

# Knowledge Organiser

Year 10

Term 1  
2024/25



**The Abbey**  
School

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# English Year 10 Term 1 – *Macbeth*

## You will learn how to:

- Identify information and ideas about characters, themes and events in the plot
- Explain what you have inferred from the text, recalling key scenes, events and quotations from the text
- Discuss the development of characters in the text
- Perform close textual analysis of the text, with reference to relevant language, form and structure methods
- Make links between the text and its context, considering the reactions of historical and modern audiences

## Prior Learning Links:

- In Year 7, students read Shakespeare's comedy play *Much Ado About Nothing*, introducing them to the conventions of Shakespeare's play
- In Year 8, students read Shakespeare's comedy play *A Midsummer Night's Dream*, further developing their understanding of Shakespearian language, form and structure
- In Year 9, students read the GCSE Literature text *An Inspector Calls*, reinforcing their understanding of texts written for the theatre and the importance of social and historical context
- In Year 9, students read the GCSE Literature text *A Christmas Carol*, developing a further understanding of how to respond to exam-style analytical questions about pre-1914 texts

## Future Learning Links:

- Shakespeare's *Macbeth* comprises one quarter of the English Literature GCSE texts and is worth approximately one quarter of the total marks – it will continue to be a focus in revision and afterschool tuition sessions throughout the rest of KS4
- In Year 11, students will study for the English Language GCSE, in which their analytical skills will continue to be a focus
- Students' understanding of how language and structure methods are used in the Literature texts, such as *Macbeth*, will form the foundation of knowledge necessary for successful analysis in English Language



## KEY VOCABULARY

### KEY WORDS

**Jacobean:** An adjective used to describe anything relating to the reign of King James I of England. *Macbeth* was first performed during the Jacobean era, which existed from 1603 to 1625. Shakespeare's relationship with the king is an important contextual factor to audiences' understanding of the play.

### KEY SUBJECT TERMINOLOGY

**Context:** In English Literature, context refers to anything that might have contributed to the writing of a text, including its setting and the ideas it explores. For example, it is contextually relevant that *Macbeth* was first performed in England in 1606, despite being set in medieval Scotland; the Jacobean context is important to audiences' understanding of the events in the play.

<p><b>Monarch:</b> A sovereign head of state, especially a king, queen, or emperor. When <i>Macbeth</i> was first performed, King James I was the monarch of England and Scotland. The monarch at the beginning of the play is King Duncan of Scotland. After Macbeth kills Duncan, the noblemen appoint Macbeth to the throne in his place. At the end of the play, Malcolm, Duncan's son and rightful heir to the throne, takes his place as the new monarch of Scotland.</p>	<p><b>Dialogue:</b> The exchange of spoken words between two or more characters in a text. In plays, lines of dialogue are preceded by the name of the person speaking.</p>
<p><b>Thane:</b> The Scottish term for a governor of a particular region. In <i>Macbeth</i>, the thanes are noblemen that are also expected to fight on behalf of the king as warrior generals. Macbeth is the Thane of Glamis at the beginning of the play, but the Witches' first prophecy comes true when he becomes the Thane of Cawdor in Act 1 Scene 3. Macbeth rival, Macduff, is the Thane of Fife.</p>	<p><b>Stage Directions:</b> An instruction in the text of a play indicating the movement, position, or tone of an actor, or the sound effects and lighting. Shakespeare's plays famously include very few stage directions, typically indicating only the entrance and exit of characters. Scenes in which more detailed stage directions appear tend to stand out as unusual.</p>
<p><b>Prophecy:</b> a prediction of what will happen in the future. In <i>Macbeth</i>, the Witches make multiple prophecies about Macbeth, Banquo and the future of Scotland. All of the Witches' prophecies come true, but Shakespeare deliberately leaves it ambiguous whether they would have come true without the Witches' intervention. Would Macbeth have killed King Duncan if he hadn't have been told he would be king?</p>	<p><b>Soliloquy:</b> An act of speaking one's thoughts aloud when by oneself or regardless of any hearers, especially by a character in a play.</p>
<p><b>The Great Chain of Being:</b> The great chain of being is a hierarchical structure of all matter and life, thought by medieval Christianity to have been decreed by God.</p>	<p><b>Poetic Meter:</b> The basic rhythmic structure of a verse or lines in verse. It is comprised of a particular number of syllables found in a single line of poetry, and can be grouped into sets of two or three beats, also known as feet. Feet are units of stressed and unstressed syllables.</p>
<p><b>Patriarchy:</b> A social system in which positions of dominance and privilege are held by men. In <i>Macbeth</i>, Scotland is a patriarchy in which the mortals' positions of power are dominated by men. However, the relationship between Macbeth and his wife, Lady Macbeth, calls into question who is really in charge. Similarly, the most powerful characters in the play are the supernatural Witches and the goddess of witchcraft, Hecate, all of whom are female characters.</p>	<p><b>Iambic Pentameter:</b> The most common meter in Shakespeare's writing and in English poetry in general. Lines consist of five feet (pairs of syllables) called iambs, in which the first syllable is unstressed. As such, lines consist of ten syllables. In <i>Macbeth</i>, the noble characters usually speak in iambic pentameter.</p>
<p><b>Superstition:</b> A widely held but irrational belief in supernatural influences, such as witchcraft.</p>	<p><b>Trochaic Tetrameter:</b> Lines of poetic meter consisting of four feet called trochees, in which the first syllable is stressed. As such, lines consist of eight syllables. In <i>Macbeth</i>, the Witches and the goddess of witchcraft, Hecate, usually speak in trochaic tetrameter.</p>
<p><b>Ambition:</b> a strong desire to do or achieve something. Ambition is Macbeth's fatal flaw.</p>	<p><b>Blank verse:</b> Poetry written in a regular meter with unrhymed lines, usually in iambic pentameter. In <i>Macbeth</i>, the lower class mortal, such as the Porter and the</p>

Murderers, usually speak in blank verse. When a noble character speaks in blank verse, it tends to signify that they are behaving very unusually. For example, Lady Macbeth speaks in blank verse while sleepwalking in Act 5.

**Original Sin:** This phrase refers generally to the Christian belief in the universal nature of sin. Sin came to the world after Adam and Eve's fall from grace in the Garden of Eden, and Christians believe that ever since that time, all people are born sinful.

**Hamartia:** A fatal flaw leading to the downfall of a tragic hero or heroine. Macbeth's fatal flaw is his ambition.

## 1. What was life like in the Jacobean era?

Red

Amber

Green

### What was the Jacobean era?

This is the period in history in which England was ruled by King James I. It existed from 1603 to 1625. King James was already King James VI of Scotland when he inherited the crown of England in 1603. His rule succeeds the Elizabethan era, in which England was ruled by Queen Elizabeth I.

### Why is the Jacobean era relevant to Shakespeare and *Macbeth*?

Shakespeare is thought to have been first performed *Macbeth* in 1606, during the reign of King James I. King James was the patron of Shakespeare's acting company, the King's Men, and the play makes various clear references to the king and events from his reign, including the Gunpowder Plot of 1605.

### What did people believe in during the Jacobean era?

The majority of people in the Jacobean era were Christians that believed God set out an order for everything in the universe. This was known as the Great Chain of Being. According to this belief, God created a social order in which everybody had a preordained position: God and His angels were positioned at the top, followed by humans, animals, plants and rocks. Amongst the mortals, the monarch was regarded as an extension of God because they had been chosen to rule. All other humans appeared after the monarch, with nobles second to the monarch and peasants at the bottom.

Jacobean people were also incredibly superstitious. In Christian countries like England, witches were thought to be agents of Satan that were capable of all manner of evil. It was believed that they could do the following: see into the future; manipulate the weather; change day into night; cause the deaths of their enemies; call up the dead; and make themselves invisible.

King James himself was especially superstitious. In 1597, he published a study of witchcraft and its evils called *Daemonologie (Demonology)*, and in 1604, he passed a statute making witchcraft punishable by death. Anything regarded as evidence of a relationship with evil spirits would have condemned a suspect to death by hanging, burning or drowning.

### What were the relationships between men and women like in the Jacobean era?

Jacobean society was patriarchal, meaning that men controlled society and were considered to superior to women. Women were regarded as 'the weaker sex,' not just in terms of physical strength, but emotionally too. It was believed that women needed someone to look after them. If

they were married, their husband was expected to look after them. If they were single, then their father, brother or another male relative was expected to take care of them.

Even though there had been an unmarried woman on the throne in Elizabethan England, the roles of women in society were very limited. There were very clear expectations of men and women, and in general, men were expected to provide for their families while women were housewives and mothers. A man was considered to be the head of a marriage and he had the legal right to chastise his wife. There was no divorce amongst the lower classes; marriage generally lasted as long as the couple both lived.

Outside of the home, women were not allowed to enter professions, such as law, medicine or politics, but they could work in domestic service as cooks, maids, etc. Women were also allowed to write works of literature, providing the subject was suitable for women: mainly translations or religious works.

### **How did the patriarchal society affect Shakespeare?**

Women were not allowed to write for or act on the public stage. Acting was considered dishonourable for women. Consequently, in Shakespeare's plays, the roles of women were often played by young boys and featured few roles for women, simply because it was impractical to depict them on stage.

However, that didn't stop Shakespeare from creating excellent female characters; beyond the tragic protagonist, the most memorable characters in *Macbeth* are often Lady Macbeth and the Witches, all of whom are memorable for subverting the stereotypes that audiences expected of women.

## **2. What happens in *Macbeth*?**

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### **What happens in Act 1?**

At the beginning of the play, audiences are introduced to Macbeth and Banquo, two Scottish noblemen, shortly after the end of a violent, bloody conflict. As they walk together, they encounter three Witches on a heath.

The Witches give both men prophecies about their futures. One of the prophecies given to Macbeth comes true almost immediately, while the prophecy that Macbeth "shalt be king hereafter" sets his mind racing. Meanwhile, Banquo learns that there will be kings in his family line, though he will never be king.

Soon after, the monarch, King Duncan, announces that his son, Malcolm, will be the heir to the throne. Eager to be king but wary of what he might have to do to secure the throne, Macbeth writes a letter to his wife, Lady Macbeth, informing her of the Witches' prophecies. Lady Macbeth is immediately excited by the news and calls upon evil spirits to give her the courage to manipulate her husband into committing murder.

When Macbeth arrives and announces that King Duncan will be spending the night in their castle, it is Lady Macbeth that reassures her husband and puts a plan in place to kill the king. She greets King Duncan when he arrives and spends the majority of the evening in his company, while Macbeth frets about the consequences of committing regicide. Ultimately, though, it is Lady Macbeth's intentions that win out; when she mocks his fears and questions his masculinity, Macbeth relents and agrees to go through with the murder.

### **What happens in Act 2?**

In the first scene of Act 1, Macbeth begins to hallucinate and has visions of a “bloody dagger” pointing in the direction of King Duncan’s chambers. Macbeth believes his conscience and doubts to be the cause of the vision, but nevertheless he presses forward, killing King Duncan in his sleep.

The murder of Duncan occurs offstage between scenes, with the second scene depicting an emotionally distressed Macbeth as he returns to his wife, hands still bloody and clutching the murder weapon. Lady Macbeth chastises her husband for bringing the daggers with him and takes them from him, planting them on the bodies of the sleeping guards outside Duncan’s chambers.

The next morning, Duncan’s body is discovered by a loyal nobleman, Macduff. He is horrified at the sight of the king’s dead body and questions how it could have happened. Pretending to be equally enraged at the sight of the guards and their bloody daggers, Macbeth murders them immediately, before they can proclaim their innocence. Macduff seems suspicious of Macbeth, but is distracted by Lady Macbeth, who pretends to faint in shock at what has happened.

In the ensuing chaos and fearing for their lives, the king’s sons, Malcolm and Donalbain, flee to England and Ireland, respectively. In their absence, Macbeth is announced king.

### **What happens in Act 3?**

Banquo begins to suspect that Macbeth was involved in Duncan’s murder, while Macbeth begins to fear that Banquo’s family might displace him as king. Macbeth plans to have Banquo and his son, Fleance, murdered. Banquo is killed but Fleance escapes, never to be seen on stage again, but presumably alive elsewhere.

Macbeth is pleased to receive confirmation that Banquo is dead and attends a feast for his Scottish noblemen in high spirits; only Banquo and Macduff are absent. However, Macbeth’s happiness is short-lived, as Banquo’s Ghost appears to haunt him, sitting in his seat and silently judging him. The Ghost is invisible to everyone but Macbeth and his guests become concerned about his violent, insensible reaction.

Lady Macbeth attempts to reassure the nobles, but it is clear that their trust in Macbeth is waning. The couple disagree about what to do next and their relationship also appears to be in decline, with this scene marking the final time that they appear onstage together. The scene ends with Macbeth announcing that he will return to the Witches for further support.

A final scene involving the noblemen reveals that Macbeth is falling out of favour with those that attended the feast. They are suspicious of the deaths of Duncan and Banquo and refer to Macbeth as a “tyrant” for the first time. They also reveal that Macduff has gone to England to seek support from Malcolm, whom he believes to be the rightful ruler of Scotland.

### **What happens in Act 4?**

Macbeth, filled with insecurity, returns to the Witches and asks them to predict his future once more. Having been criticised for the chaos they’ve caused by Hecate, the goddess of witchcraft, the Witches reveal Macbeth’s future in a way which is purposefully designed to confuse him.

Their first three prophecies are delivered by ghostly apparitions, each of which takes on an appearance which foreshadows how their words will come true:

- The first apparition, taking the appearance of an armoured head, says, “Beware Macduff”
- The second apparition, in the image of a bloody child, says “none of woman born shall harm Macbeth”
- The third apparition, a crowned child holding a tree, says that Macbeth will never be defeated “until Great Birnam Wood” comes to “high Dunsinane hill”

Though reassured, Macbeth presses for more information, asking if Banquo's descendants will ever reign. The Witches advise against his question, but he demands that they answer. In response, a procession of eight kings appears following Banquo's Ghost, each one looking like the former, predicting that Banquo's family line will result in kings for generations to come. Macbeth is angry and terrified, but the Witches disappear, and a nobleman arrives with word that Macduff has fled to England. Privately, Macbeth vows to kill all of Macduff's family, including his wife and children.

In the next scene, Lady Macduff worries about why her husband has fled to England and teases her son that his father must be a traitor. A messenger advises Lady Macduff to flee with her family, warning that she is in danger, but she refuses to go, saying she has "done no harm". Within moments, murderers arrive seeking Macduff and, finding him gone, they kill both his wife and his son.

In England, Macduff tells Malcolm of how Scotland is suffering under the rule of Macbeth. Malcolm is suspicious of Macduff and tests his loyalty, but eventually reveals his commitment to his country and people. With support from his uncle, an English general named Old Siward, Malcolm is ready to march into Scotland and take back the throne from Macbeth.

The penultimate act ends with the arrival of another nobleman, who tells Macduff the terrible news about his wife and children. Malcolm comforts Macduff, advising him to "cure this deadly grief" by way of "great revenge" against Macbeth.

### **What happens in Act 5?**

The final act reveals that Lady Macbeth's mental state is rapidly deteriorating: she appears on stage sleepwalking and talking aloud to herself, revealing secrets that only she and Macbeth have knowledge of. It is clear that she is consumed by her guilt, which is represented by a hallucination of blood that she cannot wash from her hands.

Meanwhile, Malcolm, backed by the English army and Macduff, approach Macbeth's castle. They cut down branches from the trees at Birnam Wood to disguise how big their army is, making the third apparition's prophecy come true.

At his lowest point and with death imminent, Macbeth hears from his armourer that Lady Macbeth is dead. He laments the brevity of life and reflects on the pointless nature of existence, vowing to die in battle if he must. Though he is unnerved by recent events, Macbeth is still confident that he cannot be killed by a man "of woman born", ordering that his armourer prepare him for battle, even as his men desert their posts and join Malcolm's army. Entering the battle, he is challenged by Old Siward's son, and Macbeth kills him.

Macduff enters the castle, seeking vengeance for the murder of his family. He fights Macbeth, revealing that he was "untimely ripped" from his mother's womb, and therefore not "of woman born." The Witches' prophecy comes true as Macduff kills Macbeth.

In the final scene, Macduff arrives with Macbeth's severed head. He hails Malcolm the new king, and Malcolm honours those who have fought and died alongside him. He invites them to see him crowned now that order has been restored to Scotland.

### **3. How are the witches presented at the start of the play?**

**Red** **Amber** **Green**

#### **In what way are the Witches introduced?**

The Witches (or "weird sisters" as they are also known) are the first characters to appear in *Macbeth*. At the beginning of Act 1, they meet during a storm and declare their intention to



encounter Macbeth after he has finished fighting a battle. The only stage directions are “Thunder and Lightning”, but the pathetic fallacy is enough to set an ominous tone for the tragedy that is about to unfold.

### **What do the Witches look like?**

The stage directions do not reveal anything about the Witches’ appearances, but Banquo’s words in Act 1 Scene 3 make them sound like they look otherworldly and unnatural; he calls them “withered” and “wild” in their attire, noting that one has, “her choppy finger laying / Upon her skinny lips.”

He also says, “That they look not like the inhabitants o’ th’ Earth,” and that they have the appearance of “women... yet [their] beards forbid [him] to interpret that [they] are so.”

No matter how a director or actor chooses to present the Witches, it is clear that they are supposed to have a startling appearance that marks them out as being different to ordinary people.

### **What do the Witches sound like?**

The Witches speak in an unusual rhythm called trochaic tetrameter. This is a rapid meter of poetry consisting of eight syllables per line, two fewer than the traditional ten syllables of most Shakespearian characters. The meter of their dialogue is trochaic, rather than iambic, because the first syllable in each pair of syllables is stressed instead of the second. Again, this makes the Witches stand out in comparison to the mortal characters, drawing attention to the differences between them and the noble people of Scotland.

Much of the Witches’ dialogue rhymes and the Witches often speak in rhyming couplets or triplets. Sometimes, one Witches’ dialogue will rhyme with the lines of another, as if to suggest that they can read one another’s minds or communicate supernaturally. Other times, the Witches will speak as one, as if chanting a magical spell, as they do in the final rhyming couplet of this scene:

Fair is foul, and foul is fair;  
Hover through the fog and filthy air.

This couplet is important for another reason: the phrase, “Fair is foul, and foul is fair,” appears to be contradictory at first, and is intentionally confusing. Audiences are supposed to find the Witches unsettling, and their language serves to reinforce this.

## **4. How are we introduced to Macbeth’s character?**

Red

Amber

Green

### **What do people think of Macbeth at the beginning of the play?**

Although his first words do not appear to until Act 1 Scene 3, audiences get their first impression of Macbeth via a report from a wounded soldier, the Bloody Captain. The Captain was present at a battle against allied rebels led by the traitorous Macdonwald and the Thane of Cawdor, as were Macbeth and Banquo, whom the Captain speaks about with effusive praise.

Before the audience even meets Macbeth, their expectations are therefore set by the Captain’s descriptions:

- “brave Macbeth – well he deserves that name”
- “with his brandish’d steel, / Which smoked with bloody execution, / [He] carved out his passage”

- “[He] ne’er shook hands, nor bade farewell to him, / Till he unseam’d him from the nave to the chaps / And fix’d his head upon our battlements”
- “I must report they were / As cannons overcharged with double cracks”
- “they doubly redoubled strokes upon the foe”
- “they meant to bathe in reeking wounds”

The above descriptions are overtly violent and bloody, yet the Captain praises them for their efforts, demonstrating the characteristics that were valued in men at the time.

### What does King Duncan think of Macbeth?

In response to the Captain’s words, King Duncan praises Macbeth and Banquo for their bravery, going so far as to award Macbeth with the title of his defeated foe, the Thane of Cawdor:

- “O valiant cousin, worthy gentleman!”
- “No more that Thane of Cawdor shall deceive... Go, pronounce his present death, / And with his former title greet Macbeth.”
- “What he hath lost, noble Macbeth hath won.”

### What might audiences think of Macbeth?

Though the characters in Act 1 Scene 2 have great respect for Macbeth and his accomplishments, their praise for Macbeth’s extremely violent behaviour are likely to make modern audiences uncomfortable; even a Jacobean audience might have regarded Macbeth’s actions on the battlefield as barbaric.

Most importantly, this scene emphasises that Macbeth is a brilliant *warrior*, but he does not necessarily have traits befitting a king. When he faces a problem, Macbeth attacks it head-on, murdering whoever is in his path to achieve success. To what extent will Macbeth act the same way when he becomes king?

## 5. What do we learn about Macbeth and Banquo’s characters from their reaction to the witches?

Red

Amber

Green

### What is Banquo’s reaction to the Witches?

Banquo is the first to speak to the Witches, asking “What are these... That look not like th’ inhabitants o’ th’ Earth / And yet are on ‘t?” Banquo also asks about their appearance, despite recognising that their true nature may be unknowable: “Live you? Or are you aught / That man may question?”

Throughout their conversation, Banquo continues to question whether the Witches are really there. After the Witches have prophesised that Macbeth will be king, Banquo asks, ‘I’ th’ name of truth, / Are you fantastical, or that indeed / Which outwardly you show?” When they disappear, he asks Macbeth if they have “eaten on the insane root”, barely believing what has happened.

Despite his doubts, Banquo still asks the Witches about his future, saying the following:

To me you speak not.  
 If you can look into the seeds of time  
 And say which grain will grow and which will not,  
 Speak, then, to me, who neither beg nor fear  
 Your favours nor your hate.

In effect, Banquo is curious but cautious. He recognises that the Witches are potentially in league with the “devil” and he refers to them as “instruments of darkness”, presuming their “truths” to be “honest trifles” intended to “win [them] to [their] harm.”

### **What is Macbeth’s reaction to the Witches?**

In contrast to Banquo, Macbeth speaks in terse commands throughout his interactions with the Witches, initially demanding that they “Speak if [they] can” and asking them directly, “What are you?”

In response to their prophecies that follow, Macbeth appears to “start and seem to fear” before becoming “rapt withal” – almost immediately, Macbeth is captivated by the prospect of being king, and he is willing to overlook the Witches’ intentions out of desire for what they predict.

By the time the Witches have predicted Banquo’s future, Macbeth has composed himself well enough to demand more of the Witches: “Stay, you imperfect speakers. Tell me more.” He goes on to ask how he could possibly become king, arguing that it “Stands not within the prospect of belief.” Rather than question how they could have knowledge of the future or for what purpose they might share it with him, he demands that the Witches “Say from whence / [They] owe this strange intelligence.”

When they ignore his demands and disappear, Macbeth seems dismayed, crying out, “Would they had stayed!” Where Banquo is wary, Macbeth is eager.

## **6. What do we learn about Macbeth in Act 1 Scene 4?**

Red

Amber

Green

### **How does Macbeth behave when presenting himself to King Duncan?**

When Macbeth approaches the king, he says the following amongst an audience of noblemen and attendants:

The service and the loyalty I owe,  
In doing it, pays itself. Your highness' part  
Is to receive our duties; and our duties  
Are to your throne and state children and servants,  
Which do but what they should, by doing every thing  
Safe toward your love and honour.

Publicly, Macbeth is attempting to present himself a loyal servant of Duncan. He claims that he requires no reward for his “service” and that he acts for the king out of “love and honour.” Macbeth seeks to present himself as a dutiful and honourable servant.

### **How does Macbeth behave in private?**

In contrast, Macbeth speaks very differently when alone:

The Prince of Cumberland! that is a step  
On which I must fall down, or else o'erleap,  
For in my way it lies. Stars, hide your fires;  
Let not light see my black and deep desires:  
The eye wink at the hand; yet let that be,  
Which the eye fears, when it is done, to see.

In this dialogue, spoken in an aside for only the audience to hear, Macbeth acknowledges that Malcolm, “The Prince of Cumberland”, is a “step” he must “o’erleap” in order to be king. Macbeth

is now convinced that he can only become king by killing Duncan and supplanting Malcolm, the rightful heir to the throne.

Though he is yet to say it explicitly, Macbeth commands the “Stars” to “hide [their] fires”, saying “Let not light see my black and deep desires”. This couplet demonstrates that Macbeth’s deception and serves to acknowledge that he knows his own “desires” to be immoral.

## 7. How is Lady Macbeth introduced to us?

Red

Amber

Green

### What does Lady Macbeth reveal in her first soliloquy?

When Lady Macbeth is introduced in Act 1 Scene 5, she is reading aloud a letter from husband about the Witches’ prophecies and their partial fulfilment. It is clear that he trusts her, confiding in her about what has happened and implying that regicide is the only way for him to be king.

As soon as she begins to speak her own mind, however, it is clear that she is conflicted about what Macbeth will need to do to – she fears that he lacks the ruthlessness necessary for coldblooded murder.

Lady Macbeth’s thoughts are communicated in a famous soliloquy, which is included in full below:

Glamis thou art, and Cawdor, and shalt be  
What thou art promised. Yet do I fear thy nature;  
It is too full o’ th’ milk of human kindness  
To catch the nearest way. Thou wouldst be great,  
Art not without ambition, but without  
The illness should attend it. What thou wouldst highly,  
That wouldst thou holily; wouldst not play false  
And yet wouldst wrongly win. Thou ’dst have, great Glamis,  
That which cries “Thus thou must do,” if thou have it,  
And that which rather thou dost fear to do,  
Than wishest should be undone. Hie thee hither,  
That I may pour my spirits in thine ear  
And chastise with the valor of my tongue  
All that impedes thee from the golden round,  
Which fate and metaphysical aid doth seem  
To have thee crowned withal.

Lady Macbeth’s reveals that she has a clear, if critical, understanding of her husband’s character: she acknowledges his “ambition” but thinks he lacks the “illness” necessary to act on it; she knows he would gladly “win” the throne, but his pride will not allow him to “play false” in order to secure it. She knows he will need to be manipulated into killing king and hopes that he will hurry to her quickly, so that she “may pour [her] spirits in [his] ear / And chastise with the valour of [her] tongue”. She intends to sway him firmly towards her line of thinking and will criticise his character if necessary.

Interestingly, Lady Macbeth appears to associate moral goodness with stereotypical feminine symbolism, describing Macbeth as being “too full o’ th’ milk of human kindness”. This gendered description of “kindness” reveals how Jacobean expected men and women to behave, while also subverting how women were usually depicted. In short, Lady Macbeth embodies stereotypically masculine traits more clearly than her husband.

### What does Lady Macbeth reveal in her second soliloquy?

After a messenger informs her of the imminent arrival of Duncan, Lady Macbeth says the following:

The raven himself is hoarse  
That croaks the fatal entrance of Duncan  
Under my battlements. Come, you spirits  
That tend on mortal thoughts, unsex me here,  
And fill me from the crown to the toe top-full  
Of direst cruelty. Make thick my blood.  
Stop up th' access and passage to remorse,  
That no compunctious visitings of nature  
Shake my fell purpose, nor keep peace between  
Th' effect and it. Come to my woman's breasts  
And take my milk for gall, you murd'ring ministers,  
Wherever in your sightless substances  
You wait on nature's mischief. Come, thick night,  
And pall thee in the dunnest smoke of hell,  
That my keen knife see not the wound it makes,  
Nor heaven peep through the blanket of the dark  
To cry "Hold, hold!"

In her second soliloquy, Lady Macbeth's dialogue is even more gendered than before: she calls on evil "spirits" to "unsex" her and replace the "milk" of her "woman's breasts" with poison. Yet again, her language suggests that her femininity, represented by breasts and milk, impedes her from performing stereotypically masculine acts of violence and cruelty; she believes she must act like a man – or at least, less like a woman – in order to commit murder.

This soliloquy also draws attention to the similarities shared by Lady Macbeth and the Witches. This is most evident in her calling on "spirits" and "murdering ministers" to aid her in her plot, but also in the way that she hides her malicious intent behind a feminine outward appearance.

Finally, her command to the "thick night" is reminiscent of Macbeth's final lines in the previous scene. Where he called on the night to hide his "black and deep desires", she calls on the blackest "smoke of hell", desperate for heaven not to "peep through the blanket of the dark". Just like Macbeth, she knows that her desires are immoral and seeks to hide them God.

## 8. Why doesn't Macbeth want to murder Duncan?

Red

Amber

Green

### What doubts does Macbeth express in his final soliloquy of Act 1?

At the beginning of Act 1 Scene 7, Macbeth stands alone, worrying about his fate in the afterlife if he becomes a murderer. The majority of his soliloquy is included below:

But in these cases  
We still have judgment here, that we but teach  
Bloody instructions, which, being taught, return  
To plague th' inventor. This even-handed justice  
Commends th' ingredience of our poisoned chalice  
To our own lips. He's here in double trust:  
First, as I am his kinsman and his subject,  
Strong both against the deed; then, as his host,  
Who should against his murderer shut the door,  
Not bear the knife myself. Besides, this Duncan  
Hath borne his faculties so meek, hath been  
So clear in his great office, that his virtues

Will plead like angels, trumpet-tongued, against  
The deep damnation of his taking-off;  
And pity, like a naked newborn babe  
Striding the blast, or heaven's cherubin horsed  
Upon the sightless couriers of the air,  
Shall blow the horrid deed in every eye,  
That tears shall drown the wind. I have no spur  
To prick the sides of my intent, but only  
Vaulting ambition, which o'erleaps itself  
And falls on th' other—

Throughout this monologue, Macbeth lists many reasons for not killing the king, including: those that commit murder are often murdered themselves; the king trusts him; he is related to the king; he is the king's subject; he is the king's host; the king is a virtuous man; his murderer would face "deep damnation" in hell; and the people of Scotland will cry to the extent "That tears shall drown the wind."

In contrast, Macbeth acknowledges a single reason for killing the king: "ambition".

When his reasons for killing the king are compared against his reasons for *not* killing the king, it becomes obvious that Macbeth would prefer to "proceed no further in this business." Lady Macbeth, however, has other ideas...

### **How does Lady Macbeth react when Macbeth refuses to go through with the murder?**

When Macbeth tries to put a stop to their plot, Lady Macbeth mocks her husband for his fears and speaks to him in a manner which many Jacobean men would have been surprised to see. Some of her most cutting insults and criticisms are listed below:

- "Was the hope drunk / Wherein you dressed yourself?"
- "From this time / Such I account thy love."
- "Wouldst thou... live a coward in thine own esteem... Like the poor cat i' th' adage?"
- "What beast was 't then, / That made you break this enterprise to me?"
- "When you durst do it, then you were a man."
- "I have given suck, and know / How tender 'tis to love the babe that milks me. / I would, while it was smiling in my face, / Have... dashed the brains out, had I so sworn as you / Have done to this."

As is usual with Lady Macbeth, she speaks in gendered terms about what it means to be a "man", using Macbeth's own fragile sense of masculinity to manipulate him into doing what she wants. It is clear that Macbeth believes a man should be brave, and that by breaking his promise to Lady Macbeth, she will regard him as a "coward". She even claims that she would murder her own child rather than break a promise to him, where she is in his position. Yet again, Lady Macbeth's language draws attention to the way that Jacobean men and women expected each other to behave; in leaning on the societal pressures that dictate how men *should* behave, Lady Macbeth is able to make her husband commit himself to the deed.

### **9. How is Macbeth's internal conflict presented?**

Red Amber Green

Macbeth's internal conflict is demonstrated in another famous soliloquy. This time, as he approaches Duncan's chambers alone at night, he sees a vision of a bloody dagger:

Is this a dagger which I see before me,  
The handle toward my hand? Come, let me clutch thee.  
I have thee not, and yet I see thee still.

Art thou not, fatal vision, sensible  
To feeling as to sight? or art thou but  
A dagger of the mind, a false creation,  
Proceeding from the heat-oppressed brain?  
I see thee yet, in form as palpable  
As this which now I draw.  
Thou marshall'st me the way that I was going;  
And such an instrument I was to use.  
Mine eyes are made the fools o' the other senses,  
Or else worth all the rest; I see thee still,  
And on thy blade and dudgeon gouts of blood,  
Which was not so before. There's no such thing:  
It is the bloody business which informs  
Thus to mine eyes.

Throughout the monologue above, Macbeth questions his own senses, wondering why he cannot “clutch” the dagger despite seeing it. He wonders if the dagger is “sensible / To feeling as to sight”, but finds that he cannot touch it. Eventually, he disregards the vision, saying that his “eyes are made the fools o’ the other senses.” He dismisses it as “no such thing”, presuming it to be a hallucination (“A dagger of the mind, a false creation”) caused by stress and doubt.

There are a number of interesting details throughout this scene, not the least of which is that Macbeth’s sense will fail him repeatedly following his murder of the king – this is not the last time he will see something that no one else can see, for example.

However, most revealing of all are the references to the positioning of the dagger and the way that it changes throughout the scene. Initially, it appears with “The handle toward [his] hand”, suggesting a part of him seeks to wish out and grab it. Later, he says that the dagger “marshall’st [him] the way that [he] was going.” This personification of the dagger seems to imply that it is compelling him onwards, in the direction of Duncan. Finally, Macbeth begins to see “gouts of blood” appear on the “blade and dudgeon” (handle), implying that he is getting closer to murdering Duncan the longer that he looks at it. Ultimately, the murder of Duncan disturbs Macbeth but he is not so conflicted as to not go through with the murder.

## 10. How do Macbeth and Lady Macbeth act after the murder?

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### How does Macbeth act after the murder?

When Macbeth returns from Duncan’s chambers, he is horrified by what he has done. He reports having killed Duncan, but is fearful of divine punishment because of the unusual circumstances that immediately followed:

- When he heard Duncan’s son, Malcolm and Donalbain, praying, Macbeth could not say “Amen” to himself.
- When he killed Duncan, Macbeth heard a voice cry “Sleep no more!”

In the latter half of this scene, the brave Macbeth of Act 1 is nowhere to be found. He refuses to return to Duncan’s chambers in order to frame the guards with the bloody daggers, admitting he is paralysed with fear: “I am afraid to think what I have done. Look on ‘t again I dare not.”

When Lady Macbeth leaves to plant the daggers herself, Macbeth laments his actions and cries out at his own bloody hands, believing that they will never be clean of blood again:

What hands are here! Ha, they pluck out mine eyes.  
Will all great Neptune’s ocean wash this blood  
Clean from my hand? No, this my hand will rather

The multitudinous seas incarnadine,  
Making the green one red.

### How does Lady Macbeth act after the murder?

As is usual of their dynamic up until this point in the play, Lady Macbeth behaves in the opposite way to her husband, criticising him for his fears and taking charge of the situation:

Infirm of purpose!  
Give me the daggers. The sleeping and the dead  
Are but as pictures. 'Tis the eye of childhood  
That fears a painted devil.

Upon her return, Lady Macbeth belittles her husband, saying that her hands are also bloodied, but that feel “shame” at the sight of his cowardice. She also speaks a fateful line when washing Duncan’s blood from her hands: “A little water clears us of this deed.” Her flippant dismissal of the blood on her hands is an ironic foreshadowing of how her own guilt will manifest itself in Act 5.

## 11. Why is the Porter significant?

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### Who is the Porter?

The drunken Porter is a comedic character that only appears at the beginning of Act 2 Scene 3. He appears briefly, speaking largely to himself before exchanging a few witty remarks with Macduff, who arrives at the castle early in the morning, intending to meet with King Duncan.

### What does the Porter represent?

Though his formal role is the gate-keeper of Macbeth’s castle, he compares himself to the “porter of hell gate” and makes jokes about the various kinds of sinners that go to hell. Though he is of little importance to the ongoing plot, the Porter’s lines are important in that they allude to the wider goings on in the story: if the Porter is the gate-keeper of hell, then Macbeth is the metaphorical devil and Macduff is the avenging angel.

Furthermore, the Porter is the first lower class mortal to appear in the play – so far, all the other human characters have been nobles. As such, he speaks in prose rather than verse, signalling his lack of education and sophistication in contrast to the main characters of the story. However, this does not mean that the Porter is unintelligent. On the contrary, the Porter speaks the bare truth in a way that few characters do, acknowledging base truths about life that the nobles sometimes fail to recognise. He is a representation of the common man and his views, comedic as they are, are indicative of the fact that lower class people often see the state of things more clearly than their social superiors.

### What is the purpose of the Porter at this point in the story?

To the audience, privy to the Macbeths’ murder of King Duncan, these lines also provide an important moment of comic relief at the most tragic low point of the play. His conversation with Macduff is filled with particularly rude jokes about the effects that alcohol has on men, including references to their desire to sleep, urinate and have sex when drunk.

Though the Porter and his jokes seem a little out of place, it is important to recognise that without him, the play would remain relentless grim up to and including this scene.

## 12. How is Macduff’s character portrayed?

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## Why does Macduff arrive in Act 2 Scene 3?

Though he appeared in the background of earlier scenes, it is not until Act 2 Scene 3 that Macduff is introduced as a major character. The fact that Macduff began knocking on the castle door immediately after Duncan's murder is no coincidence: as the Porter's dialogue alludes, Macbeth's castle is like hell, making Macbeth the devil; in contrast, Macduff is a representation of moral goodness, order and stability – the angel to Macbeth's devil. He arrives at this point precisely because there needs to be a character that can come into conflict with Macbeth.

## How does Macduff respond to Duncan's murder?

Despite his stern and curt dialogue when first greeting Macbeth, Macduff expresses incredible emotion upon discovering the body of King Duncan:

O horror, horror, horror!  
Tongue nor heart cannot conceive nor name thee!  
... Confusion now hath made his masterpiece.  
Most sacrilegious murder hath broke ope  
The Lord's anointed temple and stole thence  
The life o' th' building.

The repetition of "horror" reinforces how shocked and emotionally distraught Macduff is at the sight of the king. Neither his "Tongue nor heart" can conceive or even put to into words his grief. His dialogue is littered with religious connotations and references to the destruction of an "anointed temple". To Macduff, killing the king is second only to the desecration of a holy church, if not of equal significance; the murder of Duncan has broken the Great of Chain of Being, and the world will be thrown into chaos as a result.

As soon as he regains his composure, note that Macduff raises the alarm and wakes up the rest of the castle. He is quick to act in much the same way that Macbeth was at the beginning of Act 1, only Macduff continues to act in service to the rightful king, while Macbeth acts out of selfish self-interest.

## How does Macduff respond to Macbeth?

When Macbeth returns from Duncan's chamber, having killed the king's guards out of fake "fury", it is Macduff that questions Macbeth's motivations: "Wherefore did you so?" To Macduff, Macbeth's response of uncontrollable "fury" seems absurd and fails to align with the way that Macduff expects men to behave: rational, logical and in control of their emotions.

Though they exchange few words between now and the next couple of acts, Macbeth's murder of the guards appears to be enough for Macduff to have suspicions. When a fellow nobleman discusses the murder with him in the next scene, Macduff refers to "Those that Macbeth hath slain" as the most likely culprits – but he does not seem convinced. Before the end of Act 2, he announces that he will go to his castle in Fife rather than to Macbeth's coronation, and he also fails to attend Macbeth's feast in Act 3, choosing instead to seek support from Malcolm in England.

## How does Macduff respond to Lady Macbeth?

An oft overlooked exchange between Macduff and Lady Macbeth reveals that Macduff is just as susceptible to the gender stereotypes of the Jacobean period as anyone else. This is most evident when he calls Lady Macbeth "O gentle lady" and tells her:

'Tis not for you to hear what I can speak.

The repetition in a woman's ear

Would murder as it fell.

Lady Macbeth being directly responsible for the murder they're discussing makes his words deeply ironic, and serves to highlight Macduff's character flaw: like Duncan before him, he is too trusting, especially of women. Macduff believes in the stereotypes about Jacobean women and is easily fooled into thinking that Lady Macbeth has no role in the crime.

This is reinforced even further when Lady Macbeth pretends to faint in order to cause a distraction; it is Macduff that tells others to "Look to the lady", again believing she needs the support of men. Macduff's perception of women will ultimately be tested in Act 4, when Macbeth orders the murders of his wife and children. Like other characters in the play, Macduff learns a valuable lesson about underestimating the significance of women.

### 13. How does Duncan's murder affect the Great Chain of Being?

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#### What does Lennox report as having happen on the night of Duncan's murder?

Lennox is a nobleman of some importance that appears sporadically throughout the play – when Shakespeare needs to communicate the perspective of the noble classes, it is typically Lennox that expresses the view.

As such, Lennox is the nobleman to accompany Macduff into Macbeth's castle at beginning of Act 2 Scene 3. It is during this scene, prior to the discovery of Macduff's murder, in which Lennox says the following:

The night has been unruly. Where we lay,  
Our chimneys were blown down and, as they say,  
Lamentings heard i' th' air, strange screams of death,  
And prophesying, with accents terrible,  
Of dire combustion and confused events  
New hatched to th' woeful time. The obscure bird  
Clamored the livelong night. Some say the Earth  
Was feverous and did shake.

Lennox's lines here reveal what Jacobean's expected would happen if the Great Chain of Being were to be broken: the natural world has been thrown into disorder, a reflection of the chaos brought about by Macbeth's murder of the king. The "unruly" night appears to refer to a storm, the pathetic fallacy recalling the introduction of the Witches in their first appearance from Act 1. Meanwhile, there appears to have been an earthquake, presumably coinciding with the death of Duncan. It is unclear what the "Lamentings heard i' th' air" might have been, but it is easier to imagine them being supernatural in origin.

#### What do Ross and the Old Man discuss having happened on the night of Duncan's murder?

Ross is another nobleman that fulfills the same kind of role as Lennox. At the end of Act 2, in the scene immediately preceding the coronation of Macbeth, Ross meets with an Old Man and exchanges accounts of recent unnatural happenings. Both claim to have seen or heard unusual goings on since the night of Duncan's murder:

- The Old Man says that "this sore night / Hath trifled former knowings," calling it the most "dreadful" and "strange" night of his long lifetime.
- In response, Ross says that "By th' clock 'tis day, / And yet dark night strangles the traveling lamp." Ross means that it is dark during the day, recalling the earlier lines of Macbeth and Lady Macbeth, both of whom called on the night to cover up their crimes.

- The Old Man draws a direct line between the supernatural events they're experiencing and the death of Duncan: "Tis unnatural, / Even like the deed that's done." This makes it clear that most people, whom the Old Man appears to represent, believe that breaking the Great Chain of Being is directly responsible for what they are witnessing.
- Both the Old Man and Ross describe unusual events involving animals, including "A falcon" being "killed" by a "mousing owl" and references to "Duncan's horses [turning] wild in nature". The Old Man even says, "Tis said they eat each other"!

### Has the world really been thrown into chaos and disorder?

Though it is true that Jacobean audiences really did believe in the Great Chain of Being, the people of Shakespeare's time would also have understood that the events reported by these characters are a metaphor for the state of Scotland in the wake of Duncan's death. Without the rightful ruler on the throne and with a new king taking his place, the country would have been in turmoil and panic amongst the lower classes would have been rife. The earth might not have really shaken, but society *would* have been thrown into chaos and disorder.

To take this idea further, consider how the events described have escalated between scenes: Lennox makes references to terrible weather and a potential earthquake, but by the time Ross and the Old Man are speaking, they say that the sun has been covered by darkness and that the king's horses are eating each other! To what extent are rumours and gossip, especially amongst the uneducated lower classes (represented by the Old Man), affecting what people think is happening? This is especially possible when you pay close attention to how much of what they report is based on hearsay. Perhaps Ross is even leaning into the beliefs of the common people and making fun of what people believe.

### HOME LEARNING TASKS

Task Description	Done?
Watch videos about <i>Macbeth</i> on GCSE Pod. Your teacher will direct you to suitable videos.	
Revise key details about characters, themes and plot.	
Revise key quotations from the text. You could begin by annotating your quotations with notes about language and/or structure methods.	
Answer exam-style questions. Your teacher will direct you to suitable questions.	
Revise the content and context of the play using your Knowledge Organiser. Your teacher will direct you to suitable sections of the Knowledge Organiser in preparation for recall quizzes in class.	

# Maths Year 10 Term 1 - Perimeter, Area and Volume

**TERM FOCUS** – What are the Area formulae that you need to know?  
 How does calculating the surface area and volume of a prism relate to your area knowledge?  
 How do the properties of circles help us measure objects with curved surfaces?



**Prior Learning Links**

**Future Learning Links**

## Areas

Rectangle = $l \times w$	
Parallelogram = $b \times h$	
Triangle = $\frac{1}{2} b \times h$	
Trapezium = $\frac{1}{2} (a + b)h$	

## Volumes

Cuboid = $l \times w \times h$	
Prism = area of cross section $\times$ length	
Cylinder = $\pi r^2 h$	
Volume of pyramid = $\frac{1}{3} \times$ area of base $\times$ h	

## 1. How do I calculate the perimeter of any shape?

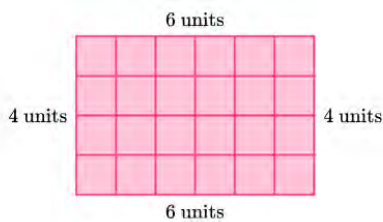
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### Simple Shapes

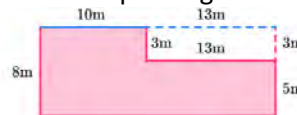
To find the perimeter of a shape, you **add** up the lengths of all the sides.



$$6 + 4 + 6 + 4 = 20, \text{ so the perimeter is } 20 \text{ units.}$$

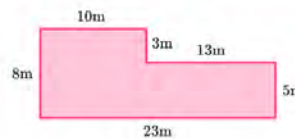
### Compound Shapes

1. Split the compound shape into easier ones like triangles or squares.
2. Find the outside length of these smaller shapes.
3. Put together the lengths of these small shapes to get the total outside length



$$10 + 13 = 23$$

The missing length of the large rectangle is 23 m.



Now that all side lengths are known, add them all to find the perimeter.

$$8 + 10 + 3 + 13 + 5 + 23 = 62$$

## 2. How do I calculate the area of any shape?

Red

Amber



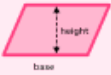



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### Area of basic shapes

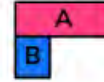
1. Write down the formula.

### Area of Compound Shapes

2. Substitute the values into the formula.
3. Complete the calculation.
4. Write the answer, including the units.

Shape	Formula
Triangle 	$\text{Area} = \frac{1}{2} \times \text{base} \times \text{height}$
Rectangle 	$\text{Area} = \text{base} \times \text{height}$
Parallelogram 	$\text{Area} = \text{base} \times \text{height}$
Rhombus 	$\text{Area} = \frac{1}{2} \times \text{width} \times \text{height}$ $\text{Area} = \frac{1}{2} \times \text{diagonal} \times \text{diagonal}$
Trapezium 	$\text{Area} = \frac{1}{2}(a + b)h$
Circle 	$\text{Area} = \pi r^2$

1. Break down the compound shape into basic shapes.
2. Find the area of the basic shapes.
3. Add the areas

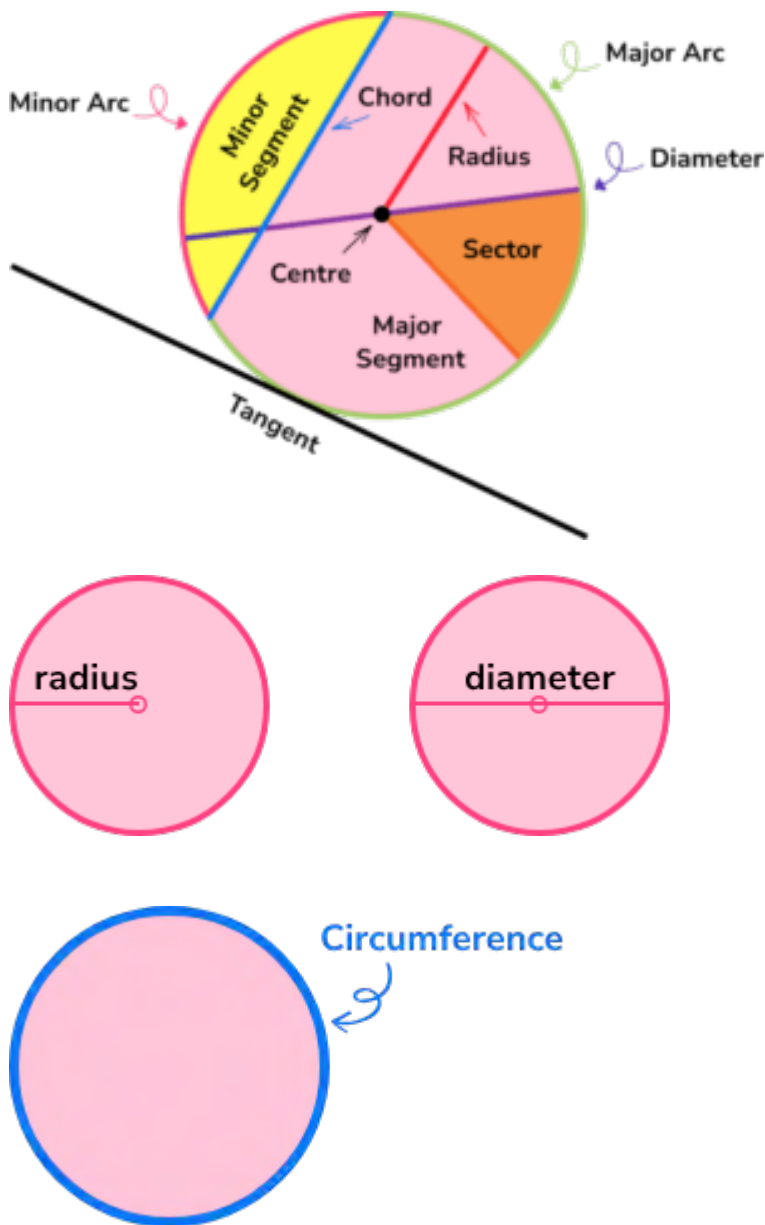


Area of Shape A + Area of Shape B = Area of Compound Shape

3. What are the parts of a circle?

Red

Amber



**Centre**

The centre of the circle is the fixed point from which all points on the circle are equidistant.

**Radius**

The distance from the centre of a circle to the outside.

**Diameter**

The distance across the circle going through the centre.

**Circumference**

The distance all around the circle.

**Arc**

A part of the circumference.

Major arc – A major arc is greater than half the circumference.

Minor arc – A minor arc is less than half the circumference.

**Chord**

A line segment going from one point of the circumference to another point through the centre.

**Tangent**

A straight line that touches the circle at a single point only.

**Sector**

A section of the circle created by two radii (radius plural).

Major sector – A major sector has a central angle which is greater than 180 degrees.

Minor sector – A minor sector has a central angle which is less than 180 degrees.

**Segment**

A section of the circle created by a chord.

4. How do I find the area and circumference of a circle?

Red

Amber

**Area of circle** is given by the area of a circle formula which is made by using a specific relationship between the radius of a circle and its area.

$$\text{Area of a circle} = \pi r^2$$



E.g.

What is the area of a circle with radius 3cm?



$$\begin{aligned} \text{Area} &= \pi r^2 \\ &= \pi \times 3^2 \\ &= 9\pi \text{cm}^2 \\ &= 28.3\text{cm}^2 \text{ (1.d.p.)} \end{aligned}$$

**Circumference** is a special case of perimeter. Both describe the total length of the boundary of a two dimensional shape, but circumference specifically refers to the perimeter of a curved figure or arc. Therefore it only applies to circles, ovals, ellipses, arcs, etc.

$$\text{Circumference} = \pi \times d$$

Or

$$\text{Circumference} = 2 \times \pi \times r$$

E.g.

What is the circumference of a circle with radius 3cm?

$$\text{Circumference} = \pi \times d$$

$$= \pi \times 6$$

$$= 6\pi \text{cm}$$

$$= 18.8\text{cm} \text{ (1.d.p.)}$$



## 5. What are bounds and how do i calculate upper and lower bounds?

Red

Amber

### What are bounds?

Upper and lower bounds are the maximum and minimum values that a number could have been before it was rounded.

In order to calculate **upper and lower bounds**:

- 1 Identify the place value of the degree of accuracy stated
- 2 Divide this place value by 2
- 3 Add this amount to the given value to find the upper bound, subtract this amount from the given value to find the lower bound

You can then use these to write an error interval:

$$\text{Lower bound} \leq x < \text{Upper bound}$$

## 6. How do I find the surface area of a shape?

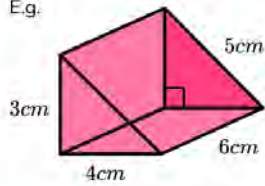
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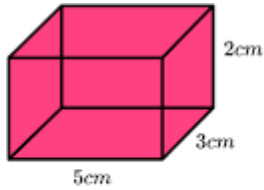
The **surface area** of a three dimensional shape is the total area of all of the faces. To find the surface area of a shape, we find the area of each face and add them together.

E.g.



Face	Area
Front	$\frac{1}{2} \times 4 \times 3 = 6$
Back	6
Bottom	$4 \times 6 = 24$
Top	$5 \times 6 = 30$
Left side	$3 \times 6 = 18$

$$\text{Total surface area} = 6 + 6 + 24 + 30 + 18 = 84\text{cm}^2$$



Face	Area
Bottom	$5 \times 3 = 15$
Top	15
Front	$5 \times 2 = 10$
Back	10
Right side	$2 \times 3 = 6$
Left side	6

$$\text{Total surface area} = 15 + 15 + 10 + 10 + 6 + 6 = 62\text{cm}^2$$

1. Calculate the area of each face.
2. Add the areas together.
3. Write the answer, including the units.

## 7. How do I calculate the volume of a prism?

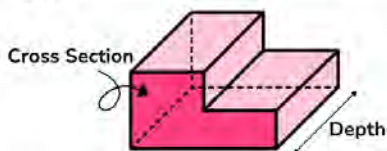
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The **volume of a prism** is how much space there is inside a prism.

To work this out we find the **area of the cross-section** and **multiply** it by the **length**.



$$\text{Volume of prism} = \text{area of cross section} \times \text{depth}$$

1. Calculate the area of the cross section.
2. Multiply the area of the cross section by the depth
3. Write the answer, including the units.

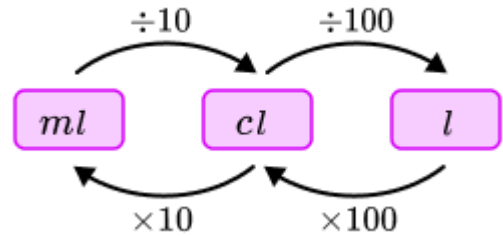
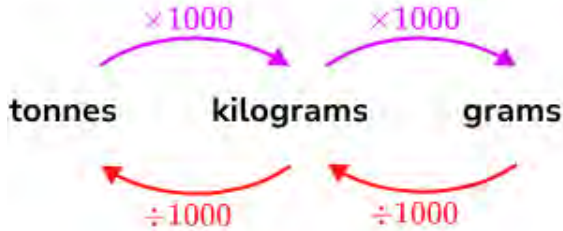
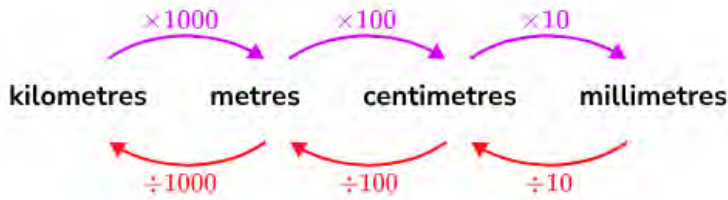
## 8. How do I convert metric units

Red

Amber

Green





**9. How do I calculate volume and surface area of a cylinder?**

Red

Amber

The **volume of a cylinder** is the amount of space there is inside a cylinder.

In order to find the volume of a cylinder we first need to find the circular area of the cross section and **multiply** it by the height (or length).

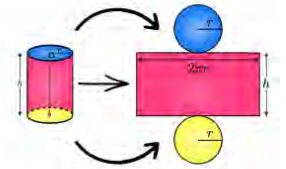
**Formula** for the volume of a cylinder:

$$\text{Volume} = \pi r^2 h$$



The **surface area** of a cylinder is the area which covers the outer surface of a cylinder.

In order to calculate the total surface area of a cylinder we need to find the area of the three parts of the surface of the cylinder and add them together. There is a **curved surface area** and **two circular bases**.



**Formula** for the **total surface area of a cylinder**: TOTAL surface area =  $2\pi r h + 2\pi r^2$

**10. How do I find the volume and surface area of a pyramid?**

Red

Amber

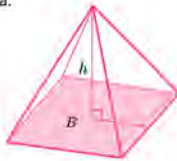
Volume of a pyramid is the volume of a three dimensional pyramid.

To calculate the volume of a pyramid, we use the formula:

$$V = \frac{1}{3} B h$$

Where:

**V** represents the volume of the pyramid,  
**B** represents the area of the base of the pyramid,  
**h** represents the perpendicular height of the pyramid.



The **surface area of a pyramid** is the total sum of the area of each face of the pyramid.

E.g. a square based pyramid consists of a square, and four triangular faces

Square based pyramid	Net	Component faces

To calculate the surface area of a pyramid, we need to calculate the area of each face of a pyramid, and then add these areas together.

**11. How do I find the volume and surface area of a cone?**

Red

Amber

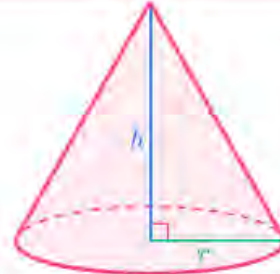
The **volume of a cone** is the amount of space inside a cone.

The volume of a cone is **one third** of the volume of a cylinder.

The volume of a cone can be calculated using a formula.

To do this, substitute two of the dimensions of the cone into the volume formula, and evaluate the result. The volume formula for any cone is:

$$\text{Volume} = \frac{1}{3}\pi r^2 h$$

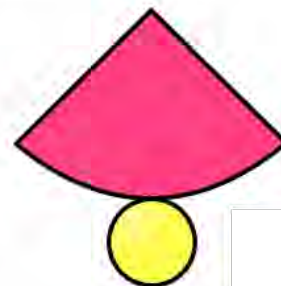
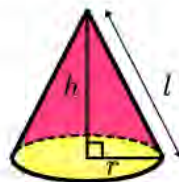


where  $r$  is the **radius** of the **base of the cone** and  $h$  is the **perpendicular height of the cone**.

The **surface area of a cone** is the area which covers the outer surface of the cone.

In order to calculate the total surface area of a cone we need to find the area of the two parts of the surface of the cone and add them together. There is a curved surface area and a circular base.

$$\text{TOTAL surface area} = \pi r l + \pi r^2$$



**12. How do I find the volume and surface area of a sphere?****Red****Amber****Green**

The **volume** of a sphere is finding the amount of space inside a sphere

The **formula** for the volume of a sphere is:  $\text{Volume} = \frac{4}{3}\pi r^3$



The **surface area** of a sphere is the area which covers the **outer surface** of a sphere.



The **formula** for the surface area of a sphere with radius  $r$  is:

$$\text{Surface area} = 4\pi r^2$$

**HOME LEARNING TASKS**

Task Description	Done?

# Chemistry Year 10 Term 1 – Acids and Alkalis

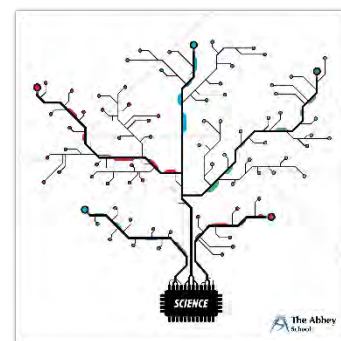
Term Focus –

## Prior Learning Links

- Properties of acidic, alkaline and neutral substances.
- pH scale.
- Formation of ions
- Physical and chemical reactions
- Rates of reaction and reversible reactions
- Concentration and volume

## Future Learning Links

- Stoichiometric calculation
- Rates of reaction
- Factors affecting rates of reaction
- Qualitative and quantitative analysis
- Environmental chemistry



## KEY VOCABULARY

Acid

Alkali

H<sup>+</sup> ion

OH<sup>-</sup> ion

Indicator

Neutralisation

Concentration

Solute

Solution

Solvent

Ionise

Strong acid

Weak Acid

Metal carbonate

Metal oxide

Salt

Ore

Oxidation

Reduction

Redox

Half equation

Ionic Equation

Electrode

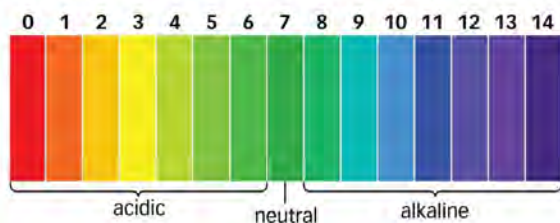
Anode

Cathode

Electrolyte

## 1. Acids and Alkalis

Red Amber Green



**Neutralisation** Reaction: Acid + Alkali → Salt + Water

**Ionic Equation:**  $H^+ + OH^- \rightarrow H_2O$

$H^+$  = Acidic solution

$OH^-$  = Alkaline solution

### Key terms

**Ion:** An atom that has lost or gained electrons to become a charged particle.

**Ionic equation:** An equation that shows only the ionic particles that react and the products they form.

**XX<sub>(s)</sub>:** Substance is in a solid state.

**XX<sub>(l)</sub>:** Substance is in a liquid state.

**XX<sub>(g)</sub>:** Substance is in a gaseous state.

**XX<sub>(aq)</sub>:** Substance is dissolved in water

How acidic or alkaline a solution is can be measured on the pH scale

A neutral substance has a pH of 7, an acidic substance has a pH less than 7 and an alkaline solution greater than 7

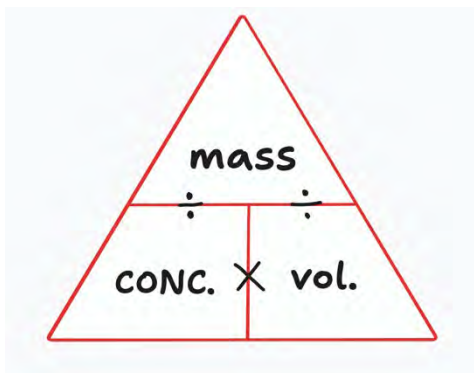
pH of a solution can be measured using either a universal indicator or a pH probe.

Hydrogen ions (H<sup>+</sup>) make a solution acidic and hydroxide ions (OH<sup>-</sup>) make a solution alkaline.

In a neutralisation reaction between an acid and alkali, hydrogen ions (H<sup>+</sup>) react with hydroxide ions (OH<sup>-</sup>) to produce water.

## 2. Concentration

Red Amber Green



### Key terms

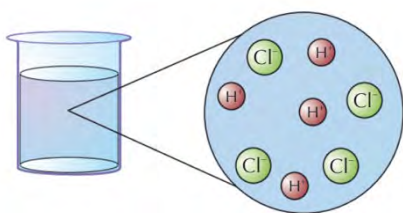
**Concentration:** The amount of a substance in a given volume. Measured in mol/dm<sup>3</sup> or g/dm<sup>3</sup>

1 dm<sup>3</sup> = 1 litre = 1000 ml = 1000 cm<sup>3</sup>

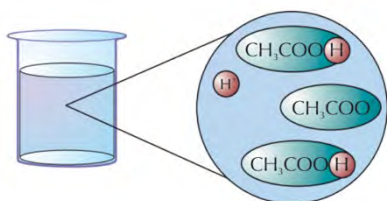
**Concentration (g/dm<sup>3</sup>)** =  $\frac{\text{mass of solute (g)}}{\text{Volume of solution (dm}^3\text{)}}$

## 3. Strong and Weak Acids

Red Amber Green



Hydrochloric acid completely dissociates:  $\text{HCl} \rightarrow \text{H}^+ + \text{Cl}^-$



Ethanoic acid partially dissociates:



### Key definitions

**Strong Acid:** An acid that completely ionises (dissociates) in water. (H)

**Weak acid:** An acid that only partially ionises (dissociates). (H)

**Examples of strong acids are:** Nitric acid (HNO<sub>3</sub>) and Sulphuric acid (H<sub>2</sub>SO<sub>4</sub>)

**Examples of weak acids are:** Ethanoic Acids (CH<sub>3</sub>COOH) and Carbonic acid (H<sub>2</sub>CO). (H)

If you multiply the concentration of H<sup>+</sup> ions in a solution by 10, the pH will decrease by 1. (H)

Therefore solutions of a strong acid will have a lower pH than a solution of a weak acid with the same concentration. (H)

Acid concentration measures the amount of acid dissolved in a fixed volume of water. (H)

Acid strength is a measure of what proportion of H<sup>+</sup> ions dissociate in water. (H)

## 4. Reactivity of Metals with Acids

Red Amber Green



### Key terms

**Metal oxide** = MO

**Metal hydroxide** = MOH

**Metal carbonate** = MCO<sub>3</sub>

### Key reactions

You must know the products of the reactions between metals, metal oxides, metal hydroxides and metal carbonates with acid.

Metal + Acid → Salt + Hydrogen

Metal oxide/ Hydroxide + Acid → Salt + Water

Metal Carbonate + Acid → Salt + Carbon dioxide + Water



You must also be able to name the salt produced in these reaction

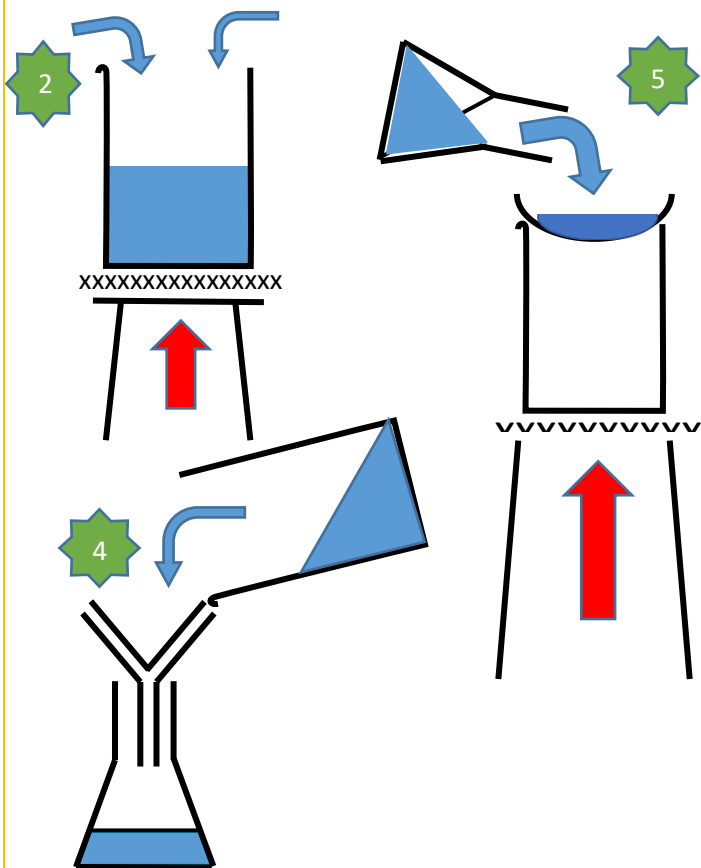
Metal + Hydrochloric acid  $\rightarrow$  Metal Chloride + Hydrogen

Metal + Sulphuric acid  $\rightarrow$  Metal Sulphate + Hydrogen

Metal + Nitric acid  $\rightarrow$  Metal Nitrate + Hydrogen

### 5. Required Practical 8

Red Amber Green

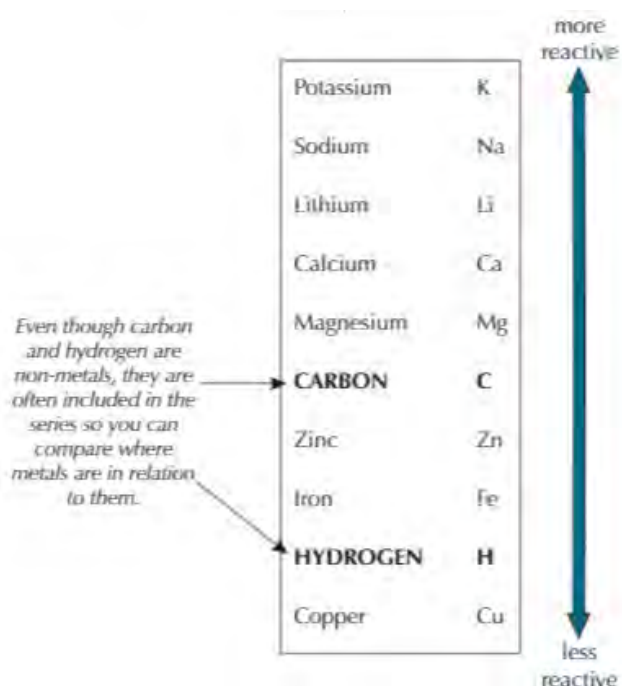


#### Making soluble salts Required Practical:

- Put the acid in a beaker and gently warm using a Bunsen burner.
- Add the insoluble metal oxide and stir until it has fully reacted and dissolved
- Keep adding the insoluble reactant until it is in excess. You will know it is in excess when there is some reactant left in its solid form that will not react.
- Use filter paper in a funnel to filter out the excess undissolved reactant into a conical flask.
- Transfer the salt solution to an evaporating basin and heat gently in a water bath until most of the water has evaporated.
- Leave the solution to cool and the salt crystals should form.

### 6. Reactivity of Metals

Red Amber Green



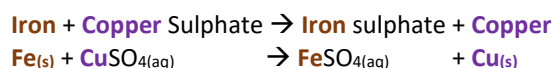
The reactivity series is a list of metals placed in order of reactivity

The reactivity of a metal is determined by how easily it forms positive ions.

Carbon and Hydrogen are often included in this series even though they are not metals because it is convenient to be able to compare their reactivity with other metals.

When a metal reacts with acid, salt and hydrogen gas are produced. The more reactive the metal the faster bubbles of hydrogen will be produced.

When a metal reacts with a compound that contains a less reactive metal, this metal will be displaced. For example:



If the metal within the compound is more reactive then no reaction will occur.

## 7. Metal oxides and redox

Red Amber Green

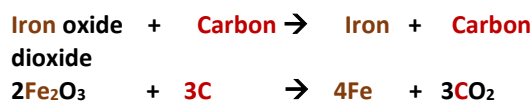
Some elements like Gold and Silver are found as themselves in the earth but most metals are found in compounds that need extracting.

When a metal reacts with Oxygen it forms a metal oxide

**Oxidation** can be defined as an element gaining an oxygen atom.

**Reduction** can be defined as a compound losing an oxygen atom.

If a metal is lower than carbon in the reactivity series it can be extracted by a reduction reaction with carbon. For example:



Here the Iron has been reduced because it has lost an oxygen.

If a metal is above carbon in the **reactivity series**, it **must be extracted by electrolysis**.

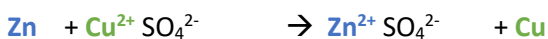
The Reactivity Series			
Extracted using electrolysis.	Potassium	K	↑ More reactive than carbon
	Sodium	Na	
	Lithium	Li	
	Calcium	Ca	
	Magnesium	Mg	
	Carbon	C	
Extracted by reduction using carbon.	Zinc	Zn	↓ Less reactive than carbon
	Iron	Fe	
	Hydrogen	H	
	Copper	Cu	

## 8. Redox Reactions

Red Amber Green

### Displacement reaction:

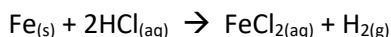
Zinc + Copper Sulphate → Zinc Sulphate + Copper



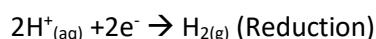
Half equations:  $\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}^-$  (Oxidation)



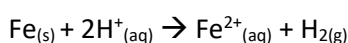
### Reaction of metal and acid:



Half equations:  $\text{Fe}_{(s)} \rightarrow \text{Fe}^{2+}_{(aq)} + 2\text{e}^-$  (Oxidation)



### Ionic equation:



### Key Definitions

**Redox Reaction:** A reaction where one substance is reduced and another substance is oxidised.

**Displacement reaction:** A reaction where a more reactive element replaces a less reactive element in a compound.

**Half equation:** An equation which shows how electrons are transferred when a substance is reduced or oxidised.

**Oxidation:** When substances lose electrons.

**Reduction:** When substances gain electrons.

**OIL RIG:** Oxidation is Loss Reduction is Gain.

Oxidation and reduction can also be described in terms of losing and gaining electrons. (H)

Substances that lose electrons in a reaction are described as being oxidised and substances that gain electrons are described as being reduced. (H)

If in a reaction, there are species that are oxidised and reduced then this is a redox reaction. (H)

Examples of redox reactions are displacement reactions and reactions of metals with acids. (H)

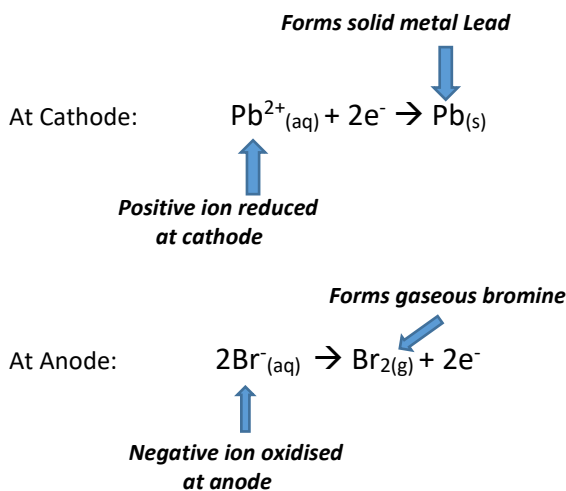
To identify which species has been oxidised in an equation first identify each element's ionic charge in solution. The ion whose charge has increased (lost electrons) has been oxidised, and the ion whose charge has decreased (gained electrons) has been reduced. (H)

## 9. Electrolysis

Red Amber Green

**P**ositive  
**A**node  
**N**egative  
**I**s  
**C**athode

### Electrolysis of lead bromide (Higher)



### Key definitions

**Electrolysis:** The process of breaking down a substance using electricity.

**Electrolyte:** A liquid or solution used in electrolysis to conduct electricity between the two electrodes.

**Electrode:** An electrical conductor which submerged in the electrolyte during electrolysis.

**Anode:** Positively charged electrode.

**Cathode:** Negatively charged electrode.

In dissolved or molten ionic compounds, the ions are free to move.

When an electric current is passed through a liquid or dissolved ionic compound that compound decomposes (ions separate). This is called electrolysis.

In **electrolysis** the positive ions move towards the negative electrode (**cathode**) and negative ions move towards the positive electrode (**anode**).

At the **cathode** positive ions are **reduced**. (H)

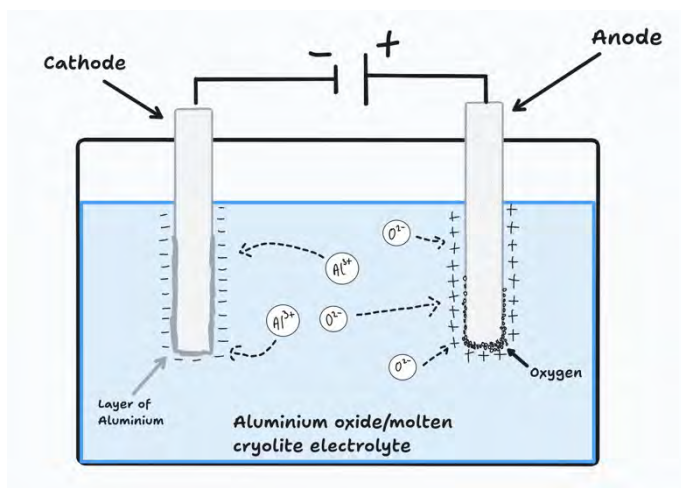
At the **anode** negative ions are **oxidised**. (H)

At the **cathode** the metal ions react to form the metal element.

At the **anode** the non-metal ions react to form the non-metal element.

## 10. Electrolysis of Metal Ores

Red Amber Green



### Half equations (Higher)

Negative electrode:  $Al^{3+} + 3e^{-} \rightarrow Al$

Positive electrode:  $2O^{2-} \rightarrow O_2 + 2e^{-}$

### Key terms

**Ore:** A naturally occurring solid material from which a metal can be extracted.

**Bauxite:** The main ore of aluminium.

**Cryolite:** a less commonly occurring ore of aluminium with a lower melting point.

Electrolysis must be used to extract metals from their ore if the metal is more reactive than carbon

Extracting metals using electrolysis is very expensive as it requires a lot of energy to melt the metal ore in order to allow the ions to move.

Aluminium is extracted from its ore (Bauxite) using electrolysis.

Bauxite is purified to give Aluminium oxide which is dissolved in molten cryolite in order to lower the ores melting point.

Aluminium will form at the cathode and oxygen will form at the anode.

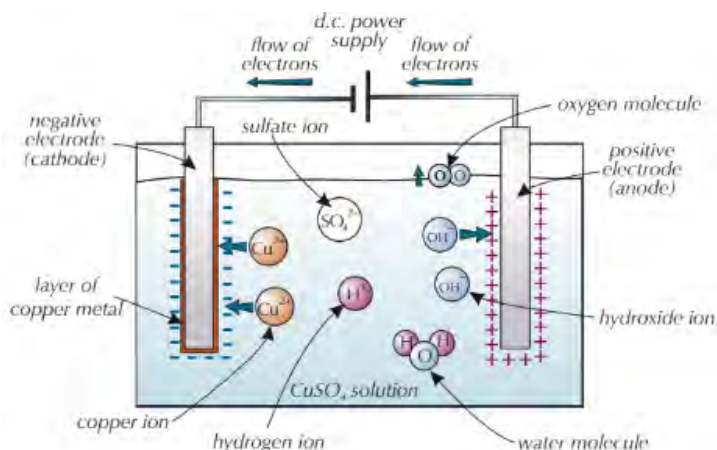
Electrodes are made of carbon (graphite) as they are good conductors of electricity.

Sometimes the oxygen reacts with the carbon in the electrode to make carbon dioxide, this means the electrode may need replacing.



## 11. Electrolysis of aqueous solutions

Red Amber Green



### Key terms

**Aqueous solution:** Solution containing a substance dissolved in water.

**H<sup>+</sup>:** Positively charged Hydrogen ion

**OH<sup>-</sup>:** Negatively charged Hydroxide ion

When carrying out electrolysis on an aqueous solution H<sup>+</sup> and OH<sup>-</sup> ions will also be present.

Only one ion can move to each electrode to form the products.

The products formed at each electrode depend on the reactivity of the ions.

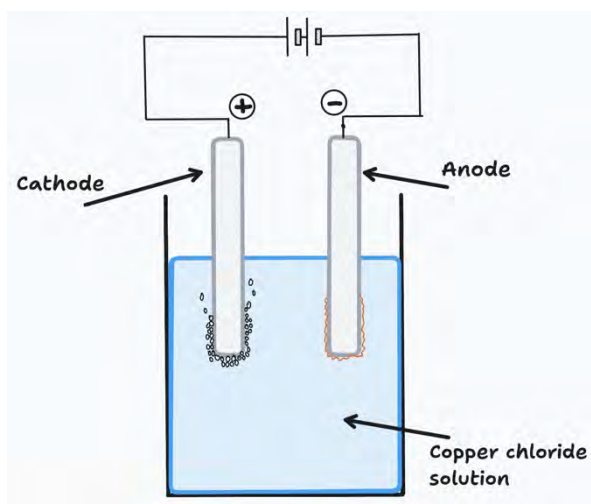
In an aqueous solution the least reactive positive ion will always move to the anode.

In an aqueous solution OH<sup>-</sup> ions will always move to the cathode unless there are halide ions present (Cl<sup>-</sup>, Br<sup>-</sup>, I<sup>-</sup>).

When OH<sup>-</sup> ions reach the cathode oxygen and water is produced.

## 12. Required Practical 9

Red Amber Green



**Chlorine:** Damp litmus paper turns white.

**Hydrogen:** Makes squeaky pop sound with a lit splint.

**Oxygen:** relights a glowing splint.

### Electrolysis of aqueous solution practical

1. use a measuring cylinder to add 40 ml of copper chloride solution into a beaker
2. place two graphite rods into the copper sulfate solution - attaching one electrode to the negative terminal of a dc supply, and the other electrode to the positive terminal
3. place two small test tubes over each electrode to collect any gases produced
4. turn on the power supply and observe what happens at each electrode
5. test any gas produced by holding a piece of blue litmus next to the electrode, or by holding a lit splint next to it
6. record your observations and the results of your tests
7. rinse the electrochemical cell apparatus and collect a new set of electrodes
8. repeat steps 1–6 using sodium chloride solution

## HOME LEARNING TASKS

### Task Description

Done?

Define an acidic and alkaline solution.

Define a displacement reaction and give an example.

Calcium carbonate is made into a solution with a concentration of 2.5 g/dm<sup>3</sup>. Calculate the mass of calcium carbonate dissolved in 300 ml of water.

Write the half equation for the reaction that occurs at the anode when molten aluminium oxide undergoes electrolysis. State whether this reaction is a reduction or oxidation reaction.

Describe a method for making and extracting zinc nitrate salt in a solution.

Describe a method for verifying the products of the electrolysis of Zinc chloride solution. Remember to state the products at each electrode and how you will test for these products.

# Science Year 10 Term 1 – P4 & P5a – Atomic Structure & Forces

TERM FOCUS –

Big Ideas: What do we know about atoms and their interactions?

## Prior Learning Links

Particle knowledge AND model gained in KS2 Science.

Atoms in general are made of a **nucleus** and **electrons** that move around the nucleus.

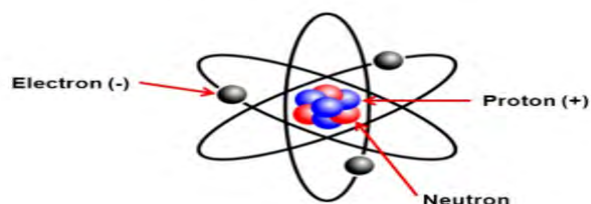
Most of the mass of the atom is concentrated in the nucleus, which is in turn made up of **protons** and **neutrons**.

The numbers of the individual particles can tell us the identity of a particular atom and determine its properties.

KS2/3 Science – The Scientific Method

KS2/3 Science – Evaluating experiments and planning for the future

## Nuclear Model of the Atom



## Future Learning Links

1. KS3 Science Investigations
2. GCSE Required Practical Activities
3. GCSE Science Investigations

## Support Resources

### GCSEPOD

ATOMIC STRUCTURE

<https://members.gcsepod.com/shared/podcasts/chapter/89166>

NUCLEAR RADIATION

<https://members.gcsepod.com/shared/podcasts/chapter/89167>

FORCES AND INTERACTION

<https://members.gcsepod.com/shared/podcasts/chapter/89170>

WORK DONE & ENERGY TRANSFER.

<https://members.gcsepod.com/shared/podcasts/chapter/89204>

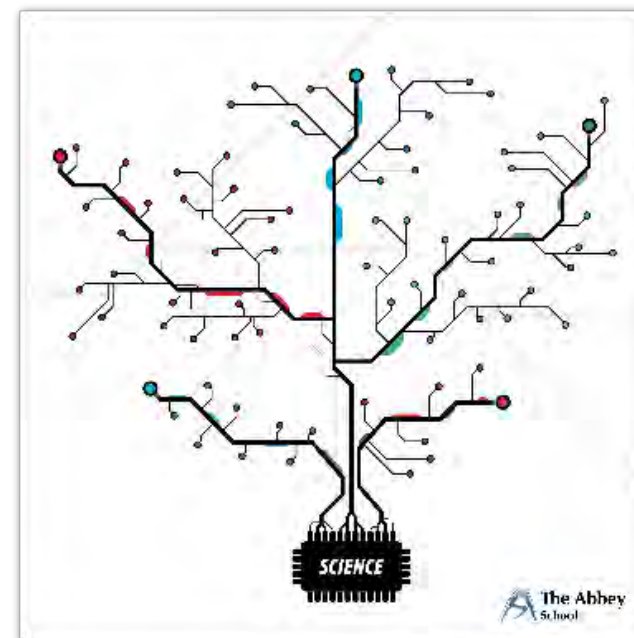
bbc bitesize Resources

Atomic structure

[Atomic structure - GCSE Physics \(Single Science\) - BBC Bitesize](#)

Forces

[Force - GCSE Combined Science - BBC Bitesize](#)



# 1. The History of the Atom

Red

Amber

Green

## LQ: How has our understanding of the atom developed over time?

Key term/question	Definition/answer
1. What are the three subatomic particles?	Protons, neutrons and electrons
2. Which subatomic particles are found in the nucleus?	Protons and neutrons
3. Which subatomic particle orbits the nucleus?	Electrons
4. The mass number is ...	number of protons and neutrons. (Big number)
5. The atomic number is...	number of protons and therefore the number of electrons (Small number)
6. Define ion.	An atom gains or loses electrons to become charged.
7. What is an isotope?	Same element with the same number of protons, but different number of neutrons.
8. What is the structural difference between Carbon-12 and Carbon-14?	Number of neutrons
9. What are the three types of radioactive decay?	Alpha, Beta, Gamma
10. What is an alpha particle composed of?	A helium nucleus: two protons and two neutrons.
11. What is a beta particle?	A fast-moving electron
12. How does beta decay occur?	A neutron in the nucleus turns into a proton and electron. The proton remains and the electron is ejected.
13. What is gamma radiation?	An electromagnetic wave emitted from the nucleus
14. What was Rutherford's experiment and why was it important?	Rutherford fired alpha particles at a thin sheet of gold. 1 alpha particle in 8000 bounced back, disproving the plum pudding model and it suggested that atoms have a dense nucleus.
15. What is irradiation?	When an object is exposed to radiation
16. What is contamination?	When radioactive material gets on an object.
17. How is radiation measured?	Using a Geiger-Muller counter. (In Becquerels: Bq)

### 1. Subatomic particle properties

What is the mass of a proton?	1
What is the mass of a neutron?	1
What is the mass of an electron?	0 (1/2000)
What is the charge of a proton?	+1
What is the charge of a neutron?	0
What is the charge of an electron?	-1

### 2. Timeline of the atom

Date	Model of the atom	Diagram
1805	Indivisible spheres	
1897	Plum pudding model	
1909	Nuclear model following Rutherford's experiment	
1913	Bohr model	
1919	Bohr model with protons in the nucleus	
1932	Bohr with neutrons and protons in the nucleus	

### 3. Radioactive Decay

### 4. Nuclear equations

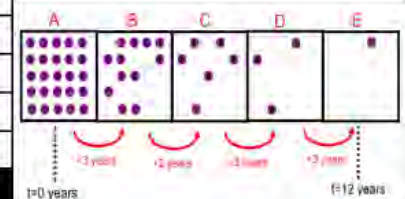
	Alpha particles	Beta particles	Gamma waves
Least penetrating	→		
Most ionising	→		
	Most penetrating		Least ionising

Alpha decay	${}_{88}^{226}\text{Ra} \rightarrow {}_{86}^{222}\text{Rn} + {}_2^4\text{He}$
Beta decay	${}_{3}^8\text{Li} \rightarrow {}_{4}^8\text{Be} + {}_{-1}^0\text{e}$
Gamma decay	${}_{28}^{60}\text{Ni} \rightarrow {}_{28}^{60}\text{Ni} + \gamma$

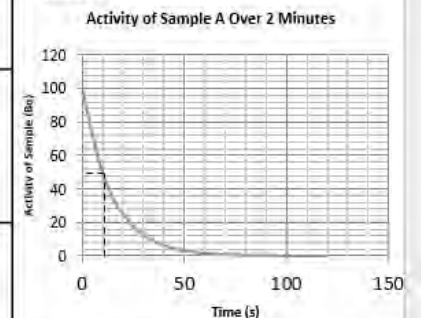
### P4 - Atomic structure

#### 5. Half-life



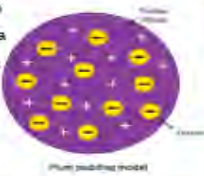


**Half life:** The time taken for the number of radioactive nuclei/decay events to decrease by half.

#### Calculating half-life from a graph.



1. Choose two values from the activity/number of nuclei (Y axis). One number should be half of the other. E.g 100 and 50.
2. Use a ruler to draw across to the plotted line for each value.
3. Use a ruler to draw down to the time (X axis)
4. Find the difference in time, which shows the **half life**. In the example the half-life is 10 seconds.

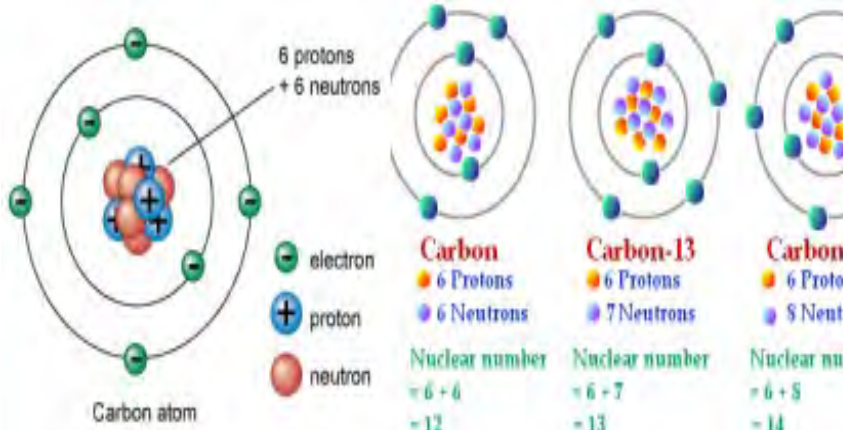
### Developing the Model of the Atom

Scientist	Time	Contribution
John Dalton	Start of 19th century	Atoms were first described as solid spheres.
JJ Thomson	1897	Thomson suggested the plum pudding model - the atom is a ball of charge with electrons scattered within it. 
Ernest Rutherford	1909	Alpha Scattering experiment - Rutherford discovered that the mass is concentrated at the centre and the nucleus is charged. Most of the mass is in the nucleus. Most atoms are empty space. 
Niels Bohr	Around 1911	Bohr theorized that the electrons were in shells orbiting the nucleus. 
James Chadwick	Around 1940	Chadwick discovered neutrons in the nucleus.

Key term/question	Definition/answer
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2. Which subatomic particles are found in the nucleus?	Protons and neutrons
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7. What is an isotope?	Same element with the same number of protons, but different number of neutrons.
8. What is the structural difference between Carbon-12 and Carbon-14?	Number of neutrons

## 2. The structure of the atom

**LQ: What do modern scientists understand about an atom's structure?**



**Carbon atom**  
6 protons + 6 neutrons

**Carbon**  
6 Protons  
6 Neutrons  
Nuclear number = 6 + 6 = 12

**Carbon-13**  
6 Protons  
7 Neutrons  
Nuclear number = 6 + 7 = 13


**Carbon-14**  
6 Protons  
8 Neutrons  
Nuclear number = 6 + 8 = 14

Legend:  
- electron  
+ proton  
● neutron

**Isotopes**  
An isotope is an element with the same number of protons but a different number of neutrons. They have the same atomic number, but different mass numbers.

Isotope	Protons	Electrons	Neutrons
$^1_1\text{H}$	1	1	0
$^2_1\text{H}$	1	1	1
$^3_1\text{H}$	1	1	2

**Atomic Number and Mass Number**



Mass number: This is the total of protons+neutrons

Atomic number: This is the number of protons

Therefore sodium has 11 protons, 11 electrons and 23-11= 12 neutrons

Some isotopes are unstable and, as a result, decay and give out radiation. Ionising radiation is radiation that can knock electrons off atoms. Just how ionising this radiation is, depends on how readily it can do that.

### 3. Radioactivity

LQ: How can unstable atoms become stable through radioactive decay?

Red

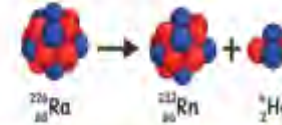
Amber

Green

Key term/question	Definition/answer
9. What are the three types of radioactive decay?	Alpha, Beta, Gamma
10. What is an alpha particle composed of?	A helium nucleus: two protons and two neutrons.
11. What is a beta particle?	A fast-moving electron
12. How does beta decay occur?	A neutron in the nucleus turns into a proton and electron. The proton remains and the electron is ejected.
13. What is gamma radiation?	An electromagnetic wave emitted from the nucleus
14. What was Rutherford's experiment and why was it important?	Rutherford fired alpha particles at a thin sheet of gold. 1 alpha particle in 8000 bounced back, disproving the plum pudding model and it suggested that atoms have a dense nucleus.
15. What is irradiation?	When an object is exposed to radiation
16. What is contamination?	When radioactive material gets on an object.
17. How is radiation measured?	Using a Geiger-Muller counter. (In Becquerels: Bq)

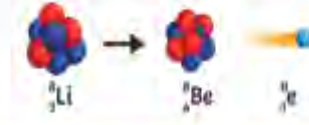
#### Alpha Decay Equations

An alpha particle is made of two protons and two neutrons. The atomic number goes down by two and its mass number decreases by four.



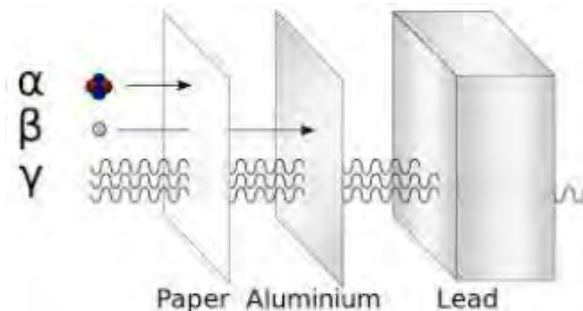
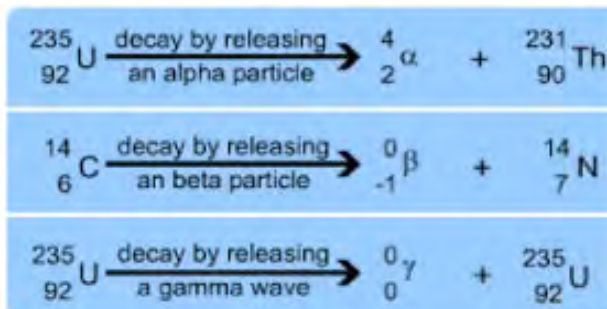
#### Beta Decay Equations

A neutron turns into a proton and releases an electron. The mass of the nucleus does not change but the number of protons increases.



#### Gamma rays

There is no change to the nucleus when a radioactive source emits gamma radiation. It is the nucleus getting rid of excess energy.



### The three types of radiation

Use this table to find information about and to compare  $\alpha$ ,  $\beta$  and  $\gamma$  radiation

	Alpha ( $\alpha$ )	Beta ( $\beta$ )	Gamma ( $\gamma$ )
Nature	It's a nucleus of helium ( ${}^4_2\text{He}$ ). Two protons and two neutrons	It's an electron $\text{e}^-$	It's an electromagnetic wave
Charge	+2	-1	0
Mass	Relatively large	Very small	No mass
Speed	Slow	Fast	Speed of light
Ionizing effect	Strong	Weak	Very weak
Most dangerous	When source is inside the body	When source is outside the body	When source is outside the body

#### 4. Activity and Half-life

**LQ: How does the radioactive substance's activity change over time?**

Red

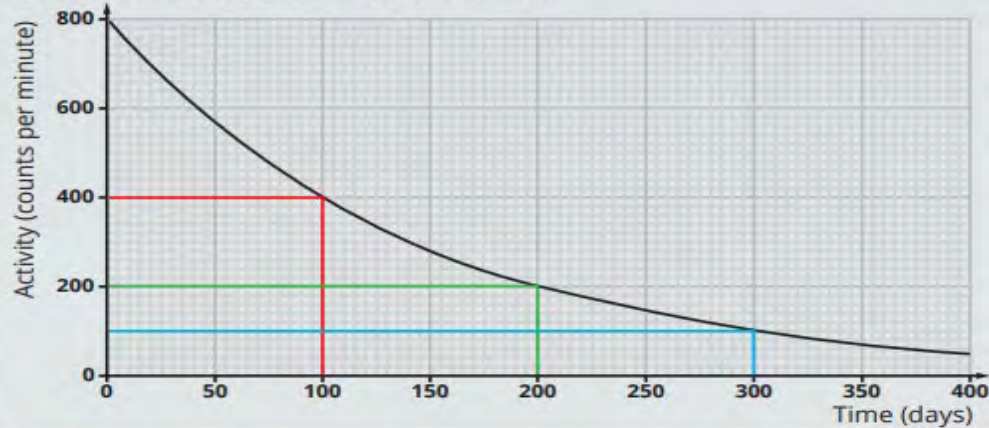
Amber

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##### Half-life

Half life is defined as the **time** it takes for the activity of a radioactive source to **halve**, or the **time** it takes for **half** the radioactive nuclei to decay.

The half life for the radioactive source shown on the graph below is **100 days**. The time it takes for the activity to halve from 800 to 400 counts per minute (cpm) is 100 days, it takes the same time to halve from 400 to 200 cpm and from 200 to 100 cpm. The half-life of a radioactive isotope is always the same.



##### Calculations using half-life

At the start, 100% of the source has not decayed, after 1 half life this will be 50% and after 2 half lives 25%.

$$100\% \xrightarrow{1 \text{ half-life}} 50\% \xrightarrow{2 \text{ half-lives}} 25\% \xrightarrow{3 \text{ half-lives}} 12.5\%$$

You can use the half-life of a material and this method to calculate the age of a sample or to predict the amount of a sample that will be left after a certain time.

For example, strontium-90 has a half-life of 29 years. The time it takes for the number of radioactive nuclei to drop to  $\frac{1}{8}$  of its original value can be calculated using this technique.

$$1 \xrightarrow{1 \text{ half-life}} \frac{1}{2} \xrightarrow{2 \text{ half-lives}} \frac{1}{4} \xrightarrow{3 \text{ half-lives}} \frac{1}{8}$$

Three half-lives would be;  $3 \times 29 \text{ years} = 87 \text{ years}$

#### 5. Irradiation and contamination

**LQ: What is the difference between irradiation and contamination?**

Red

Amber

Green

##### Radioactive decay

Of the two isotopes of carbon shown above, only carbon-12 is stable. Carbon-14 is **unstable because of an imbalance between the number of protons and neutrons in its nucleus**. This means it will try to become more stable by releasing some radiation. This is called decaying.

This is a **random process** as it is impossible to guess when a nucleus will decay but estimations can be made from the probability. This is similar to throwing several dice, you cannot guess which will land on 6 each time but you would expect roughly one sixth to land on 6.

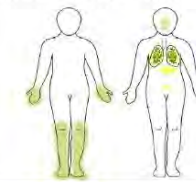
Due to its random nature, any measurements of radiation should be taken over a **long time** or **repeated** several times to **reduce the effect of random fluctuations**.

##### Irradiation and Contamination

- What is the difference?
- Irradiation involves exposure to ionising EM waves (UV, X-rays, gamma rays) and alpha or beta particles.
- Contamination involves radioactive material (which produces ionising radiation) being physically transferred.
- e.g. alpha sources outside the body are harmless because our skin is a barrier to alpha particles. However, if radioactive alpha sources (like radon) are airborne they can be breathed in and then produce alpha particles in the lungs where they can do damage.

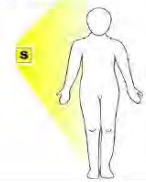
##### Contamination

This is when the source is inside the body, or on your skin and will affect you all of the time.



##### Irradiation

This is when a source outside the body affects you – but only when you are near it.



Section 8: Key Terms	
Background radiation	Background radiation <b>is around us all of the time</b> . It comes from: <ul style="list-style-type: none"> <li>• <b>natural sources</b> such as <b>rocks</b> and <b>cosmic rays</b> from space</li> <li>• <b>man-made sources</b> such as the <b>fallout from nuclear weapons testing and nuclear accidents</b>.</li> </ul>
Radiation dose	A measure of the <b>amount of exposure to radiation</b> , measured in <b>sieverts (Sv)</b> .
Radioactive isotopes	Isotopes <b>used in medicine for medical imaging, treatment of cancer</b> and as <b>tracers</b> to monitor organs.
Radioactive tracers	<b>Trace the flow of a substance</b> through an organ.
Nuclear Fission	<b>Splitting of an atom's nucleus</b> into <b>two smaller nuclei</b> and the release of two or three neutrons and energy.
Nuclear Fusion	is the <b>joining of two light nuclei</b> to form a <b>heavier nucleus</b> . In this process some of the <b>mass</b> may be <b>converted</b> into the <b>energy of radiation</b> .

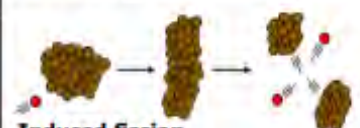
**Section 9: Radioactive isotopes and medicine**

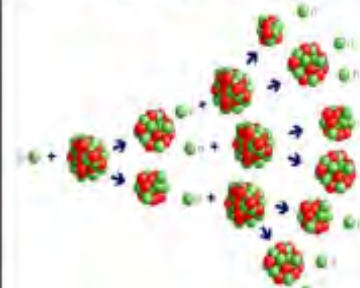
**Used** in medicine **for medical imaging, treatment of cancer** and **tracers** to monitor/explore internal organs. How useful the radioactive isotope is depends on it's half life and the type of radiation given out.

Radioactive tracers	Radioactive Tracers (like radioactive Iodine) contain a <b>radioactive isotope</b> that <b>emits gamma radiation</b> . <b>Radioactive Iodine</b> is used because: <ul style="list-style-type: none"> <li>• Half life of 8 days (lasts long enough for test but decays completely after a few weeks).</li> <li>• Emits gamma so can be detected outside the body.</li> <li>• Decays into a stable product.</li> </ul>
Gamma Cameras	Take <b>images of internal body organs</b> . Before image is taken, patient is injected with solution containing a gamma-emitting radioactive isotope. The solution is absorbed by the organ and the camera detects the gamma radiation. The half life of the radioactive isotope <b>should not be too long</b> (to avoid unnecessary risks) <b>or too short</b> (so a useful image produced).
Gamma beams	<b>Gamma beams</b> (or radioactive implants) can <b>destroy cancer cells</b> in a tumour.

**Section 10: Nuclear Fission**

Nuclear fission is the **splitting of a large and unstable atom's nucleus** (e.g. uranium or plutonium) into two smaller nuclei and the release of neutrons and energy.

Induced fission	Energy is released in a nuclear reactor because of nuclear fission. In induced fission, the nucleus of an atom is struck by a neutron, causing the nucleus to split into two smaller fragment nuclei. Energy is also released.	
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Nuclear fission in Power Stations	<ul style="list-style-type: none"> <li>• Unstable nuclei are <b>bombarded with neutrons</b>.</li> <li>• The nuclei undergo fission and split.</li> <li>• <b>Two smaller nuclei are formed</b> plus neutrons.</li> <li>• <b>Energy is released</b>.</li> <li>• Released neutrons cause more nuclei to split which produces a <b>chain reaction</b>.</li> <li>• The reaction is <b>controlled</b> using <b>control rods</b> which <b>absorb the neutrons</b> (slowing down the chain reaction).</li> <li>• A coolant removes the heat energy, usually to produce steam.</li> </ul>	 <p><b>Chain reaction</b> (extremely dangerous if not controlled). The explosion caused by a nuclear weapon is caused by an <b>uncontrolled</b> chain reaction.</p>
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**Section 11: Nuclear fusion**

Process of forcing the nuclei of two atoms close together forming a single larger nucleus. The two nuclei collide at high speed. Energy is released when the nuclei fuse together. The **sun's core releases energy** due to the **nuclear fusion** reaction of **hydrogen nuclei into helium nuclei**.

Nuclear fission	Nuclear fusion
Been used for over 50 years.	A <b>developing technology</b> . Needs to be at a <b>high temperature</b> and <b>pressure</b> for reaction take place and generate energy.
Uses uranium (only found in some parts of world)	Hydrogen fuel easily available as present in sea water
Produces radioactive waste which has to be stored safely and securely.	Reaction product helium is stable.

**Scalar and vector quantities**

Scalar quantities have only a magnitude. Vector quantities have a magnitude and direction.

Scalar	Vector
Distance	Displacement
Speed	Velocity
mass	Acceleration
Temperature	Force
Pressure	Weight
Volume	Momentum
Work	

**Contact and Non-contact Forces**

Forces are always the result of objects **interacting** with each other. For instance, the force of gravity keeping this piece of paper on the desk is the result of the interaction between the Earth's mass and the paper's mass. All forces can be classified as contact or non-contact forces.

Examples of contact forces: friction, air resistance, tension, the normal contact force. Examples of non-contact forces: gravitational force, electrostatic force and magnetic force.

Key Terms	Definitions
Quantity	Anything that can be given a numerical value.
Magnitude	Size of a quantity. E.g. a distance of 5 metres has a higher magnitude than 2 metres.
Scalar	Describes quantities that only have a magnitude (size). E.g. speed (how fast something is moving).
Vector	Describes quantities that have a magnitude AND a specific direction. E.g. velocity (speed in a particular direction)
Force	A vector quantity. Forces are pushes or pulls that act on an object. Forces have size and direction. Forces are the result of objects interacting with each other.
Contact forces	For these forces to act, the interacting objects have to be physically touching.
Non-contact forces	For these forces to act, the interacting objects don't have to be touching (they are physically separate).
Resultant force	The single overall force acting on an object. It has the same effect as all the forces acting on the object all together. The resultant force is the vital thing in working out how an object will move. If there is a resultant force, the object's speed will change; or the shape of the object will change; or the direction of the object will change. If the resultant force is nothing (the forces cancel out), the object will keep doing what it was doing – either not moving at all, or moving along at a steady speed.

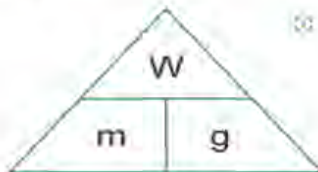
**MASS AND WEIGHT**

**Mass** means how much matter an object contains, whereas **weight** is the force on an object due to gravity. Mass is measured in **kg**, whereas weight is measured in **N**. Mass is measured using a **balance**, whereas weight is measured using a **newton meter**. Mass does not vary depending on gravitational field strength, whereas weight does depend on gravitational field strength.

**Gravity**

Gravity is a force that acts between any two objects with mass.  $W = mg$  is the equation that relates weight to mass and gravitational field strength. On Earth  $g = 10 \text{ N/kg}$ . Gravity is the force that holds objects in orbit.

**The Wmg triangle**



W = weight  
m = mass  
g = gravitational field strength

$W = mg$	$W = m \times g$
$m = \frac{W}{g}$	$m = W \div g$
$g = \frac{W}{m}$	$g = W \div m$



Challenge question: How do forces shape the movement of objects in the world?

Suggested reading: GCSEPOD <https://www.bbc.co.uk/bitesize/topics/z4brd2p/articles/zs3896f>

[Forces - GCSE Physics \(Single Science\) - BBC Bitesize](#)



### The Resultant Force

In real life, there are usually a few forces acting on any particular object. All the forces can be shown with vectors (arrows – see above). When we take all the forces into account, we can draw just one vector arrow to show a single force, which has the same effect on the object as all the other forces acting at once. This is simplest when the forces are in a straight line:



two forces are acting; by adding them we get the resultant force....



this time, the forces are opposite in direction, and are different in magnitude. We subtract one from the other to get the resultant force...



### Resultant Force continued

If the forces acting on an object are equal in magnitude and opposite in direction, then the resultant force ends up being ZERO. You can say the forces are balanced. Reading the definition above should make it clear that a resultant force of zero means that an object's movement will not change. So if it was moving to start with, a resultant force of zero means it keeps moving at the same speed. Also, zero resultant force means the direction can't change.



The resultant force is.... nothing!



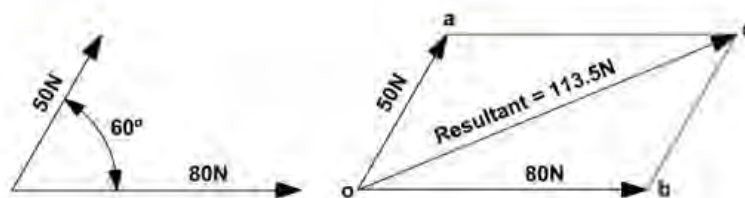
### Resultant force – The parallelogram rule (Higher only)

The parallelogram of force is used to find the resultant force when the forces don't act in the same line. To find the resultant force you:

1. Work out the scale
2. Copy out one force to scale so it follows on the other force at the same angle as the original
3. Repeat for the other force. The forces should meet and create a parallelogram.
4. Draw the resultant force between this point and the point the objects act from.
5. Measure the size of this arrow.
6. Use the scale to determine the magnitude of the force

### Free body diagrams

Free body diagrams are used to describe situations where several forces act on an object. Vector diagrams are used to resolve (break down) a single force into two forces acting at right angles to each other



Parallelogram of Forces

### Work done and energy transfer

'Work' has a particular meaning in physics. If work has been done, energy has been transferred. Work is always done as a result of a force acting on an object. The amount of work can be calculated using  $W = Fs$ .

For example, if a force of 1000N makes the car move 200m to the left ...

The work done is  $W = 1000 \times 200 = 200\,000\text{ J}$   
This means 200 000 J of energy was transferred.



### Work done against Frictional Forces

When objects move, they are almost always moving against a frictional force – so the friction arrow is opposite to the direction of motion. Doing work against friction causes an energy transfer to heat (thermal) energy. This raises the temperature of the object and the surroundings.

There are frictional forces even when objects move through the air – air resistance.

### Example



In this example, a force of 10 N causes the box to move a horizontal distance of 2 m, so:

$$W = F \times d$$

$$W = 10 \times 2$$

$$W = 20\text{ J}$$

### Distance vs. Displacement

Displacement is different to distance because it involves the direction that an object has moved. The displacement is always measured in a straight line from start to end of a journey, missing out any wiggles along the way.

Key Terms	Definitions
Work done	The measure of how much energy is transferred when a force makes an object. You can say: 'a force does work on an object when it makes it move'. Doing work always involves the transfer of energy. This is a scalar quantity.
Joule	The unit joule (J) is how the amount of energy transferred by doing work is measured. 1 joule = 1 newton metre (thanks to the equation, below).
Distance	How far an object moves. It does not include direction, so distance is a scalar quantity.
Displacement	The distance an object moves from where it started. This is measured in metres. It is a vector quantity, because it includes the direction an object moved.
Friction	A contact force that results when two objects move past each other. They have to be touching.

Equation	Meanings of terms in equation and units
$W = F s$	$W = \text{work done}$ (joules, J) $F = \text{force}$ (newtons, N) $s = \text{distance (metres, m) - aka displacement}$

### Distance vs. Displacement Diagram

Look how displacement is simply a straight line from A to B. Distance is the total, with visits to C and D during the journey.



**HOME LEARNING TASKS****Task Description****Done?**

Look, cover, write the definition of keywords used in topic 1-history of an atom.

Draw a timeline showing the history of the atom, starting with the ancient Greeks in 500BC, and ending with the nuclear model.

Describe the plum pudding model of an atom

Compare the plum pudding to the current nuclear model of an atom.

Write a definition of: mass number, atomic number and an isotope.

A doctor weighs 600 N. A lift moves her 40 m to the top floor of a hospital. Calculate the work done on the doctor by the lift.

In a scrum, a rugby team pushes the other team backwards 5 m using a force of 1000 N. Calculate the work done moving the other team.

A sample has a half-life of 8 hours. It has an initial activity of 200 Bq. Calculate the activity of the sample after 1 day.

Write a description of the three different radiation sources in terms of: their ionising ability, how far they travel, and what they are stopped by.

A nucleus emits a gamma ray; what happens to the mass and charge of the atom?

Give the definition of an isotope.

Give the definition of half-life.

# Biology Year 10 Term 1 – B3, Infection and Response

Term Focus –

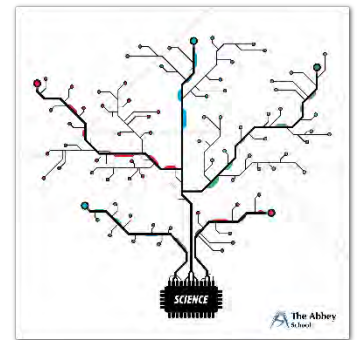
Looking into what causes infection and how we can prevent it.

## Prior Learning Links

- KS3 Science – knowing the structural adaptations of unicellular organisms.
- KS3 – Organelles that are found in living organisms (plant, animal, bacteria).
- KS3/4 Science – Understanding of non-communicable diseases.
- KS4 – The function of white blood cells.
- KS3/4 – knowing the process of photosynthesis; including the word equation.
- KS3/4 – Understanding of how plants make their food.
- KS3 – Understanding of respiration and gas exchange in plants.

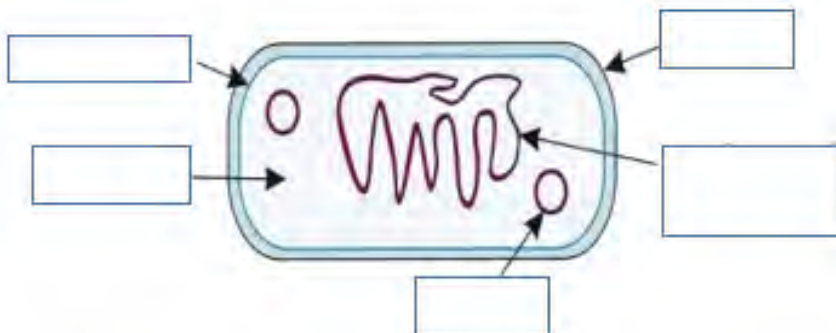
## Future Learning Links

- GCSE Required Practical activities.
- B6 – New species, variation, extinction and adaptation.
- B7 – Ecology
- B7 – Maintaining ecosystems



## 1. Communicable Diseases

Red Amber Green



### Key

### terms/Definitions:

#### Pathogen:

Microorganisms that can cause disease.

#### Communicable disease:

Infectious disease can be spread between individuals.

#### Eukaryotic cells:

Cells that contain a nucleus and organelles, enclosed within a plasma membrane.

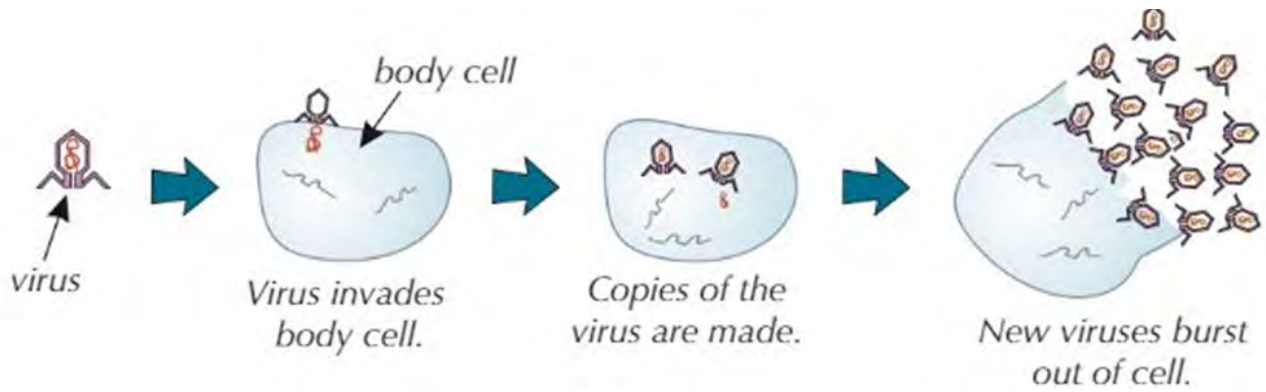
#### Prokaryotic cells:

Cells with a single strand of DNA floating free in

- There are **4 types** of pathogens:
  - **Bacteria**
  - **Viruses**
  - **Protist**
  - **Fungi**
- Viruses are **NOT** cells and can only replicate once they are inside a host's cell.

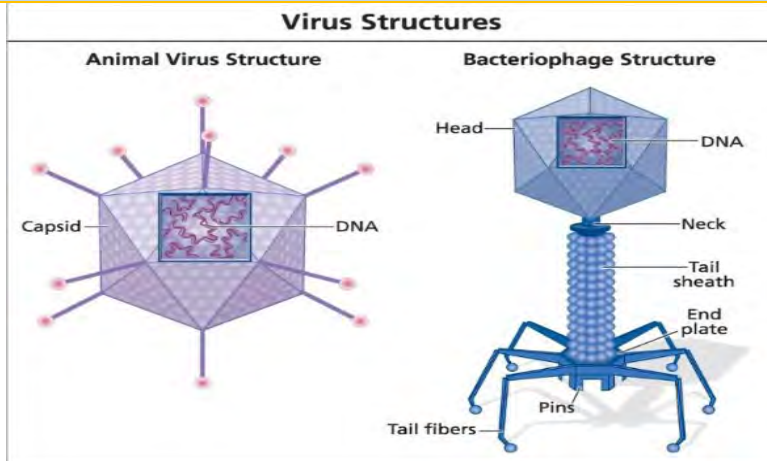
- Examples of eukaryotic cells include:
  - **Fungi and protists**
- Example of prokaryotic cell includes:
  - **Bacteria**

- Pathogens spread through:
  - **Drinking contaminated water**
  - **Inhaling pathogens carried in the air**
  - **Touching contaminated surfaces**



2. Viral Disease

Red Amber Green



**Key terms/Definitions:**  
**Virus:**  
 A tiny particle that causes disease in people, other animals and plants. The cell the virus invades is called the host cell.

**Measles:**  
 A highly contagious disease caused by a virus. Spread when an infected person breathes, coughs or sneezes.

**HIV:**  
 A virus that damages the cells in your immune system and weakens your ability to fight everyday infectious diseases. Spread by exchanging bodily fluids.

**Tobacco Mosaic Virus (TMV):** A virus that causes discolouration and stunted growth. Spread through direct contact from plants through its vectors.

**Vectors:**  
 Living organisms that can transmit infectious pathogens between humans, or animals to humans. E.g. Mosquitoes.

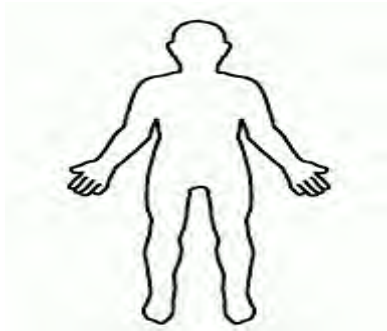
Viral disease	How is it spread?	Main symptoms	Treatment
Measles	Airborne droplets from an infected person through coughing or sneezing.  Prevent through self-isolation.	Red skin rash.  High fever	No treatment, however can be vaccinated as a child.
HIV	Exchanging bodily fluids. E.g. unprotected sex, sharing needles.	Flu-like symptoms.	Controlled with antiretroviral drugs which stops the virus replicating in the body.
Tomato mosaic virus	Direct contact (touch). Leaf to leaf or a farmers hand to a new plant.	Mosaic patterns on leaves.  Stunted plant growth.	No treatment.  Remove infected plant.

3. Fungal and Protist Diseases					Red	Amber	Green
Disease	Type of disease (fungal / protist)	How is it spread?	Main symptoms	Treatment	<b>Key terms/definitions:</b>		
Rose black spot	Fungal	Water Wind	Black/purple spots. Leaves turn yellow. Leaves fall off. Stunted growth.	Fungicides Affected leaves to be stripped off the plant and destroyed.	<b>Fungal Disease:</b> Pathogens that can cause communicable diseases in humans.		
Athlete's foot	Fungal	Direct contact Indirect contact (shower floors)	Itchy skin. Skin to flake off.	Antifungal creams.	<b>Protist Disease:</b> Eukaryotic microorganisms that spread disease through vectors.		
Malaria	Protist	Vectors (mosquitoes)	Episodes of fever.	Antimalarial medicines.	<b>Rose Black Spot:</b> Fungus that causes black/purple spots to develop on the leaves of rose plants.		
					<b>Athlete's foot:</b> A fungal infection of skin, usually occurs in between the toes. Common in individuals whose feet sweat.		
					<b>Malaria:</b> A life threatening disease which is spread to humans by a vector (typically mosquitoes).		

4. Bacterial infection and preventing disease		Red	Amber	Green
<b>Key terms/definitions:</b>				
<b>Bacteria Disease:</b> An illness which is caused by a bacterial pathogen. Bacteria enters the body and infects it.				
<b>Examples of Bacteria:</b> Salmonella – caused by food poisoning. Gonorrhoea – Sexually transmitted disease				
<b>Salmonella:</b>		<b>Gonorrhoea:</b>		
<ul style="list-style-type: none"> <li>- Symptoms of salmonella include: Fever, abdominal cramp, vomiting, diarrhoea.</li> <li>- Transmitted by ingesting contaminated food.</li> <li>- Controlled by: Vaccinating poultry, preparing food in hygienic conditions, cooking food thoroughly.</li> </ul>		<ul style="list-style-type: none"> <li>- Symptoms of gonorrhoea include: Green discharge from the penis or vagina, painful to urinate.</li> <li>- Transmitted through unprotected sex.</li> <li>- Controlled by: Using a condom during sexual intercourse, treated with antibiotics.</li> </ul>		

## 5. Fighting Disease

Red Amber Green



### The body's defences:

- **The skin** – acts as a barrier
- **Nose, Trachea and Bronchi** – mucus traps pathogens
- **Trachea and Bronchi** – cilia wafts mucus up to the throat.

The stomach – HCl kills pathogens.

**White blood cells** defend the body from harmful pathogens by phagocytosis, producing antibodies, and producing antitoxins.

- **Phagocytosis** – White blood cells engulf and digest pathogens.
- **Antibodies** – lock onto invading pathogens so that white blood cells can detect and destroy them.
- **Antitoxins** – neutralise the toxins produced by bacterial pathogens.

**Antibodies** recognise pathogens as foreign to the body because pathogens have antigens on their surface. This then is detected by the white blood cells which in turn triggers the production of antibodies.

White blood cells can engulf foreign cells and digest them. This is called phagocytosis.

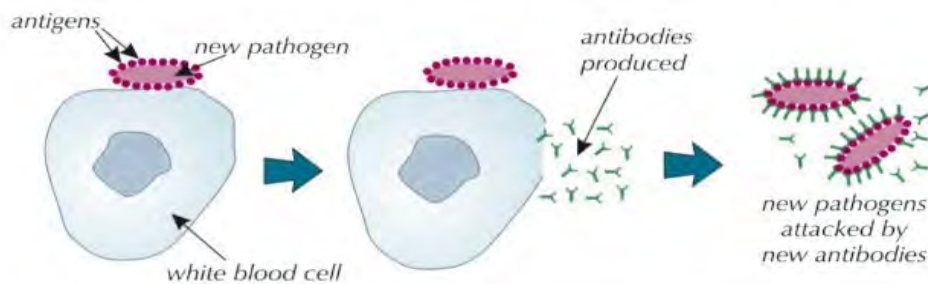
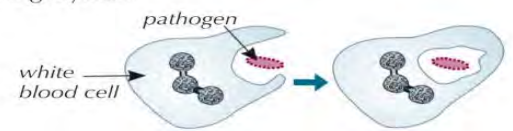


Figure 4: Diagram showing the production of antibodies.

## 6. Fighting Disease – vaccination

Red Amber Green

### What are vaccinations?

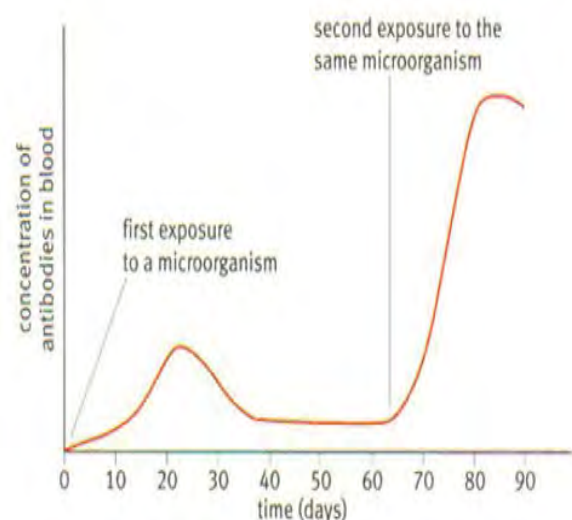
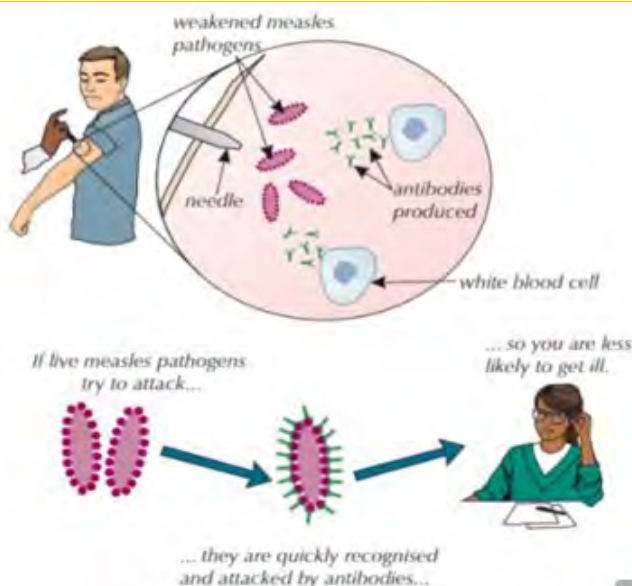
- Injecting small amounts of **dead** or **inactive** pathogens to stimulate antibody production
- This protects people, because if infected with a live pathogen, white blood cells **rapidly** produce antibodies to prevent infection.

### Pros of vaccinations:

- Reduces the spread of many infectious diseases.
- Prevents larger outbreaks of disease – these are known as epidemics.

### Cons of vaccinations:

- They do not always work.
- A small number of people have adverse reactions to vaccinations (seizure).



**Epidemic** – Disease that affects a large number of people within a community, population or region.

**Pandemic** – This is an epidemic that has spread over multiple countries or continents (e.g. COVID-19).

## 7. Fighting Disease - Drugs

Red Amber Green

### Different Types of Drugs:

**Drug** – A drug a chemical substance that affects the functioning of living things (altering how the mind and/or body works), drugs can produce both harmful and beneficial effects.

**Painkillers** are one type of drug and are taken by individuals to treat the symptoms of a disease but DO NOT kill the pathogen.

**Antibiotics** are a second type of drug and are taken to only kill bacteria.



Antibiotic



resistance occurs when

bacteria are able to mutate, this allows them to become resistant to an antibiotic.

**Alexander Fleming** was the first to discover antibiotics and this was accomplished accidentally.

## 8. Developing Drugs

Red Amber Green

### The drug checklist:

When creating a new drug there are a number of things that it must be tested on first:

- Safe/Toxicity
- Effective against the disease (efficacy)
- At the correct dosage (optimal dose)

**Toxicity** – How harmful the drug is

**Efficacy** – whether the drug works and produces the desired effect.

**Optimal Dose** – the most suitable concentration with the fewest side effects.

**Side effects** – Symptoms that the drug causes which are not beneficial to the patient.

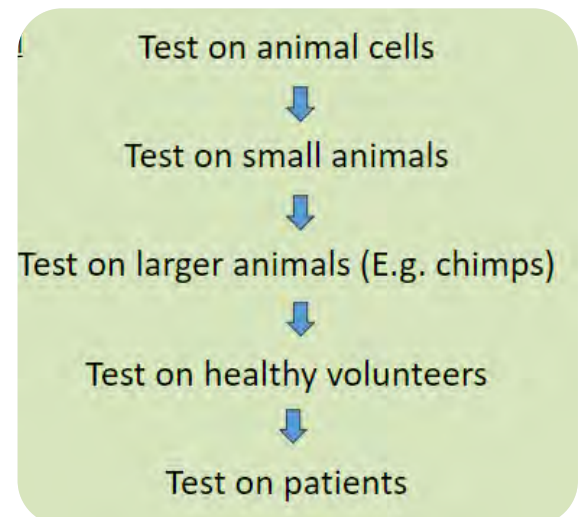
**Preclinical Trials** – Drugs are tested on human cells and tissues in the lab before tested on live animals (e.g. mice).

**Clinical Trials** – Drug passes the test on animals -> Tested on healthy human volunteers -> then tested on those with the illness.

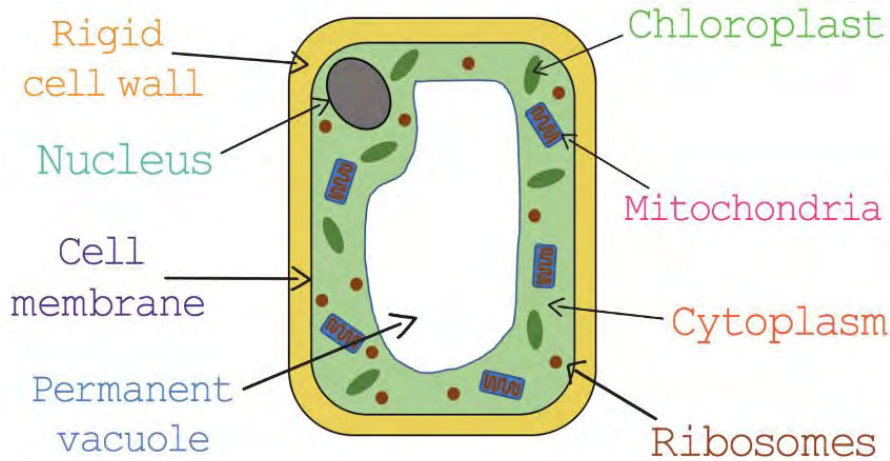
**Placebos** – A substance that looks like the drug being tested but does not do anything.

**Blind trial** – The patient does not know whether they are getting the drug or the placebo.

**Double blind trial** – Both the patient and the doctor does not know if the patient is getting the drug or the placebo.







**Key term and Function:**

**Chloroplast**  
A structure in a plant cell which contains chlorophyll. The site of photosynthesis

**Mitochondria**  
Site of most reactions for aerobic respiration

**Cytoplasm**  
Gel-like substance in a cell wall where most chemical reactions take place.

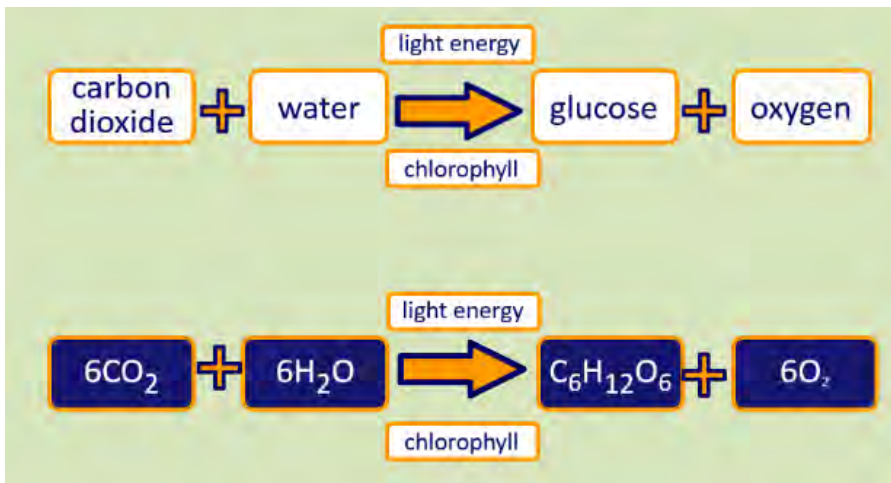
**Ribosomes**  
Site of protein synthesis

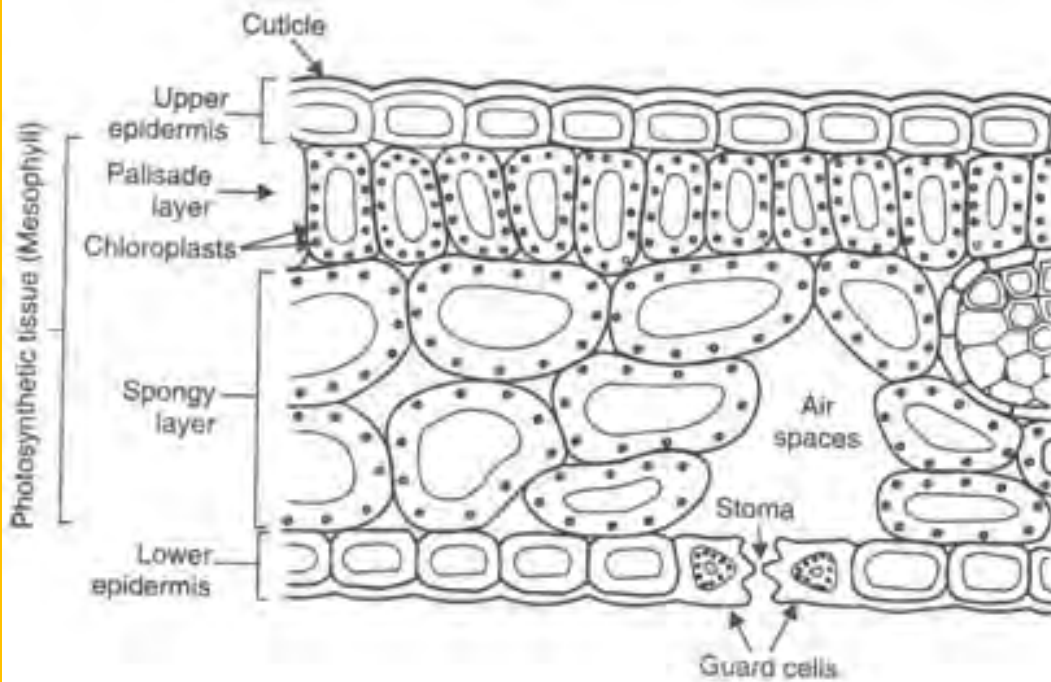
**Permanent Vacuole**  
Contains cell sap to keep the cell turgid

**Cell membrane**  
Semi-permeable and controls what enters and exits the cell

**Nucleus**  
Contains DNA that controls cellular activity

**Cell Wall**  
Supports and strengthens the cell





**Epidermal tissue**  
Waxy cuticle to prevent water loss by evaporation

**Upper epidermis tissue**  
Transparent to let light pass through

**Palisade mesophyll tissue**  
Contains many chloroplasts for photosynthesis

**Spongy mesophyll tissue**  
Contains air spaces to allow gases to diffuse in and out of cells

**Guard cells**  
Controls the opening and closing of the stomata

**Stomata**  
Holes underneath the leaf which allow carbon dioxide to diffuse in and oxygen to diffuse out

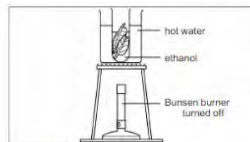
## 10. Uses of Glucose

Red Amber Green

**Leaves Can be tested for starch to check if photosynthesis has taken place:**

**Method**

1. Take the two leaves and cut the end off the one that has been in the dark, so you can remember which is which.
2. Turn off the Bunsen burner. Half fill a test tube with ethanol. Place two leaves in it using forceps. Place the test tube into the beaker of hot water and leave it for 5 minutes.



3. Place both leaves in a beaker of boiling water for one minute.
4. Take the leaves out of the test tube and wash them with tap water.

5. Place the leaves on a petri dish and put a few drops of iodine solution on them. If a blue-black colour appears, there is starch in the leaf.



**Plant use glucose for several reasons:**

- 1) Respiration
- 2) Makes cellulose
- 3) Makes amino acids for protein synthesis

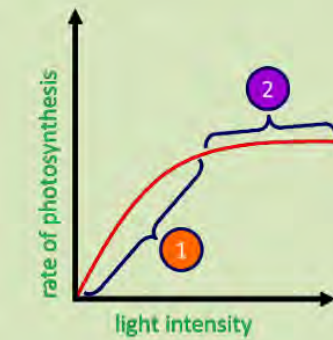
Glucose + Nitrate ions = Amino Acids

Plants convert excess glucose into two different states to be stored. They are:

- 1) Starch
- 2) Lipids

Glucose is stored as starch because glucose is soluble, however, starch is insoluble.

## Effect of light intensity



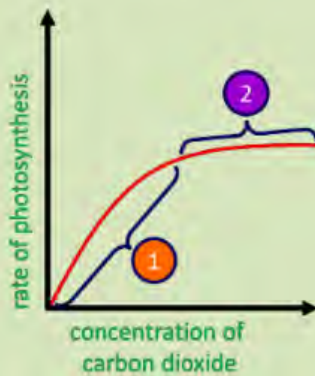
1 As the light intensity increases, the rate increases. The limiting factor is light.

2 Here, increasing the amount of light has no effect on the rate. The limiting factor is now carbon dioxide or temperature.

The rate of photosynthesis is affected by three limiting factors:

- 1) Light intensity
- 2) Volume of Carbon Dioxide
- 3) Temperature

## Effect of carbon dioxide

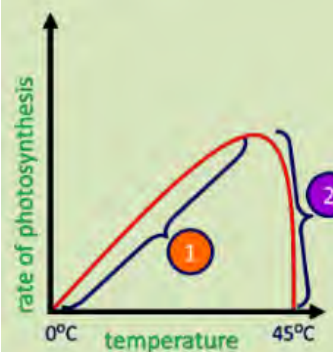


1 As the concentration of carbon dioxide increases, the rate increases. The limiting factor is carbon dioxide.

2 Increasing the concentration of carbon dioxide has no effect on the rate. Light or temperature is now the limiting factor.

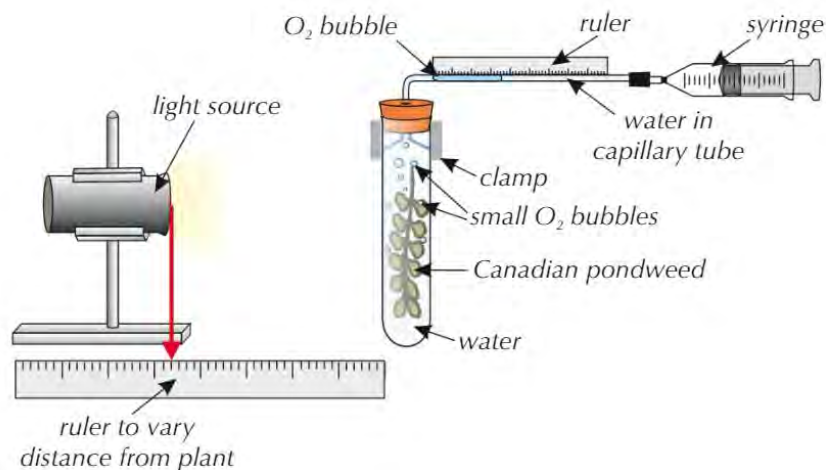
Optimal level needs to be achieved in each of the limiting factors to achieve the highest rate of photosynthesis.

## Effect of temperature



1 As temperature increases, the rate increases. Enzymes have an optimum temperature. Here, the limiting factor is temperature.

2 Most plant enzymes are denatured at around 45°C. Here, photosynthesis stops and the rate falls to zero. What is the limiting factor?



### Method for investigating the rate of photosynthesis

Secure a boiling tube to a clamp and add sodium hydrogen carbonate solution.

Add to the boiling tube a piece of pond weed.

Using a meter ruler, place the boiling tube 10 cm away from a lamp.

Turn on lamp and wait 5 minutes to allow the pond weed to start photosynthesising.

Using the stopwatch count how many oxygen bubbles are produced in 60 seconds.

Repeat the count two more time and calculate the mean.

Repeat steps 1 to 6 by moving the boiling tube further away from the lamp by 10 cm each time until reaching a distance of 60 cm.

### HOME LEARNING TASKS

Task Description	Done?
What is a pathogen?	
What are the 4 types of pathogens?	
How is the trachea adapted to its function?	
How are pathogens spread?	
What are two symptoms of measles?	
Name 2 fungal diseases and how they can be spread.	
How do white blood cells defend the body from harmful pathogens?	
What is a pro and con of vaccinations?	
What is the difference between a painkiller and an antibiotic?	
What 3 things need to be tested when creating a drug?	
What is a placebo?	
What are the body's defences to fighting disease?	
What is the function of the nucleus?	
What is the function of the palisade mesophyll tissue?	
How can excess glucose be stored?	
What is the word and symbol equation for photosynthesis?	
Why is an LED bulb used during the investigation into rate of photosynthesis?	

# Knowledge Organiser

Additional Subjects  
Year 10

Term 1  
2024/25



**The Abbey**  
School

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# History Year 10 Term 1 – Change & Continuity in Norman England 1066-1088

How different was Norman England from Anglo-Saxon England? Historians used to think that the feudal system introduced to England by William I was very different from how Anglo-Saxon society was organised. Now, historians have identified as much continuity as change, although undoubtedly Norman England was governed by different people: the Normans. The way it was governed might have had many similarities to government under Edward the Confessor, but now the purpose of that government was to maintain Norman control and, in particular, boost the power and wealth of the king. In this unit you will analyse the implications of social changes brought about by the feudal system and the reorganisation of the Church; the role of Norman government; the Norman aristocracy, and finally, the struggle surrounding William's succession following his death in 1088.

## Prior Learning Links

- Year 7 Term 2 – Analysis of the Feudal System and its impact on England
- Medicine Through Time – Themes of change and continuity in Year 9 Term 1-4
- Year 9 Term 5 – Understanding of the make-up of Anglo-Saxon England used as a basis to compare to Norman England

## Future Learning Links

- Social, cultural and religious changes will be covered in Part 3 of the GCSE course – Weimar & Nazi Germany
- Aspects of change and continuity will also appear in Part 3, where you will compare and contrast the features of Weimar Germany to Nazi Germany



Scan me!

**GCSE Pod**

## KEY VOCABULARY

### Historical Skills Vocabulary

**Cause** – the reason for something happening  
**Change** – when things are different to how they were before  
**Consequence** – the result of something happening  
**Continuity** – the opposite of change; when something stays the same or continues  
**Difference** – the ways in which things are different to one another  
**Factor** – something that can affect, or determine an event or outcome  
**Inference** - a conclusion drawn about something using the information you already have about it  
**Rate of change** – the pace at which change occurs; e.g. very quickly or slowly  
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**Significance** – the importance of something  
**Similarity** – the quality of being similar, or the same  
**Trend** – when there are a number of similar and related changes continuing in the same direction over a period of time  
**Turning point** – a significant change happens – something that is different from what has happened before and which will affect the future

### Paper 2 (B1) Anglo-Saxon & Norman England 1066-1088 Core Vocabulary

**Administration** - the management and organization of the affairs of a government, business, or institution.  
**Anglo-Saxon** – a member of any of the West Germanic tribes (Angles, Saxons and Jutes) that settled in Britain from the 5<sup>th</sup> century AD and were dominant in England until the Norman Conquest  
**Aristocracy** - a class of people holding exceptional rank and privileges, often hereditary nobility.  
**Conquest** - the act of taking control of a country, city, etc., through the use of force.  
**Government** – the group of people in a country who are responsible for governing (ruling) it  
**Economy** - the wealth of a country gained from business or industry  
**Integration** - the process of combining or adding parts to make a unified whole, especially within societies and cultures.  
**Legacy** - something that is a result of events in the past; often referring to what a previous generation has left behind.  
**Legislation** – laws passed by a government  
**Norman** - pertaining to the people from Normandy in northern France, especially those who invaded and settled in England in 1066.  
**Rebellion** - an act of violent or open resistance to an established government or ruler.

**Succession** - the process of inheriting a title, office, property, etc.; often referring to the sequence in which one person follows another.

### Norman England 1066-1088 Vocabulary

1. **Aristocracy** - a class of people holding exceptional rank and privileges, especially the hereditary nobility.
2. **Centralized Power** - consolidation of control and authority in a single governing body or leader.
3. **Demesne** - land attached to a manor and retained for the owner's use.
4. **Domesday Book** - a record of a survey of English lands and properties ordered by William the Conqueror in 1086.
5. **Feudalism** - the dominant social system in medieval Europe, in which the nobility held lands from the Crown in exchange for military service.
6. **Fief** – land held by a vassal in return for service to a lord (also called a feud)
7. **Forfeiture** - the loss or giving up of something as a penalty for wrongdoing.
8. **Homage** - formal public acknowledgment of feudal allegiance.
9. **Knight Service** - the military service owed by a knight to his lord in return for land.
10. **Labour Service** - work performed by peasants for their lords as part of the feudal contract.
11. **Lanfranc** - an Italian Benedictine monk who became the Archbishop of Canterbury under William I.
12. **Logistics** – the planning and organisation of supplies for troops and moving troops around.
13. **Manor** - a large country house with lands; the principal house of a landed estate.
14. **Normanisation** - the process of implementing Norman culture, language, and administrative systems in England.
15. **Odo of Bayeux** - a half-brother of William the Conqueror, who became Bishop of Bayeux and played a significant role in Norman politics.
16. **Primogeniture** - the right of an eldest son to succeed to the estate of his ancestor to the exclusion of all others
17. **Regent** - a person appointed to administer a country because the monarch is a minor, absent, or incapacitated.
18. **Sheriff** - an official responsible for keeping the peace and enforcing the law in a county.
19. **Stigand** - the last Anglo-Saxon Archbishop of Canterbury before the Norman Conquest.
20. **Succession** - the process by which a new monarch or leader is selected to follow the previous one.
21. **Tenants-in-Chief** - the nobles who held their lands directly from the king in return for military service.
22. **Vassal** - a holder of land by feudal tenure on conditions of homage and allegiance.
23. **Vernacular** – the language or dialect that is most widely spoken by ordinary people in a region or country.
24. **William Rufus** - the third son of William the Conqueror, who became King William II of England.
25. **Writ** - a formal written order issued by a body with administrative or judicial jurisdiction.

#### 1. How did the feudal hierarchy shape medieval society?

Red

Amber

Green

Are you able to explain the roles and responsibilities of tenants-in-chief and knights?

Can you describe the concept of feudalism, including landholding, homage, knight service, and labour service?

Are you able to discuss the consequences of forfeiture in the feudal system?

#### 2. What role did the Church play in medieval England?

Red

Amber

Green

Are you able to identify the Church's influence on both society and government?

Can you explain the significance of key figures such as Stigand and Lanfranc in the Church?

Are you able to describe the process of Normanisation and reform of the Church during William I's reign?

#### 3. To what extent did Anglo-Saxon society and economy change under Norman rule?

Red

Amber

Green

Are you able to compare Anglo-Saxon society before and after the Norman Conquest?

Can you analyse the economic transformations that occurred due to Norman policies?

Are you able to evaluate the overall impact of Norman rule on Anglo-Saxon traditions and systems?

#### 4. How did government structures change after the Norman conquest?

Red

Amber

Green

Are you able to describe the centralization of power under William I?

Can you explain the role and significance of earls and regents in Norman government?

Are you able to assess the effectiveness of these changes in governance?

#### 5. What was the role of sheriffs and the demesne in Norman England?

Red

Amber

Green

Are you able to explain the duties and powers of sheriffs?

Can you describe the concept and importance of the demesne in Norman administration?

Are you able to discuss the introduction and significance of the 'forest'?

#### 6. Why was the Domesday Book significant for Norman government and finance?

Red

Amber

Green

Are you able to describe the purpose and process of the Domesday survey?



Can you explain the information recorded in the Domesday Book?			
Are you able to analyse the financial, military, and administrative implications of the Domesday Book?			
7. What were the cultural and linguistic characteristics of the Norman aristocracy?	Red	Amber	Green
Are you able to identify key cultural practices of the Norman elite?			
Can you describe the influence of Norman French on language and administration?			
Are you able to compare Norman aristocratic culture with that of the Anglo-Saxons?			
8. What was the significance of Bishop Odo's career?	Red	Amber	Green
Are you able to outline the major events and accomplishments in Bishop Odo's life?			
Can you explain Bishop Odo's influence on Norman politics and society?			
Are you able to evaluate the long-term impact of Bishop Odo's actions and policies?			
9. How did William I's character and personality influence his reign?	Red	Amber	Green
Are you able to describe William I's leadership style and personal traits?			
Can you explain the nature of William's relationships with key figures, such as his son Robert?			
Are you able to assess how William I's character affected his policies and governance?			
10. What were the causes and consequences of Robert's revolt in Normandy (1077-1080)?	Red	Amber	Green
Are you able to identify the reasons behind Robert's revolt against William I?			
Can you describe the key events and outcomes of the revolt?			
Are you able to analyse the impact of the revolt on Norman and English politics?			
11. How did William I's death lead to a disputed succession?	Red	Amber	Green
Are you able to explain the circumstances surrounding William I's death?			
Can you describe the key contenders and conflicts in the succession dispute?			
Are you able to evaluate the impact of the disputed succession on Norman stability?			
12. What were the key events and outcomes of William Rufus's conflict with Robert and Odo?	Red	Amber	Green
Are you able to outline the main events in William Rufus's struggle for power?			
Can you explain the roles of Robert and Odo in this conflict?			
Are you able to assess the consequences of William Rufus's victory for the Norman kingdom?			
<b>HOME LEARNING TASKS</b>			
<b>Task Description</b>	<b>Done?</b>		
Use 'Look, Cover, Write, Check' to learn the Norman England 1066-1088 Vocabulary			
Complete GCSE Pod Tasks 1-4 using the QR code at the top of the page			
Create a table with two headings: Changes, Continuities. Consider the aspects of economy, law, government, culture and society and provide examples of all of the changes between Anglo-Saxon England & Norman England, and all of the continuities.			
<b>Exam Style Question:</b> Describe two features of the feudal system. (4 marks)			
<b>Exam Style Question:</b> Explain why William I had a poor relationship with his son, Robert. (12 marks)			
<b>Exam Style Question:</b> 'Taxation was the most significant feature of the Domesday Book.' How far do you agree with this statement? (16 marks)			

# History Year 10 Term 1 – The Weimar Republic 1918-1929

By November 1918, the First World War had been going on for four years. The German army was still deadlocked against the armies of the Allies (including Britain, France and the United States). The Allies were gradually gaining the upper hand, but Germany was still undefeated on the battlefield. However, back at home, the German state was crumbling. Demonstrations, strikes, revolts and mutinies had broken out across the country. Between November 1918 and July 1919, in a series of events known as the German revolution, the Kaiser abdicated and a new German state – the Weimar Republic – was formed. Nevertheless, the new Weimar Republic was crippled from the start. It carried wounds inflicted by four years of warfare. It was resented by a large part of the German people. It was also governed under a flawed constitution – the Weimar Republic had a difficult birth.



GCSE Pod

## Prior Learning Links

- Year 8 Term 5 – Weimar & Nazi Germany

## Future Learning Links

- Year 10 Term 2-3: Completion of investigation into Weimar & Nazi Germany detailing the rise of the Hitler and the establishment of a dictatorship.
- Year 12 Paper 1: Germany 1918-1989 provides an investigation in breadth and depth of the Weimar Republic and Nazi Germany

## KEY VOCABULARY

### Historical Skills Vocabulary

**Cause** – the reason for something happening  
**Change** – when things are different to how they were before  
**Consequence** – the result of something happening  
**Continuity** – the opposite of change; when something stays the same or continues  
**Difference** – the ways in which things are different to one another  
**Factor** – something that can affect, or determine an event or outcome  
**Inference** - a conclusion drawn about something using the information you already have about it  
**Interpretation** – an historian’s particular view on an event/period or the significance or importance of certain features/factors in this event/period  
**Rate of change** – the pace at which change occurs; e.g. very quickly or slowly  
**Reliability** – the degree to which something can be trusted or relied upon as accurate  
**Significance** – the importance of something  
**Similarity** – the quality of being similar, or the same  
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**Turning point** – a significant change happens – something that is different from what has happened before and which will affect the future

### Paper 3 GCSE: Weimar & Nazi Germany 1918-1939 Core Vocabulary

**Abdicate:** To give up a position of power or responsibility, especially a throne or royal office.  
**Authoritarian:** Favoring or enforcing strict obedience to authority at the expense of personal freedom.  
**Chancellor:** The head of the government in some countries, such as Germany or Austria.  
**Coalition:** An alliance for combined action, especially a temporary alliance of political parties forming a government.  
**Constitution:** A set of fundamental principles or established precedents according to which a state or other organization is governed.  
**Culture:** The ideas, customs, and social behavior of a particular people or society.  
**Communist:** A person who supports or believes in the principles of communism, where all property is owned by the community and each person contributes and receives according to their ability and needs.  
**Democracy:** A system of government by the whole population, typically through elected representatives.  
**Dictatorship:** A form of government in which a single person or a small group possesses absolute power without effective constitutional limitations.  
**Economy:** The system by which a country’s money and goods are produced and used.  
**Fascism:** A political system based on a very powerful leader, state control of social and economic life, and extreme national pride, often involving the suppression of political opposition.  
**Ideology:** A system of ideas and ideals, especially one that forms the basis of economic or political theory and policy.

**Left Wing:** The liberal, socialist, or radical section of a political party or system.  
**Liberal:** Open to new behavior or opinions and willing to discard traditional values; often associated with policies favoring individual freedoms and government intervention to achieve social equality.  
**Mutiny:** Refusal to obey the orders of a person in authority, especially by soldiers or sailors against their officers.  
**Prejudice:** Preconceived opinion that is not based on reason or actual experience; bias.

**American loans:** Financial assistance provided by the United States to Germany to stabilize its economy, particularly through the Dawes and Young Plans.  
**Armistice:** An agreement to stop fighting, which ended the fighting in World War I on November 11, 1918.  
 Article 48  
**Bauhaus:** An influential German school of art, design, and architecture founded in 1919, promoting modernist ideas.  
**Dawes Plan:** A 1924 plan to resolve Germany's World War I reparations by restructuring payments and securing foreign loans.  
**Expressionism:** A cultural movement in art and cinema during the Weimar period that emphasized emotional experience over physical reality.  
**Friedrich Ebert:** Leader of the SPD, and first Chancellor of the Weimar Republic  
**Freikorps:** Paramilitary groups composed of World War I veterans, often used to suppress communist uprisings in post-war Germany.  
**Gustav Stresemann:** A leading German politician and statesman who served as Chancellor and Foreign Minister, instrumental in stabilizing Weimar Germany.  
**Hyperinflation:** An extremely rapid and excessive rise in prices, which occurred in Germany in 1923, severely devaluing the German mark.  
**Kaiser Wilhelm II:** The last German Emperor and King of Prussia, whose abdication in 1918 led to the establishment of the Weimar Republic.  
**Kapp Putsch:** A 1920 coup attempt by right-wing elements, including the Freikorps, to overthrow the Weimar government.  
**Kellogg-Briand Pact:** A 1928 international agreement in which signatory states promised not to use war to resolve disputes or conflicts.  
**League of Nations:** An international organization established after World War I, which Germany joined in 1926 under Stresemann's leadership.  
**Locarno Pact:** A series of agreements signed in 1925, in which Germany, France, Belgium, Great Britain, and Italy mutually guaranteed peace in Western Europe.  
**Occupation of the Ruhr:** The 1923 invasion and occupation of the Ruhr Valley by French and Belgian troops in response to Germany's failure to pay reparations.  
**Proportional Representation:** An electoral system which promotes a fair representation of all parties voted for – they are represented in proportion to the number of votes they received  
**Reichstag:** Part of the Weimar Republic's Parliament – the governing and law-making chamber of Germany. Members were elected at least once every four years  
**Revolution of 1918-1919:** A period of political turmoil in Germany that led to the abdication of the Kaiser and the establishment of the Weimar Republic.  
**Rentmark:** A new currency introduced in 1923 to stabilize the German economy and end hyperinflation.  
**Spartacists:** A Marxist revolutionary group that led the Spartacist uprising in January 1919, seeking to establish a communist state in Germany.  
**Stab-in-the-back myth:** The belief propagated by right-wing factions that Germany lost World War I due to internal betrayal rather than military defeat.  
**Treaty of Versailles:** The 1919 peace treaty that ended World War I, imposing harsh reparations and territorial losses on Germany.  
**Women's suffrage:** The right of women to vote, which was granted in Germany with the establishment of the Weimar Republic.  
**Young Plan:** A 1929 program for settling German reparations debts after World War I, which reduced the total amount and extended the payment period.

1. What were the key events leading to the abdication of the Kaiser and the establishment of the Weimar Republic?

Red

Amber

Green

Can you describe the impact of the First World War on Germany and its society?

Can you explain the reasons behind Kaiser Wilhelm II's abdication in 1918?

Are you able to summarize the events of the German Revolution of 1918-19?

<b>2. What were the main features of the Weimar Constitution?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
Can you identify the strengths of the Weimar Constitution? Can you analyse the weaknesses and potential problems within the Weimar Constitution? Are you able to compare the Weimar Constitution with the previous autocratic rule under the Kaiser?			
<b>3. How did the armistice and the end of World War I influence the political landscape in Germany?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
Can you explain the terms of the armistice and their implications for Germany? Are you able to discuss the immediate political changes that occurred after the armistice? Can you evaluate the impact of the armistice on public sentiment in Germany?			
<b>4. Why was the Weimar Republic unpopular in its early years?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
Can you describe the 'stab in the back' theory and its proponents? Are you able to explain the key terms of the Treaty of Versailles and their effects on Germany? Can you assess how the Treaty of Versailles contributed to the Republic's unpopularity?			
<b>5. What were the significant threats to the Weimar Republic from the left and right?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
Can you detail the goals and actions of the Spartacist uprising? Can you explain the role and impact of the Freikorps in the early Republic? Are you able to analyse the events and significance of the Kapp Putsch?			
<b>6. What were the causes and consequences of the hyperinflation crisis of 1923?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
Can you identify the reasons behind the French occupation of the Ruhr and its effects on Germany? Are you able to explain how hyperinflation affected various groups within German society? Can you evaluate the overall impact of the 1923 economic crisis on the stability of the Weimar Republic?			
<b>7. How did Gustav Stresemann contribute to the economic recovery of the Weimar Republic?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
Can you describe the introduction and impact of the Rentenmark? Are you able to explain the significance of the Dawes and Young Plans in stabilizing the economy? Can you assess the role of American loans and investment in the Weimar economic recovery?			
<b>8. What were Stresemann's achievements in foreign policy, and how did they influence domestic policy?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
Can you explain the importance of the Locarno Pact for Germany? Are you able to describe Germany's entry into the League of Nations and its implications? Can you analyze the impact of the Kellogg-Briand Pact on Germany's international standing?			
<b>9. How stable was the Weimar Republic by 1929?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
Can you discuss the economic and political indicators of stability in the late 1920s? Are you able to evaluate the extent of support for the Weimar Republic among the German population? Can you identify remaining weaknesses and potential threats to the Republic's stability?			
<b>10. How did living standards change in Germany during the Weimar period?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
Can you describe changes in wages and employment rates between 1924-1929? Are you able to explain the developments in housing and urban living conditions? Can you assess the effectiveness of unemployment insurance introduced during this period?			
<b>11. What changes occurred in the role and status of women in the Weimar Republic?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
Can you describe the changes in employment opportunities for women? Are you able to explain the role of women in politics during the Weimar period? Can you analyze the shifts in social and leisure activities for women in the 1920s?			
<b>12. How did cultural life in Germany evolve during the Weimar years?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
Can you identify key developments in Weimar architecture and their significance? Are you able to describe important movements in Weimar art and their main characteristics? Can you evaluate the impact of cinema on German culture during the Weimar Republic?			
<b>HOME LEARNING TASKS</b>			
<b>Task Description</b>	<b>Done?</b>		
Use 'Look, Cover, Write, Check' to learn the Weimar 1918-1929 Vocabulary			
Complete GCSE Pod Tasks 1-7 using the QR code at the top of the page			
Create a concept map with three areas: political challenges, economic challenges, and constitutional challenges. In each section, provide detail for how this area challenged the Weimar Republic. You must also include detail on how the Weimar Republic responded to/dealt with this challenge, and an overall evaluation of how significant the threat was of this type of challenge.			
<b>Exam Style Question:</b> Describe two features of the Weimar Republic. (4 marks)			
<b>Exam Style Question:</b> Explain why the Weimar Republic was increasingly unpopular from 1918-1929. (12 marks)			
<b>Exam Style Question:</b> 'Economic challenges were the most significant threat to the stability of the Weimar Republic' How far do you agree with this statement? (16 marks)			

# Geography Year 10 Term 1

## – Cold Environments: Svalbard

Term Focus – Some of the most seemingly inhospitable places in the world have a range of the most distinctive characteristics and are completely valued globally. This Case Study of Svalbard highlights on the interdependence of climate, permafrost, soils, plants and people. Where living in the fragile polar and tundra environments create many challenges and are at risk of economic development. Yet, at the same time, can provide so many opportunities.



### Prior Learning Links

- Cold environments back in Term 2 Year 7. Foundations of Antarctica.
- Human activity upon the planet, consequences and sustainability from Term 6 in both Years 7 and 8.
- PEA global description from Year 9 Term 1 foundations.
- Further adaptation and interdependence in ecosystems in Term 6 Year 9.

### Future Learning Links

- Antarctica and Global Commons in AQA KS5 geography.

## KEY VOCABULARY

### KEY WORDS

**Biodiversity** – the variety of plant and animal life in a particular habitat.  
**Adapt** – a change to fit certain conditions.  
**Development** – the process of change and growth to improve quality of life.  
**Infrastructure** – the basic facilities and structures that help a government and community run.  
**Mineral extraction** – the removal from the earth materials with industrial value.  
**Mitigation** – the action to reduce the severity or seriousness of something.  
**International Agreement** – legal binding arrangement made between countries.  
**Conservation** – the protection, preservation and management of something.

### KEY SUBJECT TERMINOLOGY

**Polar** – situated near to the earth's poles, reaching -40 degrees in winter.  
**Tundra** – a vast, flat, treeless Arctic region of Europe, Asia and North America in which the subsoil is permanently frozen.  
**Wilderness area** – an area of land undisturbed by human activity or development.  
**Permafrost** – permanently frozen ground.  
**Thermal Growing Season** – the portion of the year in which local conditions permit normal plant growth.  
**Interdependence** – the dependence of two or more species upon each other, and the environment.  
**Fragile environment** – a delicate and precious part of our world.

### 1. What is the climate like in polar and tundra areas?

Red Amber Green

Cold environments experience temperatures of 0 C or below for long periods of time and have strong winds.  
 Cold environments cover one-third of the world's land surface.

	Polar Regions	Tundra Regions
<b>Location</b>	The most extreme regions and ice sheets, where temperatures are below zero all year round. E.g. Greenland, Antarctica and Northern Russia.	Found around the Northern Arctic Circle. Less extreme, with <b>Thermal Growing Seasons</b> in their short summers (approx. 2 months). E.g. Alaska, Northern Canada and Norway's Svalbard.
<b>Climate</b>	Extreme – winter temperatures can fall below -50 C, strong winds, low snow totals.	Less extreme – winter temperatures may drop to -20 C, warm but brief summers, high precipitation (snow) in coastal regions.
<b>Soil</b>	<b>Permafrost</b> covered by ice.	Surface <b>permafrost</b> melting in summer causing waterlogging.

**Svalbard:** Norway's Svalbard is close to the Mid-Atlantic Ridge and is the world's most northerly inhabited territory.

Svalbard has 5 major islands (known as an archipelago). 60% of Svalbard is covered in glaciers and the rest of the land is tundra. Most of Svalbard's population live in the main town of Longyearbyen, on Spitzbergen (the largest of the islands).

**2. How have plants and animals adapted to survive?**

Red Amber Green

**In Polar Regions:**

Few plants are found, just mosses and lichen on the fringes of ice.

Polar bears: adapted with thick foot pads so they do not slip on ice, and fur surrounding their paws to keep them warm.

**In Tundra Regions:**

The bearberry plant has adapted by: -

- Growing low to the ground to protect itself from the strong winds.
- It's stems having thick bark for stability.
- Having hairy stems for insulation (keeping the plant warm)
- Producing bright red berries in the thermal growing season to attract birds, which spreads seeds.

Arctic Foxes and Arctic Hares are animals which have adapted to tundra. Both can shed their white fur at the start of the thermal growing season, replacing with a brown coat to better camouflage in its surroundings. So the Arctic fox can hunt prey much easier with little detection, and the Arctic hare can hide from predators.

**3. What are the opportunities for development?**

Red Amber Green

- |   |
|---|
| 1. Mineral extraction – rich reserves of coal. Provides many jobs and has been the main economic activity of the area.  |
| 2. Energy developments – Geothermal energy. Also, Longyearbyen's coal-fired power station supplying all of Svalbard's energy needs. Plus, Carbon capture and storage. |
| 3. Fishing – The Barent's sea are rich fishing grounds with 150 species of fish (including cod and haddock).  |
| 4. Tourism – Most recent main economic activity of the area, providing as many jobs as mining.  |

**4. How does tourism provide opportunities for Svalbard?**

Red Amber Green

Tourism is becoming increasingly popular in recent years.

Svalbard has more jobs in the tertiary sector (tourism) than from primary sector (of mining and fishing).

Tourists come to enjoy...

Seeking out natural sights, such as the Northern Lights. Plus, glaciers and fjords.	Seeking out unique wildlife, especially polar bears.	Seeking out adventure, such as hiking, kayaking and snowmobile safaris.	Providing opportunities for Cruise passengers to stop at Longyearbyen.
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**5. Should we be drilling the Arctic for oil?**

Red Amber Green

**Cold environments are fragile.**

Tundra vegetation takes a very long time to become established. Tundra is a delicate ecosystem which is easily disturbed and damaged by human activities.

- For example, off-road driving in summer leaves deep tyre tracks scarring the thawed surface of permafrost. These scars will remain for decades.

**Alaska: Trans-Alaskan pipeline** – Discovering oil in Prudhoe Bay, northern Alaska, in 1969 stimulated a technological solution to Arctic sea ice preventing tanker movements in winter. A 1300km pipeline. Crossing 2 mountain ranges and 800 rivers. Raised and insulated to prevent the hot oil from melting the permafrost, while allowing for caribou to migrate underneath. Engineered to slide during earthquakes, and a automatic shut off if there is a leak.

**Siberia, Russia** – However, rich reserves of oil and gas remain in high demand. The potential for long-lasting, if not permanent damage to such fragile environments is great, especially from pollution incidents.

Oil leaked from broken pipes.	River edge habitats polluted – trees and vegetation may never recover.	Risk of fires, either started deliberately or by lightning strike.
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**6. What challenges do humans continue to face living in cold environments?**

Red Amber Green

Living and working in Svalbard, and other cold environments, poses many extreme challenges. Such as

- How do people work in 4 months of complete darkness?
- How can homes be kept warm in very cold winters ( - 30 C ) ?
- How is water connected to homes, so it does not freeze in the pipes?
- How is sewage and waste removed from houses?
- How do people travel around when roads are covered in snow?
- How can roads be constructed and maintained?

**Extreme temperatures** – Winter temperatures can fall below – 30 C. People are at risk of frostbite. So layers of thick clothing, gloves, boots and socks are essential. This means working outside is slow, difficult and dangerous.

**Construction** – Building, construction and maintenance can only really happen in the summer months. Permafrost must be protected from melting, otherwise buildings and infrastructure will collapse. Dirt and gravel roads have to be raised above ground surface.

**Services** – Pipes must be raised above ground, so they do not freeze. These include water, power and sanitation. This is also so the pipes do not thaw the permafrost and allows for easier maintenance.

**Accessibility** – Svalbard can be reached by sea or air. There are no roads outside Longyearbyen. Most people use snowmobiles to get around, especially easier in winter. There are international air flights to mainland Norway and Russia (plus some smaller aircraft to other islands).

**7. How can cold environments be managed sustainably?** **Red** **Amber** **Green**

**1. Using technology** – Such as the Trans-Alaskan pipeline, which has been raised and insulated to protect the permafrost and allow wild caribou to migrate underneath.

**2. Action by governments** – On an international scale, the Antarctic Treaty states to

- prevent economic development
- promote scientific research
- control tourism to keep disturbance to a minimum

**3. Conservation groups** – Such as the WWF (Worldwide Fund for Nature) who work with oil companies, Inuit organisations, local communities and government regulators to plan for a sustainable future.

**8. Should cold environments just be left alone?** **Red** **Amber** **Green**

**Cold environments need protecting.**

- For being home to a rich variety of birds, animals and plants who have specially adapted to the conditions.
- For the wild beauty which attracts adventurous tourists and benefits the country's economy.
- For opportunities for forestry and fishing.
- For indigenous people (e.g. Arctic Inuit) who depend on the wildlife to survive.
- For important unpolluted, unspoilt outdoor laboratories for scientific research (e.g. for climate change).

**HOME LEARNING TASKS**

Task Description	Done?
Learn Key Word Vocabulary.	
Quizlet Cold Environment Flash Cards: <a href="#">Svalbard - Cold environment Flashcards   Quizlet</a>	
Geog Your Memory Retrieval 1	
Svalbard Tourism Flyer	
Geog Your Memory Retrieval 2	
Revision <a href="#">Svalbard Case Study - Internet Geography</a>	

### Buddhist Key ideas/terms to learn

<p><b>Buddha's early life &amp; 4 Sights</b></p> <ul style="list-style-type: none"> <li>• Buddha born <b>Siddhartha Gautama</b> in S. Nepal</li> <li>• Parents Queen Maya &amp; King Suddhodana, Maya dreamed white elephant entered her side</li> <li>• Buddha took 7 steps &amp; lotus flowers &amp; said, <i>"This is the last re-birth"</i></li> <li>• Prophecy become King or Holy Man</li> <li>• <b>4 sights – Old age; illness; death; Holy man</b> – leave palace</li> </ul>	<p><b>Buddha's asceticism &amp; enlightenment</b></p> <ul style="list-style-type: none"> <li>• Lived as an ascetic for 6 years – fasting; sleeping on thorns</li> <li>• Meditated under Peepul tree &amp; tempted <b>Mara</b> &amp; daughters</li> <li>• Earth to witnessed enlightenment</li> <li>• 3 watches: knowledge of past lives; understood cycle of re-birth; beings suffer due to attachment</li> <li>• <b>Buddha</b> means <i>"enlightened one"</i></li> <li>• Taught 5 ascetics - <b>Middle way</b></li> </ul>	<p><b>Dhamma – the Buddha's teachings</b></p> <ul style="list-style-type: none"> <li>• Seen as truth but not to be worshipped</li> <li>• Analogy of <b>raft</b> – once used, do not cling to it</li> </ul> <p>One of 3 <b>refuges/jewels</b> (with <b>Buddha and Sangha</b>) so trust they relieve you from suffering</p>	<p><b>5 precepts – Rules to follow – He Should Stop Lying Immediately</b></p> <ul style="list-style-type: none"> <li>• Abstain from Harming Life</li> <li>• Abstain from Taking what is not Given (Stealing)</li> <li>• Abstain from Sexual Misconduct</li> <li>• Abstain from False speech (Lying)</li> <li>• Abstain from Intoxicants (drugs &amp; alcohol)</li> </ul>
<p><b>Dependent Arising – everything dependent on conditions</b></p> <p>All is connected and not independent, in constant process of change e.g. tree dependent on soil and weather</p> <ul style="list-style-type: none"> <li>• <b>Tibetan wheel of life</b> illustrates this</li> <li>• Outer wheel <b>12 nidanas</b> or stages of birth, death, re-birth</li> <li>• <b>Kamma</b> shows dependent arising as happiness depends on past actions</li> <li>• Attain <b>nirvana</b> when break craving</li> </ul>	<p><b>3 Marks of existence - DAA</b></p> <ul style="list-style-type: none"> <li>• <b>Dukkha – suffering-</b> 3 types – ordinary; due to change; due to attachment</li> <li>• <b>Anicca – impermanence</b> – everything always changing affecting – living things; non-living things; people's minds. Story of <b>Kisa Gotami &amp; mustard seed</b></li> <li>• <b>Anatta – no permanent self</b> – no fixed part – <b>Nagasena &amp; chariot</b></li> </ul>	<p><b>4 Noble Truths – truths about suffering</b></p> <ol style="list-style-type: none"> <li>1) <b>Existence of suffering (dukkha)</b> – suffering exists &amp; all experience it</li> <li>2) <b>Causes of suffering (samudaya)</b> – <b>tanha</b> (craving) main cause of suffering due to 3 poisons</li> <li>3) <b>Ending of suffering (nirodha)</b> – overcome craving &amp; ignorance</li> <li>4) <b>Cure for suffering (magga)</b> – follow 8-fold path</li> </ol> <p>Follow <b>3 refuges</b> to understand 4 Noble Truths</p>	<p><b>8 Fold Path – overcoming suffering</b> <i>Vampires in Space Always like Eating Moaning Children</i></p> <p>Also known as the threefold way</p> <p><b>Wisdom (Panna):</b> Right view; Right Intention</p> <p><b>Ethics (Sila):</b> Right Speech; right Action; Right Livelihood</p> <p><b>Meditation (Samadhi):</b> Right effort; Right Mindfulness; Right Concentration</p>
<p><b>3 poisons</b></p> <ul style="list-style-type: none"> <li>• <b>Greed</b> – craving all things</li> <li>• <b>Hatred</b> – towards others</li> <li>• <b>Ignorance</b> – of the dhamma</li> </ul>	<p><b>5 Skandhas – aggregates (Theravada)</b></p> <p>Beings made of parts – no self (anatta)</p> <p><b>Form</b> - body</p> <p><b>Sensation</b> – feelings/sensations</p> <p><b>Perception</b> – recognising things</p> <p><b>Mental formation</b> – thoughts/opinions</p> <p><b>Consciousness</b> – awareness of world</p>	<p><b>Sunyata – Emptiness (Mahayana)</b></p> <p>There is no independent soul or self (anatta)</p> <ul style="list-style-type: none"> <li>• Everything exists in relation to other things</li> <li>• All things are <b>dependent</b> - needs to be trust, compassion &amp; selflessness</li> </ul>	<p><b>Buddha Nature (Buddhahood)</b></p> <ul style="list-style-type: none"> <li>• All Buddha nature inside them</li> <li>• Buddha nature is hidden by <b>desires, attachment, ignorance</b></li> <li>• Buddha nature like <b>honey surrounded by bees</b></li> <li>• All potential for enlightenment</li> </ul>
<p><b>Arhat (Perfected person Theravada)</b></p> <ul style="list-style-type: none"> <li>• Followed the 8-fold path</li> <li>• Overcome 3 poisons &amp; enlightened</li> <li>• No-longer re-born</li> </ul>	<p><b>Bodhisattva – enlightenment being (Mahayana)</b></p> <ul style="list-style-type: none"> <li>• Have achieved enlightenment through 6 perfections</li> <li>• Remain in samsara to help others be enlightened (vow to do this)</li> </ul>	<p><b>6 Perfections</b></p> <p><b>Generosity</b> – to be generous in all things</p> <p><b>Morality</b> – follow 5 precepts</p> <p><b>Patience</b> – patient with all</p> <p><b>Energy</b> – needed to keep on path</p> <p><b>Meditation</b>– concentration &amp; awareness</p> <p><b>Wisdom</b> – obtain understanding</p>	<p><b>Pure Land (Mahayana)</b></p> <ul style="list-style-type: none"> <li>• Based on faith in <b>Amitabha Buddha</b></li> <li>• Recite Amitabha in hope of being re-born &amp; enlightened in pure land</li> <li>• Recite scriptures; meditate on Amitabha; worship Amitabha; chanting name; offerings to him</li> </ul>



# Sport Science // Year 9 & 10 // Terms 1-6

Cambridge National Level 1 / 2 Sport Science

R181: Applying the principles of training: fitness and how it affects skill performance

## Prior Learning Links

- Knowledge of basic components of fitness from Core PE.
- Some knowledge of basic fitness tests such as MSFT.
- Completed unit of work on "Fitness" in Years 7&8 in Core PE.

## Future Learning Links

- Some links to questions in exam paper for R180.
- BTEC Level 3 Unit 2 – Fitness Training and Programming.



## KEY VOCABULARY

### KEY WORDS & TERMINOLOGY

**Topic Area 1:** Components of fitness applied in sport

#### Key Terms:

- ✓ **Strength** – the extent to which a muscle or muscle group can exert force to overcome a resistance, e.g. in weightlifting
- ✓ **Power** – exerting muscular force (strength) with speed, e.g. 100m sprint
- ✓ **Agility** – the ability to change direction at speed while remaining in control of movement, e.g. sidestepping an opponent
- ✓ **Balance** – the ability to maintain the centre of mass over the base of support, e.g. standing on one leg
- ✓ **Flexibility** – the range of movement around a joint, e.g. performing the splits
- ✓ **Muscular endurance** – the ability of the muscles to repeatedly contract without fatiguing/tiring
- ✓ **Cardiovascular endurance** – the ability of the heart and lungs to meet the oxygen demands of the muscle over a prolonged period of time
- ✓ **Speed** – how fast an athlete covers a premeditated distance
- ✓ **Fatigue** – extreme tiredness from mental or physical exertion
- ✓ **Stamina** – the term used to describe the body's ability to sustain physical activity for a long time
- ✓ **Coordination** – the ability to use two or more body parts at the same time with efficiency
- ✓ **Reaction time** – how long it takes to respond to a stimulus
- ✓ **Pressurised drill** – an activity within a training session which has an added element of competition such as being timed or up against an opponent

**Topic Area 2:** Principles of training in sport

#### Key Terms:

- ✓ **Progression** – gradual increases or movements towards a goal
- ✓ **Overload** – doing more than what was done in a previous session to ensure continued results
- ✓ **Frequency** – how regularly an individual trains, i.e. times a person trains per day, week or month
- ✓ **Intensity** – how hard an individual works during a session
- ✓ **Time** – how long an individual exercises for
- ✓ **Type** – the method of training adopted by the participant, e.g. circuit training
- ✓ **Specificity** – training which improves a component of physical or skill-related fitness related to an individual's goal, sport or activity of choice
- ✓ **Reversibility** – the regression in physical fitness or ability after a prolonged period of inactivity
- ✓ **Specific** – how relevant goal is to the performer or their role in that sport
- ✓ **Measurable** – a goal in which can be in some way quantified and monitored to assess
- ✓ **Achievable** – a goal which is not impossible to meet
- ✓ **Realistic** – a goal which is within the capabilities of the performer
- ✓ **Time-bound** – a goal which is set a duration in which it is to be achieved

**Topic Area 3:** Organising and planning a fitness training programme

**Key Terms:**

- ✓ **Injury history** – whether an individual has had any physical niggles in the past which may affect the planning of a training programme.
- ✓ **Aims** – the ultimate goals that the training programme hopes to achieve
- ✓ **Objectives** – the measurable, intermediate steps that help and athlete check progress leading to the ultimate goal
- ✓ **Suitability** – whether or not a training programme is appropriate enough for an individual's needs
- ✓ **Adaptability** – the extent to which a programme can be manipulated in response to an unforeseen event or new demands
- ✓ **FITT** – an acronym for the principles of progressive overload which should be incorporated into any successful training programme (Frequency, Intensity, Time, Type)
- ✓ **Reflection** – coaches and athletes taking time out to check on strengths, weaknesses and progress – to help formulate future plans
- ✓ **Facilities** – the location or amenities needed to take part in sport or physical activity
- ✓ **Equipment** – the items or resources which are needed to perform a certain sport or physical activity
- ✓ **Risk assessment** – a pre-exercise safety measure carried out to identify hazards and arrange appropriate controls
- ✓ **Testing** – a way of evaluating a training programme by comparing a fitness component before and after the training block.
- ✓ **SMART goals** – the targets that an individual sets themselves for a fitness training programme which applies different principles ensuring its effectiveness

**Topic Area 4:** Evaluate own performance in planning and delivery of a fitness training programme

**Key Terms:**

- ✓ **Protocol** – the set of instructions involved in carrying out a fitness test
- ✓ **Sequence** – the order in which a series of tests are carried out
- ✓ **Validity** – whether a test actually measures the component of fitness that it intends to
- ✓ **Reliability** – the ability of a test to produce the same outcome if performed exactly the same
- ✓ **Practicality** – the feasibility of a test protocol or its ease of implementation with respect to time, equipment, space and individuals
- ✓ **Normative data** – the typical age and gender matched fitness test results of a larger population, used for comparative purposes
- ✓ **Average** – the mean value of a set of fitness results
- ✓ **Rating** – the descriptor given to a test result that helps categorise or group together sets of results
- ✓ **Gender** – whether an individual considers themselves as male, female or another identity will affect how they are scored in a fitness test
- ✓ **Age** – how old or young an individual is, which impacts their expected fitness test result
- ✓ **Standardisation** – an established set of procedures which are reproduced every time to ensure consistency in both inter and intra individual testing
- ✓ **Comparison** – analysing the results from two different individuals or groups and measuring them against each other
- ✓ **Accuracy** – the extent to which a test result is recorded with precision
- ✓ **Procedure** – the sequence of steps for carrying out a task
- ✓ **Units** – the quantity given for a particular measurement

1. How are components of fitness relevant to different sports?
2. Can you justify why different components of fitness are relevant for different sports?

Red  
Red


Amber  
Amber

Green  
Green

### Components of Fitness

Think about which components of fitness are needed to complete the challenges set for the sports stars below


**Owen Farrell** (rugby union)



Challenge: To steal the ball and sidestep an opponent to score a try.

Component of fitness	Definition

**Simone Biles** (gymnastics)



Challenge: To execute the double layout floor exercise to a high standard.

Components of fitness	Definition

3. What fitness tests are used for each component of fitness?
4. Can you apply the components of fitness to a skilled performance?

Red  
Red

Amber  
Amber

Green  
Green

### Fitness Tests

Fill in the missing appropriate fitness tests:

Component of Fitness	Appropriate fitness test
Agility	
Cardiovascular endurance	Multistage fitness test
Muscular endurance	Press up test
Speed	30m speed test
Strength	
Power	Standing long jump
Flexibility	
Balance	Stork stand test
Coordination	

## 5. What are the principles of training?

Red

Amber

Green

### Principles of Training

Fill in the blanks for the following definitions of the FITT principles:

- Fr\_qu\_e\_cy – the number of times you train per week (how often)
- In\_e\_s\_ty – how hard you train during each training session (how hard)
- \_im\_ – the length of each training session (how long)
- T\_p\_ – the method of training used during each training session (which training method)

## 6. What are SMART goals?

Red

Amber

Green

### SMART Goals

Match up the SMART principles below with their definitions

<b>Specific</b>	It should be possible to reach your goal.
<b>Measurable</b>	Goals should not be vague but should describe what you want to achieve in detail.
<b>Achievable</b>	Goals should be tracked in order to see your progress as you complete them.
<b>Realistic</b>	It should be clear when your goals should be achieved by.
<b>Time-bound</b>	A goal should be something that is possible given your individual circumstances, e.g. the amount of time you can dedicate to training, or the facilities and equipment available to you.

## 7. What are methods of training and their advantages/disadvantages?

Red

Amber

Green

### Methods of Training

Complete the table below to describe the characteristics of the exercises/training methods and the advantages and disadvantages of each.

Exercise/ training method	Aerobic, Anaerobic or both?	Advantages	Disadvantages
Walking around the room/hall/track for 1 minute			
jogging on the spot for 30 seconds			
Sprinting on the spot for 10 seconds			
Weaving in and out of 10ms of cones			
Sprinting to a cone 10m away and walking back			
Sprinting to a cone 10m and sprinting back			
Enacting a first and second tennis serve			
Performing four different static stretches for 10-12 seconds each			

**8. What factors should you consider when designing a fitness training programme?**

Red

Amber

Green

**Designing a Fitness Programme**

Circle the 5 most important factors to consider when designing a fitness training programme:

Method used	Current fitness levels	Safety/risk assessments
Duration	Previous injuries	Suitable activities
Name	Session aims	Application of SPOR
Age	Athlete goals	Progression
Aims	Equipment/ facilities needed	Objectives

**9. How do you apply the principles of training to a fitness programme?**

Red

Amber

Green

**Principles of Training**

Read what each athlete says below about their training and give them advice on how they could apply the most relevant principle of training to their situation



*I have managed to stay fit and active over the years and continue to run recreationally, but I am frustrated by the fact that I can no longer run at the same pace I did when I was racing.*

.....
.....
.....
.....
.....



*I always lift the same weights at the gym as I'm comfortable with this but I don't seem to feel any fitter or stronger.*

.....
.....
.....
.....
.....

10. How do you plan a fitness programme?

Red

Amber

Green

11. How do you record your results from a fitness training programme?

### Planning a Fitness Programme

Think about the information that goes into a training programme. Fill out the worksheet below to begin the planning process.

#### **Suitable warm-up and cool-down**

(Think about the different components of warm-ups and cool-downs and how exercises may vary for different activities.)

#### **Suitable main activities**

(Can you think of different activity examples suitable to a range of different subjects?)

**Coaching points** (What instructions might coaches provide to improve the performance of different skills and techniques?)

**Duration of plan** (What factors would influence the optimum duration of the programme?)

**Duration of sessions** (What factors might influence the duration of a training session?)

#### **Monitoring progression and adaptability**

(How is progress monitored and how might a training session or mid-term testing result in adaptation of the programme?)

#### **Equipment and facilities**

(What different equipment and facilities are needed for different sports and activities?)

**12. What are the strengths and areas for improvement for your fitness training programme?**

Red

Amber

Green









**Strengths and Areas for Improvement**

It is important to evaluate the effectiveness of a fitness programme. Think about the strengths and weaknesses of your fitness programme. Things to consider are:

- ✓ The level of success based on whether or not the goals were met
- ✓ Whether the training methods were appropriate for the participant
- ✓ If the programme was tailored to the individual needs of the subject
- ✓ Whether the programme was fully adhered to (if not, why not?)

Strengths	Areas for improvement

**HOME LEARNING TASKS**

Task Description		Done?
<p><b>1) Complete Checkpoint 1 &amp; 2 on the EverLearner at a minimum grade of 70%</b>  <i>“Components of fitness applied to sport”</i></p>	 	
<p><b>2) Complete Checkpoint 3 &amp; 4 on the EverLearner at a minimum grade of 70%</b>  <i>“Applying the principles of training: fitness and how it affects skill performance”</i></p>	 	
<p><b>3) Complete Checkpoint 5 on the EverLearner at a minimum grade of 70%</b>  <i>“Organising and planning a fitness training programme”</i></p>	 	
<p><b>4) Complete Checkpoint 6 on the EverLearner at a minimum grade of 70%</b>  <i>“Evaluate own performance in planning and delivery of a fitness training programme”</i></p>	 	

# Sport Science // Year 9 & 10 // Terms 1-6

Cambridge National Level 1 / 2 Sport Science

**Unit R182: The body's response to physical activity and how technology informs this.**

## Prior Learning Links

- Knowledge of basic anatomy and physiology from Core PE.
- Knowledge of sporting examples R181 and Core PE.

## Future Learning Links

- Some links to questions in exam paper for R180.
- BTEC Level 3 Unit 1 – Anatomy and Physiology



## KEY VOCABULARY

### KEY WORDS & TERMINOLOGY

**Topic Area 1:** The cardio-respiratory system and how the use of technology supports different types of sports and their intensities

#### Key Terms:

- ✓ **Atria** - upper chambers of the heart that collect blood from veins.
- ✓ **Ventricles** – lower chambers of the heart that pump blood out through arteries.
- ✓ **Valves** - prevent the backflow of blood.
- ✓ **Deoxygenated** – venous blood (in veins) that does not carry oxygen.
- ✓ **Oxygenated** - arterial blood (in arteries) that carries oxygen.
- ✓ **Arteries** - blood vessels that mainly carry oxygenated blood away from the heart.
- ✓ **Capillaries** - tiny, thin walled blood vessels that join arteries (which carry blood away from the heart) and veins (which carry blood back to the heart).
- ✓ **Alveoli** - tiny air sacs in the lungs.
- ✓ **Veins** - blood vessels that mainly carry deoxygenated blood back to the heart.
- ✓ **Trachea** - tube connecting the mouth and nose to the lungs.
- ✓ **Lungs** - large spongy organs in chest; used for gas exchange.
- ✓ **Bronchi** - airways that lead from the trachea into the lungs.
- ✓ **Bronchioles** - air passages inside the lungs that connect the bronchi to the alveoli.
- ✓ **Diaphragm** - dome-shaped muscle causing inhalation and exhalation.
- ✓ **Radial pulse** - heart rate that can be felt at the wrist.
- ✓ **Carotid pulse** - heart rate that can be felt at the neck.
- ✓ **Vasoconstriction** – reduction in the diameter of a blood vessel to reduce blood flow through that vessel.

#### Topic Area 1 (Continued...):

- ✓ **Vasodilation** - widening in the diameter of a blood vessel to increase blood flow through that vessel.
- ✓ **Cardiac output** – the volume of blood that the heart is able to pump out in one minute.
- ✓ **Stroke volume** – the volume of blood that leaves the heart during each contraction.
- ✓ **Systolic blood pressure** - blood pressure when the heart is contracting.
- ✓ **Diastolic blood pressure** - blood pressure when the heart is relaxed.
- ✓ **Inhalation** - breathing in.
- ✓ **Exhalation** - breathing out.
- ✓ **Intercostal muscles** - muscles located between the ribs.
- ✓ **Diffusion** - the movement of a gas from an area of high concentration to an area of low concentration.
- ✓ **Wearable technology** - technology worn on the body during exercise to provide data.
- ✓ **Laboratory-based technology** - the use of technology inside a laboratory to provide data.
- ✓ **Field-based technology** - technology that can be used to provide data outside of a laboratory in the setting where sports take place, for example a football pitch.
- ✓ **Spirometer** - machine that produces a spirometry trace of breathing volumes.
- ✓ **Vital capacity** – amount of air expelled from your lungs when you take a deep breath and then exhale fully.
- ✓ **Pulse oximeter** – device used to measure how efficiently oxygen is being carried to the extremities by the heart (blood oxygen level).



**Topic Area 2:** The musculo-skeletal system and how the use of technology supports different types of sports and their movements

**Key Terms:**

- ✓ **Clavicle** - the collarbone.
- ✓ **Scapula** - the shoulder blade.
- ✓ **Humerus** - bone in the upper arm.
- ✓ **Radius** - bone of the forearm; attaches to the thumb side of the wrist.
- ✓ **Ulna** - bone of the forearm; forms the point of the elbow.
- ✓ **Cranium** - skull bone, which surrounds the brain.
- ✓ **Ribs** - bones surrounding the heart and lungs, forming the chest cavity.
- ✓ **Sternum** - flat bone at the front of the chest, sometimes called the breastbone.
- ✓ **Vertebrae** - many single bones joined together to form the backbone.
- ✓ **Femur** - long bone of the thigh or upper leg, which extends from the hip to the knee.
- ✓ **Tibia** - the shin bone; forms knee joint with the femur.
- ✓ **Fibula** - bone in the lower leg that forms the ankle.
- ✓ **Patella** - the kneecap; covers the knee joint.
- ✓ **Deltoids** - muscles on shoulder joint that move the upper arm.
- ✓ **Trapezius** - muscle at the top of the back that moves the scapula and head.
- ✓ **Latissimus dorsi** – muscle at the side of back that moves the upper arm.

**Topic Area 2 (Continued...):**

- ✓ **Pectorals** - muscles in the chest that move the upper arm.
- ✓ **Biceps** - muscles at the front of the upper arm.
- ✓ **Triceps** - muscles at the back of the upper arm.
- ✓ **Abdominals** – stomach muscles that protect internal organs.
- ✓ **Gluteals** - buttock muscles, which are used when running.
- ✓ **Hamstrings** - muscles at the back of the upper leg.
- ✓ **Quadriceps** - muscles at the front of the upper leg.
- ✓ **Gastrocnemius** - one of the calf muscles; used in walking.
- ✓ **Soleus** - one of the calf muscles; used in walking.
  
- ✓ **Synovial joint** - a freely moveable joint.
- ✓ **Ball and socket joint** - ball shaped end of bone fits into the socket of another, for example the hip.
- ✓ **Hinge joint** - end of bone fits against another bone allowing movement in only one direction, for example the knee.
- ✓ **Gliding joint** - one bone can slide over another, for example the carpals in the wrist.
- ✓ **Pivot joint** - rounded end of one bone fits into a ring formed by the other bone, for example the vertebrae of the neck, which allow head rotation.

**Topic Area 3:** Short-term effects of exercise on the cardio-respiratory and musculo-skeletal systems

**Key Terms:**

- ✓ **Anticipatory rise** – slight increase in heart rate before exercise.
- ✓ **Heart rate** – Number of times the Heart beats per minute
- ✓ **Stroke volume** – Volume of blood that leaves the Heart during each contraction
- ✓ **Cardiac output** – Volume of blood that the Heart pumps out in one minute
- ✓ **Breathing rate** – Number of breaths taken per minute
- ✓ **Gaseous exchange** – The exchange of gases in the lungs (Oxygen in – Carbon dioxide out)
- ✓ **ROM** – Range of movement at joints

**Topic Area 4:** Long-term effects of exercise on the cardio-respiratory and musculoskeletal systems

**Key Terms:**

- ✓ **Fast twitch fibres** – muscle fibres that contract quickly and/or with high force; used during high-intensity work.
- ✓ **Slow twitch fibres** – muscle fibres that contract with a low force but do not fatigue quickly.
- ✓ **Bradycardia** – decrease in the resting heart rate because of training.
- ✓ **Goniometer** - device used to measure flexibility (range of movement at a joint).
- ✓ **Lung capacity** - the amount of air the lungs can hold.
- ✓ **Tidal volume** - the amount of air breathed in and out at rest.
- ✓ **Bone density** - the amount of bone mineral in bone tissue.
- ✓ **Capillarisation** – an increase in the number of capillaries as a result of endurance training.

- ✓ **Heart disease** - when the heart's blood supply is blocked or interrupted by a build-up of fatty substances in the coronary arteries that supply the heart with blood.
- ✓ **Heart attack** – medical emergency in which the supply of blood to the heart is suddenly blocked.

1: What is the function and role of the cardio-respiratory system?

Red

Amber

Green

- **What is Heart Rate and how is it measured?**

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- **What is Stroke Volume?**

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- **What is Cardiac Output?**

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- **What is Breathing Rate and how is it measured?**

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- **What is Tidal Volume?**

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- **What is Gaseous Exchange?**

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2: How is technology used to inform us about the cardio-respiratory system?

Red

Amber

Green

Key terms

**Technology** Putting scientific knowledge into practical use to solve problems or invent useful tools.

**Wearable technology** Technology worn on the body during exercise to provide data.

**Laboratory-based technology** The use of technology inside a laboratory to provide data.

**Field-based technology** Technology that can be used to provide data outside of a laboratory in the setting where sports take place, for example a football pitch.

- How could a coach use data from a Central Midfielder’s Heat Map to assess the performance of his/her Football player?

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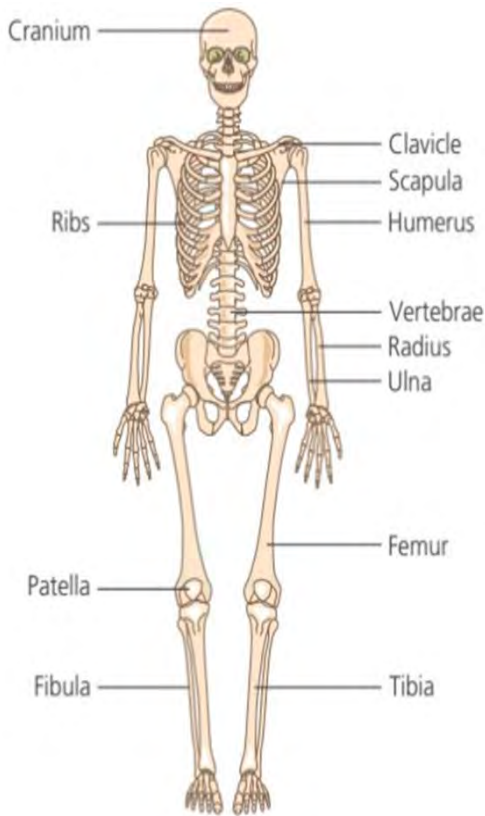
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3: What are the components and role of the musculo-skeletal system?

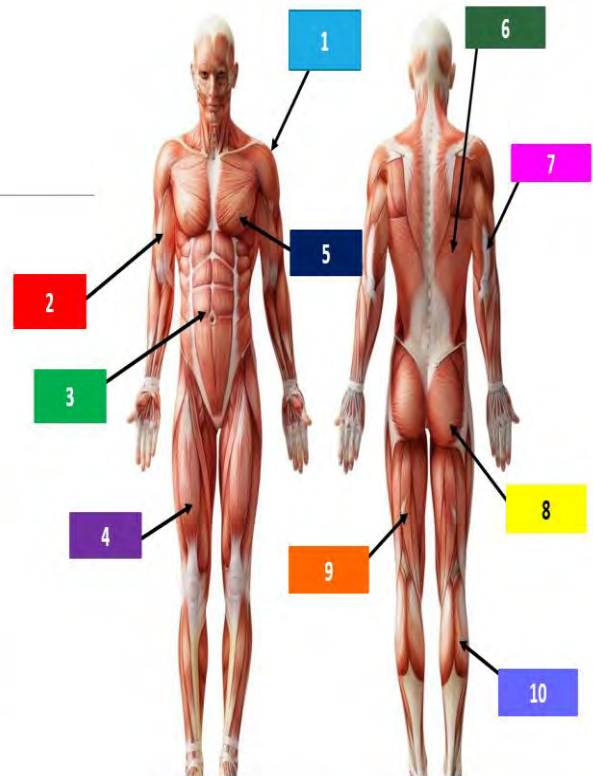
Red

Amber

Green



- 1 = Deltoid
- 2 = Bicep
- 3 = Abdominals
- 4 = Quadriceps
- 5 = Pectorals
- 6 = Latissimus Dorsi
- 7 = Triceps
- 8 = Gluteal
- 9 = Hamstring
- 10 = Gastrocnemius



4: How is technology used to inform us about the musculo-skeletal system?

Red

Amber

Green

- **How could a High Jump coach use the data gathered from Slow Motion Capture to assess the performance of his/her athlete?**

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5: What are the short-term effects of exercise on the cardio-respiratory system?

Red

Amber

Green

- **What would you notice occurring to your Heart Rate and Cardiac Output during exercise?**

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- **What would you notice occurring to your Breathing Rate during exercise?**

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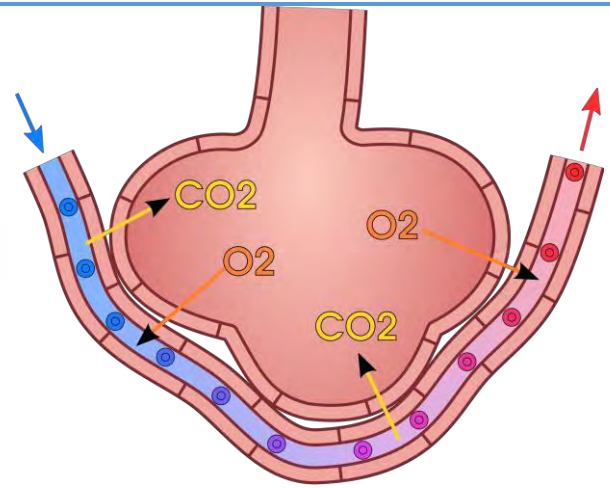
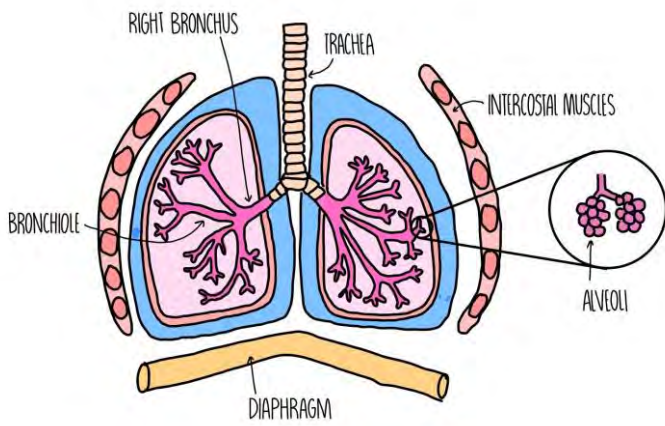
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6: What are the short-term effects of exercise on the musculo-skeletal system?

Red

Amber

Green

- During exercise, what happens to blood flow to muscles and why does this occur?
- What effect would this have on muscle temperature and pliability?

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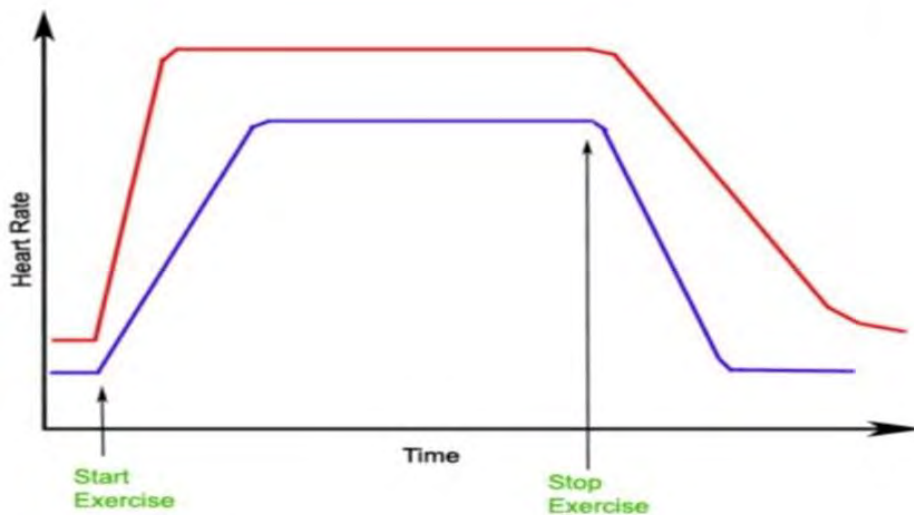
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**Think:**

- ✓ **Heart rate** – Number of times the Heart beats per minute
- ✓ **Stroke volume** – Volume of blood that leaves the Heart during each contraction
- ✓ **Cardiac output** – Volume of blood that the Heart pumps out in one minute
- ✓ **Breathing rate** – Number of breaths taken per minute
- ✓ **Gaseous exchange** – The exchange of gases in the lungs (Oxygen in – Carbon dioxide out)

### Long-term effects of exercise on the cardio-respiratory system occurs to:

- Heart Rate
  - Stroke Volume
  - Cardiac Output
  - Heart Rate recovery
  - Lung capacity
- This graph shows the **Heart Rates** of two performers running 100m. One of them is fit, while the other is unfit. Which is which? Back up your answer with **two reasons** as to why you have come to your conclusions. **(4 marks)**



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Long-term effects of exercise on the musculo-skeletal system occurs to:

- Changes in muscle size
- Changes in strength
- Changes in flexibility
- Quicker muscle recovery

*Changes in flexibility*

Regular training brings about changes in flexibility (the range of movement at a joint). Because they are being used more often, muscles, tendons and ligaments around joints become stronger. This helps improve the stability of the joints as well as their flexibility. More flexibility means an increased range of movement. Because of training, performers are able to stretch and reach further without injuring themselves. Changes in flexibility can be measured objectively by performing flexibility tests, such as a sit-and-reach test or by using a **goniometer**.

- The long-term changes to an athlete's flexibility due to training will enable them to perform at a much higher level than someone who has not been training over time. How would their performances in Badminton differ? Give two explicit examples of how flexibility benefits Badminton performance.  
(4 marks)

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**HOME LEARNING TASKS**

Task Description		Done?
<p><b>1) Complete Checkpoint 1 on The EverLearner at a minimum grade of 70%:</b>  <i>“The cardio-respiratory system and how the use of technology supports different types of sports and their intensities”</i></p>	 	
<p><b>2) Complete Checkpoint 2 on The EverLearner at a minimum grade of 70%:</b>  <i>“The musculo-skeletal system and how the use of technology supports different types of sports and their movements”</i></p>	 	
<p><b>3) Complete Checkpoint 3 on The EverLearner at a minimum grade of 70%:</b>  <i>“Effects of Exercise”</i></p>	 	



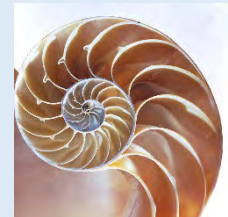
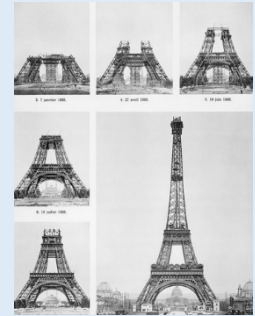
# Subject Art Year 10 Term 1 & 2

## 'Structures'

Term Focus – **Select and hone skills acquired in Year 9 through the theme 'Structures' (2D/3D)**

*In art, the term **structure** pertains to the arrangement and mutual relation of the part of the body, object or composition. **Structure** refers to the relation of parts, to the relative proportions of the component elements. It also refers to the underlying skeleton which supports the whole figure, giving form to flesh. Investigate how artists use manmade and natural structures to inspire artwork.*

*Use knowledge of the theme to select and develop personal and meaningful ideas”.*



### Prior Learning Links

In Year 9 students revisited and built upon drawing, printmaking, painting and 3D skills acquired in Year 8. They continued to repeat and further embed processes of recording, developing, refining, evaluating and realising intentions. This repetition of processes will progress through Year 10 while students embark on more sustained, independent projects in which they will hone their skills and respond to given themes, beginning with 'Structures'.

### Future Learning Links

Students will continue responding to the theme 'Structures'. The focus will shift more towards developing ideas, experimenting with media and completion of one or more final pieces.



[The Ultimate Guide on Different Art Mediums – ARTDEX](#)

### KEY VOCABULARY

#### KEY WORDS

*I will be expected to recall keywords learned in previous projects and use them in the appropriate context.*

*Shape/Form/Scale/Texture/Tone/Colour/Composition/Primary Source/Secondary Source*

#### KEY SUBJECT TERMINOLOGY

Record  
Develop  
Refine  
Realise  
Evaluate

1. Can you describe the process of development in artists work?

Red

Amber

Green

*Develop ideas through investigations, demonstrating critical understanding of sources (AO1):*

**I will learn to confidently develop...**

- and hone my observation skills using a range of media, techniques and processes.
- my knowledge and understanding of 2D/3D styles and techniques

**Record ideas, observations and insights relevant to intentions as their work progresses (AO3):**

**I will learn how to confidently record...**

- images and information appropriate to a given theme of Structures
- building on my knowledge and understanding of how artists use materials and imagery to create meaningful work

**I will learn how to confidently evaluate...**

- artists using analytical writing skills and forming opinions



Kate Malone



Barbara Hepworth



James Rosenquist



Georgia O'Keeffe



Yayoi Kusama



**2. How can the study of other artists help you find your own direction in the development of ideas?**

Red

Amber

Green

**Develop ideas through investigations, demonstrating critical understanding of sources (AO1):**

**I will learn how to confidently develop...**

- and hone my observation skills using a range of media, techniques and processes.
- my knowledge and understanding of 2D/3D styles and techniques
- my drawing and planning skills
- ideas in response to a given theme, linking to artists work.
- my higher order thinking skills



In this example, the student is clearly showing how Georgia O'Keeffe is influencing their own work. Consider how you could be inspired by Georgia O'Keeffe?

**Record ideas, observations and insights relevant to intentions as their work progresses (AO3):**

**I will learn how to confidently record...**

- images and information appropriate to a given theme of Structures
- using wet and dry media
- using drawing and photography
- building on my knowledge and understanding of how artists use materials and imagery to create meaningful work
- ideas for a work of art specialising in 2D or 3D



**3. Why are primary sources are the richest form of research?**

Red

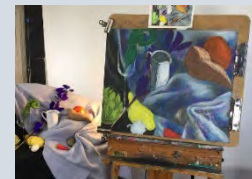
Amber

Green

**Record ideas, observations and insights relevant to intentions as their work progresses (AO3):**

**I will learn how to confidently record...**

- images and information appropriate to a given theme of Structures
- using wet and dry media
- using drawing and photography
- building on my knowledge and understanding of how artists use materials and imagery to create meaningful work
- ideas for a work of art specialising in 2D or 3D



**4. How can Secondary sources enrich the development of ideas?**

Red

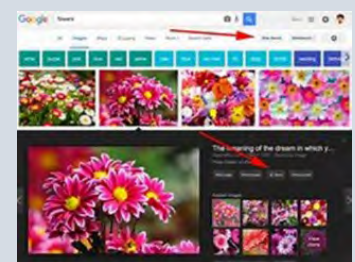
Amber

Green

**Record ideas, observations and insights relevant to intentions as their work progresses (AO3):**

**I will learn how to confidently record...**

- images and information appropriate to a given theme of Structures
- using wet and dry media
- using drawing and photography
- building on their knowledge and understanding of how artists use materials and imagery to create meaningful work
- ideas for a work of art specialising in 2D or 3D



**5. Can you list 5 different ways you could record observations of the subject matter?**

Red

Amber

Green

**Record ideas, observations and insights relevant to intentions as their work progresses (AO3):**

**I will learn how to confidently record...**

- images and information appropriate to a given theme of Structures
- using wet and dry media
- using drawing and photography
- building on their knowledge and understanding of how artists use materials and imagery to create meaningful work
- ideas for a work of art specialising in 2D or 3D



Take a photograph, Do a drawing, make a collage, write it down, print it, paint it, model it in 3D....

## 6. Why should you plan a wide range of ideas before selecting a final one?

Red

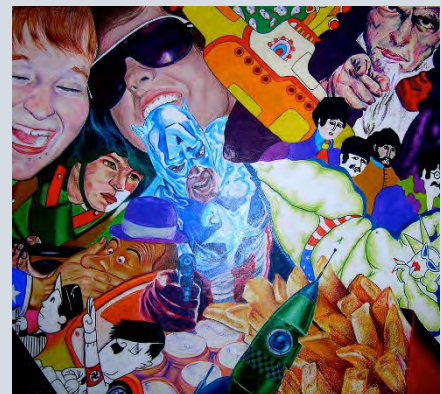
Amber

Green

**Develop ideas through investigations, demonstrating critical understanding of sources (AO1):**

**I will learn how to confidently develop...**

- and hone my observation skills using a range of media, techniques and processes.
- my knowledge and understanding of 2D/3D styles and techniques
- my drawing and planning skills
- ideas in response to a given theme, linking to artists work.
- my higher order thinking skills



This is a James Rosenquist inspire collage. Consider how you could be inspired by James Rosenquist?

## 7. Why is it important to annotate work as it progresses?

Red

Amber

Green

**Record ideas, observations and insights relevant to intentions as their work progresses (AO3):**

**I will learn how to confidently evaluate...**

- *analysing and reflecting on the development of my own work*
- *making connections between my own artists' work*
- *suggesting ways I could I improve*

## 8. How can the refining process help you to fully realise intentions?

Red

Amber

Green

**Refine work by exploring ideas, selecting and experimenting with media, materials, techniques and processes (AO2):**

**I will learn how to confidently refine...**

- by selecting and experimenting with a range of 2D/3D media and techniques
- by selecting ideas to adapt and improve e.g. adjustments to size, colour and composition.
- through developing a piece of work from one media into another



Notice how the same idea has been adjusted and made slightly different in each one. This is called **REFINING**.

**Present a personal and meaningful response that realises intentions and demonstrates understanding of visual language (AO4):**

**I will learn how to confidently realise intentions...**

- using 2D/3D techniques and processes

### **EVALUATING ARTISTS' WORK**

1. Describe the piece of art you are looking at
2. What is the name of the artist or type of art?
3. What art movement or culture does the art link to?
4. Research and list 5 or more things about the artist or culture?
5. What important things have happened in the country that the art comes from?
6. What has influenced the art E.g. other artists, people, personal experiences, society, culture, politics, gender, colour, pattern, movement, religion, travel, places, objects etc.
7. Describe the materials used to make the art
8. How has the art been produced?
9. What is being communicated through the art?
10. Which of these words best describes the mood of the picture? EMOTIONAL/POWERFUL/BUSY/SLOW/PEACEFUL/WARM/COLD/HAPPY/SAD/CALM/INTENSE/SCARY can you think of any other words?
11. What do you like or dislike about the picture? Explain your reasons...

**Think!**  
**See?**  
**Know?**  
**Think?**

### **ANNOTATING YOUR OWN WORK**


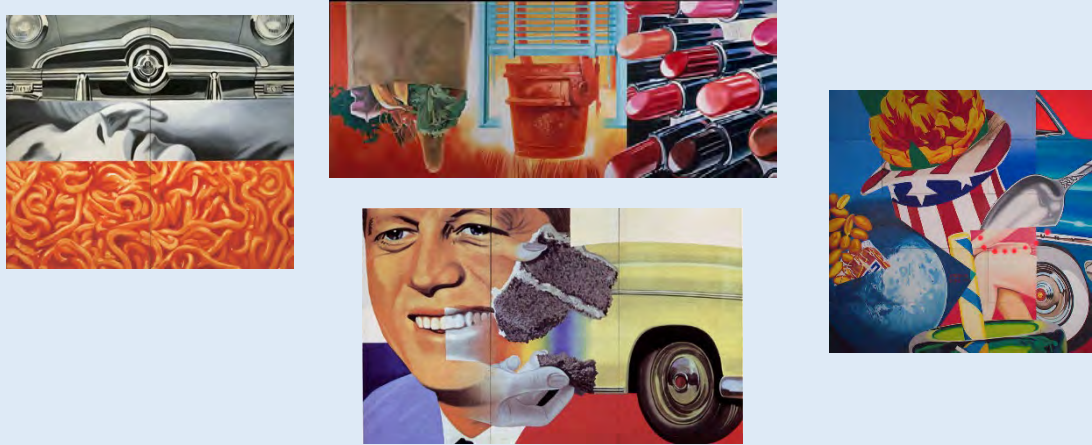
- In this artwork I was trying to...
- The artist/culture that has influenced my work is...
- The source I have used is...
- I found the source I used at...
- In this artwork I used the technique of...
- The media I have used is...
- I like/dislike this piece because...
- My idea links to the theme because...
- I can improve this piece by...
- I could develop this work further by...

**Think!**  
**What?**  
**How?**  
**Why?**

### **END OF PROJECT EVALUATION**

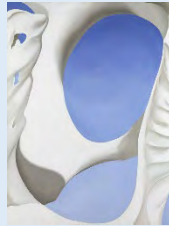
1. Describe each stage of the project from start to finish
2. What media did you use to produce your work? E.g. Paint/Pencil/Clay etc.
3. Describe how you used different techniques in your project? E.g. painting/drawing/modelling with clay etc.
4. Which artist's culture have you looked at?
5. Write down 2 or more similarities between your work and the artist's work.
6. Which piece of your work best shows the Artist's style or the influence of another culture and why?
7. Describe some of your own ideas...

8. Have you used a primary or a secondary source?
9. Have you included the secondary source in your work? Where did you find it?
10. Imagine your final piece was displayed in a public place.... Describe the effect looking at your work might have on people and society. E.g. relax them, make them feel sad, curious, happy, angry, thoughtful, surprised, confused, nostalgic etc. explain why e.g. because of your use of colour, images, content, arrangement? etc.
11. Explain any other influences on your work e.g. personalities (*including your own*), places, memories, objects, politics, events, activities, religion, fact, fiction etc.
12. Describe how your work links to the project theme?
13. Explain what you have done well...
14. Explain how you could improve...
15. What would you do differently, if you were to repeat any part of this project?

Task Description	Done?
<p><b>Homework- tasks linked to 'Structures' (2 hours per cycle)</b></p>	
<p><u>Can you describe the process of development in artists work?</u></p> <p>Complete tonal drawing of these <b>Barbara Hepworth</b> Sculptures, use light to heavy pressure and directional shading to make them appear 3D on the page:</p> 	
<p><u>Can you describe the process of development in artists work?</u></p> <p>Complete a detailed colour pencil drawing from one of these pictures by <b>James Rosenquist</b>:</p> 	

Can you describe the process of development in artists work?

Complete a detailed colour pencil drawing from one of these pictures by **Georgia O'Keeffe**:



Can you describe the process of development in artists work?

Complete a detailed colour pencil drawing from one of these pots by **Kate Malone**:



Can you describe the process of development in artists work?

Complete a detailed colour pencil drawing from one of these artworks by **Yayoi Kusama**:



Can you describe the process of development in artists work?

Choose your favourite artist from above and evaluate the work using the 'Evaluating Artists Work' questions from above

How can the study of other artists help you find your own direction in the development of ideas?

**Yayoi Kusama has been in the news recently with her 'Pumpkin' Sculpture, complete the following tasks:**

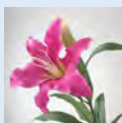
- Describe 3 ways you could design and create your own sculpture inspired by Yayoi Kusama's art
- Which Organic forms do you think have inspired these sculptures?  
.....
- Design your own sculpture inspired by organic forms and Yayoi Kusama

**If you are able to access the internet go to the link below and read about the 'Pumpkin'. Answer the following questions:**

- How tall is the Pumpkin Sculpture?  
.....
- Where is it?  
.....
- What is permanently installed at Benesse Art Site Naoshima Japan?  
.....
- What are her pumpkins always covered with?  
.....
- What does Kusama admire about pumpkins?



[Yayoi Kusama: Pumpkin - Serpentine Galleries](#)



Why are primary sources are the richest form of research?

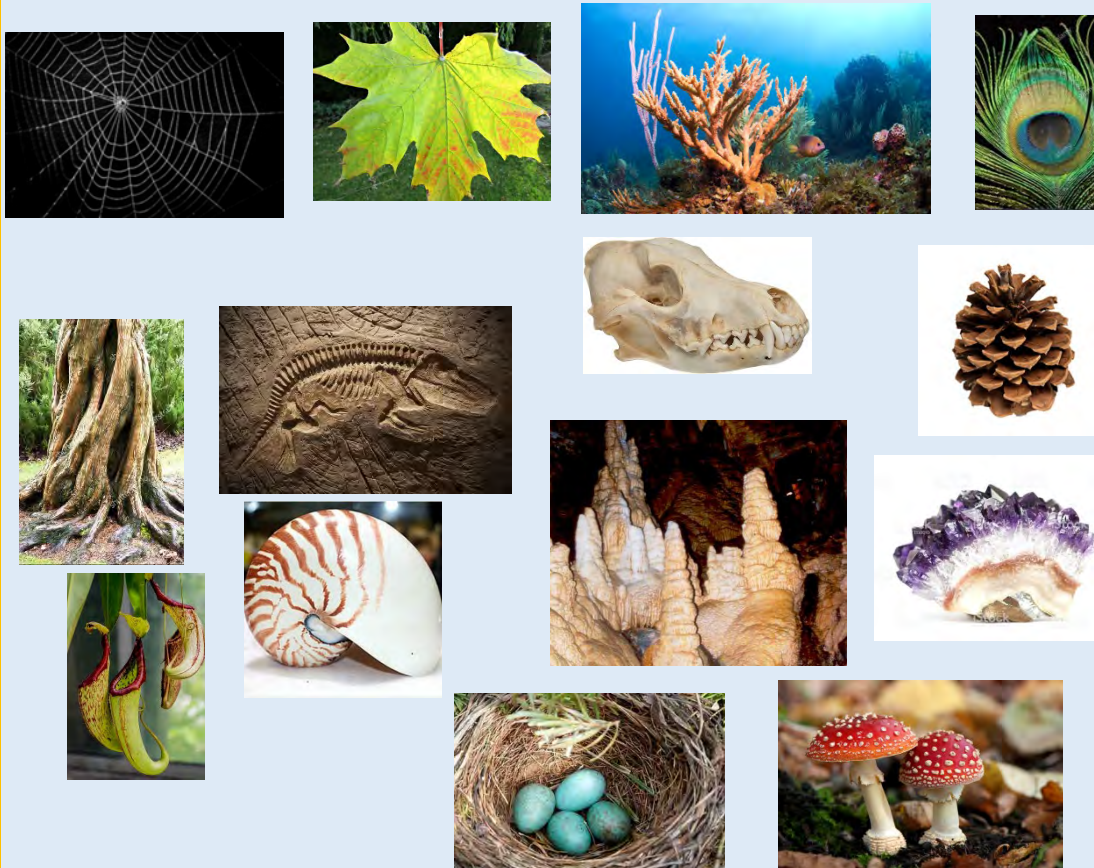
- Draw 3 things in the room, this called drawing from a PRIMARY SOURCE



- Draw the view through the window this is also called drawing from a PRIMARY SOURCE

How can Secondary sources enrich the development of ideas?

Draw examples of natural structures in 3 ways e.g. Pencil Tone, Colour Pencil, Biro, Paint etc.



How can Secondary sources enrich the development of ideas?

Draw examples of manmade structures in 3 ways e.g. Pencil Tone, Colour Pencil, Biro, Paint etc.



**Can you match the themes to the pictures?**

Street, Field, Famous Buildings, Water, Mechanical, Transport, Castles



Can you list 5 different ways you could record observations of the subject matter?

List the 5 different ways to record shown earlier in this KO and then try at least two different ways to record a natural and a manmade structure

Why should you plan a wide range of ideas before selecting a final one?

- Zoom in and enlarge one of these natural forms in the style of Georgia O'Keeffe
- Annotate your work using the 'Annotating my work' section above

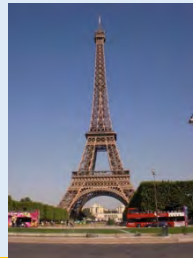


Why should you plan a wide range of ideas before selecting a final one?

- Use a piece of tracing paper to trace sections of these manmade structures so they all overlap and merge together in the style of James Rosenquist (if you don't have tracing paper try to do free hand)
- Annotate your work using the 'Annotating my work' section above
- As an extension you could make a collage of pictures you have printed or from a magazine.

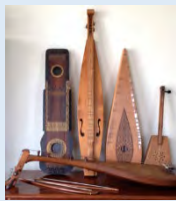


Can you guess the theme connecting these pictures?



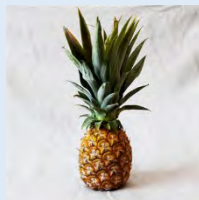
Why should you plan a wide range of ideas before selecting a final one?

- Simplify details from these musical instruments and see if you can design 3 different sculptures inspired by Barbara Hepworth
- Annotate your work using the 'Annotating my work' section above



Why is it important to annotate work as it progresses?

- Use the fruit pictures below to help you design 3 different pots inspired by Kate Malone
- Annotate your work using the 'Annotating my work' section above



How can the refining process help you to fully realise intentions?

Choose what you feel is your best idea and develop it in 3 different ways .e.g. different media, resize, change parts etc. this is called refining

How can the refining process help you to fully realise intentions?

Draw your best idea to a high standard

**Drama Year 10 Term 1**  
**Performing a Script**

**Term Focus**

You will learn how to:

- Build upon your understanding of performance skills both through theoretical and practical explorations.
- Review knowledge from last term and develop an understanding on how to apply this information to a script. Rather than focusing primarily on the acting, this unit encourages pupils to look at the bigger picture.
- Create and perform your own performances whilst collaborating with others developing your teamwork, communication and problem-solving skills.
- Evaluate your own work in addition to the work of your peers.



**Prior Learning Links**

- Drama and Theatre Roles
- Physical and Vocal Interpretations
- Approaching a Script – Stage Types
- An Introduction to Practitioners
- Genres and Styles
- Interpreting Theatre

**Future Learning Links**

- Responding to a Stimulus – this is preparation for Unit 1
- Students will continue to develop key practical skills such as performance and drama techniques.
- Apply knowledge to exam style questions.

**KEY VOCABULARY: PERFORMANCE SKILLS**

**Performance Skills are used by an Actor to convey a character.**

<b>Planned Movement</b>	Physical actions that are organised prior to the performance and then rehearsed.
<b>Positioning</b>	Arranging an actor in a place/way. Where the actor is facing.
<b>Posture</b>	How the body is held.
<b>Body Language</b>	Movements with the body, that communicate feeling.
<b>Eye Contact</b>	Where the actor is looking.
<b>Discipline</b>	The ability to maintain commitment in conveying a character on stage.
<b>Space</b>	How the environment is used.
<b>Levels</b>	How high or low an actor is positioned on stage.
<b>Vocal Skills</b>	How the voice is used to communicate emotion and character.
<b>Gestures</b>	Using your hands to further express meaning or emotion.
<b>Facial Expressions</b>	Showing mood through the movement of your face.

**KEY VOCABULARY: DRAMA TECHNIQUES**

**Drama Techniques are used in an abstract performance, to present an idea in an alternative way.**

<b>Thought Tracking</b>	A character telling the audience their thoughts and feelings about the situation on stage. All other actors remain in a still image. The Actor breaks down the fourth wall of Actors and audience.
<b>Still Image</b>	. A frozen moment in a scene.

<b>Monologue</b>	A speech spoken by one character.
<b>Choral Speaking</b>	A group of actors speaking at the same time.
<b>Slow Motion</b>	Changing the pace of movement/speech in order to emphasis that specific moment. The speed to complete the action takes longer.
<b>Flashback</b>	A scene from the past
<b>Cross Cutting</b>	Mixing up the order of scenes, so the order is no longer chronological.
<b>Narration</b>	A spoken commentary for the audience about what is happening on stage.
<b>Organic Sound</b>	Sounds created by the Actors (not recorded).
<b>Synchronisation</b>	Actors moving at the same time.
<b>Canon</b>	Performing the same action one after another.
<b>Multi-role</b>	One actor taking on more than one role in a performance.
<b>Hot Seating</b>	Questioning an Actor and the Actor responds as the character they are playing. This is a key rehearsal technique.
<b>Physical Theatre</b>	Using your body to communicate an idea.
<b>Mime</b>	Performing actions without talking and without the aid of props.
<b>Mirroring</b>	2 Actors facing one another and moving at the same time as if they were a reflection of each other.
<b>Split – Role</b>	Multiple Actors playing the same role.
<b>Flash Forward</b>	A scene from the future.
<b>Tableau</b>	The bigger picture. A larger scale still image which captures the whole scene or story.
<b>Repetition</b>	Performing an action/word/sound again
<b>Marking the Moment</b>	When a moment in a scene is emphasised. A moment in a scene can be emphasised by one of the drama techniques listed such as slow motion.

## 1. What needs to be considered when performing a script?

Red

Amber

Green

### Let's recap what we learned last year:

#### Drama and Theatre Roles:

In a performance you must consider the role of everyone in a group; performer, director, costume designer, set designer, lighting designer and sound designer.

#### Physical and Vocal Interpretations:

How are you going to include performance and vocal skills in a performance?

In order to show a character effectively, you must be able to embody the role of the character you are playing.

#### Approaching a Script – Stage Types:

What type of stage are you going to use for your performance?

- Traverse
- Thrust
- Proscenium Arch
- End on Stage
- In the round

When deciding which stage type to use for your performance, ensure you have considered the benefits and disadvantages to each type.

### An Introduction to Practitioners:

- Brecht
- Stanislavski
- Grotowski
- Rice
- Frantic Assembly

### Genres and Styles:

- Naturalism
- Abstract
- Musical Theatre
- Physical Theatre
- Melodrama
- Epic Theatre
- Tragedy
- Comedy
- Theatre in Education

### Interpreting Theatre:

Have you considered the following and how each category can support the narrative of your piece.

- Costume
- Lighting
- Set
- Sound
- Drama techniques
- Performance skills

## 2. What are the different parts of a play called?

Red

Amber

Green

**Script** – A whole play

**Extract** – Part of a script taken from a play, a short segment.

**Monologue** – Performance by one person

**Duologue** – Performance by two people

**Group/Ensemble** – Performance of three people or more

## 3. What are the different rehearsal techniques called?

Red

Amber

Green

Rehearsal Techniques are used to support Actors when performing a play. The greater understanding and knowledge an Actor has over the character they are playing, the better their performance will be.

Suitable rehearsal techniques could include:

**Status games** - the technique would help the actor understand the power and control that he has over the other characters within this extract.

**Hot seating** – the questioning of characters in role – this would help the actor understand their motivation with this extract.

**Freeze frames** – a still position demonstrating a key moment in time - this could help the actor explore their relationships with the other characters.

**Role on the wall** – allows the performer to consider information about the character they are playing.

## HOME LEARNING TASKS

### Task Description

Done?

Use 'Look, Cover, Write, Check' to learn the Key Vocabulary

Write a paragraph demonstrating your understanding of each of the elements learned last term.

- Drama and Theatre Roles
- Vocal and Physical Interpretations
- Approaching a Script – Stage Types
- An Introduction to Practitioners
- Genres and Styles
- Interpreting Theatre

Write an example of the following:

- A monologue – based on the importance of internet safety.
- A duologue – based on two siblings experiencing a troubled relationship.
- A script – write your own version of 'Matilda' in a script format.

Choose a fictional character from your favourite book or movie. Write down 6 hot seating questions along with your character's responses.

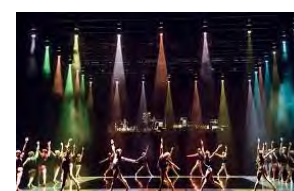
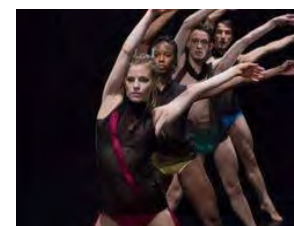
Devise a role on the wall for your character explored in the previous question.

**Dance Year 10 Term 1**  
**Dance – A Linha Curva**

**Term Focus**

You will learn how to:

- Explore practically and theoretically A Linha Curva. A Linha Curva is an anthology work from the written exam paper which requires analysis and evaluation. This is 1 out of 6 works which need to be explored.
- Perform to peers using knowledge developed of physical, expressive, mental and technical skills.
- Evaluate your own work and the work of others using correct terminology.
- Develop the link between the knowledge developed through practical exploration and how this applied to exam style questions from a theoretical standpoint.



**Prior Learning Links**

- Students will have developed a foundation of physical, expressive, mental and technical skills. Students will need to continue to develop their understanding of these skills in preparation for their practical exam in Y11. Finesse and confidence of these skills is essential.
- The skills pupils have learned previously with regards to performance and choreography will be applied to the exploration of each anthology work.

**Future Learning Links**

- There are 6 anthology works in total. Students will look apply their skills to a second work next term in order to develop a practical and theoretical understanding which they can apply to the written paper of the exam.

**KEY VOCABULARY: PHYSICAL SKILLS**

**Physical Skills enable a dancer to physically complete the action therefore giving an effective performance.**

**TOP TIP: We use BASIC SPEC FM to help us remember these skills.**

<b>Balance</b>	A steady or held position achieved by an even distribution of weight.
<b>Alignment</b>	The correct placement of body parts in relation to each other.
<b>Stamina</b>	The ability to maintain energy over a period of time.
<b>Isolation</b>	An independent movement of part of the body.
<b>Control</b>	The ability to stop and start movement, change direction and hold shape efficiently.
<b>Strength</b>	Muscular Power.
<b>Posture</b>	The way the body is held.
<b>Extension</b>	The lengthening of muscles or limbs.
<b>Coordination</b>	The ability to move 2 or more body parts at the same time efficiently.
<b>Flexibility</b>	The range of movement at a joint.



<b>Mobility</b>	The ability to move fluently from movement to movement.
-----------------	---

### KEY VOCABULARY: EXPRESSIVE SKILLS

Expressive Skills are aspects that contribute to performance artistry and that engage the audience.

**TOP TIP: We use FAT FROGS POUNCE MASSIVELY SIDWAYS SOUTH to help us remember these skills.  
FFPMSS**

<b>Facial Expressions</b>	The use of the face to show mood, character or feeling.
<b>Focus</b>	The use of the eyes to enhance performance or interpretative qualities.
<b>Projection</b>	The energy the dancer uses to connect with and draw the audience in.
<b>Musicality</b>	The ability to make the unique qualities of the accompaniment evident in performance.
<b>Sensitivity to Other Dancers</b>	Awareness of and connection to other dancers. EG: Timing.
<b>Spatial Awareness</b>	Consciousness of the surrounding space and its effective use .

### KEY VOCABULARY: MENTAL SKILLS

Mental Skills are aspects of a performance/rehearsal process that allow a dancer to be able to get to the point where they are able to perform.

#### TOP TIPS

**PERFORMANCE: We use MCFLURRIES CAN CAUSE COUGHING to remember the skills for performance.  
MMCCC**

**PROCESS: We use MASSIVE SNAILS PLAY RANDOMLY ROUND CAVES to recall mental skills for process.  
MSPRRC**

#### Performance

<b>Movement Memory</b>	The automatic recall of learned material without conscious thought.
<b>Commitment</b>	Dedication to a performance.
<b>Concentration</b>	The power to focus all of one's attention
<b>Confidence</b>	The feeling or belief that one can have in one's performance or work

#### Process

<b>Mental Rehearsal</b>	Thinking through or visualising the dance.
<b>Systematic Repetition</b>	Repeating something in an ordered way.
<b>Plan a Rehearsal</b>	Organisation of when to go over material
<b>Response to Feedback</b>	Implementing changes and making improvements based on feedback given to you.
<b>Rehearsal Discipline</b>	Attributes and skills required for refining a performance. Use of an effective rehearsal and time.
<b>Capacity to Improve</b>	Being open to make changes and take on feedback to improve a performance.

## KEY VOCABULARY: TECHNICAL SKILLS

Technical Skills refer to the accuracy of content performed in a stylistic way.

**TOP TIP: We use DARRTS to remember technical skills.**

<b>Dynamic Content</b>	How a movement is performed. Speed and Flow.
<b>Action Content</b>	What the movement itself is - The 5 basic body actions.
<b>Relationship Content</b>	How movement can be performed when the dancers interact - Contact, mirroring, lead and follow, complementary, contrast, action and reaction, formations, counterpoint and accumulation.
<b>Rhythmic Content</b>	Repeated patterns or sounds.
<b>Timing Content</b>	The use of counts when matching movements to sounds and/or other dancers.
<b>Spatial Content</b>	Where the movement is performed - Levels, size, pathway, direction and design.

### What are the key facts linking to A Linha Curva?

Red

Amber

Green

#### Key Facts:

**Choreographer:** Itzik Galili

**Performed by:** Rambert Dance Company

**Performance:** Originally performed by Balé da Cidade de São Paulo (Brasil), 2005. Rambert premiere Tuesday 12 May 2009 at Sadler's Wells, London.

**Dancers:** 28 – 15 male, 13 female

#### **Dance Styles:**

- **Rhythmic** pulses
- Samba - **Samba** is a fun, upbeat, lively dance that progresses counter-clockwise around the floor. It is characterized by its syncopated timing, bounce, rolling hip action and pelvic tilt and a great deal of rhythm is expressed throughout the torso.
- Capoeira - **Capoeira** is an Afro-Brazilian art that combines elements of dance, acrobats and music.
- Contemporary dance - **Contemporary** dance is a style of expressive dance that combines elements of several dance genres including modern, jazz, lyrical and classical ballet. Contemporary dancers strive to connect the mind and the body through fluid dance movements.

**Structure:** Narrative with large ensemble sections

### 1. What was the choreographic approach for the work?

Red

Amber

Green

#### Choreographic Approach:

- Task setting – creating a phrase restricted by squares
- Collaboration with dancers
- improvisation

When originally creating A Linha Curva, Itzik Galili worked collaboratively with the dancers and nearly all of the motifs were composed from improvisation. One of the tasks set by Galili was quite simple, he asked the dancers to choreograph a very short solo (2 – 3 counts of eight) of some of their favourite moves which stayed within the boundaries of their allocated square within a chequer-board grid (see lighting) that takes up the floor space of the stage. Galili believes that you can see essences of the

dancers' personalities in these sequences. Each of these sequences was named after the dancer who made it and the dancers then learnt each other's sequences to form the basis of this large ensemble work.

## 2. What are the stimuli and choreographic intentions of the work?

Red

Amber

Green

### Stimuli / Choreographic Intention:

The difference between a stimulus and a choreographic intention is, a stimulus is the starting point or inspiration for the dance whereas the choreographic intention is what the dance is actually about.

Example:

Stimulus – A computer – This is the inspiration.

Intention – Cyber Bullying – This is what the dance is about.

Computer > On the Internet > Social Media > Cyber Bullying

### Stimuli:

- Brazilian Culture
- Celebration of Brazilian Life
- The title 'The Curved Line'

### Choreographic Intent:

- Having fun
- Men competing and show off in front of the women
- Carnival/ samba parades
- 

The intention behind the choreography is simply to have fun. Large ensemble sections of vibrant Brazilian inspired movement are performed in regimental straight lines, creating a sense of samba parade. There are also several narrative sections that through the choreography present observations of how Brazilian men communicate with women, for example men in tribes hunting the girls as well as showing off and competing with each other.

## 3. How do the costumes in A Linha Curva contribute to the audience's understanding of the work?

Red

Amber

Green

### Costume:

- Designed by Itzik Galili

Colour:

- Bright – pink, yellow, blue, orange, red, green – coloured shorts and coloured vest
- Black – vest
- Carnival inspired – bright colours are often associated with having fun and celebration

Garment/Material:

- Lycra shorts
- Sleeveless mesh vest
- Zip on garment – for women the zip is at the back whereas for men the zip is at the front

Accessories:

- Men wear metallic discs around their neck at the start which reflect the light

Footwear:

- Bare feet

Style/Length:

- Minimal clothing - the lack of clothing represents hot climate and allows dancers to move freely

### **Contribution:**

- Highlight location
- Suggest gender
- Create interest
- Creates mood
- Compliments lighting
- Supports intention of having fun
- Highlights dance style
- Allows movement to be seen clearly

#### **4. How does the aural setting in A Linha Curva contribute to the audience's understanding of the work?**

Red

Amber

Green

### **Aural Setting:**

Aural setting is also known as music or accompaniment.

- Performed by Percossa

Type of Accompaniment:

- Body Percussion
- Orchestral
- Spoken word – vocal chants

Instruments:

- Drums
- Body Percussion
- Berimbau: Brazilian instrument played in the slow section.

Speed/Dynamics:

- Samba Rhythms
- Fast, lively, fun and rhythmic
- Contrast is shown through slow section

### **Contribution:**

- Creates mood and atmosphere
- Compliments movement content
- Adds interest
- Highlights choreographic intention
- Creates contrast
- Aids movement

#### **5. How does the physical setting in A Linha Curva contribute to the audience's understanding of the work?**

Red

Amber

Green

### **Physical Setting:**

Props:

- skateboards are used to propel 5 dancers across the stage – connection to carnival floats

Performance Environment:

- End Stage

Set Design:

- Black box set
- Raised platform upstage – 4 live musicians - Equality of musicians and dancers on stage represents the equality of the two art forms at a carnival
- Large space allows for group unison sections and large formations

**Lighting:**

- See below – also a separate entity

**Contribution:**

- Allows movement to be seen clearly
- Creates atmosphere
- Does not distract audience's attention
- Highlights intention
- Highlights gender

**6. How does the lighting in A Linha Curva contribute to the audience's understanding of the work?**

Red

Amber

Green

**Lighting:**

**Type of Lighting:**

- Spotlights
- Wash

**Colour:**

- Grid 49 coloured squares – red, yellow, green, blue, orange

**Pattern:**

- Linear patterns: lines and squares

**Intensity:**

- Bright

**Contribution:**

- Restricts dancers' space
- Highlights dancers
- Creates contrast in showing of section: white wash
- Creates structure - timing and cues for the lighting is pre-programmed and so in a way dictates the speed and pace of the dancing and music
- Adds to mood

**7. How does the movement content and use of dancers in A Linha Curva contribute to the audience's understanding of the work?**

Red

Amber

Green

**Use of Dancers:**

- Mixed gender – supports theme of men competing for women
- Gender specific costumes
- Content at times gender neutral however other times specific to gender role

**Movement Content:**

Action

Dynamics

Space

Relationships

Choreographic Devices

**Canon Duets:**

- Run, arch, throw, drop, extend, rise & fall, lunge, kick, plie. Capoeira influences.
- Fluid, smooth, rapid, suspend
- Diagonal: USL > DSR
- Contact
- Canon

### Showing off section:

- Jump, thrust, contract, fall, lie, roll, pose
- Strong, powerful, sharp, staccato, rigid, sudden,
- Travelling on the diagonal US left to DS right.
- Contact. Counterpoint.
- Unison, canon. Repetition

### Samba:

- Robson Motif
- Fast & punchy vs slow and fluid
- Robson travels forwards from US to DS.
- Linear formations. Counterpoint. Accumulation.
- Unison. Climax

### Contribution:

- Suggests gender
- Highlights dancers
- Creates contrast
- Adds interest
- Compliments music
- Creates structure
- Shows relationships amongst dancers
- Directs audience's attention
- Adds to mood
- Suggests theme

### HOME LEARNING TASKS

Task Description	Done?
Use 'Look, Cover, Write, Check' to learn the Key Vocabulary	
How does the costume support the audience's understanding of A Linha Curva? (6 marks)	
How does the aural setting support the audience's understanding of A Linha Curva? (6 marks)	
How does the physical setting support the audience's understanding of A Linha Curva? (6 marks)	
How does the movement content support the audience's understanding of A Linha Curva? (6 marks)	
How does the lighting support the audience's understanding of A Linha Curva? (6 marks)	
Discuss how the staging/set and accompaniment in the work contribute to the mood of the piece? (12 marks)	
Discuss how the costume and lighting in the work contribute to the mood of the piece? (12 marks)	
Discuss how the choreographic approach and movement content in the work contribute to the audience's understanding of the piece? (12 marks)	

# Media Year 10 Term 1 – Introduction to Component 1A



Term Focus –

## Prior Learning Links

- Theory lessons completed terms 1-6 in Year 9

## Future Learning Links

- Year 10 term 2+3

## KEY VOCABULARY

### KEY WORDS/ SUBJECT TERMINOLOGY

**Convention** – Something we would expect to see, for example a convention of an action film would be explosions. A product convention would be something we expect to see in a certain product, e.g. a film poster would usually have the title of the film

**Publishing**- Media products that are physical and can be printed, e.g. posters, magazines, leaflets etc

**Demographic**- A way to categorise audience based of factors like age, gender etc

**Audience**- The people who are the intended ‘consumers’ of media

**Producer**- The person/s responsible for creating and distributing media products

**Purpose**- The reason a media product has been created, usually to **persuade, inform or entertain (PIE)**

**Genre**- The category a media product belongs to, based on the conventions it has

**Reception Theory**- A media theory that seeks to understand how and why audiences react differently to media products (more info in qu 8)

**Uses and Gratification Theory**- A theory that tries to understand why audiences choose certain media products (more info in qu 9)

**Contemporary or Historical**- If a product is made pre 2000 it is historical if not, contemporary

**Primary Research**- Gathering your own information and statistics

**Secondary Research**- using the internet etc to find out information and facts

## 1. What is the Media Coursework?

Red

Amber

Green

The Media coursework is split into two components (parts).

Component 1 is the theory component and Component 2 is the practical component. Each is worth 30% of your final grade:

Component 1- 30%

Component 2- 30%

Component 3 (Exam) – 40%

For each component you will get a ‘Brief’ provided by the exam board. This will contain a theme that you need to stick to when completing the tasks needed.

Component 1 is split into 2 sections Learning Aim A and Learning Aim B. We are going to start with Learning Aim A.

## 2. What is Learning Component 1 Learning Aim A?

Red

Amber

Green

In Learning Aim A you are expected to analyse three different Media products.

You must select one media product from each media platform.

E.g. you must select one Publishing product, one interactive product and one broadcast product.

Once you have selected 3 products you need to analyse the following:

- Forms
- Purpose
- Audience
- **The relationship between these three things.**

### 3. How can I analyse the 'form' of a media product?

Red Amber Green

This bit is actually quite straight forward. You just need to describe the product and how it has been designed.

For example, you might have selected a film poster as your publishing product.

You just need to state:

- what is on the poster
- where it is on the poster + why
- how big it is +why
- colours used + why
- fonts used +why
- anything else you see

Clearly for interactive and broadcast products you would be talking about different elements but the process is the same



### 4. How do I discuss purpose?

Red Amber Green

When we discuss purpose we are likely going to be talking about PIE.

Persuade  
Inform  
Entertain

You need to work out what the primary job (purpose) of your product is.

Then you need to say how it goes about trying to meet this purpose.

In the case of a film poster, it has the purpose of persuading someone to go and watch the film. You need to analyse how it does this.

You can (and should) combine this part with the analysis of the form of the product otherwise you will repeat yourself!



### 5. How can I discuss who the primary and secondary target audience are?

Red Amber Green

Before you analyse your products you need to also establish to yourself who the product is aimed at.

Firstly, establish the 'primary' target audience. This is the main group of people who this product is aimed at.

You need to break this down into a demographic profile. For this you are trying to establish the following things about the target audience:

- Age
- Gender
- Location
- Social class (ABC1/C2DE) →
- Religion
- Education
- Ethnicity

Social Class in the United States

Group	%	Characteristics
Upper Class	1%	<ul style="list-style-type: none"><li>• Heirs, celebrities, top corporate executives</li><li>• \$500,000+ income</li><li>• Elite education is common</li></ul>
Upper Middle Class	15%	<ul style="list-style-type: none"><li>• Managers, professionals</li><li>• \$100,000+ income</li><li>• Highly educated; college and graduate degrees likely</li></ul>
Lower Middle Class	32%	<ul style="list-style-type: none"><li>• Skilled contractors, craftspeople, artisans, semi-professionals; autonomy in work environment common</li><li>• \$35,000-\$75,000 income</li><li>• Some college, training, secondary education likely</li></ul>
Working Class	32%	<ul style="list-style-type: none"><li>• Clerical, blue- and pink-collar workers; job security is often a problem</li><li>• \$16,000-\$30,000 income</li><li>• High school education</li></ul>
Lower Class	20%	<ul style="list-style-type: none"><li>• Poorly-paid positions and/or reliance on government assistance</li><li>• Some high school education</li></ul>

Source: Thompson, W. & Hickey, J. (2005). *Society in Focus*. Boston, MA: Pearson, Allyn & Bacon

If you are ever not sure then it is often best to look at the main character/s. These are often a reflection of the main target audience.



Once you have worked out the primary audience you can think about the **secondary audience**. These are people who may well be interested in the product but who are not part of the primary audience. You would need to be able to justify why these people might be interested in the product, even if it is not aimed at them.

#### 6. What do I do once I know who my target audience is?

Red

Amber

Green

It is not just enough to know who the target audience is, you must make sure that you comment and analyse how the product appeals to the people within that demographic. You should look for things like:

- Themes that appeal to them
- Characters that are like them
- Colours that appeal to them
- Fonts that are likely to appeal to them
- Content that would appeal to them
- Anything else you can find that might appeal to that target audience

#### 7. How do I know if my product is a contemporary or historical product?

Red

Amber

Green

Really easy one this...

If it was made before 2000 then it is considered historical.

If it was made in 2000 or after then it is contemporary.

Once thing to bear in mind is that a website might have originally been created before 2000 but its content is continually updated so the content now would be contemporary.



#### 8. How might an audience respond to a media product?

Red

Amber

Green



Remember, just because the audience is from the same demographic, it does not mean all will love the media product and respond in the same way.

Stuart Hall's Reception Theory explains how audiences react to different media products.

There are three 'readings' we need to remember:

Firstly, the **Dominant Reading**. This is where the audience responds in the way that the media producer intended. For example, in the advert to the right the target audience would want to buy the aftershave.

The **Negotiated Reading** is second. This is where the audience understand the messaging and values of the product but might not agree with all of it but still may agree with some. In the advert for example they might not be persuaded with the muscular man as they might find this overly sexualising but they still might be tempted to buy the product for other reasons.



The **Oppositional Reading** is third. This is where the audience rejects the messaging of the product. For example they would definitely not buy the aftershave as they do not find the image or the lifestyle the poster is offering appealing.

For each of the three products you analyse you need to ensure that you have discussed how and why an audience might react in different ways to the product.

#### 9. Why might an audience choose a media product?

Red

Amber

Green

When we are thinking about why an audience might choose a particular media product, we need to consider Uses and Gratification Theory.

In this theory an audience chooses a media product to fulfil one of four needs.

- **Companionship** – i.e the need for a connection. This could be being interested in a character and wanting to find out what happens to them or talking about the latest TV series with your friends/family.
- **Surveillance/Information**- This is the need to want to know what is going on in the world. This could be the news or just what your friends are up to via social media
- **Personal Identity** – This is the way we use the media to shape who we are. This could be watching politics to shape our views there, or watching music videos to shape our fashion choices. It could be playing brave heroic characters on the computer or looking up to a celebrity we are reading about in a magazine.
- **Entertainment/Diversion**- We all need a distraction, life can be difficult and dull at times so watching a film, reading a magazine or scrolling through the internet can help us be entertained.

Why might an audience have chosen the product you have selected?

**10. What research would I need to do once I have got my brief?**

Red Amber Green

You would need to find out (by doing secondary research) and make notes on the following things for each product you select:

- The name of the product
- When it was made
- Who made it
- What type/form of product it is
- What platform it is from
- How it links to the theme of the brief

Each time you use the internet you must keep a log of where you find information as you will add the website to the bibliography.

You will also need to complete some basic primary research that links to the brief. This will allow you to put in some facts and information that you have gathered yourself. For the practice brief you will be provided with this information.

**11. How can I analyse my primary research?**

Red Amber Green

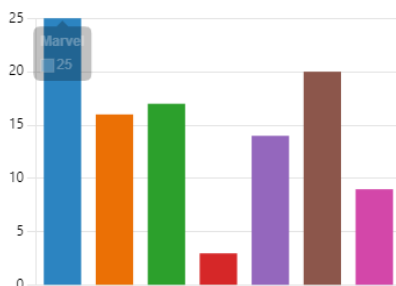
Once you have looked over the data gathered in a primary research questionnaire you need to be able to interpret that data in relation to the media brief.

Look at the example below:

5. Please indicate if you have consumed any media linked to the following franchises: (0 point)

[More Details](#)

Marvel	25
DC	16
Star Wars	17
Star Trek	3
Transformers	14
Jurassic Park	20
None of the above	9



From this we can tell that Marvel is the most popular film franchise. Therefore it would make sense to choose products related to Marvel as we know that it is a popular franchise linked to this theme (technology in this case). It would not make much sense to choose Star Trek as we can see it is less popular.

You only need to reference the primary research at the beginning of the analysis but if you have found out anything that backs up a point you are making then you should mention that!

Red Amber Green

**HOME LEARNING TASKS**

Task Description	Done?
Find The Media Insider on YouTube and watch his video on Reception Theory	
Find The Media Insider on YouTube and watch his video on Uses and Gratification Theory	

Research a media franchise and see how many different products you can find related to it	
Work out who you think the target audience is and create a demographic profile on a TV show you have watched	
Read the sample answers to Learning Aim A on OneNote	

# Business Year 10 Term 1

Term Focus – Market Research aims, Methods, Sampling Methods and Data Analysis



## Prior Learning Links

- Year 9 Term 1 – 6 Topics

## Future Learning Links

- RO68 Business Proposal
- RO69 Pitching your Business Proposal
- RO67 Exam

## KEY VOCABULARY

KEY WORDS	KEY SUBJECT TERMINOLOGY
Marketing aims	Marketing aims are SMART targets that help businesses achieve their broader goals.
SMART	SPECIFIC MEASURABLE ACHIEVABLE REALISTIC TIMELY
Market Research	Market research is the process of gathering data about people or companies and analysing it to figure out what they're looking for.
Qualitative	Gather and analyse non-numerical data in order to gain an understanding of individuals' social reality, including understanding their attitudes, beliefs, and motivation.
Quantitative	The process of collecting and analysing numerical data to describe, predict, or control variables of interest.
Primary Research	(Also known as field research) is new research that a business undertakes itself.
Secondary Research	Secondary market research (also known as desk research) involves gathering existing data that has already been produced. This can be collected from inside (internal) or outside (external) of a business.
Sampling Methods	Sampling methods refer to the techniques used to select a group of individuals from a larger population for the purpose of conducting market research. Examples of sampling methods include: cluster, convenience, random, quota.

### 1. What are marketing aims? Can you give examples of marketing aims? Can you explain why marketing aims are so important?

Red

Amber

Green

Think carefully about what you need to find out (read the brief and all tasks) and explain in detail what you want to achieve (your aims) with your market research investigation. It is too simple to say "I want to find out who likes trainers" – this is too generic and too brief.

Your aims should be broken down into very specific and measurable targets for example:

**"My first aim is to find out who buys trainers the most" I have set this aim because it will help me understand the biggest market for my trainer design. Whether its adults, children, a certain gender, a certain occupation, or lifestyle.**

**"My second aim is to identify the most popular design elements that should be included in my trainers" I have set this aim because it will help me design trainers that are more attractive to my target customers.**

Your aims should consider not just the design of your product, but also the most likely type of customer, the price they will be willing to pay, how often they may buy your product, and what similar products are already on sale that will compete with your design.

**2. Can you identify and describe primary market research methods? Can you justify your chosen market research methods?**

Red

Amber

Green

Select two primary market research tools:

Primary market research tools:
Survey OR questionnaire on potential customers
Observation of potential customers / competitors
Focus group of potential customers / competitors
Interviews with potential customers / competitors

Reasons for choice, consider:

Cost – High or low

Time – Fast or slow to complete

Difficulty level to gather information- Timeframe needed to do this

**3. Can you identify and describe secondary market research methods? Can you justify your chosen market research methods?**

Red

Amber

Green

Select one secondary market research tool:

Secondary market research tools
Data / spreadsheet collection from competitor websites
Data / spreadsheet collection from government publications / Mintel
Data / spreadsheet collection from trade magazines / books / newspapers

Reasons for choice, consider:

Cost – High or low

Time – Fast or slow to complete

Difficulty level to gather information- Timeframe needed to do this

**4. Can you describe different methods of sampling methods? Can you explain the difference between quota and cluster sampling? Are you able to justify your choice of sampling methods?**

Red

Amber

Green

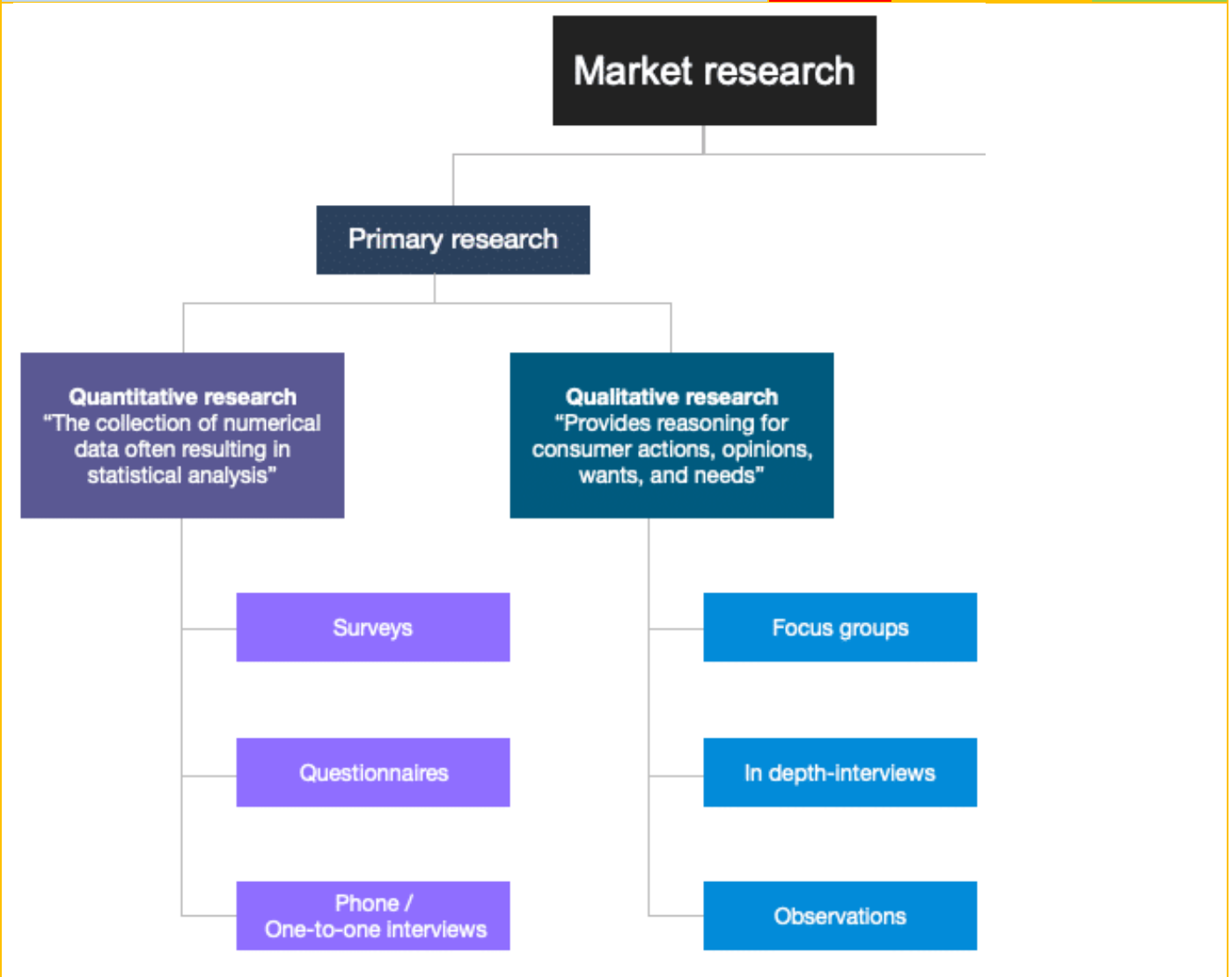
For each research method (ABOVE) you need to select how you are going to collect the results (The sampling method). You need to consider which sampling method is likely to give you the most accurate results for your research.

Sampling method	Description
Cluster	This is when you divide the population into groups (known as clusters) and then randomly select a number of people in each group (cluster) to ask questions to. You can then compare the results between groups E.g., you could break the population into clusters dependent on age (school year group), gender. And then randomly ask a specific number of people your research questions in each section.
Convenience	This is when you choose your target population / research based on them being located near you, or it being easily accessible via the internet to collect the data.
Random	This is when you have no set pre-determined rules, and everyone has an equal chance of being selected for your research.
Quota	This is when you specially target certain groups of people (not at random) for your research task. For example, you specifically target pupils aged 11 to 12, and so you use convenience sampling to ask year 7 pupils in school.
Cluster and quota sampling sound very similar. However, with cluster, you are breaking the population down into groups and randomly selecting people in each group. With quota you are targeting a more specific group to start with and using convenience sampling to gather research for that specific group.	

Your choice of sampling method should consider which will give you the most accurate results rather than what is the easiest to collect. Your reasons should explain why it is the most appropriate method of sampling for each of your chosen research methods.

5. Can you carry out secondary market research that will help you to achieve your marketing aims? Are you able to present your secondary research in a table?		Red	Amber	Green
	Retailer 1 – ASOS			Retailer 2 – e.g. JD Sports Retailer 3 – e.g. Amazon
Trainers 1:	Nike Air Force One			
Website link	<a href="https://www.asos.com/nike/nike-air-force-1-high-trainers-in-triple-white/prd/202275349?affid=15402&amp;_b16242eb68f71062044f21669183a567&amp;channelref=product+search&amp;ppcadref=291867623 1275434110174398 pla-4583314234077071&amp;gclid=b16242eb68f71062044f21669183a567&amp;gclsrc=3p.ds&amp;msslkid=b16242eb68f71062044f21669183a567">https://www.asos.com/nike/nike-air-force-1-high-trainers-in-triple-white/prd/202275349?affid=15402&amp;_b16242eb68f71062044f21669183a567&amp;channelref=product+search&amp;ppcadref=291867623 1275434110174398 pla-4583314234077071&amp;gclid=b16242eb68f71062044f21669183a567&amp;gclsrc=3p.ds&amp;msslkid=b16242eb68f71062044f21669183a567</a>			
Trainer sole	Rubber sole			
Outer material	Leather			
Lining material	Padded			
Accessories	White laces Stitched logo			
Price:	£110- £120 (dependent on colour)			

6. 5. Can you carry out primary market research that will help you to achieve your marketing aims?		Red	Amber	Green
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**7. Are you able to create bar charts and pie charts using the data? Are you able to create bar charts and pie charts using the data?**

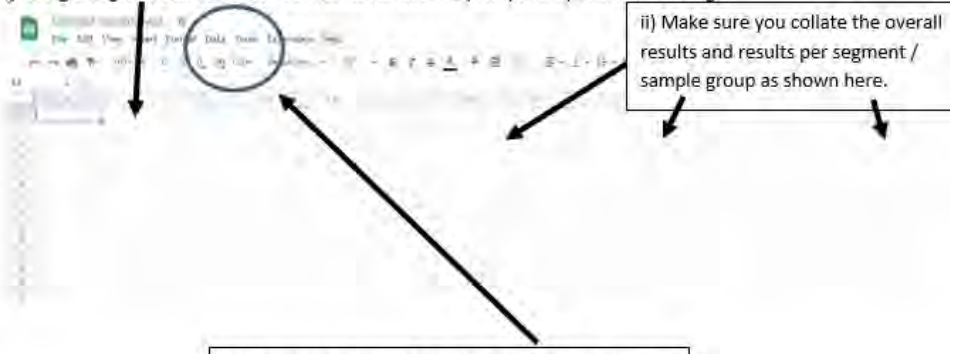
**Red**

**Amber**

**Green**

**(F) Collate and present your primary market research findings**

i) Using Google sheets to collate the results of each of your primary research findings.



iii) Then create a visual graph of you results by highlighting your results in excel, click insert, and choose a graph layout of your choice (pie chart, bar chart, line graph, scatter graph).

iv) Do not forget to change the graph heading to what the graph actually shows.  
You may not be able to create graphs of your qualitative results.

Eg My aim number 4 was to be able to find out what price customers would pay for my trainers. My survey shows that most people will be happy paying a price between £41 to £60 with the most popular choice being between £41 to £60. In terms of my clusters, year 10 and 11 students were more willing to pay between £61 - £80 while year 7 – 8 students preferred £41 - £60.

**8. Are you able to analyse the charts?**

**Red**

**Amber**

**Green**

Using your graphs of your primary research results explain what you found out and which aims it helped you achieve. You also need to explain your results of your qualitative research and what aims from task A it helped you achieve.

**HOME LEARNING TASKS**

Task Description	Done?
What is the purpose of market research?	
For each purpose of market research evaluate how market research will help to achieve these.	
Research the 7 primary market research methods and make notes on what it is. Highlight the benefits and constraints of each.	
Research the 5 secondary market research methods and make notes on what it is. Highlight the benefits and constraints of each.	
How do businesses select appropriate market research?	

# French Year 10 Term 1 – Future plans

Term Focus – This term looks at talking about future plans and the importance of languages. You will be able to:

- Talk about what you will do this summer and your passions
- Describe what kind of person you are
- Talk about what jobs you would like in the future
- Talk about your future ambitions



## Prior Learning Links

- Using time phrases
- Using the future tense
- Using opinion phrases
- Describing people

## Future Learning Links

- Using the future tense
- Using the conditional tense
- Giving complex opinions
- Using infinitive phrases

## 1. What would you like to do this summer?

Red Amber Green

Qu'est-ce que tu aimerais faire cet été? (What would you like to do this summer?)

Cet été (this summer)	j'aimerais (i would like)	travailler dans (to work in)	un restaurant (a restaurant)	un café (a café)
			un supermarché (a supermarket)	une boulangerie (a bakery)
Ce serait (It would be)	je voudrais (i would like)	faire du babysitting (to do babysitting)	aider dans un centre sportif (help in a sports centre)	
		être animateur de vacances (to be a holiday camp leader)	promener les chiens (walk dogs)	
Ce ne serait pas (It wouldn't be)		dur (hard)	génial (great)	
		ennuyeux (boring)	intéressant (interesting)	

## 2. What are your passions?

Red Amber Green

Quelles sont tes passions? (What are your passions?)

Ma passion, c'est (My passion is)	la mode (fashion)	aider les autres (helping others)
Je suis passionné par (I am passionate about)	les sciences (science)	voyager (travelling)
Ce qui m'intéresse le plus, c'est (What interests me the most is)	le sport (sport)	les animaux (animals)



3. What sort of person are you?

Red

Amber

Green

Quelle sorte de personne es-tu? (What sort of person are you?)

<b>Je dirais que</b> (I think that)	<b>créatif</b> (creative)	<b>responsable</b> (responsible)	<b>indépendant</b> (independent)
<b>Je pense que</b> (I think that)	<b>fidèle</b> (loyal)	<b>travailleur</b> (hardworking)	<b>actif</b> (active)
<b>Mes amis disent que</b> (My friends say that)	<b>organisé</b> (organised)	<b>patient</b> (patient)	<b>intelligent</b> (intelligent)
<b>Je peux être</b> (I can be)			
<b>En plus</b> (In addition)	<b>je sais bien me concentrer</b> (I know how to concentrate well)	<b>j'ai beaucoup de patience</b> (I have lots of patience)	
	<b>j'ai une attitude positive</b> (I have a positive attitude)	<b>je m'entends bien avec toutes sortes de personnes</b> (I get on well with all kinds of people)	

4. What do you find important in a job?

Red

Amber

Green

Qu'est-ce que tu trouves important dans un emploi? (What do you find important in a job?)

<b>Dans le futur,</b> (In the future,)	<b>je voudrais être</b> (I would like to be)	<b>chanteur</b> (a singer)	<b>joueur de foot</b> (a football player)
<b>À l'avenir,</b> (In the future,)		<b>chef</b> (a chef)	<b>médecin</b> (a waiter)
		<b>directeur / directrice</b> (a boss)	<b>policier</b> (a police officer)
<b>Avoir des responsabilités,</b> (Having responsibilities,)	<b>Un bon salaire,</b> (A good salary,)	<b>c'est important pour moi.</b> (is important for me)	
<b>Faire quelque chose d'intéressant,</b> (Doing something interesting,)	<b>Un métier actif,</b> (An active job,)	<b>c'est l'essentiel.</b> (is the essential.)	

5. What do you want to do in the future?

Red

Amber

Green

Qu'est-ce que tu veux faire à l'avenir? (What do you want to do in the future?)

<b>Avant de</b> (Before)	<b>avoir des enfants,</b> (having children,)	<b>j'aimerais</b> (I would like)	<b>aller à l'université</b> (go to university)	<b>chercher un emploi</b> (to look for a job)
	<b>me marier,</b> (getting married,)	<b>j'espère</b> (I hope)	<b>suivre une formation</b> <b>professionnelle</b> (to do professional	<b>visiter d'autres pays</b> (to visit other countries)
	<b>trouver un bon travail</b> (Before)	<b>j'ai envie de</b> (I want)	training)	<b>gagner beaucoup de</b> <b>l'argent</b>

<b>Après avoir</b> (After having)	<b>réussi mes examens,</b> (passed my exams,)	<b>j'ai l'intention de</b> (I intend)	<b>trouver un emploi dans</b> (to earn lots of money)
	<b>fini mes études,</b> (finished my studies,)	<b>mon but est de</b> (my goal is)	<b>le domaine de...</b> (to find a job in the field of...)
	<b>voyagé à l'étranger,</b> (travelled abroad,)		<b>avoir ma propre entreprise</b> (to have my own business)

#### 6. What are the advantages and disadvantages of this job?

Red

Amber

Green

**Quels sont les avantages et les inconvénients de ce travail?** (What are the advantages and disadvantages of this job?)

<b>Je dirais que</b> (I think that)	<b>un avantage, c'est que</b> (one advantage, is that)	<b>Le métier est bien payé</b> (the job is well paid)	<b>on peut devenir riche</b> (you can become rich)
		<b>Le travail est varié</b> (the job is varied)	<b>on peut prendre ses propres décisions</b> (you can make your own decisions)
<b>Je pense que</b> (I think that)	<b>Un inconvénient, c'est que</b> (a disadvantage, is that)	<b>ça peut être dangereux</b> (it can be dangerous)	<b>les heures sont longues</b> (the hours are long)
<b>À mon avis</b> (In my opinion)		<b>c'est fatigant</b> (it's tiring)	<b>on a besoin d'une longue formation</b> (you need a long period of training)
		<b>le travail est difficile</b> (the job is difficult)	<b>on risque le chômage</b> (you risk unemployment)

#### 7. How do I form the simple future tense?

Red

Amber

Green

English	French	Ending
I	Je	ai
You	Tu	as
He / She / One	Il / Elle / On	a
We	Nous	ons
You (pl)	Vous	ez
They	Ils / Elles	ont

To form the simple future tense, you need to follow the following steps:

1. Decide who is speaking
2. Find your infinitive verb e.g. jouer
3. Add the ending that matches

E.g. I will play → Je + jouer + ai = Je jouerai

#### 8. What is a verb?

Red

Amber

Green

**Definition:** A word used to describe an action, state or occurrence. E.g. to play, to feel, to have, to be.

Key Verbs: travailler (to work), je suis (I am)

#### 9. What is a noun?

Red

Amber

Green

**Definition:** A person, place or thing.

Remember – Every noun in French is either masculine or feminine.

<b>10. What is a conjunction?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
<b>Definition: A word used to link two clauses or sentences.</b>			
Key Conjunctions: et (and), aussi (also), cependant (however)			
<b>11. What is an adjective?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
<b>Definition: A word used to describe a noun.</b>			
<b>12. What is an intensifier?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
<b>Definition: An intensifier is used <u>before</u> an adjective to add detail.</b>			
Key intensifiers: très (very), assez (quite), un peu (a little), trop (too)			
<b>HOME LEARNING TASKS</b>			
<b>Task Description</b>	<b>Done?</b>		
Can you write a short paragraph talking about your passions and your summer plans?			
Can you write a short paragraph to talk about your future plans?			
Can you write a short paragraph talking about the jobs you would like to do?			
Can you use the sentence builders above to write sentences answering the questions? Can you improve these by adding conjunctions and intensifiers?			
Practise the vocabulary in your knowledge organiser by using the look, cover, write, check method.			
Go to <a href="http://www.sentencebuilders.com">www.sentencebuilders.com</a> and practise this terms vocabulary.			

# Spanish Year 10 Term 1 – Future plans

Term Focus – This term looks at talking about future plans and the importance of languages. You will be able to:

- Talk about what you do to earn money
- Give opinions about your job
- Describe what kind of person you are
- Talk about what jobs you would like in the future
- Say why learning languages are important



## Prior Learning Links

- Using time phrases
- Using the future tense
- Using opinion phrases

## Future Learning Links

- Using the future tense
- Adjectival agreement

## 1. What do you do to earn money?

Red Amber Green

### ¿Qué haces para ganar dinero? (What do you do to earn money?)

<b>Para ganar dinero</b> (To earn money)	<b>trabajo en</b> (I work in)	<b>una tienda</b> (a shop)	<b>un café</b> (a café)
		<b>una fábrica</b> (a factory)	<b>un gimnasio</b> (a gym)
	<b>Hago cosas y las vendo en línea</b> (I make things and sell them online)		
	<b>cuido a los niños</b> (I look after children)		
<b>Lo hago</b> (I do it)	<b>Los fines de semana</b> (at the weekends)	<b>y gano</b> (and I earn)	<b>cinco euros</b> (5 euros)
	<b>cuando necesito dinero</b> (the headmaster)		<b>diez libras</b> (10 pounds)
	<b>cuando me necesitan</b> (when they need me)		<b>por hora</b> (per hour)
	<b>en las vacaciones</b> (during the holidays)		<b>por día</b> (per day)
			<b>por semana</b> (per week)

## 2. Do you like your job?

Red Amber Green

### ¿Te gusta tu trabajo? (Do you like your job?)

<b>Me gusta</b> (I like)	<b>mi trabajo</b> (my job)	<b>porque</b> (because)	<b>me llevo bien con</b> (I get on well with)	<b>mi jefe</b> (my boss)
<b>Me chifla</b> (I love)				<b>mis compañeros</b> (my colleagues)
<b>No me gusta</b> (I don't like)			<b>mis compañeros son</b> (my colleagues are)	<b>desagradables</b> (unpleasant)
<b>Odio</b> (I hate)				

### 3. What type of person are you?

Red

Amber

Green

#### ¿Qué tipo de persona eres? (What type of person are you?)

<b>Diría que</b> (I think that)		<b>activa</b> (active)	<b>responsable</b> (responsible)	<b>lista</b> (clever)
<b>Pienso que</b> (I think that)	<b>una persona</b> (a... person)	<b>fuerte</b> (strong)	<b>trabajadora</b> (hardworking)	<b>independiente</b> (independent)
<b>Mis amigos dicen que</b> (my friends say that)		<b>organizada</b> (organised)	<b>artística</b> (artistic)	<b>práctica</b> (practical)
<b>Además</b> (In addition)	<b>tengo</b> (I have)	<b>buen sentido del humor</b> (a good sense of humour)	<b>buenos conocimientos de...</b> (good knowledge of...)	<b>buenas capacidades de comunicación</b> (good communication skills)

### 4. What type of job do you want?

Red

Amber

Green

#### ¿Qué tipo de trabajo quieres? (What type of job do you want?)

<b>Cuando era más joven,</b> (When I was younger,)	<b>Me gustaba la idea de ser</b> (I like the idea of being)	<b>actor</b> (an actor)	<b>camarero</b> (a waiter)
<b>De niño,</b> (As a child,)	<b>quería ser</b> (I wanted to be)	<b>actriz</b> (an actress)	<b>camarera</b> (a waitress)
<b>Antes,</b> (Before,)	<b>era mi sueño ser</b> (it was my dream to be)	<b>artista</b> (an artist)	<b>enfermero</b> (a nurse)
<b>Ahora,</b> (Now,)	<b>me apetece ser</b> (I'm keen to be)	<b>periodista</b> (a journalist)	<b>ingeniero</b> (an engineer)
	<b>es mi sueño ser</b> (It's my dream to be)	<b>policía</b> (a police officer)	<b>guía turístico</b> (a tour guide)
	<b>quiero ser,</b> (I want to be)	<b>científico</b> (a scientist)	<b>peluquero</b> (a hairdresser)
		<b>director de cine</b> (a film director)	<b>profesor</b> (a teacher)
		<b>director de teatro</b> (a theatre director)	<b>médico</b> (doctor)

5. What plans do you have for the future?

Red

Amber

Green

¿Qué planes tienes para el futuro? (What plans do you have for the future?)

<b>En el futuro</b> (In the future)	<b>voy a</b> (I'm going)	<b>casarme</b> (get married)	<b>conseguir un buen trabajo</b> (to get a good job)
<b>El año próximo</b> (Next year)	<b>me gustaría</b> (I would like)	<b>tener hijos</b> (to have children)	<b>buscar un trabajo</b> (find a job)
<b>Cuando sea mayor</b> (When I am older)	<b>espero</b> (I hope)	<b>ir a la universidad</b> (go to university)	<b>ser empresario</b> (to be an entrepreneur)
<b>Cuando tenga bastante dinero</b> (When I have enough money)	<b>tengo ganas de</b> (I am keen to)	<b>hacer una carrera universitaria</b> (to do a university degree)	<b>montar mi propio negocio</b> (to set up my own business)
	<b>tengo la intención de</b> (I intend to)		

6. Why are languages important?

Red

Amber

Green

¿Por qué los idiomas son importantes? (Why are languages important?)

<b>Hablo</b> (I speak)	<b>español.</b> (Spanish.)	<b>castellano.</b> (castillian.)	
<b>Aprendo</b> (I am learning)	<b>francés.</b> (French.)	<b>atalán.</b> (catalan.)	
<b>Me gustaría aprender</b> (I would like to learn)	<b>inglés.</b> (English.)	<b>euskera.</b> (basque.)	
	<b>gallego.</b> (gallician.)		
<b>Si sabes hablar otro idioma,</b> (If you know how to speak another language,)	<b>puedes</b> (you can)	<b>estudiar o trabajar en el extranjero</b> (study or work abroad)	<b>descubrir otras culturas</b> (discover other cultures)
	<b>te permite</b> (it allows you to)	<b>mejorar tus oportunidades laborales</b> (improve your job opportunities)	<b>descubrir otros países</b> (discover other places)

7. What are the rules for masculine and feminine agreement of jobs?

Red

Amber

Green

In Spanish, the spelling of jobs will change depending whether someone is masculine or feminine.

Most jobs ending in 'o' will change to an 'a'. E.g. enfermero → enfermera

Jobs ending in an 'a' will not change. E.g. periodista

Jobs ending in a consonant, will often add an 'a' e.g. profesor → profesora

8. What is a verb?

Red

Amber

Green

**Definition: A word used to describe an action, state or occurrence. E.g. to play, to feel, to have, to be.**

Key Verbs: Trabajar (to work), Soy (I am)

9. What is a noun?

Red

Amber

Green

**Definition: A person, place or thing.**

Remember – Every noun in Spanish is either masculine or feminine.

**10. What is a conjunction?**

Red

Amber

Green

**Definition: A word used to link two clauses or sentences.**

Key Conjunctions: y (and), también (also), sin embargo (however)

**11. What is an adjective?**

Red

Amber

Green

**Definition: A word used to describe a noun.**

**12. What is an intensifier?**

Red

Amber

Green

**Definition: An intensifier is used before an adjective to add detail.**

Key intensifiers: muy (very), bastante (quite), un poco (a little), demasiado (too)

**HOME LEARNING TASKS**

**Task Description**

**Done?**

Can you write a short paragraph talking about what you do to earn money?

Can you write a short paragraph to talk about your future plans?

Can you write a short talking about the importance of languages?

Can you use the sentence builders above to write sentences answering the questions? Can you improve these by adding conjunctions and intensifiers?

Practise the vocabulary in your knowledge organiser by using the look, cover, write, check method.

Go to [www.sentencebuilders.com](http://www.sentencebuilders.com) and practise this terms vocabulary.

# Health and Social Care Year 10 Term 1

Term Focus – Re-cap -Factors that affect growth and development. Types of life events and coping with change. How people may react differently to the same life events and adapt to changes Sources and types of support

**IMAGE**  
(please check copyright)

## Prior Learning Links

Factors that affect growth and development from Yr 9 Term 4

## Future Learning Links

Plan tasks 1, 2 and 3  
Controlled assessment

## KEY VOCABULARY

### KEY WORDS

**Resilience-** the capacity to withstand or to recover quickly from difficulties

**Rehabilitation-** the action of restoring someone to health or normal life through training and therapy after imprisonment, addiction, or illness.

### KEY SUBJECT TERMINOLOGY

**Genetic inheritance-** are inherited conditions that are a result of genes that are passed from a parent or parents to their child

**Community involvement-** being part of a community or group brings a sense of belonging essential for wellbeing

**Gender role-** is the role and responsibilities determined by a person's gender

**Life event-** is something that happens to people as they move through life that has a major impact on their health and wellbeing

**Life circumstances –** refer to the way a person lives, their day-to-day life and the choices they make

**Formal support-** is provided by trained, paid employees such as health and social care professionals

**Informal support-** is provided by people who are not paid, such as family and friends

**Emotional support-** essential to help individuals cope with life events. Having someone to talk to helps people feel secure and come to terms with and adapt to change.

**Economic factors –** relate to a person's employment situation and their financial resources

## 1. How do factors affect our growth and development?

Red

Amber

Green

Factors include:

- Physical factors – inherited conditions, illness and disease, physical ill health, mental ill health, disability and sensory impairment
- Lifestyle factors – nutrition, physical activity, smoking, alcohol and substance misuse
- Emotional factors – fear, anxiety and worry, upset and sad, grief and bereavement, happiness and contentment and security
- Social factors – relationships, social inclusion and exclusion, discrimination and bullying
- Cultural factors – religion, community participation, gender roles, gender identity, sexual orientation and race
- Environmental factors – housing, the home environment and pollution
- Economic factors – employment situation and financial resources

Consider how these factors impact on all areas of development



<b>2. What is a life event?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
<p>Life events include:</p> <ul style="list-style-type: none"> <li>• Health and wellbeing – accident and injury, physical illness, mental and emotional ill health</li> <li>• Relationship changes – new relationships, long-term relationships, divorce or separation, parenthood and bereavement</li> <li>• Life circumstances – moving house, starting or moving school, exclusion from education, redundancy, imprisonment, changes to standard of living and retirement</li> </ul>			
<b>3. How do life events impact on an individual's development?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
<p>Consider how life events can have a positive or negative impact on development.  Will this impact be short or long term?  Some life circumstances can have a negative impact on development, but as people come to terms with the event, they may also have some positive effects.</p>			
<b>4. How do individuals cope with change caused by life events?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
<p>Two people can face the same life event but deal with it in very different ways. Influences on how individuals cope with change include:</p> <ul style="list-style-type: none"> <li>• Emotional intelligence (the ability to control and express emotions)</li> <li>• Resilience (how quickly they recover)</li> <li>• Self-esteem (how good they feel about themselves)</li> <li>• Disposition (feeling positive or negative)</li> <li>• The support they have from others</li> <li>• Other life events happening at the same time</li> </ul>			
<b>5. What have we learnt so far this term?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
<p>Assessment lesson</p>			
<b>6. How can I progress?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
<p>PIT lesson</p>			
<b>7. What can informal support provide?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
<p>Support given by partners, family and friends is often the first level of support a person receives. Informal support can provide:</p> <ul style="list-style-type: none"> <li>• Reassurance</li> <li>• Encouragement</li> <li>• Advice</li> <li>• A sense of security</li> <li>• Someone to talk through options</li> <li>• Practical help</li> </ul> <p>Why is informal support important in helping people adapt to change?</p>			
<b>8. Who provides professional care and support?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
<p>Some individuals may need professional support. Support may be provided by statutory care services (provided and paid for by the state) or private health and care services (paid for by the person receiving care).  Professional carers and services include:</p> <ul style="list-style-type: none"> <li>• Counsellors</li> <li>• Specialist nurses</li> <li>• GP health centres</li> <li>• Dieticians</li> <li>• Health visitors</li> <li>• Mental health teams</li> <li>• Occupational therapists</li> <li>• Social workers</li> <li>• Home carers</li> </ul>			
<b>9. What is the difference between multi-agency and multidisciplinary working?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
<p>Multi-agency working – two or more different types of service work together in a planned way e.g. social services may work with a GP and an early years setting to help protect a child at risk.  Multidisciplinary working – professionals from the same service but with different specialisms work in cooperation e.g. a GP may work with the practice nurse to help a patient with asthma.</p>			
<b>10. Why do some people find it difficult to adapt to change unless given support?</b>	<b>Red</b>	<b>Amber</b>	<b>Green</b>
<p>The support given needs to meet the needs of the individual and to be effective. Types of support include:</p>			

- Emotional support (having someone to talk to helps people feel secure and come to terms with and adapt to change).
- Information and advice (helps people understand where to go for support, how to make healthy choices and what the choices available to them are).
- Practical help (financial assistance, additional care support, transport and domestic chores).

Red Amber Green

Red Amber Green

**HOME LEARNING TASKS**

Task Description	Done?
Begin making your own notes in preparation for controlled assessment on how life events impact on the PIES	

# Child Development Year 10 Term 1

Term Focus – Recap Component 1- Children’s growth and development and different areas of development. Plan task 1, Growth and Development and Task 2 Children’s development and factors affecting development - 1

**IMAGE**  
(please check copyright)

## Prior Learning Links

Growth and development from Yr 9 term 3.  
Factors that impact growth and development from Yr 9 Term 4 and 5

## Future Learning Links

Plan task 3  
Controlled assessment

## KEY VOCABULARY

### KEY WORDS

**Growth** – an increase in size and mass  
Centile charts- This is a graph where health professionals can mark children’s height and weight on a line that plots the growth pattern that is expected.  
**Development** – the gaining of skills and knowledge over time

### KEY SUBJECT TERMINOLOGY

**Physical Dev** - is defined as the growth of the body and its parts, including muscle and motor development  
**Cognitive Dev** - means how children think, explore and figure things out. It is the development of knowledge, skills, problem solving and dispositions, which help children to think about and understand the world around them.  
**Emotional Dev** – involves a baby and their parent establishing an emotional link, based on feelings of love and affection. It involves a child’s development of self-esteem and learning how to control or express their emotions.  
**Social**-involves the development of relationships with others, the acceptable ways of behaving and how to relate to others in everyday situations  
**Holistic** – made up of parts that are interconnected  
**Milestones** – a stage or event in a process  
**Midwife** - Midwives provide care and support to women and their families while pregnant, throughout labour and during the period after a baby's birth.  
**Health visitor** -specialise in working with families with a child aged 0 to five to identify health needs as early as possible and improve health and wellbeing by promoting health, preventing ill health and reducing inequalities.

1. What is the meaning of growth and development?

Red

Amber

Green

This includes:

- Bone changes
- Comparisons of growth between a newborn and a 5 year old
- How growth is measured and recorded

2. What is the meaning of growth and development?

Red

Amber

Green

This includes:

- The 2 year old’s check
- The National Child Measurement Programme

3. What are the different roles and responsibilities of individuals involved in measuring growth and development?

Red

Amber

Green

This includes:

- Health professionals involved in measuring growth and development – midwife, social care workers, early years educators, health visitors
- Parents and carers
- The importance of measuring growth

Consider why each person might monitor children's growth

**4. What are the principles of development?**

**Red Amber Green**

This includes:

- Developmental milestones
- Who uses developmental milestones
- Holistic development

Developmental milestones are tracked against Early Years Outcomes by early years educators. The key person for a child must keep organised records of that child's developmental progress.

**5. How does development change throughout the different age ranges?**

**Red Amber Green**

Areas of development include:

- Physical
- Communication and language
- Cognitive and intellectual
- Social
- Emotional

Age ranges include:

- 0-18 months
- 18 months to three years
- 3 to 5 years

**6. Preparing for controlled assessment**

**Red Amber Green**

You will be assessed via a Pearson set assignment. This will be completed under formal supervision and carried out independently with no access to the internet. The assignment will include three tasks. Task one relates to learning outcome A. You will demonstrate your knowledge and understanding of the principles of growth and development. You will be given approximately 1 hour to complete the task. Evidence includes:

- All expected milestones
- A detailed and relevant account of how to measure a child's growth
- A detailed account of the role and responsibilities of individuals involved in the care of the child
- A well developed reasoning showing the importance of measuring and monitoring a child's growth.

**7. How do I plan Task 1 to ensure a good grade for controlled assessment?**

**Red Amber Green**

1. Plan an introduction for part 1 – research definitions for development
2. Research the milestones of development for the age and area of development given
3. Find any pictures you want to include

**8. How do I plan Task 1 to ensure a good grade for controlled assessment?**

**Red Amber Green**

1. Plan an introduction for part 2 – research definitions for development
2. How would the growth be measured and recorded for the given child?
3. What the role and responsibilities are of individuals involved in measuring and monitoring the child's growth
4. Why is it important to measure and monitor the child's growth?

**9. How do I plan Task 2 to ensure a good grade for controlled assessment?**

**Red Amber Green**

1. Plan an introduction – who is the child and what is their age?
2. What are the current milestones for the age and area of development given?
3. What are the next milestones for the age and area of development given?

**10. How do I plan Task 2 to ensure a good grade for controlled assessment?**

**Red Amber Green**

1. Plan an introduction – what are the factors that may affect the child's development?
2. Identify four factors that will affect the given child's development
3. Which of the factors may have the most influence on the child's development and why?
4. Which of the factors may have the least influence on the child's development and why?

**11. Red Amber Green**

**12. Red Amber Green**

HOME LEARNING TASKS	
Task Description	Done?
Prepare notes for controlled assessment task 1	
Prepare notes for controlled assessment task 2	

# Subject Year 10 Term 1 – Hospitality and Catering



Term Focus – Hospitality and catering providers. Food safety. Nutrition of life stages.

**Prior Learning Links**  
 KS3 Basic food and nutrition  
 KS4 Hospitality and Catering. WJEC

**Future Learning Links**  
 WJEC Hospitality and Catering  
 Level 1 / 2 Vocational Award

## KEY VOCABULARY

KEY WORDS		KEY SUBJECT TERMINOLOGY
Provision/providers	Symptoms	Commercial (residential)
Hospitality	Prevention	Commercial (non-residential)
Catering		Non-commercial (residential)
Pathogens		Non-commercial (non-residential)
Accommodation		Environmental Health Officer

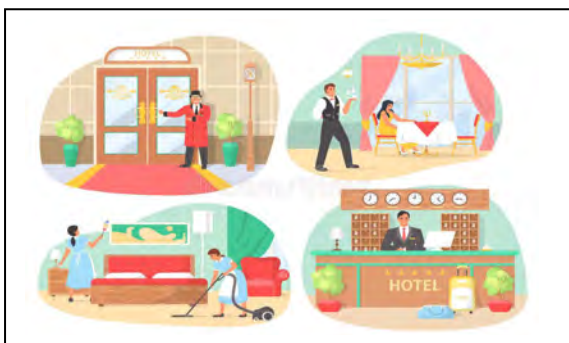
### 1. How are the providers grouped?

Red Amber Green



### 2. How does a Commercial Residential provider operate?

Red Amber Green



Accommodation providers that DO make a profit.  
 B&B, Guesthouses, Airbnb, campsites and caravan parks, hotels, motels and hostels ...

### 3. How does a Commercial Non-residential provider operate?

Red Amber Green

Commercial non-residential provisions (food and drink only that DO make a profit)  
 Cafes, tea rooms and coffee shops, vending machines, restaurants, pubs and bars, takeaways etc.....



4. How does a Non-commercial Residential provider operate?

Red Amber Green



5. How does a Non-commercial-non residential provider operate?

Red Amber Green



These providers offer food and drink but this is not their primary purpose. For example a schools purpose is to educate but it will provide students and staff with refreshments.



6. What is food safety in hospitality and catering?

Red Amber Green



There are visible and non-visible symptoms of food induced ill health.

Visible: Bloating, vomiting, sweating, fatigue, chills, diarrhoea.

Non-visible: aches and pains, cramps, fever and chills, stomach ache, nausea, feeling sick.

7. What are the food related causes and symptoms of ill health?

Red Amber Green



Bacteria need:  
Food, moisture, warmth and time to multiply



Bacteria are tiny single celled organisms and are found almost everywhere

8. How can we prevent food induced ill-health with control measures?

Red Amber Green

### 5 KEY FOOD HYGIENE PRINCIPLES

Good PERSONAL HYGIENE



Safe INGREDIENTS



Safe HANDLING



Correct TEMPERATURE



CLEAN Premises



There are many recognised ways to prevent food induced ill health (P.97).

Including: staff training, maintaining all equipment, correct storage of chemicals



## 9. What is the role of the Environmental Health Officer?

Red Amber Green



An environmental health officer is responsible for checking and implementing food safety, health and hygiene legislation. They have the power to immediately close down an unsatisfactory provider.



## 10. What is the importance of nutrition?

Red Amber Green

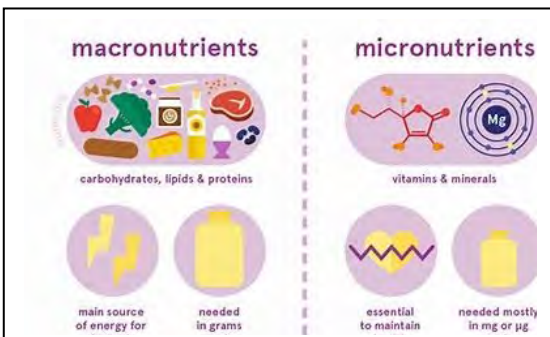
We need nutrients for:

Growth, repair, energy, help digesting food, body structure (tissue, teeth, bones and organs) keeping the immune system healthy



## 11. What are the Macronutrients / micronutrients / dietary fibre / water

Red Amber Green



Nutrients are divided into two main groups. Macronutrients and micronutrients.

Macro means large, we need a lot of these.

Micro means small, we need these in small amounts

## 12. How does nutritional need differ at various life stages?

Red Amber Green



**Recommended Daily  
Nutritional Requirements  
for Different Age Groups**

Category	Age (years)	Protein (g)	Fat (g)	Calories (kcal)	Calcium (mg)	Iron (mg)
Children	2-3	16.7	27	1060	600	9
Children	4-6	20.1	25	1350	600	13
Children	7-9	29.5	30	1690	600	16
Boys	10-12	39.9	35	2190	800	21
Boys	13-15	54.3	45	2750	800	32
Boys	16-17	61.5	50	3020	800	28
Adult (males)	Above 18	25	60	2320	600	17

We will look at how each life stage will need different amounts of nutrients to ensure a healthy lifestyle. We will also investigate the effects of cooking methods on these nutrients. This is to give us some of the knowledge needed for the NEA Unit 2

**HOME LEARNING TASKS**

List the different types of providers and give 3 examples of their offerings	<b>Done?</b>
Consider 1 dish that you made this term, consider how you could modify it for a different customer (state the customer you are providing for)	
Write a paragraph on the role of the EHO, list at least four jobs within their role	
Plan a lunch time meal for a child and their parent (2 separate dishes). Give the reasons for your choice of dishes	
How can food related ill health be prevented? List at least 6 ways	

# Subject Photography Year 10 Term 1 – ‘Introduction to Photography’

Term Focus – To enable students to work from a set of objectives relating to a theme. To develop students’ knowledge of the formal elements and principles of visual language in photography including;

**Line, shape, form, tone, colour, texture, pattern and composition.**

To develop students’ knowledge and understanding of photographic techniques including lighting, viewpoints, aperture, depth of field, shutter speed and movement.

To develop students’ knowledge of genres of photography. This might lead to consideration of career paths e.g. sports or fashion photography.

**These basic camera skills, the elements and principles of visual language will proceed to be built upon and interleaved through a series of projects. Scaffolding the design process for proceeding coursework projects.**

In Year 9 students studied 3D Art and Design and due to a course change transitioned over to Photography during Terms 5 and 6.

In Year 9 students studied 3D Art and Design and due to a course change transitioned over to Photography during Terms 5 and 6. They explored cyanotypes and how they work creating examples of work in different light settings, taking pictures on their phones and editing them in class using photopea, not only adjusting the settings such as a focus on contrast, lightness and hues but also on layering different colours and themes over the top and understand the different layers and what they do to create contrasting images. They also looked into creating vector illustrations and how they would look with their ideas they had created this year, with the 3D Art and Design course, the clay bowls and balancing tools mainly. They also used Bezier as a tool to develop their pen tool techniques for photoshop, analysing their ideas using ACCESS FM. Reinforcing and embedding basic IT skills such as how to copy & paste, send an email and general computer usage.

## Future Learning Links

### Begin Sustained project ‘Conceal and Reveal’

Bill Mangold and Aaron Siskind

*Understanding the design process, develop awareness of Abstract/Macro Photography, more advanced Photo Shop skills- layers, line, shape, bending modes.*

Marc Anderson and Kaleidoscope

*Developing knowledge of Macro Photography and broadening awareness of distortion through Kaleidoscope photography, More advanced Photoshop skills- layers, quick selection tool, transform, line, shape, bending modes etc.*

### Scaffolding the design process for proceeding coursework projects.



## KEY VOCABULARY

KEY WORDS

KEY SUBJECT TERMINOLOGY

**Genres-** *Portrait, Still Life, Abstract, Conceptual, Commercial, Documentary, Fashion, Fine Art, Wedding Photography.*

**DSLR-** *DSLR, Lens, Battery, Aperture, Electronic Sensor  
Shutter Release, Data Display, Camera Dial,  
Viewfinder, Shutter release, Modes- P, Tv, Av and M*

**Vocabulary-** *Digital SLR, Card Reader, Contact sheet, JPEG, PSD/B files, Genre, Focal lengths, Exposure, Depth of field, Underexposed, Overexposed, Shooting Modes- **auto**, scene, and P, Tv, A and M Modes, Shutter speed, Aperture.*

**Composition-** *Rule of thirds, Filling the frame, Symmetry, Repetition, Balance, Import, Edit*

## Genres

**Visual Language-** *Line, shape, form, tone, colour, texture, pattern and composition.*



**1. What are the different Photography genres and how can we learn from the photographers who are successful with them?**

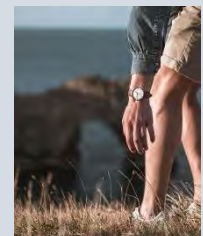
Red

Amber

Green

I will discover and be able to recognise different photography genres

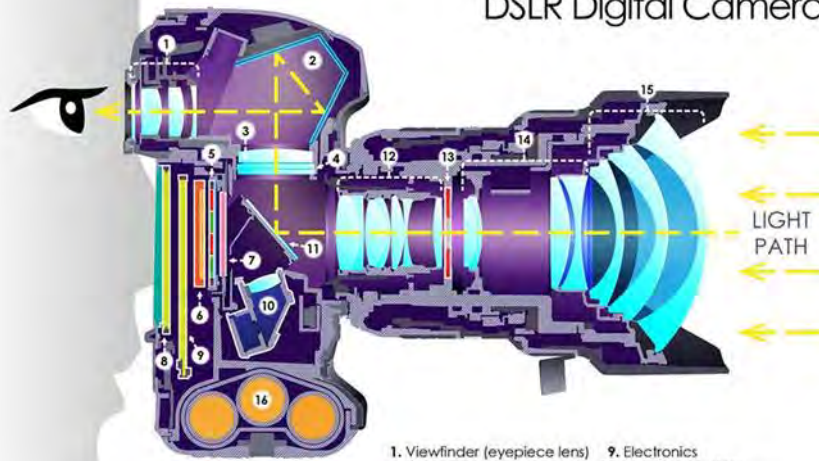
**Portrait, Still Life, Abstract, Conceptual, Commercial, Documentary, Fashion, Fine Art and Wedding.**



**2. Can you identify the different parts and functions of the DSLR?**

I will learn how to identify the different parts and functions of the DSLR

# DSLR Digital Camera



- |                               |                                   |
|-------------------------------|-----------------------------------|
| 1. Viewfinder (eyepiece lens) | 9. Electronics                    |
| 2. Pentaprism                 | 10. Autofocus system              |
| 3. Focusing screen            | 11. Reflex and relay mirror       |
| 4. Condenser lens             | 12. Focusing elements             |
| 5. Color and infrared filter  | 13. Aperture                      |
| 6. Digital sensor             | 14. Zoom elements                 |
| 7. Shutter                    | 15. Front line gathering elements |
| 8. Display                    | 16. Batteries                     |



# I will learn how to handle and hold the camera properly



## How to hold a camera

It's worth taking a few minutes to practise holding your camera before you start shooting – you'll get sharper shots

**FINGER**  
The camera body is designed to be gripped with your right hand and your index finger over the shutter release. You should be able to press the button without having to reposition your grip.

**HAND**  
Rest your lens in your left hand. You should be able to twist the barrel of the lens to zoom or focus with this hand, leaving your right hand to grip the camera body.

**ELBOWS**  
Tuck your elbows into your body to keep your camera steady. The further out your elbows are, the more unstable you will be.

**EYEBROW CONTACT**  
Lift the camera up to your eye and rest the viewfinder against your eyebrow. This makes another point of contact on the body for more stability.

**BACK PANEL CONTROL**  
With your hands in the correct position, your thumb is well placed to access the controls on the back of the camera to alter the shooting settings.

**PORTRAIT**  
If you need to switch your camera to a portrait orientation then turn it over so the shutter release sits at the top. If you do it the other way around your arms will become all twisted up!

**REST ELBOWS**  
If you have a surface area in front of you, lean your elbows onto it to steady yourself. Look for level surfaces, such as a table or wall.

**CONTROL YOUR BREATHING**  
Breathe out when you take a shot. If you hold your breath or breathe in, you'll find you move around a bit more. It's amazing how much of a difference controlling your breathing can make.

**LEGS**  
Place your legs a little apart so you're balanced. If you're leaning in to take a shot then move one foot forward to create a sturdier body shape.

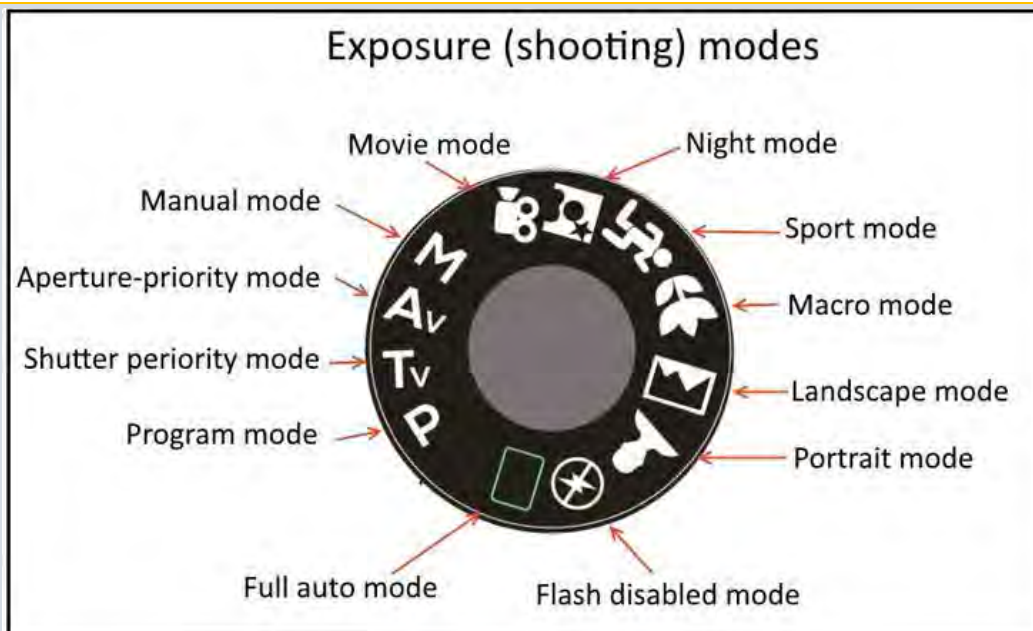
**TAKE A MAT**  
When kneeling to take shots outdoors, you might get a wet or dirty knee. Take a mat or a plastic bag to place under your knee for comfort and to avoid marring your clothes.

**BRING ONE LEG UP**  
By coming down into a crouching position and bringing your leg up you can turn your body into a human tripod. Place your elbow on your knee to connect your leg and arm together, creating a braced position so you don't wobble around.

**LEAN IN**  
Leaning against a wall creates instant support for your camera. This can be useful when shooting at slow shutter speeds without a tripod.

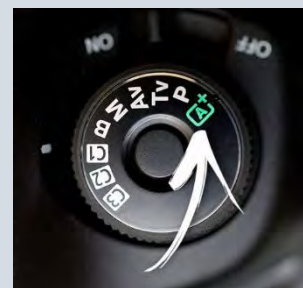
### 3. What are shooting modes and how can we use them?

I will learn how to recognise the different modes on the camera mode dial and understand their functions.



### Auto mode

**In auto mode the camera will do all the work.** It will choose the settings it thinks is right for that scene that is currently in the frame of the camera. If that scene gets darker, it will brighten up the frame by automatically changing any one, or all of your three principle settings, aperture, shutter speed and ISO. You only have to point the camera in the right direction and work on what is going to be in your photograph.



### Shutter Priority (S or Tv)

Shutter priority is where you have control over shutter speed with the main dial on your camera and then the camera chooses the appropriate aperture for the given scene your camera is pointing at.

Shutter speed is the time that the shutter is open for. The longer the shutter speed, the more light will get into your camera.

Shutter speed also controls how much **motion blur** you have in your photographs. If you are shooting a moving object like a sports person, a bird or moving water, a longer shutter speed will blur this movement.

Shutter priority is great for sports and wildlife photography, where having the right shutter speed is imperative.





Big Aperture (small Hole) more depth of field and slow shutter speed for motion bur of the moving water.



Fast shutter speed

### **Aperture Priority (A, Av)**

Aperture priority is where you have control over the aperture with the main dial on your camera. The camera then chooses the appropriate shutter speed for that scene you are pointing the camera at. If the brightness in your frame changes, the shutter speed will change to suit. The aperture will only ever change when you turn that dial.

The aperture refers to the size of the (iris) hole within the lens. Aperture is measured in **F-stops**. A low number like F1.8 or F2.1 means a wider aperture. F16 would be a smaller aperture. A wider aperture (a low F-stop) means less of the image is in focus. It also means a faster shutter speed can be used.

### **ISO**

Is the light sensitivity of the digital chip or film. The higher the ISO the more sensitive the chip becomes, meaning that you can take a photograph when there is less light. An ISO of 200 is the average daylight setting.

## **4. What is focal length and why is it important?**

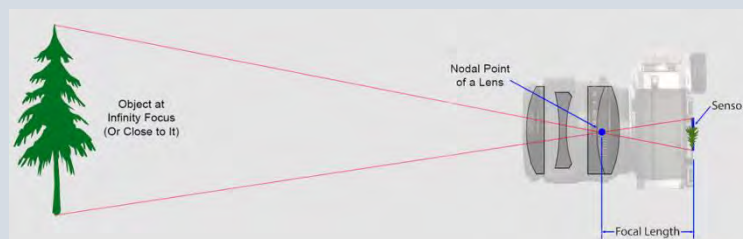
Red

Amber

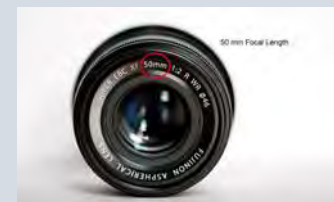
Green

**I will learn how different lenses can be used to adjust focal length.**

Focal length measures the distance, in millimeters, between the “nodal point” of the lens and the camera’s sensor. “Nodal point” may sound complicated, but it is simply the point where light converges in a lens. Here’s a simple diagram showing the focal length of a lens, based upon this definition:



As you can see from the diagram above, focal length is determined when the lens is focused on something very far away – in other words, focused to infinity. Lenses are named by their focal length. You can find this information on the barrel of the lens, and almost every camera lens ever made will prominently display the focal length. For example, a 50mm lens has a focal length of 50 millimeters.



Focal length is a property of the lens itself, not the camera

Focal length is important because it relates to the field of view of a lens – that is, how much of the scene you'll capture. It also explains how large or small a subject in your photo will appear.

If you're trying to understand different focal lengths, you can think of higher values (like 500mm) as more "zoomed in," whereas lower values (like 20mm) are more zoomed out."

While the technical definition of focal length may be relevant to some people, as photographers, it is more important to understand is what focal length looks like!

Take a look at the following demonstration. The four photos shown below were taken at increasing focal lengths. The photos start at 25mm and end at 140mm:



Focal length: 25mm. Can you spot the climbers yet?



Focal length: 50mm. Now the climbers are



Focal length: 140mm. Now you can even see the expression on the climber's face!

If you want to know more about lenses go to this website-

[6 Different Types of Camera Lenses \(and when to use each one\) \(livesnaplove.com\)](https://livesnaplove.com/6-Different-Types-of-Camera-Lenses-(and-when-to-use-each-one))

## 5. How are aperture and depth of field connected?

Red

Amber

Green

I will learn how to adjust aperture and depth of field

Depth of field is one of the best-known photography techniques. It relates to which elements in the image are in or out of focus. It is set by tweaking your camera's aperture settings. Shallow depth of field puts your subject in sharp focus and blurs the background or foreground. While large depth of field puts all of your subject in sharp focus.





Shallow Depth of Field larger F-Stop foreground / background in focus



Large Depth of Field Small F-Stop everything in focus



[3 Steps for Adjusting the Depth of Field on Your Camera - Photonify Photographers Marketplace](#)

## 6. How can shutter speed be used creatively?

Red

Amber

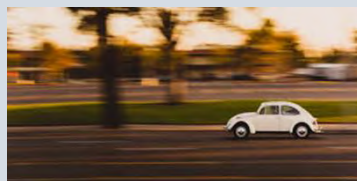
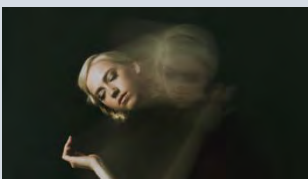
Green

I will learn how to select the appropriate shutter speed to capture movement and experiment with motion blur.

Motion blur is a long exposure photography that lets you convey the feeling of movement or action in a still image. **“It gives use the ability to see things in a way that we can’t on our own,” says photogpher Chris Sidla.**

### Camera settings to capture motion blur.

Motion blur is all about shutter speed and how it interacts with light. You create the blur with a slow shutter speed. The slower your shutter speed (sometimes called a long shutter speed), the more light gets to your camera sensor. Because your shutter is open longer, more visual information is captured, which can include the blur of motion. This can also be helpful in low-light scenarios, but most of the time you’ll need to adjust your other settings to limit the amount of light in your frame to compensate for the potential of overexposing a long exposure image. For the most control, shoot in manual mode. You can work with almost any DSLR or filmcamera, as long as you can adjust your exposure triangle of shutter speed, aperture, and ISO. If you don’t want to go full manual, shutter priority mode lets you choose your shutter speed, and the camera will balance the other settings around your choice.



[How to make motion blur photography | Adobe](#)

## 7. Why are the Formal Elements important in photography?

Red

Amber

Green

## I will learn the importance of the Formal Elements.

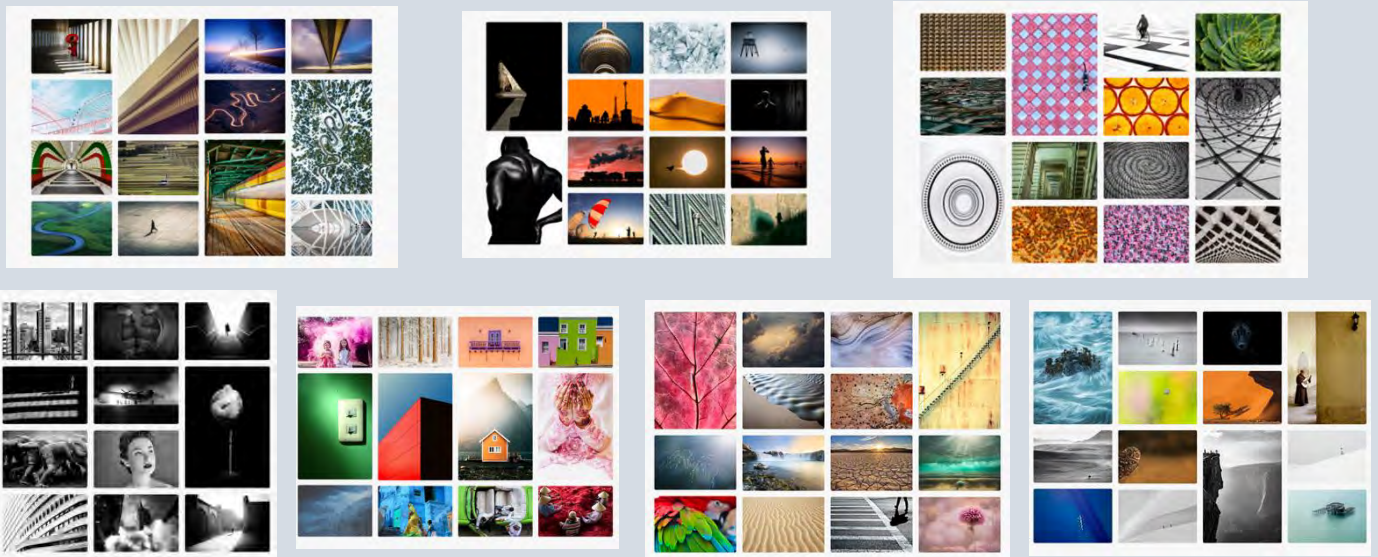
There are several design elements, known as formal elements, that all photographers should be aware of when thinking about their image compositions.

Formal elements are visual feature that, when applied, have the potential to transform simple subjects into great shots.

The seven formal elements are commonly known as: LINE, SHAPE AND FORM, PATTERN, TONE, COLOUR, TEXTURE AND SPACE

Paying attention to the formal elements will bring order to your compositions and help you emphasise the most critical aspects of the shot.

Many of the world's most successful photographers base their images around formal elements, and understanding them is essential to developing your photography skills.



[Focus: Understanding the 7 formal elements of photography \(picfair.com\)](http://picfair.com)

## 8. What is the Rule of Thirds and how can we apply it in Photography?

Red

Amber

Green

### I will learn how to apply the Rule of thirds and about the Rule of Odds.

The rule of thirds in photography is a guideline that places the subject in the left or right third of an image, leaving the other two thirds more open. It divides a photo into nine equal parts, split by two equally spaced horizontal and vertical lines. Generally, the rule of thirds leads to compelling and well-composed shots.

Imagine dividing a photo, or even your camera's viewfinder, into nine equal zones using these horizontal and vertical lines. That forms your rule of thirds grid – a setting you can select on most cameras, and even your phone.



[Guide to the Rule of Thirds in Photography | Adobe](#)

### What is the rule of odds in photography?

The rule of odds states that, whenever possible, a composition should have an *odd* number of objects, *not* an even number of objects. So an image should have three flowers rather than two, and five people rather than four.

Why? The rule of odds taps into the brain's propensity to create order. You see, when viewing a group of objects, we unconsciously want to group them in pairs

But when we're faced with three, five, or seven objects in a photograph, we have a group that can't be easily organized. With an odd number of objects, one may become dominant. At the very least, the viewer will look longer at the image, moving between the individual elements.

That is the power of the rule of odds in photography: It creates a composition that makes the viewer's brain work a little harder and look a little longer.



[The Rule of Odds in Photography \(An Easy Trick for Better Compositions\) \(digital-photography-school.com\)](#)

## 9. What is fill the frame photography?

Red

Amber

Green

### I will learn what it means to fill the frame

#### What is fill the frame photography?

In photographic composition, the "frame" refers to the rectangular scene you see through your camera. When you use this technique, you simply fill your photo's frame with more of your subject, reducing the amount of background or negative space shown.

You can achieve this by getting closer to the subject to bring forward the details. A zoom lens is another option if you can't get as close as you'd like.

#### Why use this technique?

When you fill the frame, you remove distractions and put more emphasis on your subject. This creates a stronger overall image and keeps viewers from having to guess what your subject is or what you hope to convey.

The fill the frame technique is especially useful in street photography. Too much background action can create confusion in a photo on busy streets, but using this technique will make your subject matter clear amidst the hustle and bustle.

#### When should you use it?

As with all photographic techniques, deciding whether to use it or not is simply a matter of creative choice.

When composing your shot, stop for a minute and consider the background. If the background helps to tell a story, consider leaving at least a portion of it within the frame. If the background doesn't add anything to the photo, consider a tighter crop to showcase more of your subject.

[What is fill the frame photography? - Adobe](#)

[Fill the Frame Photography & Composition Techniques \(studiobinder.com\)](#)



## 10. How can we consider balance and symmetry in Photography?

Red

Amber

Green

**I will learn about symmetry in photography.**

In photography symmetry appears when parts of your composition mirror other parts. It is created when two halves of your scene look the same and balance each other out. Symmetry defines something being clean, proportional and balanced and will make pictures appear neat, tidy and clinical.



[Symmetry in Photography – Killer Tips to Improve Composition — The School of Photography - Courses, Tutorials & Books](#)

## 11. What is repetition and how can it be explored through photography?

Red

Amber

Green

**I will learn how to recognise repetition in photographs**

Repetition in photography refers to the technique of integrating recurring elements, patterns, or themes in a composition to produce a sense of rhythm and balance in an image. This can involve the repeated use of lines, shapes, colours, textures, or other visual elements that can create a sense of consistency and uniformity.

E.g. A row of trees, a series of arches, a field of sunflowers, or even a group of people dressed similarly. By echoing these elements throughout the image, the photographer guides the viewer's eye across the photograph, establishing a visual rhythm.



## Writing Help

### ANALYSING OTHERS' WORK

Structure your response using the following headings:

#### **FORM**

What is going on in the art work/photography? Explain objectively and honestly (this is what you see)

Imagine you are trying to explain the art work to someone over the telephone and transcribe that message (write it down)

#### **PROCESS**

What has the artist used to make the art work? Consider materials and media. If a photograph, what are the lighting considerations? Has it been presented in a special way i.e. as an installation?

What formal elements appear?

Are there any recognisable types of composition e.g. Rule of Thirds, Rule of Odds, Symmetry, Repetition?

#### **CONTENT**

Having researched further and understood the wider context, discuss the ideas behind the art work and the intentions of the photographer to the best of your ability. Consider the mood of the work and how it has been achieved.

Do you recognise the associated genres?

**CONTEXT-** Understanding the wider context and underlying themes gleaned from research and used to inform your opinion

**This could include-** *Biographical information about the artist, Political events of the time e.g. Wars, Suffragettes*

*Social & Cultural Norms e.g. fashion movements*

*Ideologies, Technology, comparing other artists from the time*

*Consider past work and common trends in career*

*Art movements such as Bauhaus or Futurism*

*How does the work fit in to the history of Art and Photography?*

*Quotes and key points by specialists and academics*

**RESEARCH-** Research using a variety of secondary sources and collecting comments, quotes and discussion points

*Books, Magazines, Periodicals, Newspapers, Galleries, Museums, Internet, Radio, TV/DVD*

**QUESTIONING-** Start with writing down key words and simple questions to get initial primary response and raise further areas for research

**What?** The Artwork

**Who?** Subject Matter

**Where?** Location

**When?** Process

**Why?** Meaning

## **ANNOTATING YOUR OWN WORK**

**Think?**

**What is it that you have done?**

*e.g. **This is a photograph of**.....(subject/object) **considering**.....(techniques such as frame, viewpoint, direct light, natural light, diffused, composition, cropping, macro, movement).*

**Was there anything you felt that didn't work well?**

Write a sentence describing what didn't work well and why.

***I feel that**..... **did not work well because**..... (is the photography in focus? Could the composition be improved? Cropped, should you have used a different viewpoints, lighting dull or not effective? More direct light)*

**Evaluate what was successful? What is it that you liked about it and why?**

*Use of colour-complementary, texture, line, detail, viewpoint lighting etc. **I felt that worked because I used**.....*

**When annotating your work make sure you used photography keywords**

**CONNECTIVES- Connective help our writing to flow- Try using these connectives to improve your written work.**

**ADDITION**

And  
Also  
In addition  
Further  
Furthermore  
As well as  
And then

**COMPARISON**

Similarly  
In comparison  
Otherwise  
In contrast  
Alternatively  
Despite this

**ILLUSTRATION**

For example  
For instance  
In other words  
To show that  
Such as  
As revealed by  
Analysis shows

**SUMMARY**

In brief  
On the whole  
Summarising  
Overall  
To sum up  
Evidently  
In conclusion

**OPINION**

It would seem  
It appears  
Obviously  
Possibly  
It seems likely  
Presumably  
In conclusion

**BALANCE & CONTRAST**

However  
Nevertheless  
Alternatively  
Yet  
whereas

**Task Description**

**Done?**

**Homework will be set every two weeks linking to the project theme**

Below are some additional tasks you can complete with or without a camera:

**Without a camera task-** Look at the different genres for Big Question no 1 choose your favourite and describe it using the analysing others work in the writing help section.

**With a camera task-** take some photographs of your own inspired by one or more genres

**Without a camera task-** Study the pictures in Big Q no 2 and then label the different parts of the DSLR pictures below:



READ ME

Shutter Priority (S or Tv)

Shutter priority is where you have control over shutter speed with the main dial on your camera and then the camera chooses the appropriate aperture for the given scene your camera is pointing at.

Shutter speed is the time that the shutter is open for. The longer the shutter speed, the more light will get into your camera.

Shutter speed also controls how much **motion blur** you have in your photographs. If you are shooting a moving object like a sports person, a bird or moving water, a longer shutter speed will blur this movement.

Shutter priority is great for sports and wildlife photography, where having the right shutter speed is imperative.



COMPLETE ME

Shutter Priority (S or Tv)

Shutter priority is where you have control over ..... with the main dial on your camera and then the camera chooses the appropriate ..... for the given scene your camera is pointing at.

Shutter ..... is the time that the shutter is open for. The longer the shutter speed, the more ..... will get into your camera.

Shutter speed also controls how much **motion** ..... you have in your photographs. If you are shooting a moving object like a sports person, a bird or moving water, a ..... shutter speed will blur this movement.

Shutter priority is great for sports and wildlife photography, where having the right shutter ..... is imperative.



**Without a camera task-** Which of the formal elements is being shown in the pictures below? Go on the internet and find 10 pictures linked to the formal elements and make a collage like the one below using copy and paste.

**With a camera task-** take pictures looking for examples of the formal elements make a collage if you can





**Without a camera task-** Use the worksheet below to help you plan a photo shoot linked to one of the genres...



# PHOTOSHOOT PLANNING SHEET

Pick your favorite idea from the ideation sheet and start to it out

**What's Your Idea?**

**List Possible Locations**

**What Lighting  
Will You need?**

**List Model and  
Wardrobe Ideas**

**Do You Need  
Any Props?**

**What is Inspiring  
You To Do This?**

**Any Specific Themes  
or Colors to Use?**

Without a camera task- complete the worksheet below...

# PHOTOGRAPHY VOCABULARY

MATCH THE WORDS WITH THE PICTURES -

LIGHTING RING - DRONE - FLASH - LANDSCAPE - PORTRAIT  
RULE OF THIRDS - GOLDEN RATIO - DSLR CAMERA - MIRRORLESS CAMERA  
BATTERY - MEMORY CARDS - CAMERA STABILIZER - TRIPOD - LENS FILTER  
APERTURE - LENS



1



2



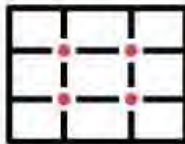
3



4



5



6



7



8



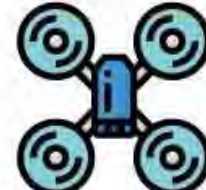
9



10



11



12



13



14



15



16

Without a camera task- complete the worksheet below

# photography

E	P	H	L	I	M	O	O	R	K	R	A	D	P
M	O	L	M	T	L	E	T	W	M	L	I	F	O
T	H	L	O	E	O	I	H	I	H	G	I	L	T
M	S	S	N	E	L	E	G	L	A	G	E	A	S
A	O	O	G	P	E	K	I	P	R	A	M	T	I
A	T	O	M	O	D	E	L	G	D	O	T	I	M
P	O	A	R	I	S	T	T	C	L	L	L	G	H
E	H	K	U	K	S	E	F	A	I	O	O	I	I
R	P	N	R	R	G	T	O	M	G	W	I	D	G
T	F	R	H	M	O	R	S	E	H	K	D	O	H
U	L	A	U	N	A	M	I	R	T	E	U	E	K
R	O	D	T	E	H	H	A	I	Y	T	O	E	
E	S	O	L	A	T	K	D	I	N	T	S	H	Y
D	I	P	T	R	I	P	O	D	G	A	A	D	S

DIGITAL  
HIGHKEY  
LENS  
STUDIO  
ISO  
MODEL  
CAMERA  
HARDLIGHT  
LOWKEY  
SOFTLIGHT  
PHOTOSHOP  
APERTURE  
TRIPOD  
MANUAL  
FILM  
DARKROOM  
LIGHTING

Play this puzzle online at : <https://thewordsearch.com/puzzle/232185/>

Without a camera task- complete the worksheet below...

# PHOTOGRAPHY - WORD SCRAMBLE GAME

Put the letters into the correct order.

PHOTO, IMAGE, CAMERA, LENS, FOCUS, MACRO, ZOOM, SHUTTER, TRIPOD, VIEW,  
FLASH, BACKGROUND, CONTRAST, CROP, CAPTURE, FILM, TONE, BRIGHTNESS

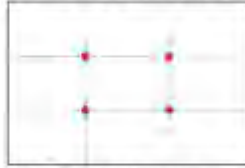
- |                |       |
|----------------|-------|
| 1. FMLI        | ..... |
| 2. MAIGE       | ..... |
| 3. TOPHO       | ..... |
| 4. ATNRCTOS    | ..... |
| 5. ESRHUTT     | ..... |
| 6. MROCA       | ..... |
| 7. SOCFU       | ..... |
| 8. TNEO        | ..... |
| 9. ETCRAPU     | ..... |
| 10. RPCO       | ..... |
| 11. SIEBSRHTGN | ..... |
| 12. DIRTPO     | ..... |
| 13. IVEW       | ..... |
| 14. BRNKCDUOAG | ..... |
| 15. SENL       | ..... |
| 16. ZOOM       | ..... |
| 17. HALFS      | ..... |
| 18. RACEAM     | ..... |

**Without a camera task-** identify which picture is using the Rule of thirds then sketch it in the grid

**With a camera task-** take photos using the Rule of Thirds

## The Rule of Thirds

Imagine that your image is divided into 9 equal segments by 2 vertical and 2 horizontal lines.



Photographs with the focal point exactly in the centre can lack depth and interest, so it's better to position your focal point off-centre. To do this, apply the rule of thirds. Draw two horizontal and two vertical lines through the picture you want to capture. The eyes are naturally drawn to the four focal points illustrated in

**Compare the two images above. A focal point placed in the centre often just looks boring, so avoid placing your focal point in the centre. You will see this rule being applied in any magazine you look at.**



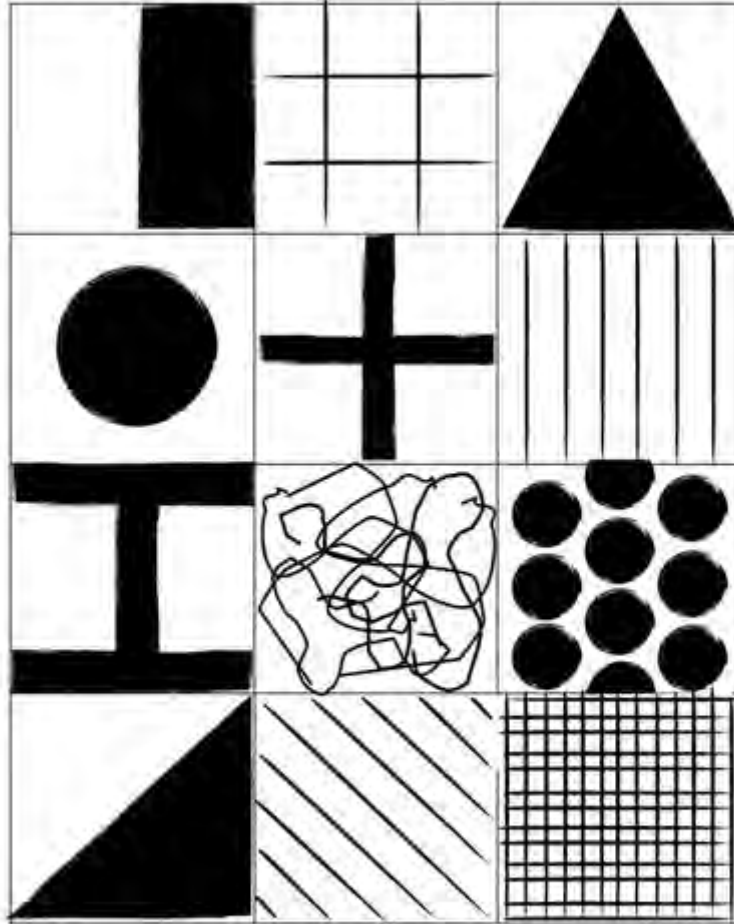
Centre focal point

Rule of Thirds

**With a camera task-** complete the worksheet below

# PHOTO SAFARI

Work in pairs. Try to capture photographs that look a bit like the drawings below.



When you get back to class, compare your images with the drawings.  
Which ones worked and why? Which ones didn't work so well, and why?

**Without a camera task-** choose a photo from the KO and analyse it using the writing help  
**With a camera task-** annotate one of your own photographs