The Castle School
ACHIEVE | BELONG | PARTICIPATE

Knowledge Organisers

Year 8

Autumn Half Term 1

'Practice of what is taught'

Name: ……

Tutor: ……

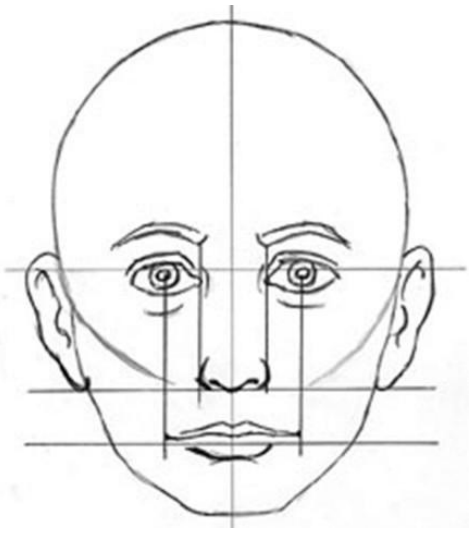
House: ……

Art

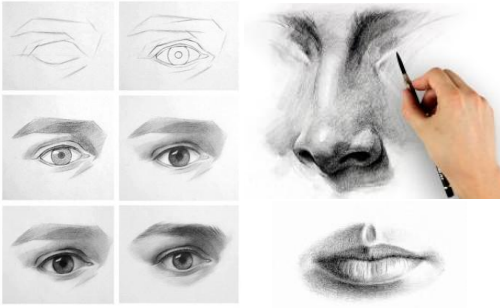
Year 8 - Portraits

Key knowledge & skills

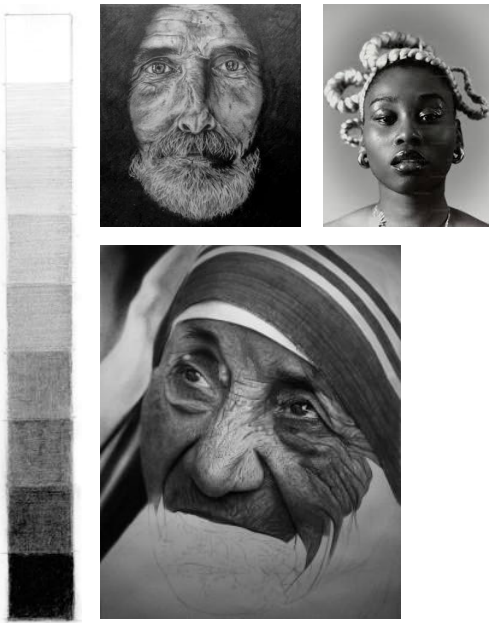
Drawing a realistic self portrait , building on what you know about drawing from observation. **Recording shapes** with accuracy. Drawing lightly so you can **adjust and refine. Measuring** as you draw to achieve accurate proportion. **Noticing** details, including using **mark-making** to show different surface textures. Using a range of **light, medium and dark tones** to show how light shines on the face and where light cannot reach.



Develop your skills in **drawing features**. **Learn how to draw eyes, noses and mouths with accuracy** and how to position them into a drawing of the whole face. You will learn how to use **tone** to help shape these features and **mark making** to show **textures**.



Understanding portraiture Art. In this project, you will learn about the role and purpose of portrait art. You will find out Portrait Art by studying a range of artists.



Your final outcome will be an **accurate** A3 portrait.

Key Artists

Kehinde Wiley
An American artist who often mimics the **'Old Masters'** in his paintings. He blurs the boundaries between t **raditional** and **contemporary** portraits. He was **commissioned** by Barak Obama to paint his presidential portrait. He uses foliage and flowers that are connected to the former president's life.

Ron Mueck
An Australian born artist who creates highly realistic looking **sculptures**. He plays around with **scale**, often creating **figures and faces** that are extremely oversized.

Kelvin Okafar
A British **photorealist** artist who works in pencil. He studied in Middlesex and during Covid he set up online drawing classes to share his drawing methods with others.

Frida Kahlo
A Mexican artist who was injured badly at a young age and used art as a therapy to help her recovery. She painted many realistic **self-portraits** which were filled with elements of **symbolism**.

Key Terms

PORTRAIT: A painting, drawing, photograph, or engraving of a person, especially one depicting only the face or head and shoulders.

REALISM: Realism is art that is designed to faithfully copy the real world - with accurate recording of shape proportion and detail.

Computing Knowledge Organiser Year 8

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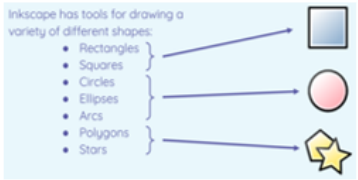
Topic: Media – Vector Graphics

Inkscape

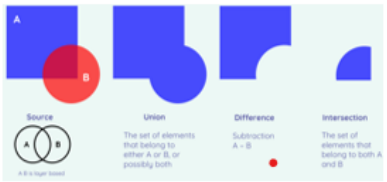
Rationale: To identify that a vector drawing comprises separate objects and be able to create vector graphics

Drawing Tools

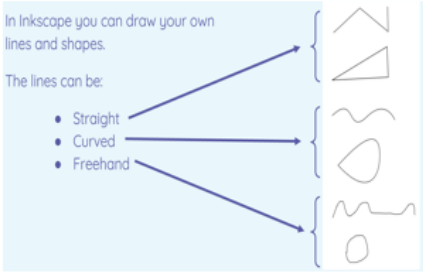


Combining Objects

Combine Objects in Inkscape using Source, Union, Difference and Intersection



Paths



Key Words

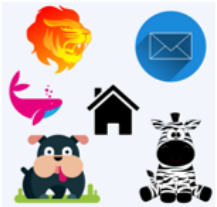
Digital Graphics	A graphic is an image or visual representation of an object. Therefore, computer graphics are simply images displayed on a computer screen.
Vector Image	Mathematically based images. Made up of lines, shapes etc (objects). Easily scalable (as they are not pixel based).
Bitmap Image	Pixel based images. This type of image is resolution based. Stretching them, stretches the pixels and loses quality.
Inkscape	Inkscape is professional quality vector graphics software

Common Uses

Common uses for vector graphics

Logos
Illustrations
Icons

Can you research any others?

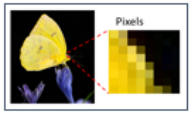


Inkscape

Inkscape is a professional quality vector graphics software.

Vector graphics software is a type of application used to create and edit images using mathematical formulas and geometric shapes, rather than individual pixels.

Difference between Bitmap and Vector Images

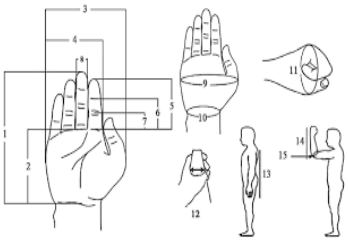


Vector graphics are images such as illustrations, icons, and logos. They do not use many colours because they have large areas of solid colour.

Bitmap images (raster graphics) are usually real photographs that contain a great deal of detail. They use lots of colours because each tiny pixel is a slightly different shade to allow the colours to blend.

DT

Week 2: Ergonomics -What is ergonomics and anthropometrics and how does it affect our lives?



Designers need to think about **anthropometrics** and **ergonomics** when they make products. This helps them create things that are safe, comfortable, and easy to use.

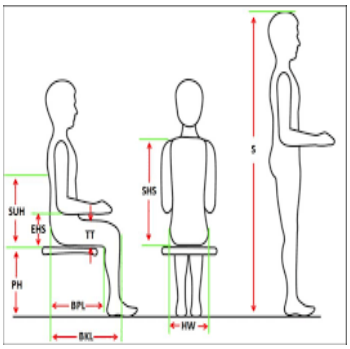
What is Ergonomics?

Ergonomics is about making sure things are comfortable and easy to use. Designers use body size information (anthropometrics) to help with this.If a product isn't designed well, it might hurt to use it or be hard to use. Good ergonomic design makes things better for your body.

Here's what good ergonomics looks like at a desk:

- The desk is the right height for typing and using a mouse.
- The screen is at eye level, so your neck doesn't get sore.
- The chair can be moved up or down to fit your height.
- Armrests and backrests help you sit properly.

What is Anthropometrics?



Anthropometrics is the study of body sizes. It helps designers know how big or small different parts of the body are—like hands, arms, or heads.

For example, if someone is making a safety helmet, they need to know how big people's heads are. Since everyone's head is a little different, the helmet should be adjustable, so it fits most people.

Designing for Most People

It's hard to make one product that fits everyone. So, designers try to make things that work for most people. They use something called **percentiles** to help.

Here's what percentiles mean:

- **5th percentile**: smaller than most people
- **50th percentile**: average size
- **95th percentile**: bigger than most people

Designers usually make products that fit people between the 5th and 95th percentiles. That way, most people can use them comfortably.

Watch (2min 16 seconds) [Why Ergonomics? | Importance & Benefits of Ergonomic Workplace [LUMI] - YouTube]

Week 4: "Exploring Woods: Types, Examples & Uses"

Softwood

- Comes from **coniferous trees** (trees with needles)
- Grows quickly, making it more affordable
- **Example:** *Pine* – used for furniture, flooring, and construction
- Often lighter in colour and easier to cut

Hardwood

- Comes from **deciduous trees** (trees that lose their leaves)
- Stronger and lasts longer but is more expensive
- **Example:** *Oak* – used for high-quality furniture and flooring
- Often darker in colour with a denser grain

Manufactured Boards

- Made by gluing wood pieces together
- More stable, affordable, and versatile
- **Example:** *MDF (Medium-Density Fiberboard)* – used in furniture.

Why understanding different woods matter when making products

- Strength vs. flexibility and its suitability for different products
- Cost and availability of timber before purchasing
- Which wood be best for different jobs

Fun Fact & Conclusion

- Did you know the oldest tree in the world is over 4,800 years old? Woods are everywhere in our lives!

Why understanding different woods matter when making products

- Strength vs. flexibility and its suitability for different products
- Cost and availability of timber before purchasing
- Which wood be best for different jobs

Types		**Uses**
Softwood	Pine, Cedar	Furniture, construction
Hardwood	Oak, Mahogany	Flooring, luxury furniture
Manufactured Boards	MDF, Plywood	Cabinets, paneling

English – Sparx Reader

For your Sparx Reader homework, you should spend 30 minutes carefully reading your Sparx reader book, paying close attention to what you are reading. If you can achieve 300 points in 30 minutes, that's excellent. If you have spent 30 minutes but not yet reached 300 points, your teacher will see that you have spent enough time reading and will give you a house-point for completing homework.

If you can, try to read in a quiet, distraction-free spot so that you can concentrate on what you are reading and answer the questions accurately.

Your homework is the same every week, so it is your responsibility to complete your 30 minutes, or 300 points, of reading. Please see your teacher **before** the day the homework is due if you have any problems.

Reading Articles

You will have a reading article each week linking to the whole school theme:

Week 1: Values

Week 2: Friendship and Family

Week 3: Ambition

Week 4: Black History Month

Week 5: Equality

Week 6: Celebration

Read the article and highlight three words of which you were not sure. Then write the definition and draw an image which will help you remember.

As you read the articles, you will identify that the articles are not in UK English. However, the articles offer some great messages.

Use this QR code to access the reading articles read by a teacher or link:
https://www.castleschool.co.uk/parents/homework.htm

Food

Chemical Hazards

Obviously, the chemical agents with which we clean the kitchen are not for human consumption. Whilst you should spray the surface of a chopping board, you don't want anti-bacterial in your finished cooked dishes. In addition, poisons and pest control materials can be highly dangerous sources of chemical contamination. You should have a clear system of cleaning which ensures no cleaning fluids, sprays or similar potential contaminants come into contact with food.

Physical Hazards

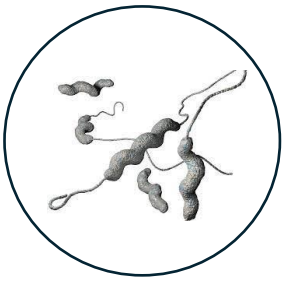
Physical hazards are things like plasters, jewellery and pest droppings. When you think how far a shattered tumbler will spread glass, it becomes clear how easy it is for physical contamination to get into food. Broken objects should be cleaned immediately and properly. Some contaminants can even be a choking hazard, so keep your eyes peeled.

Allergen Hazards

Allergic reactions can kill. Allergens are one of the most dangerous types of food hazard. The victims' airways or tongue can swell, their blood pressure can plummet, and they can struggle to breathe. Many pre-made ingredients contain allergens and therefore cross-contamination is easy. Education about them is an absolute necessity.

Microbiological Hazards

This is one of the most common types of food hazard and what we mostly associate with food poisoning. It concerns the introduction of bacteria and similar nasties into food can cause a range of illnesses. For example, washing chicken is an extremely common microbiological hazard. Campylobacter and salmonella can spread when you splash chicken water around the sink and adjacent areas. Handling chicken and other poultry properly is vital to preventing this.



Clearing Up Procedure in School

1. Use hot water and washing up liquid
2. Place dirty dishes next to the sink but not on the draining board
3. Use a dishcloth
4. Wash up the cleanest items first and overturn onto draining board to drain
5. Clean worktops with a dishcloth
6. Wash out your bins and dry them
7. Dry up dishes with a tea-towel and leave out for teacher to check
8. Place sharp knives in the block
9. Collect your name tag and organise your container
10. Pack equipment away
11. Check your sink is clean and the plug hole is empty
12. Place dirty cloths in the wash basket and oven gloves away
13. Switch oven off at the dials and the main switch. Wait quietly for the teacher to dismiss

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Geography

Topic: 'How is Asia being transformed?'

Week 2 – Introducing Asia	Week 4 – Asia's population	Week 6 – Squatter settlements and trade
A **continent** is a huge area of land, like Asia or Africa, and it's usually separated from other continents by oceans. Inside each continent, there are **countries**, which are areas with their own governments, like **Nepal**. Within countries, there are smaller areas called **regions**, and in different regions, you can find different **biomes**. A **biome** is a large area that has its own kind of weather, plants, and animals. One example is the **mountain biome**, which starts high up—around 3,000 meters—and goes up to where the snow begins. The **climate** of a biome is what the weather is usually like over a long time, usually 30 years. In Nepal, which is in Asia, the mountain biome is being affected by **deforestation**, which means cutting down lots of trees. This is causing problems like **soil erosion**, where the soil gets washed or blown away because there are no tree roots to hold it in place. This can harm the land and the people who live there.	Asia is the biggest continent in the world, and more than 60% of all the people on Earth live there—that's about 4.4 billion people! Most of them live in just two countries: China and India. In every country, there are people who work and people who don't. The people who don't work, like children and older people, are called the **dependent population** because they rely on others to take care of them. Some countries, like **Japan**, have more and more older people and fewer babies being born. This is called an **ageing population**, and it means there are fewer young people to help support the older ones. Japan's population is also getting smaller, which can make it hard to keep the country running smoothly. On the other hand, **Afghanistan** has lots of young people and its population is growing very fast. This can lead to **overpopulation**, which happens when there aren't enough jobs, food, or homes for everyone. In some places, the opposite happens—there aren't enough people to use all the resources and technology. That's called **underpopulation**. Each of these situations brings different challenges for countries to solve.	A **megacity** is a city with more than ten million people, like **Mumbai** in India. Inside Mumbai is **Dharavi**, the largest **squatter settlement** in India. Squatter settlements—also called slums, favelas, or shanty towns—are areas where people live in poor-quality homes without proper water, toilets, or electricity. Dharavi is very crowded, with about one million people living in just one square mile. Even though life is hard, there's a strong sense of community. The government wants to move people out to build new developments, but many residents don't want to leave, which causes conflict. India is also connected to other countries through **interdependence**, meaning it works with and relies on others, especially through **trade**. Trade is when countries buy and sell goods and services. **Exports** are things a country sells to others, and **imports** are things it buys from other countries. If a country spends more on imports than it earns from exports, it has a **trade deficit**. If it earns more from exports, it has a **trade surplus**. Since 2006, India's economy has grown quickly. Its imports—like oil from the Middle East and goods from China—and its exports—mainly to other Asian countries—have both tripled.

History

Component	Core knowledge (that you NEED to know)	Key vocab (that you NEED to know and use)
Week 1: Why was the Roman Catholic Church challenged in the Early 1500s? 	In England in the 1500s most people were Roman Catholic Christians. If you did not follow the Catholic faith, you were considered a recusant by the Church and the monarch. Religion was used by the Church and monarch as a way to control people. If people were good, they thought they would go to heaven after death. If they had sinned, they were told to expect to go to hell. The Church was a positive influence for many people as they found community and support, such as shelter, medical and food. Martin Luther was a German monk and teacher who lived from 1483 to 1546. He is best known for starting the Reformation by challenging the Catholic Church's practices, especially the sale of indulgences, with his 95 Theses in 1517. Luther's actions led to the creation of Protestant churches, and he also translated the Bible into German, making it accessible to more people. His ideas about faith and direct relationship with God changed the course of Christian history. This movement indirectly influenced Henry VIII, who, driven by personal and political motives, broke away from the Catholic Church and established the Church of England. Luther's actions set the stage for broader religious transformations that reshaped Europe.	**Recusant:** Someone who did not follow the religion of the country. **Doom paintings:** Paintings found on the walls of Catholic churches. They would show good people going to heaven and sinners going to hell. **Reformation** – The process of making change in an organisation. 'The Reformation' is the name given to describe How Henry VIII changed the church from Catholic to Protestantism.
Week 3: Why did his marriage to Catherine of Aragon become a challenge for Henry VIII? 	'The King's Great Matter' is a way that Henry VIII's advisors referred to his efforts to get a divorce/annulment from Catherine of Aragon. It was a very difficult situation because both Henry and Catherine believed that they had evidence to show that the other was wrong in their views. Catherine also refused to leave. She was a strict Catholic so believed marriage should last until death. However, four key areas, explain why Henry decided to overcome this challenge through a divorce. 1. **Lack of Male Heir**: His marriage to Catherine had failed to produce a male heir to the throne, which was crucial for the stability of the Tudor dynasty. 2. **Infatuation with Anne Boleyn**: Henry became infatuated with Anne Boleyn, one of Catherine's ladies-in-waiting. Anne's influence encouraged him to seek a divorce and pursue a relationship with her. 3. **Issue with Catherine of Aragon** – Catherine had many miscarriages and by 1527 was around 40. She would not be able to bear a male heir. 4. **Religious concerns** – Henry VIII was concerned that he had married his dead brother's wife and this was sinful/against gods will.	**Divorce:** Ending a marriage **Illegitimate:** born outside marriage (a child could not legally become a monarch if this was so) **Annulment:** Declaration to say a marriage was never legal in the first place. **Pope:** The Head of the Catholic Church **Heir:** The next person to rule a country**.**

Week 5: How was the Catholic Church a challenge to Henry VIII's Power? 	The Pope is considered the spiritual leader of Catholics worldwide. He interprets religious doctrine, provides guidance, and ensures unity within the Church. He refused to give Henry VIII an annulment as he was worried about upsetting the King of Spain and the other Catholic leaders. Henry didn't like the fact that the Pope had more power than him over people in England and told them what to do. After all, Henry was king of England and not the Pope! Why should the Pope who lived in Rome in Italy have more power than Henry. • The Pope faced challenges: He was about to step down as pope and lacked time. He was a prisoner of the Holy Roman Emperor, Charles V. A previous pope had clashed with Henry, making Clement hesitant to assist him. Essentially, this led to Henry VIII making himself **Supreme Head** of the new 'Church of England'. • He rid himself of his old Catholic Archbishop, Wolsey, and appointed **a new Protestant archbishop**, Cranmer. He **annulled his own marriage** to Katherine and married Anne Boleyn By making himself Head of the new Church in England, people wouldn't pay their taxes to the Pope, instead they would pay their taxes to Henry. Henry would become rich. Henry could sell the land and buildings (monasteries) that the Roman Catholic Church owned in England and make a lot of money for himself. Monasteries were Catholic places of worship and were often very big, rich places. Monks would live in monasteries and devote their lives to serving God. Monks had to give up their families and possessions when they went to live in monasteries so were individually very poor. However, they had food, healthcare, education and accommodation in the monasteries, so they were good places to live. They were highly decorated, impressive buildings with lots of expensive items and relics. The Catholic Church owned a quarter of all the land in England at that time. The Catholic Church took 10% of people's income at this time (tithe). Henry VIII wanted this wealth for himself as he had spent much of his wealth on costly wars.	**Divorce:** Ending a marriage **Annulment:** Declaration to say a marriage was never legal in the first place. **Pope:** The Head of the Catholic Church **Heir:** The next person to rule a country. **Reformation** – The process of making change in an organisation. 'The Reformation' is the name given to describe How Henry VIII changed the church from Catholic to Protestantism. **Economic:** Relating to money. **Monastery:** A place where monks live. **Tithe:** A tax of 10% of income or production that the public pay the Church. **Dissolution:** Destruction – getting rid of the monasteries.

Languages - *French*

Tu es allé(e) où en vacances? Avec qui? (verbs that use 'être' / perfect tense)
Where did you go on holidays? With who?

* You use the verb 'to be' to form the perfect tense with these past participles. E.g. 'je suis arrive' =' I am arrived' word for word, but means 'I arrived' in real English.

Time phrase	*Être verb*	Past participle	Country	With	*Who with?*
L'année dernière *Last year* L'été dernier Last summer	**Je suis** *I*	**allé (e)** *went* **arrivé (e)** *arrived*	**au** Maroc *to Morocco* **au** Portugal *to Portugal* **au** Canada *to Canada* **en** France *to France* **en** Espagne to *Spain* **en** Italie to *Italy* **en** Grèce to *Greece* **aux** États-Unis *to America*	avec with	**mon** père *my dad* ***mon** copain* *(male) friend*
	Nous sommes *we*	**allé(e)s** *went* **arrivé(e)s** *arrived*			**ma** mère *my mum* ***ma** copine* *(female) friend* **ma** famille *my family*
					***mes** parents* my parents **mes** copains my friends

When	Verb	Details	With	Who?
Normalement *normally* D'habitude *usually* Pendant les vacances *during the holidays*	je vais *I go / I am going* nous allons *we go / we are going* 	au bord de la mer *to the seaside* à la campagne *to the countryside* à la montagne *in the mountains* à Paris *to Paris*	avec	**mon** père *my dad* ***mon** copain* *(male) friend*
	je voyage *I travel* nous voyageons *we travel* 	en train *by train* en car *by coach* en voiture *by car* en avion *by plane* en bus *by bus* à vélo *by bike* à pied *on foot*		**ma** mère *my mum* ***ma** copine* *(female) friend* **ma** famille *my family*
				***mes** parents* my parents **mes** copains my friends

Tu es allé(e) où en vacances? Avec qui? (verbs that use 'être' / perfect tense)
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Time phrase	*Être verb*	Past participle	Country	With	*Who with?*
L'année dernière *Last year* L'été dernier Last summer	**Je suis** *I*	**allé (e)** *went* **arrivé (e)** *arrived*	**au** Maroc *to Morocco* **au** Portugal *to Portugal* **au** Canada *to Canada* **en** France *to France* **en** Espagne to *Spain* **en** Italie to *Italy* **en** Grèce to *Greece* **aux** États-Unis *to America*	avec with	**mon** père *my dad* ***mon** copain* *(male) friend*
	Nous sommes *we*	**allé(e)s** *went* **arrivé(e)s** *arrived*			**ma** mère *my mum* ***ma** copine* *(female) friend* **ma** famille *my family*
					***mes** parents* my parents **mes** copains my friends

Tu as voyagé comment? Comment était le voyage? (regular –er verb / perfect tense)
How did you travel? How was the journey?

Time phrase	*Avoir verb*	Past participle	*Transport*	*Conjunction + verb*	*Adjective*
L'année dernière *Last year* L'été dernier *Last summer*	**j'ai** *I*	**voyagé** *travelled*	**en** voiture ***by** car* **en** train ***by** train* **en** avion ***by** plane* **en** car ***by** coach* **en** bus ***by** bus*	et c'était... *and it was...*	rapide *quick* lent *slow* cher *expensive* confortable *comfortable* ennuyeux *boring*
	nous avons *We*	**voyagé** *travelled*		et ce n'était pas ... *and it wasn't...*	

Tu as passé de bonnes vacances? (regular –er verbs / perfect tense)
Did you have a good holiday?

Time phrase	Avoir verb	Past participle	Activity	Conjunction / verb	*Adjective*
Pendant les vacances *During the holidays* D'abord *First of all* Ensuite *Next* *Après* *After* Finalement *Finally*	**j'ai** *I*	**joué** *played*	au tennis *tennis*	et c'était *and it was*	génial *great* amusant *fun* marrant *funny* sympa *nice* ennuyeux *boring* nul *rubbish*
		mangé *ate*	des glaces *some ice-creams*		
		retrouvé *met*	mes / nos amis *my / our friends*		
	nous avons *we*	**écouté** *listened*	de la musique *to some music*		
		acheté *bought*	des baskets *some trainers*		
		regardé *watched*	des clips vidéo *some video clips*		
		nagé *swam*	dans la mer in the sea		
		traîné *hung around*	à la maison at home		

Qu'est-ce que tu as fait pendant les vacances? (irregular verbs / perfect tense)
What did you do on holiday?

Time phrase	Avoir verb	Past participle	Details	Conjunction + verb	Adjective
Pendant les vacances *During the holidays* D'abord *First of all* Ensuite *Next* *Après* *After* Finalement *Finally*	**j'ai** *I*	**vu** *saw*	un spectacle *a show* des monuments historiques *some historic monuments*	et c'était *and it was*	génial *great* amusant *fun* marrant *Funny* sympa *Nice* ennuyeux *boring* nul *rubbish*
		bu *drank*	un coca *a cola*		
	nous avons *we*	**lu** *read*	un roman *a novel / book*		
		fait *did/made*	une balade en bateau *a trip by boat*		
		pris *took*	beaucoup de photos *lots of photos* des selfies *some selfies*		

German

Was ist dein Lieblingsfach?

opinion	noun	negative or intensifier	connective	adjective	verb
Ich mag *I like* **Ich liebe** *I love* **Ich hasse** *I hate* **Ich mag auch** *I also like* **Ich mag** *I like*	**Deutsch** *German* **Englisch** *English* **Erdkunde** *geography* **Französisch** *French* **Geschichte** *history* **Informatik** *IT* **Kochen** *food* **Kunst** *art* **Mathe** *maths* **Musik** *music* **Naturwissenschaften** *science* **Religion** *RE* **Spanisch** *Spanish* **Sport** *PE* **Theater** *drama* **Werken** *DT*	**sehr** *very much*	**,weil es** *because it* **,obwohl es** *although it*	**einfach** *easy* **faszinierend** *fascinating* **gut** *good* **interessant** *interesting* **kreativ** *creative* **lustig** *funny* **nützlich** *useful* **spannend** *exciting* **supercool** *cool* **toll** *great* **wichtig** *important*	**ist.** *is.*
		nicht *not* **gar nicht** *not at all* **überhaupt nicht** *absolutely not at all*	**,weil ich es** *because I it.....*	**doof** *stupid* **furchtbar** *terrible* **langweilig** *boring* **nervig** *annoying* **nutzlos** *useless* **schrecklich** *awful* **schwierig** *difficult* **stinklangweilig** *really boring*	**finde.** *find* *(I think it's...)*

Was hast du am Montag?

Time phrase	More specific time phrase	Verb + subject	Object (school subject)
Am Montag *On Monday* **Am Dienstag** *On Tuesday* **Am Mittwoch** *On Wednesday* **Am Donnerstag** *On Thursday* **Am Freitag** *On Friday* **Am Samstag** *On Saturday* **Am Sonntag** *On Sunday* **Heute** *Today* **Morgen** *Tomorrow*	**in der ersten Stunde** *in the 1st period* **in der zweiten Stunde** *in the 2nd period* **in der dritten Stunde** *in the 3rd period* **in der vierten Stunde** *in the 4th period* **in der fünften Stunde** *in the 5th period* **in der sechsten Stunde** *in the 6th period* **in der letzten Stunde** *in the last period* **vor der Pause** *before break* **nach der Pause** *after break* **vor der Mittagspause** *before lunch* **nach der Mittagspause** *after lunch*	**habe ich** *I have* **haben wir** *we have*	**Deutsch** *German* **Englisch** *English* **Erdkunde** *geography* **Französisch** *French* **Geschichte** *history* **Informatik** *IT* **Kochen** *food* **Kunst** *art* **Mathe** *maths* **Musik** *music* **Naturwissenschaften** *science* **Religion** *RE* **Spanisch** *Spanish* **Sport** *PE* **Theater** *drama* **Werken** *DT* **keine Schule** *no school*

Wann *When*	**hast du** *have you*	**(Mathe)?**
Um wieviel Uhr *At what time*	**haben wir** *have we*	

Um *At*	**acht** *(8)*	**Uhr**	**fünfzehn**
	zwölf *(12)*		**dreißig**
	fünfzehn *(15)*		**fünfundvierzig**

Was isst du in der Schule?

Subject-Verb	Time phrase	Noun – food/drink	Connective (Kicker)	Intensifier	Adjective	Verb
Ich esse I eat	**jeden Tag** every day	**Chips** crisps	**weil es** because it	**ziemlich** quite	**lecker** tasty	**ist** is
Er isst He eats	**jede Woche** every week	**einen Apfel** an apple	**obwohl es** although it	**sehr** very	**köstlich** delicious	
Sie isst She eats	**oft** often	**einen Kuchen** a cake		**ein bisschen** a bit	**gesund** healthy	
Ich trinke I drink	**manchmal** sometimes	**Kekse** biscuits		**echt / ganz** really	**ungesund** unhealthy	
Er trinkt He drinks	**ab und zu** now and then	**Schokolade** chocolate		**extrem** extremely	**langweilig** boring	
Sie trinkt She drinks	**immer** always	**Bonbons** sweets		**total** completely	**ekelhaft** disgusting	
	selten rarely	**eine Banane** a banana				
	nie never	**eine Orange** an orange				
		ein Brötchen a bread roll				
		Cola cola				
		Orangensaft orange juice				
		Wasser water				

Wie sind die Lehrerinnen und Lehrer?

Pronoun/noun	verb	intensifier	adjective
Ich *I*	**bin** *am*	**zu** *too*	**alt** *old*
Du *you*	**bist** *are*	**sehr** *very*	**fair** *Lorrine*
Der Lehrer *The teacher (male)* **Die Lehrerin** *The teacher (female)* **Der Direktor** *The headteacher (male)* **Die Direktorin** *The headteacher (female)* **Er** *He* **Sie** *She*	**ist** *is*	**ziemlich** *quite*	**freundlich** *friendly* **gemein** *mean* **jung** *young* **komisch** *weird* **kräftig** *strong* **launisch** *moody* **lustig** *funny* **nervig** *annoying* **pünktlich** *punctual* **schlau** *clever* **streng** *strict* **unfreundlich** *unfriendly* **unpünktlich** *unpunctual*
Wir *We* **Sie** *They* **Die Lehrer** *The teachers (male)* **Die Lehrerinnen** *The teachers (female)*	**sind** *are*	**ein bisschen** *a bit* **nicht** *not*	

Opinion phrase	verb	noun	adjective	
Meiner Meinung nach In my opinion	ist	**der Deutschlehrer**	**freundlich** **fair** **streng**	
Ich denke, dass I think that		**die Mathelehrerin**		
		die Sportlehrerin		**ist**

Mandarin

wǒ xǐ huān chī mǐ fàn yīn wèi hěn hǎo chī
我喜欢吃米饭，因为很好吃。 I like eating rice, because it's very tasty.

Subject	Verb 1	Verb 2	Object	because	adjective
wǒ 我 I bà bà 爸爸 Dad mā mā 妈妈 Mum gē gē 哥哥 older brother dì dì 弟弟 younger brother jiě jiě 姐姐 older sister mèi mèi 妹妹 younger sister	xǐ huān 喜欢 like	chī 吃 eat	miàn bāo 面包， bread jī dàn 鸡蛋， egg miàn tiáo 面条， noodle mǐ fàn 米饭， cooked rice bǐ sà bǐng 比萨饼， pizza shuǐ guǒ 水果， fruit	yīn wèi 因为 because	hěn hǎo chī 很好吃。 very tasty hěn xiāng 很香。 very fragrant hěn tián 很甜。 very sweet
		hē 喝 drink	shuǐ 水， water chá 茶， tea guǒ zhī 果汁， fruit juice		hěn hǎo hē 很好喝。 very tasty hěn xiāng 很香。 very fragrant hěn tián 很甜。 very sweet

wǒ bù xǐ huān chī mǐ fàn yīn wèi bù hǎo chī
我不喜欢吃米饭，因为不好吃。 I don't like eating rice, because it's not tasty.

Subject	Negative	Verb 1	Verb 2	Object	because	adjective
wǒ 我 I bà bà 爸爸 Dad mā mā 妈妈 Mum gē gē 哥哥 older brother dì dì 弟弟 younger brother jiě jiě 姐姐 older sister mèi mèi 妹妹 younger sister	bù 不	xǐ huān 喜欢 like	chī 吃 eat	miàn bāo 面包， bread jī dàn 鸡蛋， egg miàn tiáo 面条， noodle mǐ fàn 米饭， cooked rice bǐ sà bǐng 比萨饼， pizza shuǐ guǒ 水果， fruit	yīn wèi 因为 because	bù hǎo chī 不好吃。 not tasty bù xiāng 不香。 not fragrant bù tián 不甜。 not sweet
			hē 喝 drink	shuǐ 水， water chá 茶， tea guǒ zhī 果汁， fruit juice		bù hǎo hē 不好喝。 not tasty bù xiāng 不香。 not fragrant bù tián 不甜。 not sweet

wǒ jiā xīng qī yī chī mǐ fàn
我家星期一吃米饭。 My family on Monday eat rice.

who	family	Days of the week	eat	food	drink	drinks
wǒ 我 xiǎo yuè 小月 Jamel péng yǒu 朋友	jiā 家 family	xīng qī yī 星期一 Monday xīng qī èr 星期二 Tuesday xīng qī sān 星期三 Wednesday xīng qī sì 星期四 Thursday xīng qī wǔ 星期五 Friday xīng qī liù 星期六 Saturday xīng qī rì 星期日 Sunday xīng qī tiān 星期天 Sunday	chī 吃 eat	chǎo miàn 炒面， fried noodles chǎo fàn 炒饭， fried rice dàn chǎo fàn 蛋炒饭， egg fried rice jiǎo zi 饺子， dumplings bāo zi 包子， steamed stuffed bun	hē 喝 drink	shuǐ 水。 water chá 茶。 tea zhōng guó chá 中国茶。 Chinese tea yīng guó chá 英国茶 English tea guǒ zhī 果汁。 fruit juice gā fēi 咖啡。 coffee

wǒ men zǎo fàn chī miàn bāo hē niú nǎi
我们早饭吃面包，喝牛奶。 We breakfast eat bread, drink milk.

who	mealtimes	eat	food	drink	drinks
wǒ men 我们 bà bà 爸爸 Dad mā mā 妈妈 Mum gē gē 哥哥 older brother dì dì 弟弟 younger brother jiě jiě 姐姐 older sister mèi mèi 妹妹 younger sister	zǎo fàn 早饭 breakfast wǔ fàn 午饭 lunch wǎn fàn 晚饭 dinner	chī 吃 eat	niú ròu 牛肉， beef zhū ròu 猪肉， pork yáng ròu 羊肉， lamb jī ròu 鸡肉， chicken yú 鱼， fish chǎo miàn 炒面， fried noodles dàn chǎo fàn 蛋炒饭， egg fried rice	hē 喝 drink	shuǐ 水。 water niú nǎi 牛奶 milk zhōng guó chá 中国茶。 Chinese tea yīng guó chá 英国茶 English tea guǒ zhī 果汁。 fruit juice gā fēi 咖啡。 coffee

wǒ xiǎng chī mǐ fàn yīn wèi hěn hǎo chī
我想吃米饭，因为很好吃。I would like to have rice, because it's very tasty.

Subject	would like to	eat or drink	Object	because	adjective
wǒ 我 I bà bà 爸爸 Dad mā mā 妈妈 Mum gē gē 哥哥 older brother dì dì 弟弟 younger brother jiě jiě 姐姐 older sister mèi mèi 妹妹 younger sister	xiǎng 想 would like to; want to	chī 吃 eat	chǎo cài 炒菜， stir fried dish bīng qí lín 冰淇淋 ice cream qiǎo kè lì 巧克力 chocolate mǐ fàn 米饭， cooked rice bǐ sà bǐng 比萨饼， pizza shuǐ guǒ 水果， fruit	yīn wèi 因为 because	hěn hǎo chī 很好吃。 very tasty hěn xiāng 很香。 very fragrant hěn tián 很甜。 very sweet
		hē 喝 drink	gā fēi 咖啡， coffee chá 茶， tea guǒ zhī 果汁， fruit juice		hěn hǎo hē 很好喝。 very tasty hěn xiāng 很香。 very fragrant hěn tián 很甜。 very sweet

wǒ bù xiǎng chī mǐ fàn yīn wèi bù hǎo chī
我不想吃米饭，因为不好吃。I don't want to have rice, because it's not tasty.

Subject	Negative form	would like to	eat or drink	Object	because	adjective
wǒ 我 I bà bà 爸爸 Dad mā mā 妈妈 Mum gē gē 哥哥 older brother dì dì 弟弟 younger brother jiě jiě 姐姐 older sister mèi mèi 妹妹 younger sister	bù 不	xiǎng 想 would like to; want to	chī 吃 eat	bīng qí lín 冰淇淋 ice cream qiǎo kè lì 巧克力 chocolate mǐ fàn 米饭， cooked rice bǐ sà bǐng 比萨饼， pizza	yīn wèi 因为 because	bù hǎo chī 不好吃。 not tasty bù xiāng 不香。 not fragrant bù tián 不甜。 not sweet
			hē 喝 drink	gā fēi 咖啡， coffee chá 茶， tea guǒ zhī 果汁， fruit juice		bù hǎo hē 不好喝。 not tasty bù xiāng 不香。 not fragrant bù tián 不甜。 not sweet

Spanish

¿De dónde eres? *(Where are you from?)* Present tense conjugation of ser						
VERB - ser	**PREP'**	**NOUN**	**CONNECTIVE**	**NOUN - location**	**PREP'**	**NOUN - country**
(Yo) soy *I am* **(Tú) eres** *You (singular) are* **(Él/ Ella) es** *He/she is* **(Nosotros) somos** *We are* **(Vosotros) sois** *You (plural) are* **(Ellos) son** *They are*	**de** *from / of*	**Taunton** **Bristol** **Madrid** **Roma** **Cardiff** **un pueblo** *a village / a town* **una ciudad** *a city*	**que está en** *which is in*	**el centro** *the centre* **el este** *the east* **el norte** *the north* **el oeste** *the west* **el sur** *the south* **el noreste** *the north east* **el noroeste** *the north west* **el sureste** *the south east* **el suroeste** *the south west*	**de** *from / of*	**Alemania** *Germany* **Escocia** *Scotland* **España** *Spain* **Francia** *France* **Gales** *Wales* **Grecia** *Greece* **Inglaterra** *England* **Italia** *Italy* **Polonia** *Poland* **Portugal** *Portugal* **Ucrania** *Ukraine*

¿De dónde son tus cosas favoritas? (*Where are your favourite things from?)* Using 'es' and 'son' correctly			
noun	**verb**	**from**	**country**
Mi amigo / Mi amiga *My friend* **Mi coche** *My car* **Mi comida favorita** *My favourite food* **Mi fruta favorita** *My favourite fruit* **Mi jugador de fútbol favorito** *My favourite football player* **Mi móvil** *My phone* **Mi ordenador** *My computer* **Mi osito** *My teddy* **Mi televisión** *My TV*	**es** *is*	**de** *from*	**Alemania** *Germany* **Escocia** *Scotland* **España** *Spain* **Francia** *France* **Gales** *Wales* **Grecia** *Greece* **Inglaterra** *England* **Italia** *Italy* **Polonia** *Poland* **Portugal** **Ucrania** *Ukraine*
Mis abuelos *My grandparents* **Mis vaqueros** *My jeans* **Mis zapatos** *My shoes*	**son** are		

¿Dónde vives? *(where do you live?)* Present tense						
VERB - vivir	**PREP**	**NOUN**	**INTENSIFIER**	**ADJECTIVE**	**PREP**	**NOUN - country**
(Yo) vivo *I live* **(Tú)** vives *You (singular) live* **(Él / Ella)** vive *He / she lives* **(Nosotros)** vivimos *We live* **(Vosotros)** vivís *You (plural) live* **(Ellos)** viven *They live*	**en** *in*	**un barrio** *an area, neighbourhood* **un bloque de pisos** *a block of flats* **un castillo** *a castle* **un edificio** *a building* **un piso** *a flat* **una casa** *a house* ***una granja*** *a farm*	**un poco** *a bit* **bastante** *quite* **muy** very **extremadamente** *extremely* **demasiado** *too*	**acogedor** *cosy* **antiguo** *old* **bonito** *beautiful* **cómodo** *comfortable* **grande** *big* **moderno** *modern* **feo** *ugly* **nuevo** *new* **pequeño** *small* **raro** *weird* **acogedora** *cosy* **antigua** *old* **bonita** *beautiful* **cómoda** *comfortable* **grande** *big* **moderna** *modern* **fea** *ugly* **nueva** *new* **pequeña** *small* **rara** *weird*	**en** in/on	**Escocia** *Scotland* **España** *Spain* **Gales** *Wales* **Grecia** *Greece* **Inglaterra** *England* **Italia** *Italy* **Polonia** *Poland* **en el centro de la ciudad** *in the city centre* **la costa** *the coast* **las afueras** *the outskirts*

¿Cómo es tu casa? *(What does your house look like?)* ¿Dónde está tu casa? *(Where is your house?).* Use of ser/estar	
VERB – ser, estar	**ADJECTIVE**
Mi casa es *My house is* *(used for description)*	**antigua** *old* **bonita** *beautiful* **cómoda** *comfortable* **fea** *ugly* **moderna** *modern* **nueva** *new* **pequeña** *small* **rara** *weird* **acogedora** *cosy* **grande** *big*
Mi casa está *My house is (used for location)* **(Yo) estoy** *I am (used for location)* **(Tú) estás** *You are (used for location)*	**en el campo** *in the countryside* **en el centro de la ciudad** *in the city centre* **en un pueblo** *in a village* **en la costa** *on the coast* **en la montaña** *in the mountains* **en la ciudad** *in the city* **en las afueras** *on the outskirts* **en Inglaterra** *in England* **en España** *in Spain*

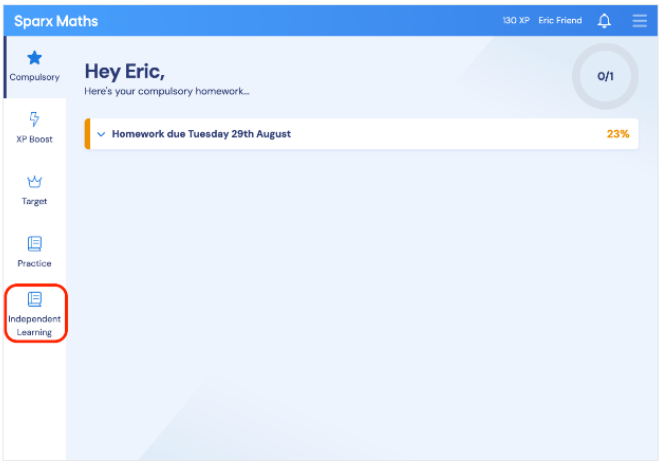
¿Qué habitaciones hay en tu casa? What rooms are there in your house? **Definite and indefinite articles / singular and plural nouns**			
En mi casa hay *In my house there are*	**siete habitaciones** *7 rooms* **diez habitaciones** *10 rooms* **tres dormitorios** *3 bedrooms*		
Mi casa tiene *My house has* **Tenemos** *We have* **Afuera hay** *Outside there is* **Abajo hay** *Downstairs there is* **Arriba hay** *Upstairs there is*	**un aseo** *a toilet* **un comedor** *a dining room* **un cuarto de baño** *a bathroom* **un despacho** *a study* **un garaje** *a garage* **un jardín** *a garden* **un pasillo** *a hall* **un salón** *a living room*	**antiguo** *old* **bonito** *beautiful* **cómodo** *comfortable* **feo** *ugly* **moderno** *modern* **nuevo** *new* **pequeño** *small* **raro** *weird*	**acogedor** *cosy* **grande** *big*
	una cocina *a kitchen* **una terraza** *a terrace*	**antigua** *old* **bonita** *beautiful* **cómoda** *comfortable* **fea** *ugly* **moderna** *modern* **nueva** *new* **pequeña** *small* **rara** *weird*	**acogedora** *cosy* **grande** *big*
Mi habitación favorita es *My favourite room is*	**el salón** *the living room* **mi dormitorio** *my room* **la cocina** *the kitchen*		

Maths

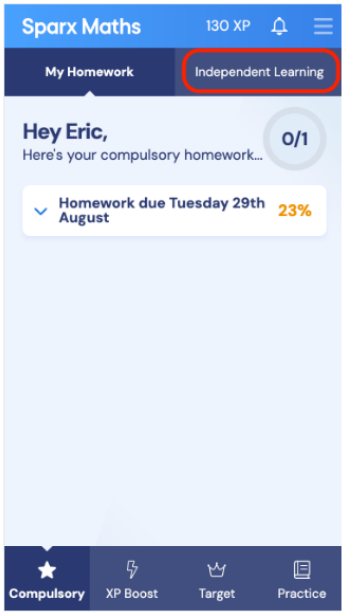
On a Monday, your Maths task will be set by your teacher. You should log on to Sparx Maths to complete this task. Your practice book has an area for your workings which you need to use as during the homework, Sparx Maths undertakes a bookwork check.

On a Thursday you practice independently on an area where you have a gap in your knowledge.

When logged in to Sparx students will always be able to see the Independent Learning option on the main menu:

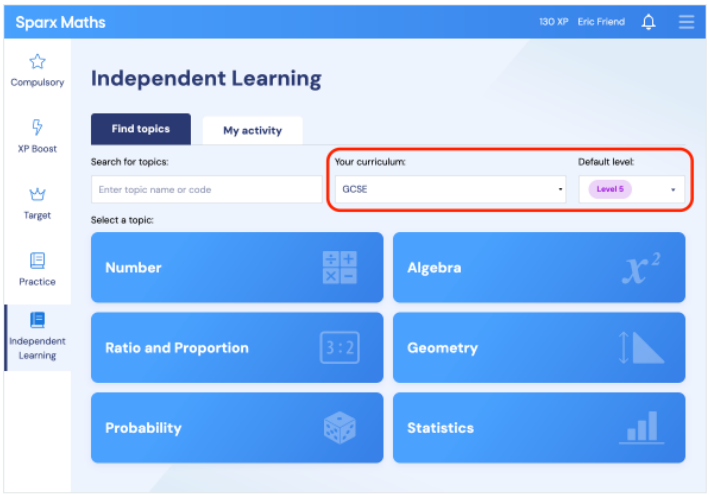


On desktop

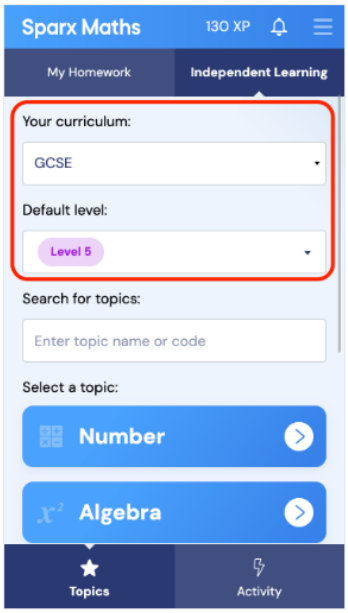


On mobile

Students have the option to choose both the **curriculum** they want to work on and the **default level** for the questions they will see, but when they first log in the curriculum will be the same as the **Base curriculum** that is set on their class' SoL, and the level will be set to the level they are being set for their homework (whether this was chosen by the algorithm or the teacher.)



On desktop



On mobile

- Typing one of the following in the **Search for topics field:**
    - The name of a topic
    - A keyword
    - A code given to them by their teacher. (Find out more about Topic Codes in our article on the Independent Learning Page)
- Browsing the content by clicking on one of the main Strands:

Choosing what level to work at within a topic

When in a topic, students will see three sets of questions at the level set on their Independent Learning homepage (see image above) which they can choose from:

- **Introduce**: basics skills for this topic at this level
- **Strengthen:** questions to consolidate understanding
- **Deepen:** more problem-solving type questions to challenge

If students find questions too easy or too tricky, they can change the level of each individual topic*. This won't affect the overall level of questions in all other topic areas so they can tailor what they see to their strengths and weaknesses.

*Some topics won't have higher or lower levels depending on the subject chosen.

How students view their own progress

1. By a count next to each topic, and **Ticks** and **Stars** within each set of questions:

- Students will get a **tick** if they complete one of the tasks in the topic. This means all the basics are covered.
- Students will get a **star** for each subsequent task they complete.

Music

WEST AFRICAN DJEMBE DRUMMING

BUILDING ON WHAT YOU ALREADY KNOW:

- **Dynamics** - volume
- **Tempo** - speed
- **Pulse** - a steady beat (think of the pulse in your body)
- **Structure**- the different sections in a piece of music (AB, ABA, verse/chorus)
- **Improvisation** - making up the music as you are going along while still following the pulse and style
- **Call and Response** - a phrase is sung or played and is answered by another group (Oggie, Oggie, Oggie)

TASKS:

Discover four of the traditional instruments from Africa, and historic methods of communication/performing (gumboot dancing)

To read drum rhythm tables to perform accurate poly-rhythms

Create a piece of music with a call and response, improvisation and syncopation

FINAL PROJECTS:

Perform as a group your African Music composition. It should have a steady pulse and clear structure with, different drum strokes (sonority), dynamics and textures.

NEW ESSENTIAL KNOWLEDGE:

- **Bass** - the drum is hit in the centre with flat fingers and palm. This creates the lowest pitch sound.
- **Tone** - the drum is hit near the edge, using the edge of your palm and most of the underside of your fingers. Your fingers should be together. This creates a middle pitch sound.
- **Slap** - the drum is hit close to the edge, using only your fingertips and the edge of your palm. Your fingers are spread out a little bit. It creates the highest pitch sound.
- **Texture** - the different layers happening within a piece.

  -***Monophonic*** - a single unaccompanied line of music, one layer.

  -***Homophonic*** - multiple layers of music but everything moves in chunks, the same rhythm.

  -***Polyphonic*** - multiple layers of music doing different things.
- **Rhythm** - how long notes last and how they are grouped together in a pattern
- **Polyrhythm** - multiple rhythms happening at the same time
- **Syncopation** - when a note is moved slightly earlier so that it is before the beat
- **Djembe**
- **Kora**
- **Talking drum**
- **Balafon**

VARIATIONS

BUILDING ON WHAT YOU ALREADY KNOW:

- **Dynamics** - volume
- **Tempo** - speed
- **Pitch** - how high or low the note is
- **Instrumentation** - what instruments are used
- **Structure** - the different sections in a piece of music (AB, ABA, verse/chorus)
- **Keyboard Skills**
- **Production Skills (GarageBand)**

TASKS:

Define variations and particularly musical variations

Analyse how music has been varied using DR SMITH for key-words on a variety of different pieces of music

Perform the ground bass from Canon in D and a piece of historic music as written as fluently as possible.

FINAL PROJECTS:

Experiment with DR SMITH to **create** and **perform** your own variations based upon a simple melody.

Experiment with DR SMITH to **create** and **produce** your own variation on GarageBand.

NEW ESSENTIAL KNOWLEDGE:

- **Variation** - where the main theme/melody has been altered to make a still recognisable but different melody (like a remix)
- **Round/Canon** - the same melody is used but each musician starts at different times
- **Articulation** - the way you play certain not

  -***staccato***—detached and spikey)

  - ***legato***—playing smoothly, will often have ***slurs***
- **Texture** - the different layers happening within a piece.

  -***Monophonic*** - a single unaccompanied line of music, one layer.

  -***Homophonic*** - multiple layers of music but everything moves in chunks, the same rhythm.

  -***Polyphonic*** - multiple layers of music doing different things.
- **Rhythm** - how long notes last and how they are grouped together in a pattern
- **Melody** - the tune or most important layer in a piece of music. In vocal music the lyrics are the melody.
- **Tonality** - what key the piece of music is in.

  -***Major*** gives a happy feel

  -***Minor*** makes the music seem sadder.
- **Harmony** - the chords that get played with the melody are the harmony, they are major or minor chords
- **Ground Bass**—a repeated bass line

The Castle School
ACHIEVE | BELONG | PARTICIPATE

Autumn Term 1

Addiction – is not just drugs. You can be addicted to almost anything.

To f t _n

S cialis_

Why might people take drugs/drink alcohol?

To e c p_

Ex rime ti g

The law

- Class A – up to 7 years in prison and/or an unlimited fine.
- Class B – up to 5 years in prison and/or an unlimited fine. (Cannabis)
- Class C – up to 2 years in prison and/or an unlimited fine.

Follow the QR code to watch more on Remembrance →

https://www.bbc.co.uk/newsround/15492752

Every year the country comes together for Remembrance Sunday. A period of silence is held at 11am to remember the people who have died in wars around the world

Relationships

What are the most important things a relationship needs?

1)
2)
3)
4)

Sexting

Follow the QR code To watch what can Happen if you send Or receive sexts

https://www.youtube.com/watch?v=MoRtLk1xihY

Religion and World Views

Week 1 - Understanding Humanism and Related Beliefs

Humanism—a worldview that focuses on human values, reason, and the natural world. Humanists believe the universe is a natural phenomenon, not guided by supernatural forces. They see science as the best way to understand how the world works.

Humanists are often atheists (who don't believe in God) or agnostics (who believe we can't know if God exists). They see no convincing evidence for an afterlife or a higher, external meaning to life. Instead, they believe we can create our own meaning and help others do the same.

Humanists believe morality is a human creation. They use reason, empathy, compassion, and respect to decide how to act. They are also secularists, supporting freedom of religion and belief, and believing that no religion should have special privilege in society.

Humanists value humanity and celebrate human achievements. They believe in living well, helping others, and making the world a better place through kindness and understanding.

Key Terms

- **Humanist**: Believes in a natural world and values science and reason.
- **Atheist**: Does not believe in God.
- **Agnostic**: Believes we can't know if God exists.
- **Secularist**: Supports a non-religious society.

Week 3 - Racism and Anti-Racism

Racism is when someone is treated unfairly or unkindly because of their race or ethnicity. It can include prejudice, discrimination, or even antagonism—hostile behaviour—toward people who belong to a particular racial or ethnic group. Racism often affects people from minority or marginalised communities, and it can happen in many forms, from name-calling to unfair treatment in jobs, schools, or public places.

Being an anti-racist means standing up against racism. It's not enough to just say, "I'm not racist." Anti-racists act. They speak out when they see racism, support those who are affected, and help others understand why racism is wrong. Anti-racists are like beacons of light—they inspire others to do the same.

To be anti-racist, you can start by learning more. Read books, listen to different voices, and ask questions. Use your voice to make it clear where you stand. Every small action helps build a fairer, kinder world.

Key Terms

- **Racism**: Treating someone unfairly because of their race or ethnicity.

- **Anti-Racist**: A person who actively works to challenge and stop racism.

Week 5 - Understanding Sexism

Sexism is the belief or attitude that one gender is less important, less capable, or less valuable than another. It often leads to unfair treatment based on whether someone is male, female, or identifies differently. Sexism can affect anyone, but it most often targets women and girls.

Sexism can show up in many ways. It might be someone saying that only boys are good at sports or that girls shouldn't lead. It can also happen in workplaces, schools, or the media—where people are treated differently or given fewer opportunities because of their gender.

Being aware of sexism helps us challenge it. Everyone deserves to be treated with respect and fairness, no matter their gender. We can all help by speaking up when we see unfair treatment, supporting each other, and promoting equality.

When we treat people equally and value everyone's abilities, we create a more just and respectful world.

Key Term

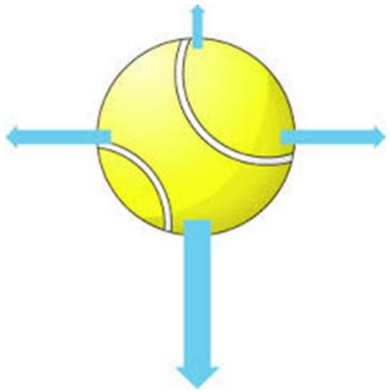
- **Sexism**: The belief or attitude that one gender is inferior, less competent, or less valuable than another.

Science – *Physics*

Week 1 - What are forces?

Forces are a **push** or **pull** which can change the speed, direction or shape of an object.
All forces are measured in **Newtons (N)**
Types of forces include: Air resistance, Water resistance, Upthrust, Friction, Static electricity, Magnetism
We cannot see forces so we need to use diagrams to represent them.
FREE BODY DIAGRAMS show the forces acting on an isolated object.

Free body diagram:



Free body diagrams...

- Use arrows to represent forces.
- The direction of the arrow shows the direction of the force.
- The size of the arrow represents the size of the force.

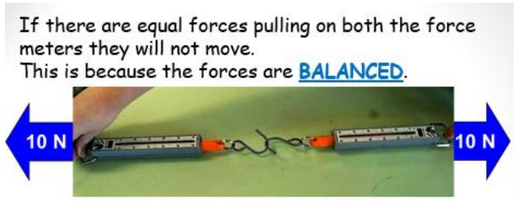
Forces are measured in **NEWTONS** using a **FORCE METER**.

Objects can be hung from the hook at the bottom of the force meter the scale will show the strength of the force in Newtons.

Forces acting on a single object can be **balanced** or **unbalanced**.

If forces are **balanced** the motion of an object will not change – the object will be **stationary** (still) or will be travelling at a **constant speed**.

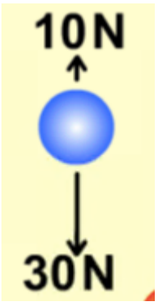
Unbalanced forces cause the object's motion to change e.g. accelerate or decelerate.



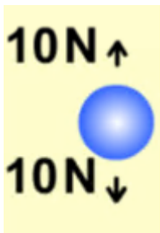
Calculating **resultant** forces:
The resultant force is the overall effect of the forces acting on an object.

If forces are acting in opposite directions you subtract the numbers.

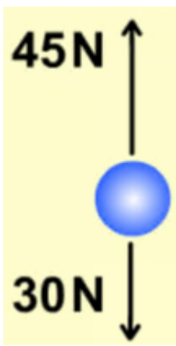
If the forces are acting in the same direction you add them together.



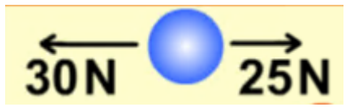
Resultant force = 20N down



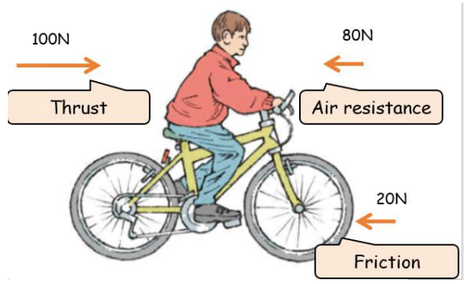
Resultant force = 0N



Resultant force = 15N up



Resultant force = 5N Left



Resultant force = 0N

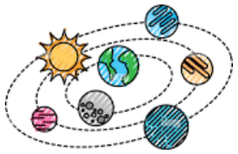
Week 2 - What is mass, weight, and gravity?

Weight is a **force** that acts towards the Earth. It is caused by gravity (a gravitational field).
Weight is measured in **Newtons** with a **Newton meter**.

Mass is the amount of 'matter' in an object.
It is measured in kg, using scales.

Gravity is an attraction between masses.

- Gravity keeping planets in orbit around the Sun.
- Gravity keeping the moon in orbit around Earth



Every object with mass has a gravitational pull

The greater the mass of an object the greater the gravitational pull

Strength of the gravitational field on Earth is 10N/kg.

Calculating weight
Weight = Mass x gravity

What is the relationship between mass and weight?

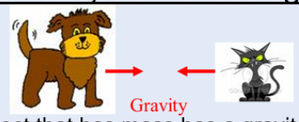
Weight = Mass x Gravity

Mass = Weight ÷ Gravity

Gravity = Weight ÷ Mass

Mass remains the same in different gravitational fields but weight changes because the gravitational pull changes.

Why don't you attract things?



Every object that has mass has a gravitational field strength…
including you!
So why do things not get attracted to you?

The size of the gravitational field strength is affected by the mass of the object. This is why the force of gravity is less on the moon; the moon has less mass than the Earth.

You are not "Massive" enough to be able to notice your own gravity!

Planet	Diameter (Compared to Earth)	Gravitational Field Strength
Mercury	0.4	4 N/kg
Venus	0.9	9 N/kg
Earth	1	10 N/kg
Mars	0.5	4 N/kg
Jupiter	11	23 N/kg
Saturn	9	9 N/kg
Uranus	4	9 N/kg
Neptune	4	11 N/kg

Weight (N) = Mass (kg) x Gravitational Field Strength (N/kg)

Gravitational field strength on different planets.

(You do not have to remember the gravitational field strengths of the different planets)

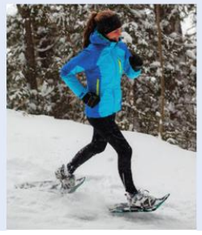
Week 3 - What is pressure?

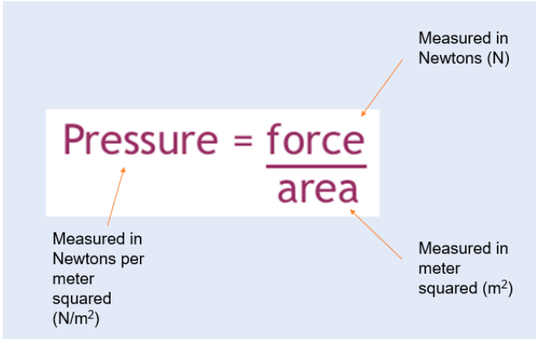
Pressure is how much something is 'pushing' on something else.

Calculation of pressure: Pressure = force ÷ area

How do snow shoes stop the person from sinking into the snow?

- The snow shoes increase the **area** that the **force** (weight) is spread over, so the **pressure** on the snow is less





If a force is applied over a **large area** the pressure will be **smaller**.

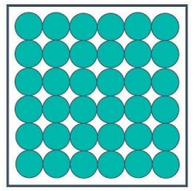
If a force is applied over **a small area** the pressure will be **larger**.

Week 4 - What is atmospheric pressure?

Recap: states of matter:

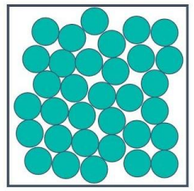
Matter is the material from which everything is made. It can exist as three states: Solid, liquid and gas

Particle diagrams:



Solid

Particles in solids vibrate



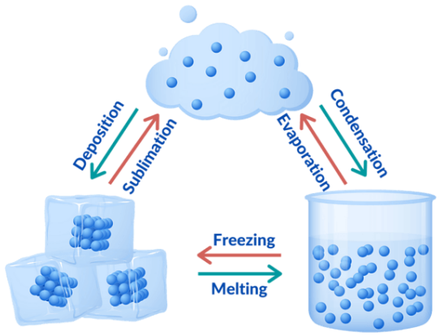
Liquid

Particles in liquids can move over one another

Gas

Particles in gases are spaced out. They move quickly and randomly

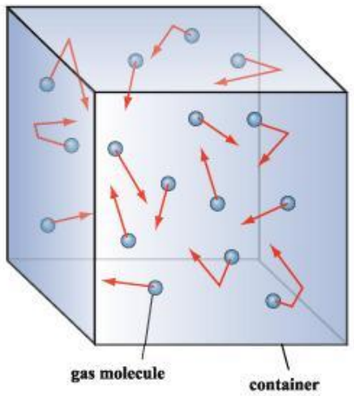
State changes:



Gas pressure is caused by particles colliding with (pushing) the sides of a container.

- The more particles the higher the pressure as there are more collisions.
- Pressure can be measured in N/m^2 or Pascals (Pa)
- Atmospheric pressure is 100,000 Pa

Increasing the temperature of gas particles will also increase pressure as the gas particles have more energy so collide with the sides more.



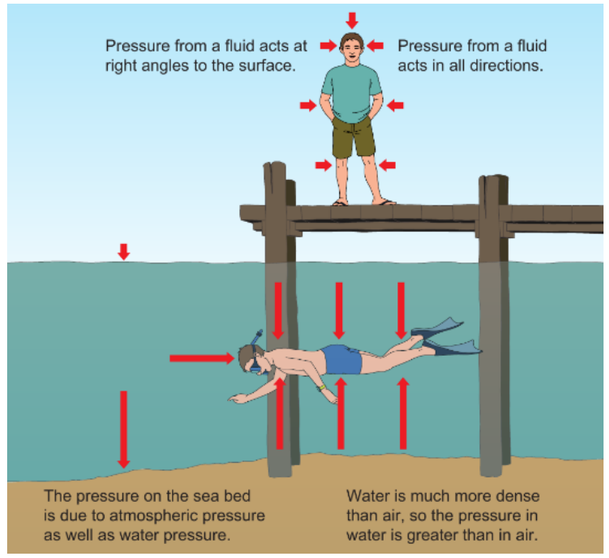
Week 5 - How is pressure caused in liquids?

Pressure is a measure of the force on a unit of surface area. Pressure = Force/area
Pressure is exerted by all fluids (liquids and gases)
Pressure depends on the

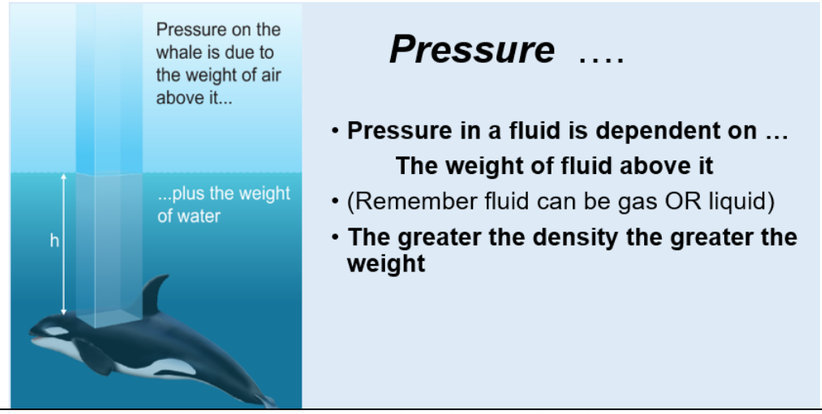
- Depth of the fluid. (The deeper something is the more weight (force) is above you to exert pressure) e.g. at sea level you have more air above you than at the top of a mountain.
- The density of the fluid.

Water is over 800 times denser than air at sea level, if you dive 10m down you will double the pressure that you felt at the surface

Both liquids and gases can 'flow' so they are known as fluids.

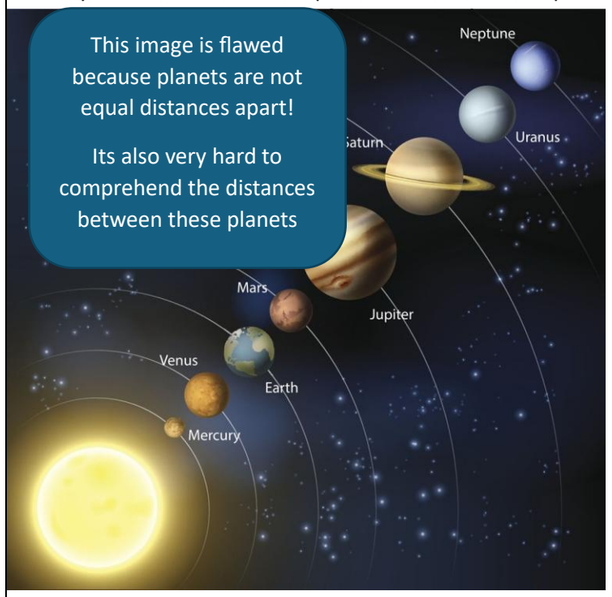


Pressure is greater in liquids than in gases because the density of particles is greater in liquids.
Pressure in a fluid act in all directions.



Week 6 - How can we explore space?

Our solar system consists of the sun (a star) and 8 planets (plus dwarf planets, comets, asteroids and many other things)
The order of the planets from the sun are:
Mercury, **V**enus, **E**arth, **M**ars, **J**upiter, **S**aturn, **U**ranus, **N**eptune



How we explore space:
- International space station (ISS)
- Probes/telescopes
- Rovers e.g. Mars rover

There are many dangers of exploring the solar system, this includes:
- Vladimir Komarov 1967: Parachute failed upon re-entry
- Soyuz 11 crew 1971: Cabin decompressed in space
- Challenger crew 1986: Shuttle exploded

Many mnemonics can be used to help remember the order of planets including:

My **V**ery **E**asy **M**ethod **J**ust **S**peeds **U**p **N**aming (planets)

There are many arguments for and against exploring space. Some reasons are outlined below:

Arguments for exploring space:	**Arguments against exploring space:**
• Humans are curious and like to explore. • To search for life on other worlds. • To inspire people. • To develop new technologies that can benefit life here on Earth. • To ensure the long-term survival of the human race. • To find new resources. • By studying other planets, we can compare them to the Earth and learn more about our home planet.	• Government money used for space travel should be spent to help people here on Earth instead. • Space exploration is too dangerous and too expensive. • There are lots of things we still don't know about our own planet.