


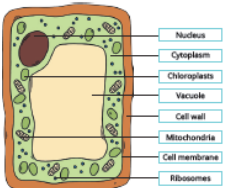
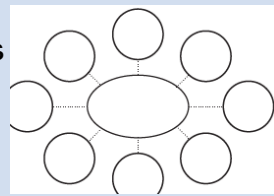


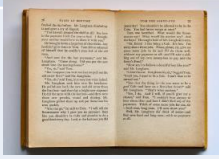

Get
academy

Autumn 1 Knowledge Organiser - Year 8 Name:

Just reading through your books or a knowledge organiser is not always an effective way to revise. Instead, you should do something with the information. Choose an example of the revision methods on the pages or see if you can come up with another method.

The knowledge is evolutionary not revolutionary. Approximately half the knowledge is new and half helps you revise. Many of the activities are changing. We hope you enjoy them.

Subject	Page Number	Subject	Page Number
Multidisciplinary Lessons	3	Geography	21
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Idea	Explanation
<p>Make some flash cards or PowerPoint slides. Make top trumps.</p> 	<p>Write down key words, quotation, questions or equations on one side of a card. On the other side, write the definition or answer. Use them to test yourself.</p>
<p>Plant Cell</p>  <p>Make a poster.</p>	<p>Turn your notes into posters with lots of colour and illustrations. Summarising the key information in a different way is an effective way of learning and your brain will remember the colours more easily. Do the title last!</p>
<p>Draw spider diagrams, or for the adventurous mind maps.</p> 	<p>Write the topic/keyword in the centre of your page. Add everything you know in subtopics. Then explore each subtopic in turn adding more ideas. Colour/pictures help you recall.</p>
<p>Write a song or a rap.</p> 	<p>Are there songs that stick your head. Change the lyrics to the information you want to learn. If you record and listen back it will be a more fun way of revising.</p>
<p>Plan a lesson</p> 	<p>If you teach something to someone else the chance of recalling it is really high. This has been found to be the most effective way of learning something for the long term.</p>
<p>Write a story or comic strip.</p> 	<p>Take the keywords or facts that you need to learn and turn them into a story or a cartoon. The sillier the story the more likely you are to remember it.</p>
<p>Write a quiz. Design a game.</p> 	<p>Playing is how we learn as young children and it is a very powerful way of learning throughout life. If we enjoy the game it helps us remember.</p>

- » Aspiration
There are no barriers to your ambition
- » Leadership
Live your own life
- » Teamwork
Together we achieve more
- » Humility
Put others first
- » Courage
Handle your fear
- » Hard work
We need to make the most of our talents
- » Respect
Treat others as you would like to be treated yourself
- » Service
It is better to give than to receive
- » Integrity
Be true to yourself
- » Forgiveness
Forgiveness is a friendship preserver
- » Thankfulness
Appreciate others; appreciate what you have
- » Perseverance
Never give up



ZERO to HERO

ZERO to HERO: 'All of us, no matter who we are, or how insignificant we may think we are, has the potential to be a hero' It is sometimes hard to stand firm, be brave, show courage when everything around us causes us to be worried or scared.

Throughout the Bible though, we are told that God will be with us, always, and therefore, we should be able to conquer our fears. God commands us to have courage, having faith and confidence in Him.

"No one has greater love than this, to lay down one's life for one's friends. You are my friends if you do what I command you. I do not call you servants any longer, because the servant does not know what the master is doing; but I have called you friends, because I have made known to you everything that I have heard from my Father. You did not choose me but I chose you. And I appointed you to go and bear fruit, fruit that will last, so that the Father will give you whatever you ask him in my name. I am giving you these commands so that you may love one another."

Jesus speaking in John 15:13-17(NRSV)

KEY QUOTE: 'Integrity is doing the right thing. Even when no one is watching' CS Lewis

LISTEN: "Give us your courage" - Tim Hughes

https://www.youtube.com/watch?v=nBE4v8IVlfs&disable_polymer=true

This song is an encouragement to stand firm in the face of huge challenges –

"For the truth of your Word we will stand. Give us your courage"

LISTEN: "Heroes" by David Bowie - sung by the Coach Choir

https://www.youtube.com/watch?v=DOOkAtg9dRw&disable_polymer=true

Over 6000 strangers from 45 countries submitted a video in 3 days to sing 1 song. It's dedicated to all the frontline heroes who are keeping us safe in the midst of the Covid-19 global pandemic

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‘May your choices reflect your hopes not your fears’ (Nelson Mandela)

Hope is fuel for our soul. Often in life, we find ourselves in need of hope, especially in difficult or worrying times. However, Jesus teaches that hope is an unbreakable spiritual lifeline; something that can grow through encouragement and faith and something that is to be shared with others (Hebrews 6:19-20).

EVERYONE CAN BE A HOPE CARRIER

Hope is like a baton used in a relay race. It's supposed to be held tightly as you run with it. However, hope is also too precious to keep to ourselves – it's supposed to be passed onto someone else. When we receive hope, there's always a greater purpose than just us. Hope comes to us, in order to flow through us. Who is 'running' alongside you this week who you can pass the baton of hope to?

BIBLE STORY: The Road to Emmaus (Luke 24:13-35). When we feel we have lost hope, others can give it back to us. We, in turn, become carriers of that hope to others.

LISTEN: ‘Cornerstone’ song

<https://www.youtube.com/watch?v=izrk-erhDdk>

This song is an encouragement to hold on, regardless of our circumstances – even in ‘every high and stormy gale’, to hope. For Christians, this hope is placed in Jesus Christ, whom they call ‘The Cornerstone’. A cornerstone was the foundation and key stone in buildings. It was always laid first and held the building up.

Wonderful World by Louis Armstrong:

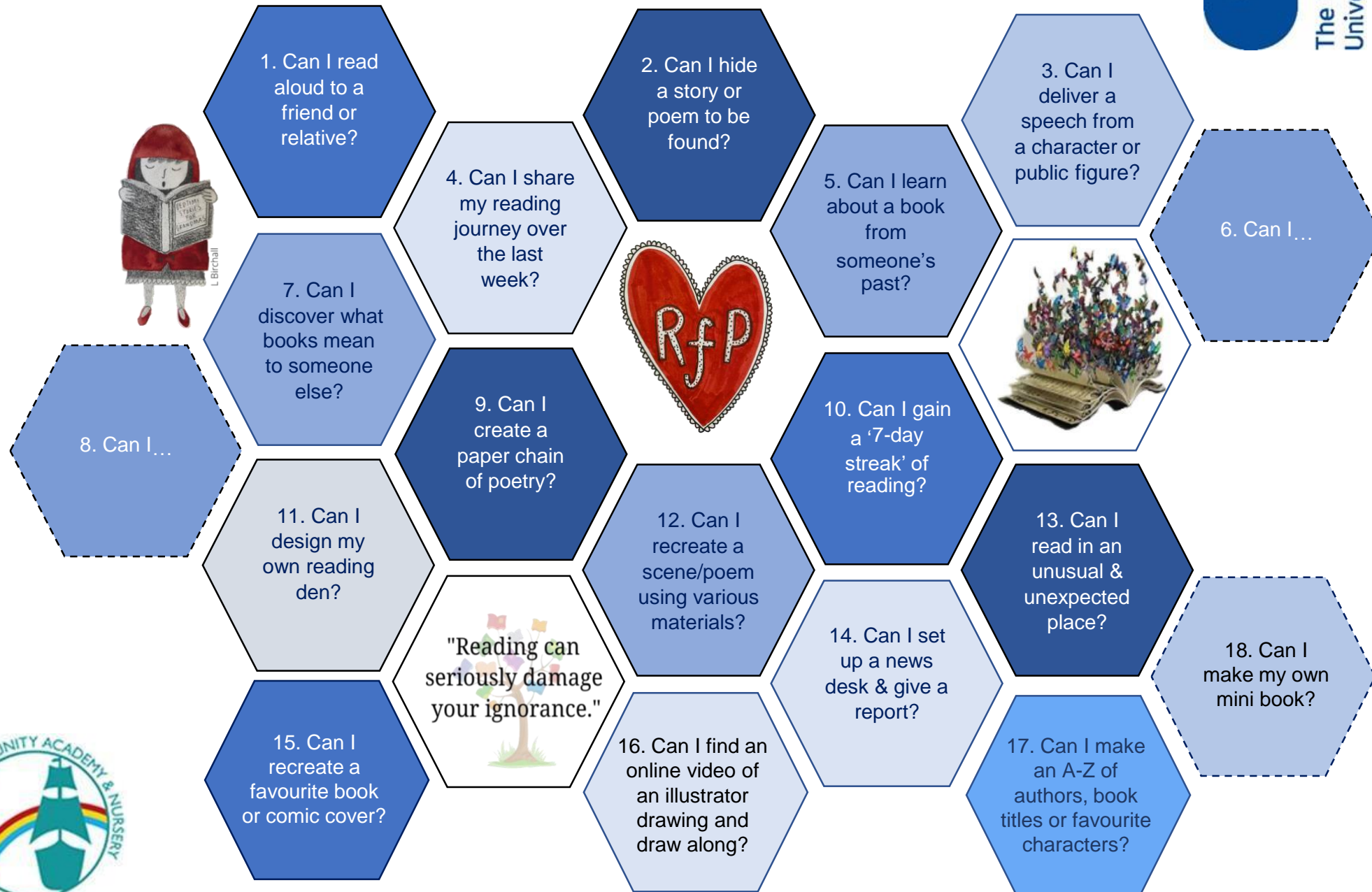
<https://www.youtube.com/watch?v=DRONFXoXsJ0>

For many people, looking at the wonder of nature can give them a new perspective and a renewed sense of hope. Where do you go to find a new hope?



THINK: Using these images, take a moment to think about the following: Where do you find your hope? What kind of hope do those around you need? What makes hope grow in what seem like barren and difficult circumstances?

Sharing the Love of Reading: 11-16-year olds



Questions, questions, questions...

Asking and answering questions (in our head and aloud) helps us to be better readers. We are constantly asking questions to encourage comprehension skills during reading and these can be broken into three clear sections; 'before', 'during' and 'after' reading.

Here are some examples you can try at home:

(You don't have to ask every question every time you read, try picking out 2-3 different questions each time you read.)

Before reading:

- Why did you select this book?
- What makes you think this book is going to be interesting?
- What do you think the book is going to be about (use the cover image, title and blurb for clues)?
- Does this book remind you of anything else you've already read or seen?

During reading:

- Who/What/Where/When/Why/How questions
- Will you catch me up on the story? What's happened so far?
- What do you think will happen next? Why do you think that?
- Why do you think the character did _____?
- If you were that character, what would you have done differently in that situation?
- How do you think the character is feeling right now?
- If the book was a TV show, which actors would you cast in it?
- Where is the book set?
- What does the place look like in your head as you read? Would you want to visit there?
- Did you learn any new words or facts so far?

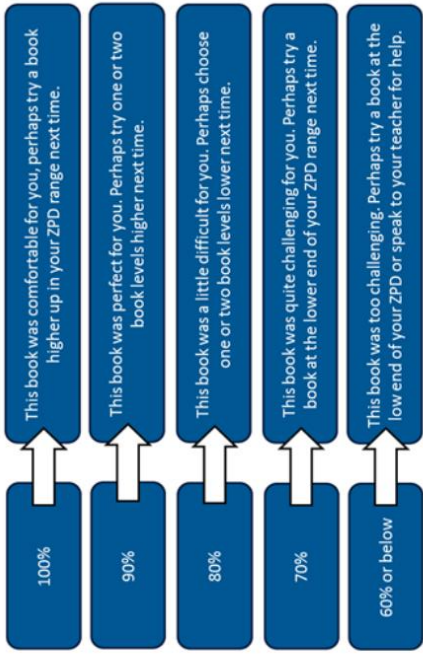
After reading:

- What was your favourite part of the book? Why?
- Who was your favourite character? Why?
- What was the most interesting thing you learned from the book?
- Why do you think the author wrote this book?
- Would you have ended the book differently? Did it end the way you thought it would?
- If you could change one thing in the book, what would it be?
- Do you think the book had a good title? What different titles could it have had?
- Can you retell the story in your own words?
- Does this book remind you of anything else you have read? How so?



To improve my Book Level:

- I will always quiz within my ZPD.
- According to my last quiz result, I should choose a book....



To improve my Average Percent Correct:

I will use the 5 W's to review before I quiz

I will make notes when reading

I will take my time when quizzing

I will make sure my book is within my ZPD range

I will quiz as soon as I finish my book

5 W's:
What...
Who...
When...
Where...
Why....

To meet my Points Target:



Aim for **100%** to earn all the points

I will stick with a book and finish it

I will fit in extra reading time:
Before bed?
On the bus?
During lunch?

I will read **fewer long** books

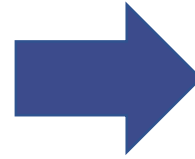
I will read **several shorter** books

If you are able to understand a book as you read, but struggle to remember events when you quiz, ask Miss Ling for a reading reminder sheet.



Open University research suggests there are three important ways to support readers and a love of reading.

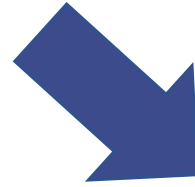
Supporting Readers at Home



Reading aloud to your children shows them reading is a pleasure, not a chore. Older children can also read to younger ones.

*Reading together doesn't have to be a story (recipes, news articles etc. all count too!)

*If you are not confident in reading aloud, why not listen to an audiobook together.



Children who read, and are supported as readers, develop strong reading skills and do better at school. Research also shows that reading aids relaxation and has benefits for mental health.



Book chats encourage readers. Invite them to make connections and share their views. Join in with your views too! (Please see the next page for suggested questions you can ask about any book.)



I wonder
if...why...what...
who...



Making time to read alongside one another helps develop children's reading stamina and interest, Let them chose what to read and relax together (you don't need to be reading the same thing.)

* Where can you 'fit' reading in? It could be 10 minutes before tea, when they come home from school, waiting in the car, before bed etc. You may find it easier to set a regular time aside, or fit it in around your other commitments.



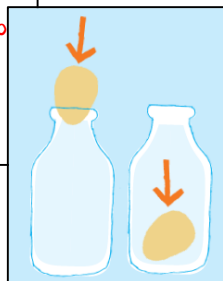
CHANGES OF STATE

The brief: Make an egg fit into a bottle without breaking it.

The method

1. Submerge the egg in a glass of vinegar for two days: the shell will become rubbery.
2. Heat the bottle in hot water – remember to use gloves or a tea towel when handling it.
3. Rest the egg on the neck of the bottle. 4. As the air inside the bottle cools down, it will contract and suck the egg down. Top tip: Try lubricating the egg with cooking oil or washing up liquid.

Now find out why this happens using your knowledge of solids, liquids and gases



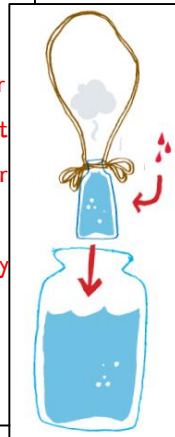
HEAT TRANSFER

The brief: Create a colourful underwater volcano.

The method

1. Cut a two foot length of string with a pair of scissors. Tie a knot around the neck of a salt shaker with one end of the string. Double-knot it to ensure the knot is secure. Repeat this process with the other end of the string, resulting in a handle to lower your shaker.
2. Empty and clean a large jar. Fill the clean jar about three quarters full with cold water.
3. Fill the salt shaker with hot water (with adult supervision) – as hot as you can get from your tap – to just below the neck. Add three to four drops of red food colouring.
4. Hold your salt shaker over the mouth of the jar by the string handle. Slowly lower the salt shaker into the jar until the shaker is completely submerged and resting upright on the bottom of the jar. Observe how the coloured water erupts from the shaker into the cold water.

Explain this using the idea of convection currents



INVISIBLE INK

The brief: Write your own secret message in an invisible ink solution.

The method

1. Squeeze lemon juice into the bowl and add a few drops of water. Stir with the spoon.
2. Dip the paint brush into the juice mixture and write a message on the paper.
3. Allow the paper to dry completely. Your message should become invisible.
4. Hold the paper very close to the light bulb to heat up the message area (adult supervision required). Watch your message appear.

Why does heat uncover the message? What is a reversible reaction?



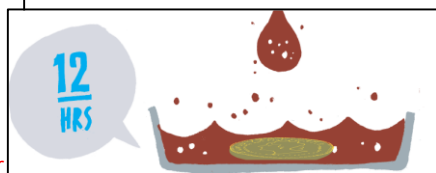
ACIDS & ALKALIS

The brief: Clean a penny using cola.

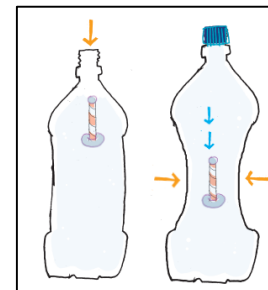
The method

1. Place the penny in the container.
2. Add enough cola so the penny is covered.
3. Leave overnight.
4. In the morning, you should find that your penny is clean.

What makes something acidic? What chemical reaction is happening to the penny?



Practical Science at Home



THE DENSITY DIVER

The brief: Build a Cartesian diver.

The method

1. Put a small ball of plasticine on the top of the straw to seal it.
2. Roll a sausage of plasticine and wrap it around the bottom of the straw, leaving the bottom open. This is your diver.
3. Now attempt to balance the diver so that it stays upright.
4. Place the diver vertically in the drinking glass. Add or remove weight from the base or top so that when you push it down, it just about bobs back up to the surface (and stays upright).
5. Once you are happy, place the completed diver in the two litre bottle filled to the top with water. Screw on the lid. Squeeze the bottle, and the diver will drop down to the bottom of the bottle. Release it and it floats back to the surface.

What is density? What makes something high or low density? Why might this be useful?

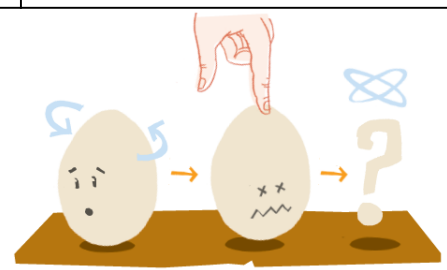
MOMENTUM

The brief: Use eggs to find out about momentum and changing direction.

The method

1. Spin each egg, one hard boiled and one fresh, on a table.
2. Leave it to spin for a few seconds then momentarily stop it by placing your finger on top.
3. Release the egg and observe what happens next.

What is happening to the inside of the egg? How do you calculate momentum?



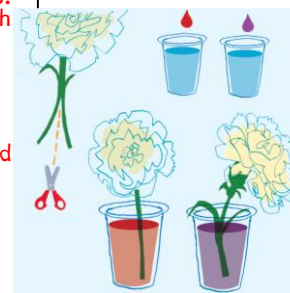
COLOURED CARNATIONS

The brief: Create multi-coloured flowers.

The method

1. Use the scissors to cut the stem of the carnation in half lengthways.
2. Take two cups and fill them with water. Add a different coloured food dye to each cup.
3. Put the split stems of the carnation into the cups and leave overnight.
4. The next morning you should find that your flower has changed colour.
5. What do you notice about the petals?

How does the food dye get to the petals? What is xylem and phloem?



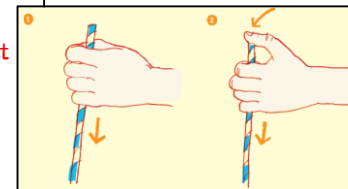
STRONG AS A DRINKING STRAW

The brief: Use a drinking straw to pierce through a raw potato.

The method

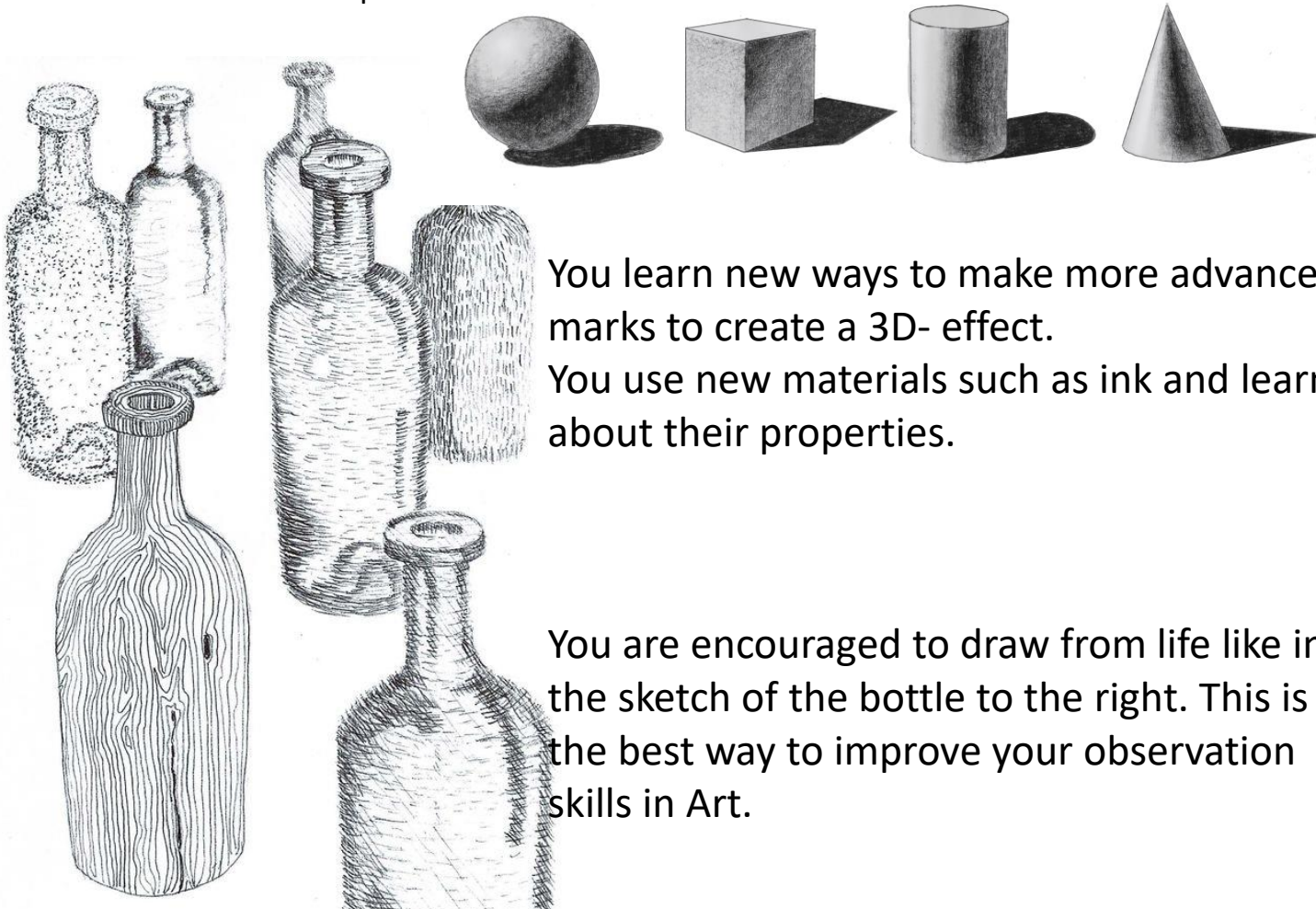
1. Hold the straw by its sides, without covering the hole at the top and try quickly stabbing the potato.
2. Repeat the experiment with a new straw but this time place your thumb over the top, covering the hole.

What forces are increasing or decreasing to allow this to happen?



Year 8 Art Knowledge Organiser - Autumn Term:

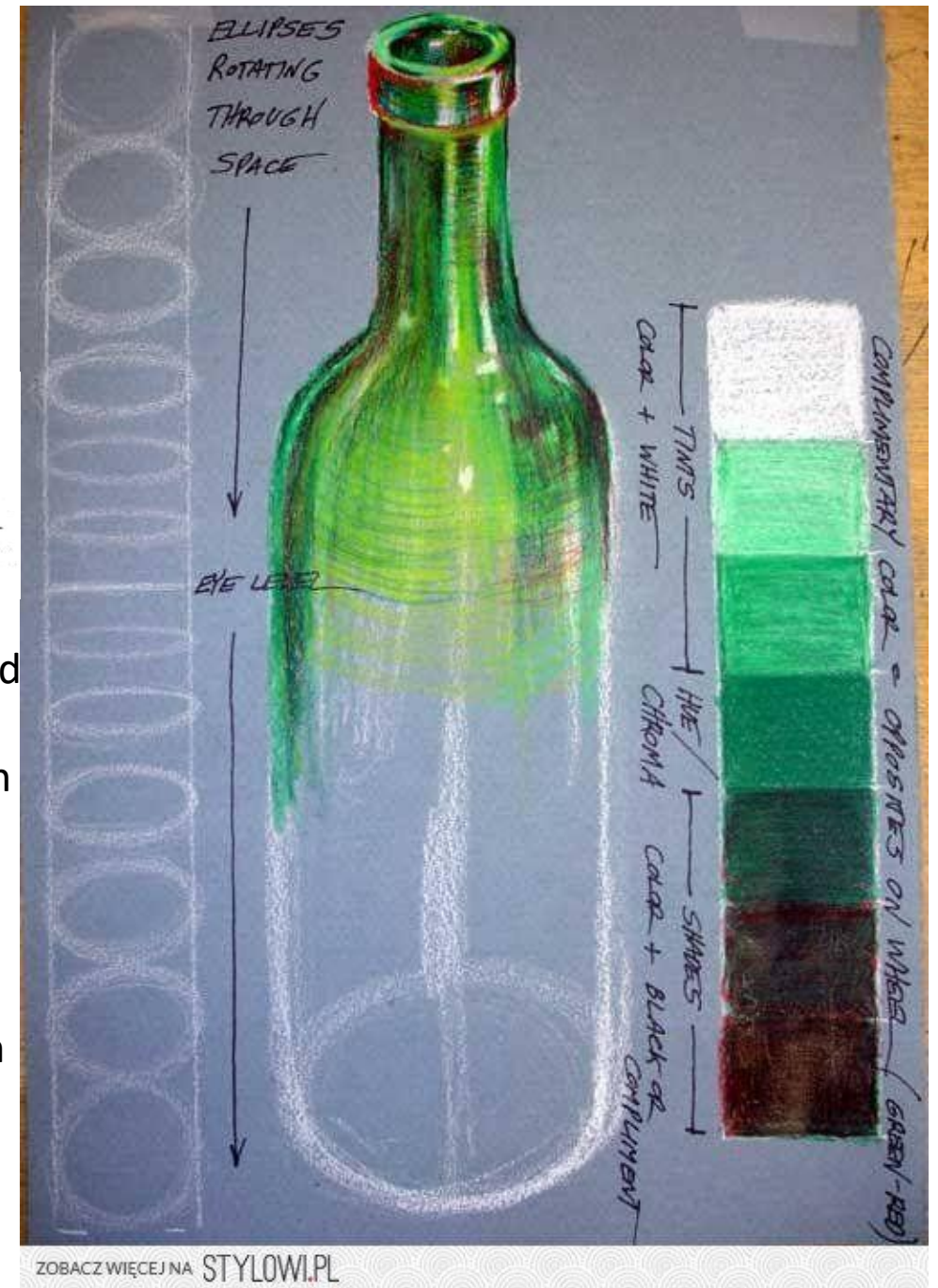
- At the start of Year 8 we do a series of lessons reminding students of the basic formal elements of Art such as **TONE**, **FORM**, **LINE**....etc... See next page for full breakdown of the art elements.
- You continue your learning on observational drawing and using tone to show 3D form. See example b - 1.....



You learn new ways to make more advanced marks to create a 3D- effect.

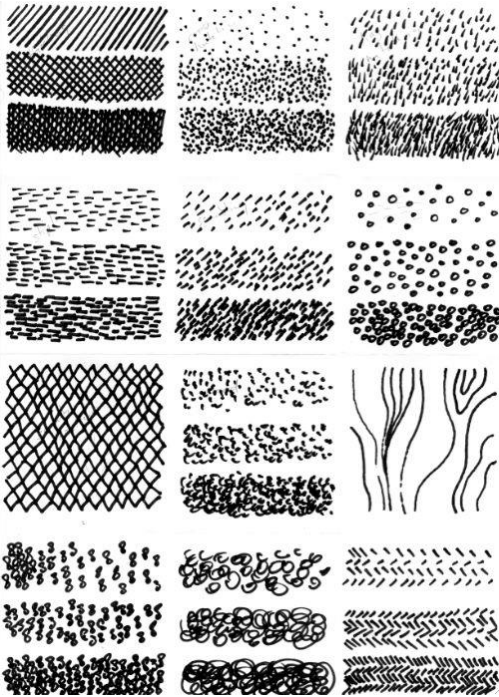
You use new materials such as ink and learn about their properties.

You are encouraged to draw from life like in the sketch of the bottle to the right. This is the best way to improve your observation skills in Art.



VAN GOGH:

We study the artist Vincent Van Gogh after half term in Year 8 and his use of mark making and pen and ink to inspire our own landscapes.



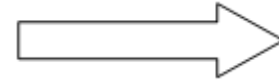
Choose a view from somewhere around your home - this could be:

- A view through a window
- A view through a door
- A view of your garden

Make a detailed drawing of the scene using pencil or pen to show all the different textures and surfaces.

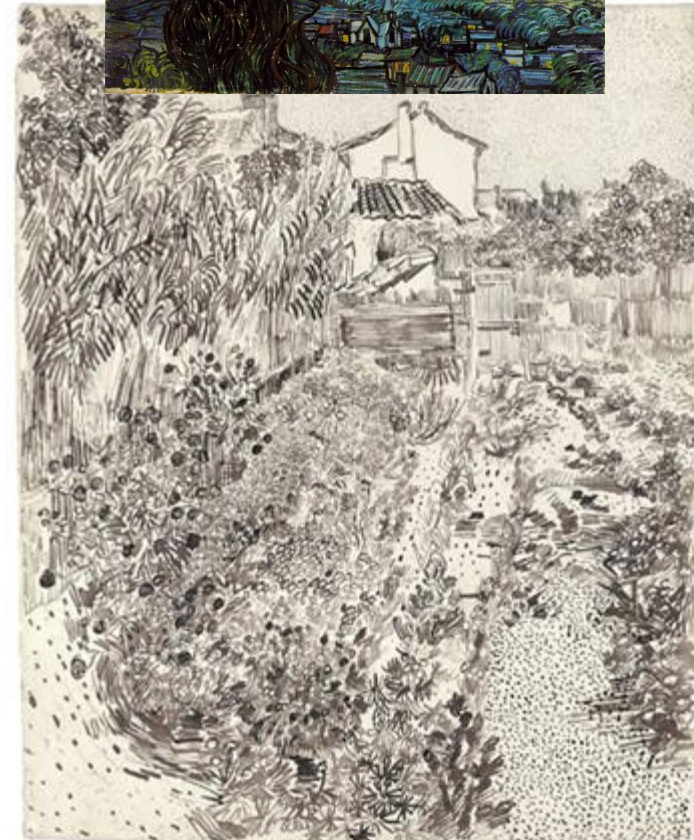
Try to work in a style similar to the one Van Gogh has used in this drawing of a garden.

He has used his pen to create many different marks.



- **PHOTOGRAPHS:** If you have a camera - take a series of photographs of the scene you have drawn to show the different details, print your photographs.

- **WRITTEN DESCRIPTION:** produce a written description of the scene you have drawn – shapes, colours, textures, this should be about 100 words



Micro-organisms

Micro-organisms are tiny forms of life. They can only be seen under a microscope and are sometimes called microbes.

They spoil food and make it unsafe to eat because they contaminate it with their waste products, their physical presence and the toxins they produce.

What micro-organisms can spoil food and make it unsafe to eat?

There are three groups of micro-organisms that you need to know about that spoil food and cause food poisoning. These are..

- Bacteria
- Moulds
- Yeasts

Micro organisms need 5 conditions to grow and multiply:

1. A warm temperature
2. Plenty of moisture (water)
3. Plenty of food
4. The right PH level (not too acidic or alkaline)
5. Enough time (bacteria split every 10-20 minutes)

High risk foods

- High risk food have ideal conditions for bacteria
- High risk foods are ready to eat foods that could grow harmful bacteria
- They are moist and high in protein which is food for bacteria.
- High risk foods have a short shelf life - you can't keep them for long or the bacteria might multiply to dangerous levels.

Examples of high risk foods:

Cooked meat, fish and poultry, dairy products (eggs, cheese etc.), gravies, stocks and sauces, shellfish, cooked rice.

Example exam questions:

What five conditions to bacteria need to grow and multiply? (5 marks)

What is a high risk food? (5 marks)

Storing food safely

Cooking (75°C)	The danger zone (5°C-63°C)
<ul style="list-style-type: none"> • Cooking food above 75°C kills bacteria • Re-heat food properly, only once. Reheat food so 75°C for at least 3 minutes • Check the food is 75°C with a temperature probe 	<ul style="list-style-type: none"> • Bacteria can grow and multiply quickly between 5°C to 63°C. • This is called the danger zone • The optimum temperature for bacterial growth is 37°C
Chilling (0°C - 5°C)	Freezing (-18°C)
<ul style="list-style-type: none"> • Keeping food between 0°C and 5°C slows down the growth of bacteria • This extends the shelf life of food • Chilling food doesn't change the properties much - food looks and tastes the same 	<ul style="list-style-type: none"> • Freezing food below -18°C stops bacteria growing - they become dormant • Freezing generally extends shelf life and the nutrients aren't lost • It doesn't kill the bacteria though. They become active again once the food defrosts.

Preparing self for cooking

- Tie hair back to prevent hair and dandruff falling in food
- Take off coats and blazers
- Wear an apron to prevent bacteria transferring from our clothes to our food
- Wash hands with hot soapy water to kill bacteria

Preparing the room for cooking

- Sanitise all work surfaces
- Check equipment is clean and dry
- Tuck all stools in as they can be a trip hazard
- Put all high risk foods in the fridge to slow bacteria growth

Wash your hands after:

- Coughing
- Sneezing
- Blowing your nose
- Tying shoe laces
- Going to the toilet
- Touching hair or face
- Touching raw meat
- Touching eggs

Nutrients

Macro nutrients - needed in large quantities in the diet. The three macro nutrients are: PROTEIN, CARBOHYDRATES, FAT

Micro nutrients - needed in small quantities in the diet. The two micro nutrients are: VITAMINS, MINERALS

Protein

Proteins are made up of amino acids, often referred to as the 'building blocks' of the body. Non-essential amino acids can be made by the body, however, essential amino acids can't be made by the body and we must get from the food we eat.

High biological Value (HBV) proteins contain all the essential amino acids we need and generally come from animal sources. Low biological value (LBV) proteins are missing one or more essential amino acids and generally come from plant sources.

Food sources

HBV - beef, pork, lamb, poultry (chicken, turkey, duck), fish, cheese, butter milk

LBV - beans, chickpeas, lentils, peas, nuts, seeds, found in smaller amounts in some vegetables such as spinach and broccoli.

Function

Needed for growth from childhood to adulthood and the growth of nails, hair and muscle mass, repair of muscles, tissues and organs after illness or injury and to make enzymes for digestion and antibodies to stop us getting ill.

Example exam questions:

What are the two types of fat? (2 marks)

Explain the difference between a HBV and LBV protein (6 marks)

Carbohydrates

There are two types of carbohydrates, complex and simple. They are also known as starchy (complex) and sugary (simple).

Food sources

Starchy - bread, rice, pasta, potatoes, bagels, oats, flour, cereal and some vegetables.

Simple - fruit, some vegetables, chocolate, sweets, biscuits, cakes

Function

Starchy/complex carbohydrates are digested slowly and provide long term energy.

Sugary/simple carbohydrates are digested slowly and provide short term energy

Fat

There are two types of fat, saturated and non saturated.

Saturated fats are classed as 'unhealthy fats', they are solid at room temperature and are generally animal based.

Unsaturated fats are classed as 'healthier fats' and are liquid or soft at room temperature and come from plant based sources.

Food sources

Animal - beef, chicken skin, processed meat (sausages, salami, pepperoni), bacon, butter, cheese, full fat milk

Plant - vegetable oils (sunflower, olive, rapeseed), avocado, nuts, seeds

Function

Keeps us warm (provides insulation), secondary source of energy, protects vital organs and bones.

Dietary related health problems

Too much sugar can cause:

1. Weight gain (which can lead to obesity)
2. Tooth decay
3. Diabetes (your body cannot produce enough/any insulin to regulate your blood sugar levels)

Too much salt can cause:

1. High blood pressure (this can increase your risk of heart disease and a stroke).

Too much saturated fat can cause:

1. Weight gain (which can lead to obesity)
2. High cholesterol (this narrows arteries making it harder for the blood to travel around, putting you at risk of heart disease).

The first project of this year will be a focused practical task. You will be making a picture frame in the Academy workshop. The aims of this task is to be able to use the workshop safely and confidently.

You be following this exploded drawing carefully. It will explain what components, tools and equipment are needed. We will teach you how to change the blade of a coping saw safely. Do you recognise the different tools and equipment from the 'how to' pages?

Can you name the following tools and explain what they are used for?



Careers using this knowledge: carpenter, engineer, product designer, teacher.

HOW TO... Make a Picture Frame

1

HOW TO... Make a Picture Frame

Components:			Equipment:
Amount	Size	Material	
2	120mmx120mm x3mm	MDF	<ul style="list-style-type: none"> Tape measure or steel rule Sharp pencil Square Pillar, Bench or Hand Drill and 4mm Drill bit Wood Vice Coping Saw Sandpaper Bench Hook PVA Wood Glue Spring Clamps
2	120mm x 10mm x3mm	MDF	
1	100mm x 10mm x3mm	MDF	
1	softwood for the stand	Softwood for the stand	
1	100mm x 100mm	Acetate	

2

HOW TO... Make a Picture Frame

Measuring & Marking

Mark 15mm in from the edge.

Draw a straight line using a square and a sharp pencil.

Do this on all four sides. This is the edge of your frame.

Draw on your design, mark where to drill and draw hatching lines to make it clear where to cut.

Cutting

Drill at least a 4mm hole in the workpiece where the cut-out will be.

Place the workpiece into the wood vice & attach the Coping Saw blade through drilled hole in the workpiece and tighten.

Saw carefully to LEAVE the LINE showing. Move the workpiece as appropriate in the wood vice to make it easier to cut.

Remove the Coping saw from the frame by turning the handle anti-clockwise to undo.

3

HOW TO... Make a Picture Frame

Sanding & Assembling

Sand the inside of the frame to a smooth finish

Start to assemble the spacers onto the backboard and glue in place using PVA wood glue

Apply glue onto the upper surface of the spacers and attach the frame. Clamp in place using spring clips until the glue dries

Make a stand at the angle shown from softwood

Finishing

Sand the edges of the completed frame to a smooth finish

Attach the stand using PVA wood glue

Cut-out 100mm x 100mm Acetate square and place in the frame

Paint, stain or varnish to complete

4

Exercise intensity

Exercise intensity means how **hard** a person is **working** when training/playing.

Think about how hard you work when you play netball or football, compared to when you field in rounders or cricket. What are the differences?

Training Zones

One way to find out how hard we are working is to use our heart rate to make sure we are working in the correct training zones.

60–85% HR max is the recommended training zone (aerobic training zone) for cardiovascular health and fitness.

What would this be for you?

$Me - 220 - 30 = 190\text{bpm}$
 $0.6 \times (\text{MHR}) = 114\text{bpm}$
 $0.85 \times (\text{MHR}) = 161.5\text{bpm}$

My aerobic training zone:
114bpm – 161.5bpm

Remember
cardiovascular is your
heart and blood
vessels

Heart rate

What is your heart rate?

Your **heart rate** is the number of times your **heart beats** per minute (bpm). A normal **heart rate** is between 60 and 100 bpm while you're resting.

Scan the QR code below to watch a video on how to find your pulse and work out your heart rate.



RESTING HEART RATE (RHR)

- Taken when a person is at complete rest.
- Average person's resting heart rate is between 60–80bpm
- Training can lower this and athletes can have a much lower resting heart rate

Training zone pyramid

Below is the training zone pyramid. The pyramid tells you how **hard** you need to be **working** in order to be training in the different **zones**. You need to know your maximum heart rate to be able to work the calculations out.



Anaerobic means without oxygen

How else can we tell how hard we are working?

Score	Effort
6 20% effort	No Exertion
7	Very, very light
8	
9	Gentle walking
10 55% effort	
11	Fairly light
12	
13	Steady pace
14	
15	Hard
16 85% effort	
17	Very hard
18	
19 100% Effort	Very, very hard
20	Exhaustion

Rate of Perceived Exertion (RPE) Scale

- Used as a measure of exercise intensity to find out how hard an athlete is working on a scale of 6-20
- A footballer may report an RPE of around 14, whereas an ironman triathlete may record an RPE of 19

Link between heart rate and the RPE scale

- There is a relationship between RPE and heart rate
- $RPE \times 10 = EHR \text{ (bpm)}$
- (E.g.) If you rate yourself 10 on the RPE scale, you can predict your EHR by doing the following calculations:
- $RPE \times 10 = \text{EHR bpm}$
- Therefore: $10 \times 10 = 100 \text{ bpm}$

EXERCISE HEART RATE (EHR)

- Taken during or immediately after exercise.
- By measuring your exercise heart rate you can check if you are pushing yourself too hard or not working hard enough.
- The most accurate way to measure Exercise heart rate is to wear a heart rate monitor.



Time to have a go!

Now you've watched the video on how to find your pulse and work out your resting heart rate (RHR), have a go yourself to find yours.

Then, do 50 star jumps, immediately after find your pulse and work out your exercise heart rate (EHR)

What have you noticed about your heart rate?

Career link:

A **fitness instructor** would need to have a really good knowledge about **exercise intensity**. This is because they will be responsible for helping others towards their **fitness goals** and will need to know how hard to push their clients.

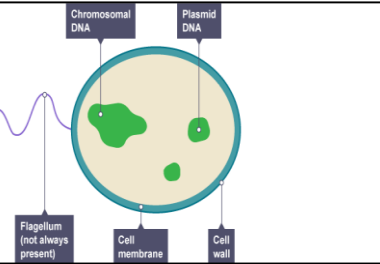
Do we have a maximum heart rate? Yes we do! The calculation to work out your maximum heart rate is **220 - your age**.

Pathogens are microorganisms that cause infectious disease

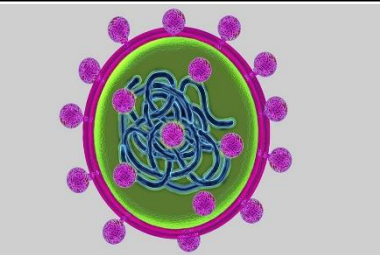
Infection and response

HOW COMMUNICABLE DISEASES ARE SPREAD – AND HOW TO PREVENT THEM

Bacteria are living organisms made up of one cell. Only some bacteria cause illness and they produce toxins that damage tissues and make us feel ill

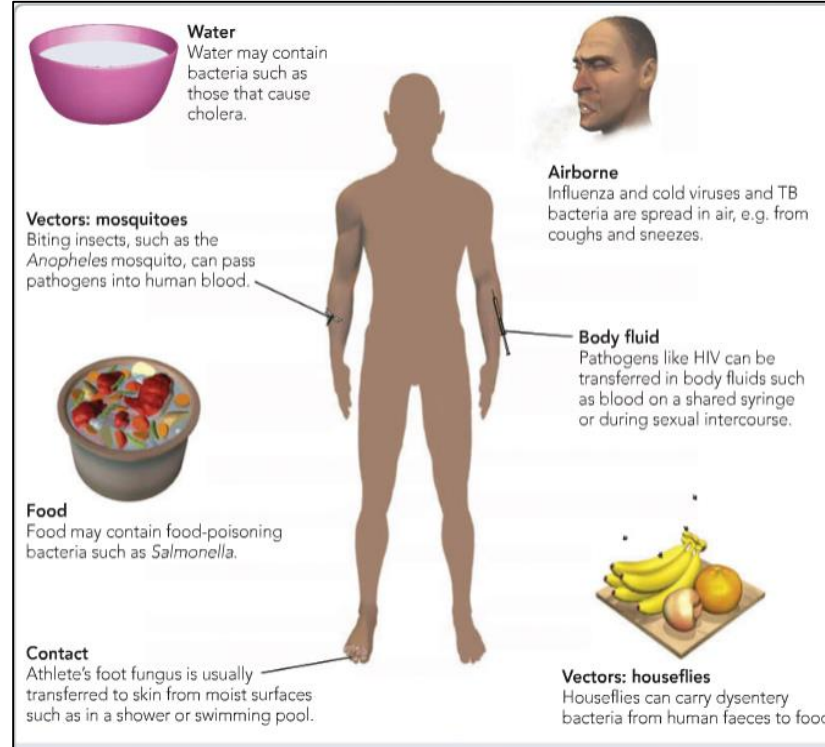


Viruses are parasitic molecules that live and reproduce inside cells causing damage



FIRST LINE OF DEFENCE

The human body has several non specific ways of defending itself from pathogens getting in	Nose	Nasal hairs, sticky mucus and cilia prevent pathogens entering through the nostrils.
	Trachea and bronchus (respiratory system)	Lined with mucus to trap dust and pathogens. Cilia move the mucus upwards to be swallowed.
	Stomach acid	Stomach acid (pH1) kills most ingested pathogens.
	Skin	Hard to penetrate waterproof barrier. Glands secrete oil which kill microbes



Water
Water may contain bacteria such as those that cause cholera.

Airborne
Influenza and cold viruses and TB bacteria are spread in air, e.g. from coughs and sneezes.

Vectors: mosquitoes
Biting insects, such as the *Anopheles* mosquito, can pass pathogens into human blood.

Food
Food may contain food-poisoning bacteria such as *Salmonella*.

Contact
Athlete's foot fungus is usually transferred to skin from moist surfaces such as in a shower or swimming pool.

Body fluid
Pathogens like HIV can be transferred in body fluids such as blood on a shared syringe or during sexual intercourse.

Vectors: houseflies
Houseflies can carry dysentery bacteria from human faeces to food.

Method	Example	How it works
Sterilising water	Cholera	Chemicals or UV light kill pathogens in unclean water.
Suitable hygiene - food	Salmonella	Cooking foods thoroughly and preparing them in hygienic conditions kills pathogens.
Suitable hygiene - personal	Athlete's foot	Washing surfaces with disinfectants kills pathogens. Treating existing cases of infection kills pathogens.
Vaccination	Measles	Vaccinations introduce a small or weakened version of a pathogen into your body, and the immune system learns how to defend itself.
Contraception	HIV/AIDs	Using barrier contraception, like condoms, stops the transfer of bodily fluids and sexually transmitted diseases.

Fighting back – White blood cells are part of the immune system

Phagocytosis

Phagocytes engulf the pathogens and digest them.

Antibody production


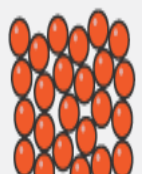

Specific antibodies destroy the pathogen. This takes time so an infection can occur. If a person is infected again by the same pathogen, the lymphocytes make antibodies much faster.

Antitoxin production

Antitoxin is a type of antibody produced to counteract the toxins produced by bacteria.

(ENERGY AND PARTICLES)

State	Particle arrangement	Properties
Solid	Packed in a regular structure. Strong forces hold in place so cannot move.	Difficult to change shape.
Liquid	Close together, forces keep contact but can move about.	Can change shape but difficult to compress.
Gas	Separated by large distances. Weak forces so constantly randomly moving.	Can expand to fill a space, easy to compress.

State	Solid	Liquid	Gas
Diagram			
Arrangement of particles	Regular arrangement	Randomly arranged	Randomly arranged
Movement of particles	Vibrate about a fixed position	Move around each other	Move quickly in all directions
Closeness of particles	Very close	Close	Far apart

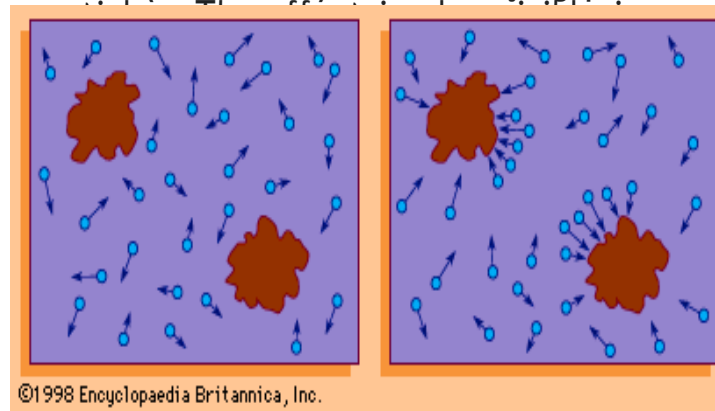
Freezing	Liquid turns to a solid. Internal energy decreases.
Melting	Solid turns to a liquid. Internal energy increases.
Boiling / Evaporating	Liquid turns to a gas. Internal energy increases.
Condensation	Gas turns to a liquid. Internal energy decreases.
Sublimation	Solid turns directly into a gas. Internal energy increases.
Conservation of mass	When substances change state, mass is conserved.
Physical change	No new substance is made, process can be reversed.

When a **solid** is heated, its atoms vibrate faster about their fixed points. The relative increase in the size of solids when heated is therefore small. Metal railway tracks have small gaps so that when the sun heats them, the tracks expand into these gaps and don't buckle.

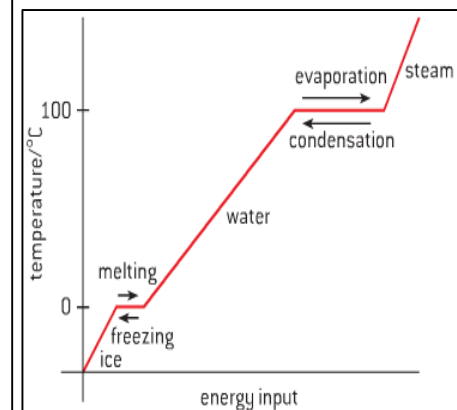
Liquids expand for the same reason, but because the bonds between separate molecules are usually less tight they expand more than solids. This is the principle behind liquid-in-glass thermometers. An increase in temperature results in the expansion of the liquid which means it rises up the glass.

Molecules within **gases** are further apart and weakly attracted to each other. Heat causes the molecules to move faster, (**heat energy** is converted to **kinetic energy**) which means that the volume of a gas increases more than the volume of a solid or liquid.

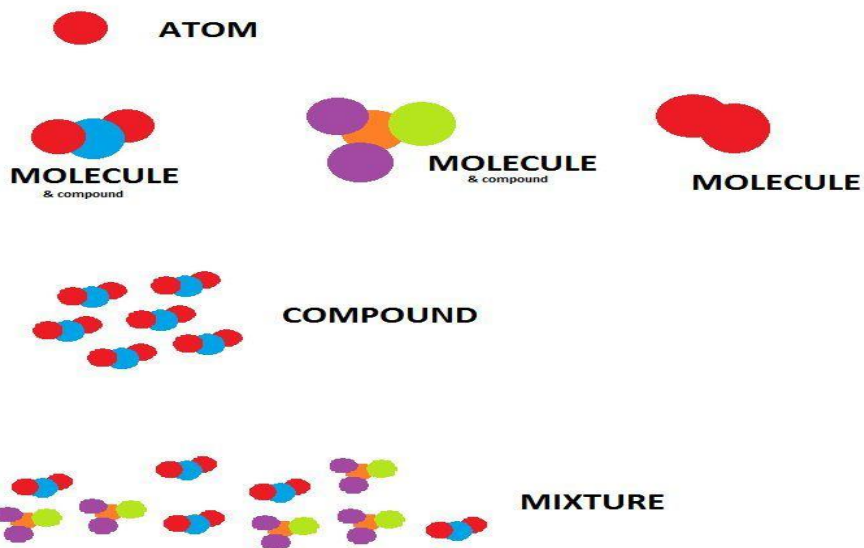
Brownian motion is the continuous random movement of small particles suspended in a fluid, which arise from collisions with the fluid molecules. First observed by the British botanist R. Brown (1773–1858) when studying pollen.




As a substance is heated it gains energy. When the particles gain enough energy they overcome the forces between them. Whilst a change of state is happening the temperature of the substance does not change. (flat line on graph)




The elements are arranged in order of increasing **atomic number** the horizontal rows are called **periods** the vertical columns are called **groups** elements in the same group are similar to each other



1	2											3	4	5	6	7	0	
																		He
Li	Be	H										B	C	N	O	F	Ne	
Na	Mg											Al	Si	P	S	Cl	Ar	
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	
Fr	Ra	Ac																

 Metals

 Non-metals

Element

A pure substance that is listed in the **periodic table** and only has one type of atom in it.

Compound

A pure substance made from more than one type of element chemically bonded together.

Mixture

An impure substance made from different elements or compounds mixed together that are not chemically joined.

Law of conservation of mass

No **atoms** are created or destroyed in a chemical reaction. Instead, they just join together in a different way than they were before the reaction, and form **products**. This means that the total **mass** of the products in a chemical reaction will be the same as the total mass of the **reactants**.

Formulae

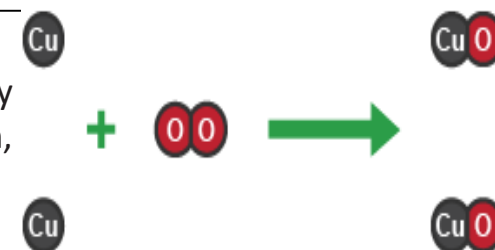
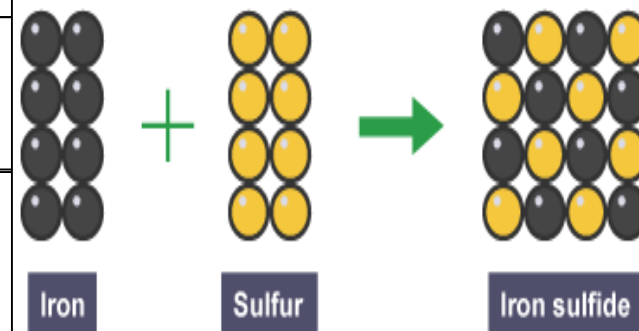
The chemical formula of a **compound** shows how many of each type of **atom** join together to make the units which make up the compound.



CO ₂	Carbon dioxide
-----------------	----------------

Making a compound –iron sulfide

Iron sulfide, the compound formed in the reaction, has different properties to the elements from what it is made. The table compares the properties of iron, sulfur and iron sulfide:



Summary

In the simplest terms, cloud computing means storing and accessing data and programs over the Internet instead of your computer's hard drive. The cloud is just a metaphor for the Internet. When you store data on or run programs from the hard drive, that's called local storage and computing.

When you sit at your PC and type a query into Google, the computer on your desk isn't playing much part in finding the answers you need. The words you type are swiftly shuttled over the Net to one of Google's hundreds of thousands of clustered PCs, which dig out your results and send them promptly back to you. When you do a Google search, the real work in finding your answers might be done by a computer sitting in California, Dublin, Tokyo, or Beijing; you don't know—and most likely you don't care!

Preparing documents over the web is a newer example of cloud computing. Simply log on to a web-based service such as Google Documents or Office365 and you can create a document, spreadsheet, presentation, or whatever you like using Web-based software.

Staying safe online

Never disclose

your name telephone number address or school

Never accept someone as a 'friend' on social media simply because they claim to know another friend of yours. Always be cautious about what you say online.

Never agree to meet anyone in person that you've only known online. If somebody does start sending you messages that offend or upset you, tell an adult that you trust.

Visit these websites for advice



Cyber Security



Cloud Productivity

Word-processing - Create and edit documents using Microsoft Word

Spreadsheet - Create and perform data calculations with Microsoft Excel spreadsheets.

Create and display professional presentations using Microsoft PowerPoint

Manage your email and calendar in Microsoft Outlook.

Key Vocabulary

Attachment	A file that is sent with an email.
Anti-virus	Anti-virus software scans all forms of storage devices for viruses and, if found, attempts to remove them.
Cloud computing	Delivering different types of services over the Internet. This could be productivity software such as Microsoft Office 365.
Cyberbullying	Cyberbullying involves sending offensive texts or emails, posting lies or insults on social networking sites and sharing embarrassing videos or photos online.
Cyber Security	The practice of protecting systems, networks, and programs from digital attacks
Hack	Gaining unauthorised access to a computer.
Malware	Malicious software created to damage or gain illegal access to computer systems.
Phishing	Trying to trick someone into giving out information over email is called 'phishing'.
Troll	A derogatory name used as a term for a person who posts offensive messages online.



<http://bit.ly/336Fnqy>





Year 8 Knowledge Organiser: Coasts



Topics covered

- ✓ What we already know
- ✓ Coastal places
- ✓ Coastal processes
- ✓ Waves types
- ✓ Causes of erosion
- ✓ Erosional landforms
- ✓ Depositional landforms
- ✓ Impacts of erosion
- ✓ Methods of sea defence
- ✓ Future of our coasts

Key Ideas:

1. I can describe the location of coastal places
2. I can describe wave types and how they link to erosion
3. I can describe how erosional landforms are created
4. I can explain how erosion can affect people and the environment
5. I can assess sea defence types and decide upon best options

Skills

- ❑ To locate coastal places on UK maps
- ❑ To measure rates of erosion using GIS (Digital Mapping)
- ❑ To understand different opinions and viewpoints
- ❑ To write a detailed piece of extended writing
- ❑ To construct a timeline of an erosion event

Places and Environments

- ❖ Norfolk Coast
- ❖ Happisburgh
- ❖ Hemsby
- ❖ Dunwich
- ❖ Greenwich
- ❖ Holderness
- ❖ Isle of Wight
- ❖ Cornwall
- ❖ Blackpool

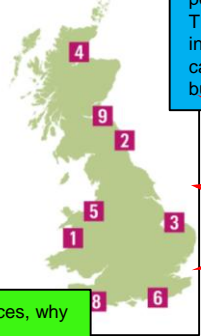
Key Terms Used in this Unit

- ❑ Erosion
- ❑ Hydraulic Action
- ❑ Abrasion
- ❑ Weathering
- ❑ Geology
- ❑ Destructive Waves
- ❑ Constructive Waves
- ❑ Stacks
- ❑ Longshore Drift
- ❑ Insurance
- ❑ Compensation
- ❑ Homelessness
- ❑ Tourism
- ❑ Revetments
- ❑ Nourishment
- ❑ Managed Retreat
- ❑ Gabions
- ❑ Breakwater
- ❑ Tidal Barrage

Year 8 Knowledge Organiser: Coasts

BEST PLACES TO LIVE BY THE SEA

- 1 Aberystwyth, Gwynedd
- 2 Amble, Northumberland
- 3 Burnham Overy Staithe, Norfolk
- 4 Dornoch, Highlands
- 5 Heswall, Merseyside
- 6 Hove, East Sussex
- 7 Kingsbridge, Devon
- 8 Lyme Regis, Dorset
- 9 North Berwick, East Lothian
- 10 St Ives, Cornwall



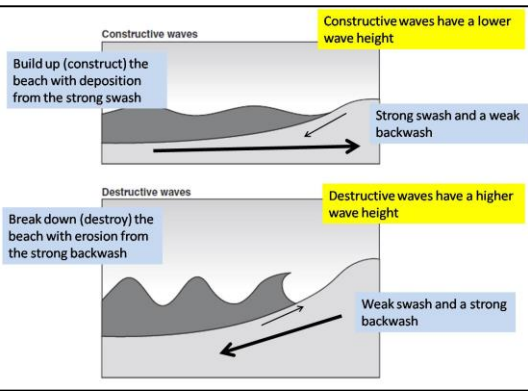
Try to research these places, why do they attract tourists?

Coastal places are popular with tourists. This brings in a valuable income boost to shops, cafes and water sports businesses.

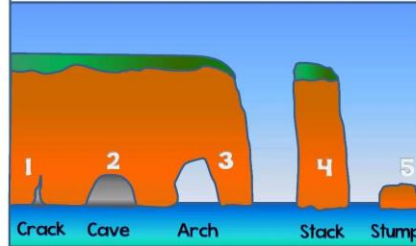
Career Links:
Oceanographer
Sea defence engineer
Tourism operator

Memory recall: Look at the diagram/labels for 1min
Cover and try to recreate this using key words and diagrams

WAVE TYPES: Memory recall - Look at the diagram/labels for 1min
Cover and try to recreate this using key words and diagrams



Formation of Caves, arches, stacks and stumps



- 1 Waves attack rock face using hydraulic action and abrasion. Crack is formed.
- 2 Over time, crack is enlarged to form cave.
- 3 Cave is widened and deepened and pushes through the headland to form a natural arch.
- 4 Undercutting and weathering lead arch to collapse leaving a stack.
- 5 Weathering and erosion wear stack down to a stump.

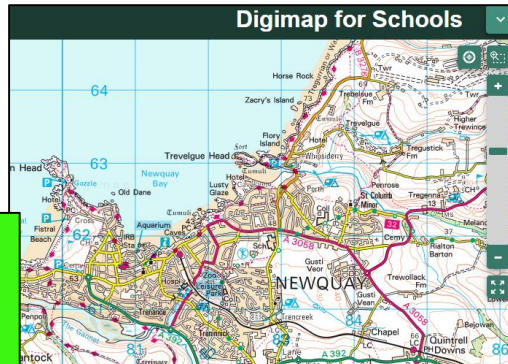
© 2015 www.3dgeography.co.uk

Try to explain how the diagram could help understand the photo

Coastal processes are natural ways the coast is being shaped. This is always happening but is difficult to see

Coastal deposition is a coastal process that involves the action of waves, and how they can often deposit sediments such as sand, rock, and pebbles. Gravity and friction play a key role in the transport and deposition of these materials as these are the driving forces that the waves experience

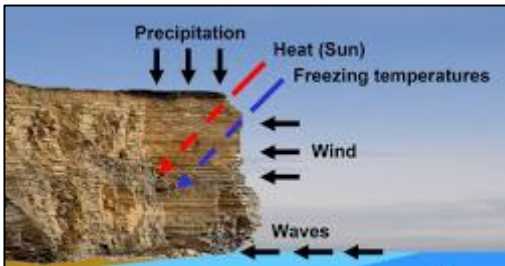
Try to research a UK coastal spit such as Blakeney point in north Norfolk



OS maps can help to show where the main tourist attractions are but can also be used to navigate, to look at the land uses behind the beach and to warn of dangers such as steep cliffs or underwater reefs

Use Digimapforschools or Google maps To try and find out how an area at the coast has changed over time.

Make a note of any signs of land use or Coastal erosion or sea defences



Coastal processes wear down the coast in different ways. Erosion attacks the base of the cliffs making them unstable. Weathering wears away the tops making a collapse more likely.



Figure 8 The formation of headlands and bays

Try to describe a coastline you have seen,
How were natural processes affecting it?
How were people managing it?

In some places coastal erosion is being managed, this means that there are often hard engineering sea defences built to reduce erosion

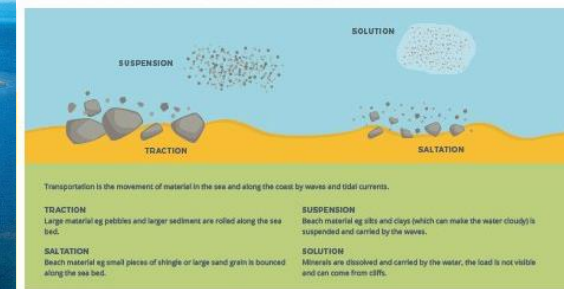


Hard engineering strategies

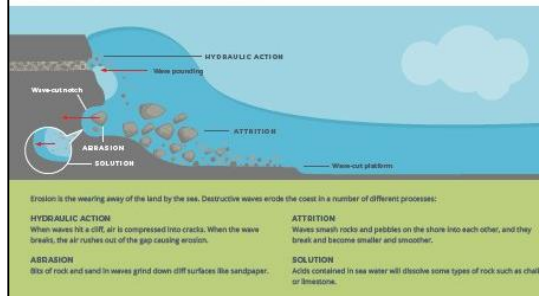


COASTAL PROCESSES

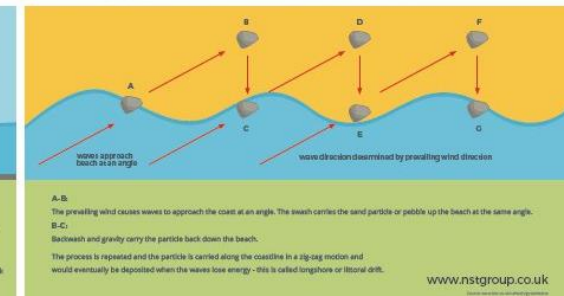
COASTAL TRANSPORTATION



COASTAL EROSION



LONGSHORE or LITTORAL DRIFT



Here is the vocabulary you will need for Module 4.

Remember to listen to the German by copying and pasting the blue codes next to the speaker icons [here](https://www.activeteachonline.com/view). The full address is: <https://www.activeteachonline.com/view>

Schulfächer • School subjects	
Deutsch	German
Englisch	English
Erdkunde	geography
Geschichte	history
Informatik	ICT
Kunst	art
Mathe	maths
Musik	music
Naturwissenschaften	science
Sport	sport, PE
Technik	technology
Theater	drama



ckMMDpUX

In this Module you will learn how to:

- talk about school subjects
- talk about days and times
- describe your teachers
- talk about school facilities and rules
- Read longer texts.

www.textivate.com

Username: openacademy

Password: surname800

Go to 'myresources' to find your work.

Keep practising your German vocabulary on www.quizlet.com

• *Either:*

click on this link: https://quizlet.com/_8ievl8?x=1qqt&i=25q2il

• *Or:*

click on your class name below to go directly to your Quizlet class.

[7H](#)

[7O](#)

[7P](#)

[7E](#)



Module 4: Schule ist Klasse! (School is class!)

Here is the vocabulary you will need for Module 4.

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click on your class name below to go directly to your Quizlet class.

[7H](#)

[7Q](#)

[7P](#)

[7E](#)



Meinungen • Opinions

mein Lieblingsfach ist ...	my favourite subject is ...
ich mag ... (sehr)	I like ... (a lot)
ich liebe	I love
ich mag ... nicht	I don't like ...
ich hasse	I hate
gut	good
toll	great
furchtbar	awful
einfach	easy
schwierig	difficult
interessant	interesting
langweilig	boring
nützlich	useful
nutzlos	useless
faszinierend	fascinating
nervig	irritating
supercool	really cool
stinklangweilig	dead boring



y944qZGg


Die Wochentage • The days of the week

Montag (Mo.)	Monday
Dienstag (Di.)	Tuesday
Mittwoch (Mi.)	Wednesday
Donnerstag (Do.)	Thursday
Freitag (Fr.)	Friday
Samstag (Sa.)	Saturday
Sonntag (So.)	Sunday

Was hast du am Montag? What do you have on Monday?

Am Dienstag habe ich ... I have ... on Tuesday

Am Sonntag haben wir keine Schule. We have no school on Sunday.



vcdJ9Xzj

Die Zeit • Time

Wann?	When?
Um wie viel Uhr?	At what time?
Um 8:30 Uhr (acht Uhr dreißig).	At 8:30.
Wie viel Uhr ist es?	What time is it?
Es ist 9:50 Uhr (neun Uhr fünfzig).	It's 9:50.
in der ersten Stunde	in the first lesson
vor der Pause	before break
nach der Mittagspause	after the lunch break



o6b32rdM

In der Schule • In school

die Lehrerin(-nen)	teacher (female)
die Deutschlehrerin(-nen)	German teacher (female)
der Lehrer(-)	teacher (male)
der Sportlehrer(-)	sports teacher (male)
Was gibt es?	What is there?
Es gibt einen/eine/ein ...	There is a ...
Es gibt viele ...	There are lots of ...
das Klassenzimmer(-)	classroom
der Tisch(-e)	table
der Stuhl(-e)	chair
der Computer(-)	computer
das Whiteboard(-s)	whiteboard
das Poster(-)	poster
das Fenster(-)	window
die Wand(-e)	wall
die Tür(-en)	door
der Korridor(-e)	corridor



IQVqlA6f

Wo ist das? • Where is it?

in der Schule	in the school
im Klassenzimmer	in the classroom
im Korridor	in the corridor
an der Wand	on the wall
am Fenster	by the window
am Tisch	at the table
auf dem Tisch	on the table
neben der Tür	near/next to the door



7S77vJHR

Oft benutzte Wörter

• High-frequency words

weil	because
sein/seine	his
ihr/ihre	her
zu	too
sehr	very
ziemlich	quite, fairly
ein bisschen	a bit
nicht	not
haben	to have
sein	to be
in	in
an	at, by, on (wall)
auf	on (top of)
neben	near, next to
heute	today
morgen	tomorrow
vor	before
nach	after



TOa6C6Ba

Strategie 4

Memory room

To help you remember vocabulary, try associating it with places in a room, such as your bedroom. In your mind, place the words you want to remember in different parts of the room. For example, to learn the school subjects, you might put **Erdkunde** by your computer, **Kunst** on top of the wardrobe, etc. Then you look round the room and say **Erdkunde** when you get to the computer and so on.

Mnemonics

If the spelling of a particular word just doesn't seem to stick, you could invent a mnemonic – a rhyme or saying that sticks easily in your mind. Here's an example, but it's best to make up your own because you'll find them easier to remember.

Sit
Tight
Until
Henry
Leaves

Read the Strategy Box for ideas for remembering vocabulary.

Year 8 History: Poverty and Scientific developments in the 16th and 17th centuries

Key words	
Reformation	The action or process of changing something
The English reformation	the Church of England breaks away from the authority of the Pope and the Roman Catholic Church
The 'middle way'	1559 Elizabeth I's religious settlement which decided on a 'middle way': Protestant but tolerant of Catholicism
Vagabond/sturdy beggar	A person who wanders from place to place without a home or job
1601 Poor Law	Placed paupers into four groups, each group was treated differently
Class	A group of people with the same economic or social status
Familiar	A demon, in the form of an animal that accompanies a witch
Superstitious	Someone who believes in omens and ghosts
Age of Reason	Also known as the Enlightenment, the period during the 1600s and 1700s when people began to explore the world and make new discoveries

The Elizabethans passed Poor Laws to give help to the sick and the old but there were harsh punishments for 'sturdy beggars'; Physical mutilation and execution by hanging!

Factfile



Name: Matthew Hopkins **Address:** Lives in Essex
Work details: Began career as a witch finder in 1645.

Methods used:

- Strip search of accused to look for devil's marks.
- Keeps accused awake till they confess.
- The water test: ties the accused up and lowers into a river or pond. If she lives, she is guilty.
- Encourages local people to make accusations of witchcraft.
- Payment:**
- Fee paid for survey of possible witches.
- Fee to be paid for each witch found.

Many people, mainly women, were accused and executed for witchcraft in the 16th and 17th centuries. People struggled to understand the world around them. Religious and superstitious beliefs influenced ideas that "witches" were to blame for bad things that happened to them

During the 16th century the living standards of many people improved. Many farmers were able to sell their produce at higher prices than before and could afford to rebuild their farmhouse and even amongst those less well off, the fear of famine was less. By 1600 this had changed and there were more poor people than ever before:

- Population: This went up quickly and there was less food
- Inflation: Prices started to go up
- Unemployment: There were less jobs as the farming industry changed from crop to sheep farming
- Henry VIII had shut the monasteries so there was less help for the poor

This led to increased begging and a divide between the 'impotent poor' (deserving poor; wanted to work but couldn't as too old or sick) and those who were poor and were turning to crime (the Tudors nicknamed these people Vagabonds)

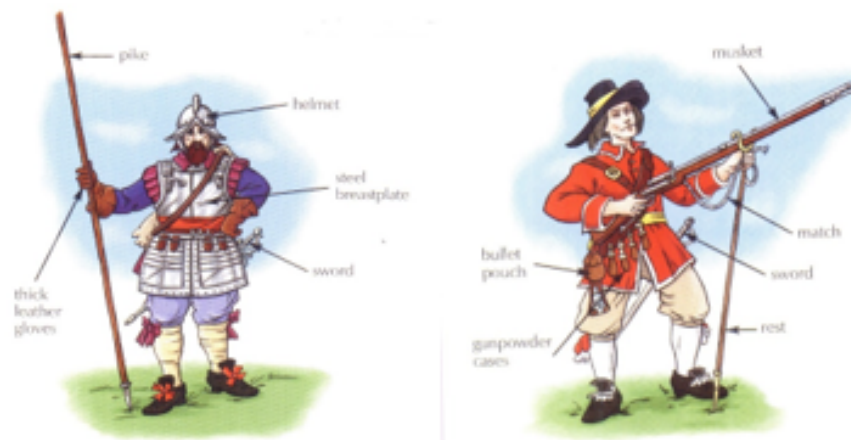
Key Scientists: William Harvey, Robert Hooke, Isaac Newton, Christopher Wren, Robert Boyle

Did Science change views about witches?

Yes	No
New discoveries & Inventions Less trouble between religious groups Information and news spread more easily People are less superstitious	People still superstitious Religion was still very important People still believed in witchcraft

Key words	
Roundhead	Nickname for the parliamentary soldiers (from their haircut)
Cavalier	Nickname for the soldiers in the royalist army
New Model Army	New and improved parliamentary army with excellent training and character
Treason	The crime of betraying your country
Puritan	Protestants who wanted to 'purify' the Church of England from its Catholic ways
Catholic	Christians who believed that the Pope, in Rome, was the head of the church
Protestant	Christians who refused to accept the Pope as the head
Ship Tax	A sum of money, introduced by Charles I paid for people living by the sea
Royalist	A supporter of the King during the civil war
Parliamentarian	A supporter of parliament during the civil war

Pikeman and Musketeer



Key battles: Edgehill (1642) Marston Moor (1644), Naseby (1645)

Between 1642 and 1646 King Charles I fought a civil war against his enemies in Parliament. He lost in 1646 and was executed by beheading in 1649. Cromwell led England as a Republic between 1653 and 1658. The Monarchy was restored in 1660.

Causes of the English Civil War:

- His marriage to the French Princess, Henrietta Maria, worried Protestants about another Civil War (France was a huge Catholic superpower)
- Soon there were religious changes such as to the prayer book which angered Protestants
- Charles spent money on wars with Scotland and Irish rebels. Taxes were raised unfairly and the wars were lost
- Wealthier members of society (Lords and Rich Gentlemen) had more political rights than others
- Charles showed little respect for Parliament; shutting it down when it would not approve his requests for money or laws which were not in the favour of the people (Ship Tax)

Oliver Cromwell as Lord Protector

A Harsh & Unpopular Ruler (Villain)

Cromwell's actions in Ireland, particularly at Drogheda, are still remembered for their cruelty and bloodshed

Popular entertainment and hobbies such as gambling, the theatre and even makeup were banned

Most popular aspects of Christmas were banned!

A Tolerant Defender of Democracy (Hero)

Cromwell was surprisingly tolerant of other religions and was the first ruler to allow Jews to re-settle

Prevented the King from destroying Parliament (although he eventually got rid of it himself!)

Built England into a formidable military power

Vocabulary to learn

Dystopian
Dystopia
Utopia
Identify
Explain
Chronology
Chronological
Non-chronological
Sequence
Wasteland
Militant
Council
Government
Poverty

Structure analysis - methods:

- Zoom in/out
- Repetition of an image/idea
- Links and connections between paragraphs
- Shifts:
 - inside to outside (and vice versa)
 - focus
 - time
 - topic
 - setting/place
 - mood/atmosphere
 - description to dialogue (and vice versa)

Language analysis Checklist:

- Link to task
- Relevant quote
- Meaning of quote
- Method named
- Effects explained
- Word zoomed in on
- Meaning of word
- Implied meanings
- Aim higher: layers of meaning

Evaluate

weigh up, form a judgement

This question asks you to **evaluate** the **extent** to which you agree with a given statement about a text.

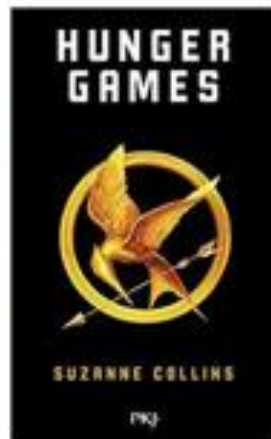
how much

You will need to consider:

- The impressions (**opinions**) you have of the text in relation to the statement
- The methods the writer has used to create these impressions
- How the particular methods create these impressions

Words/phrases
Linguistic devices
Structural features
Sentence forms

Suggested reading



Literary devices and word class

- Metaphor – a literal comparison – *she was a monster*
- Personification – human qualities – *the grass danced in the wind*
- Simile – as/like/as if – *he was like a man possessed*
- Onomatopoeia – the sound words – *bang, pop, sizzle*
- Alliteration – same starting sounds – *really rather raucous*
- Lists – to emphasise many reasons
- Verbs – doing words
- Adjectives – describing words
- Nouns – objects or abstract things e.g. love
- Adverbs – describe doing words e.g. wrote neatly
- connotations of words – associations – night-time = mystery

YEAR 8 - PROPORTIONAL REASONING...

@whisto_maths

Ratio and Scale



What do I need to be able to do?

By the end of this unit you should be able to:

- Simplify any given ratio
- Share an amount in a given ratio
- Solve ratio problems given a part

Solutions should be modelled, explained and solved

Keywords

Ratio: a statement of how two numbers compare

Equal Parts: all parts in the same proportion, or a whole shared equally

Proportion: a statement that links two ratios

Order: to place a number in a determined sequence

Part: a section of a whole

Equivalent: of equal value

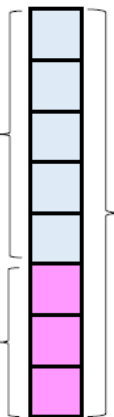
Factors: integers that multiply together to get the original value

Scale: the comparison of something drawn to its actual size.

Representing a ratio

"For every 5 boys there are 3 girls"

This is the "whole" – boys and girls together

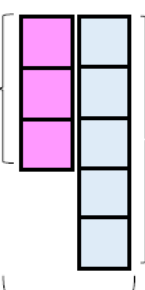


This represents the 5 boys This represents the 3 girls

5:3

This represents the 5 boys

Double Number Line



This represents the 3 girls

Order is Important

"For every dog there are 2 cats"

Dogs: Cats

1:2

The ratio has to be written in the same order as the information is given

eg 2:1 would represent 2 dogs for every 1 cat. ✗

Simplifying a ratio

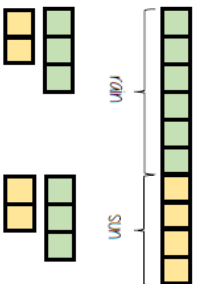
Cancel down the ratio to its lowest form

"For every 6 days of rain there are 4 days of sun"

6:4

÷ by 2 ↓

3:2



Find the biggest common factor that goes into all parts of the ratio

For 6 and 4 the biggest factor (number that multiplies into them is 2)

"For every 3 days of rain there are 2 days of sun" – when this happens twice the ratio becomes 6:4

Ratio In (or n:1)

This is asking you to cancel down until the part indicated represents 1

Show the ratio 4:20 in the ratio of 1:n

The question has to be stated that the part has to be 1 unit.
4 : 20
↓
1 : 5

The site has to be divided by 4 too – to keep n proportion

Therefore Divide by 4
*If the n part does not have to be an integer for the type of question

Units are important:

When using a ratio – all parts should be in the same units



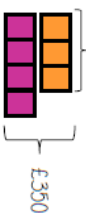
Sharing a whole into a given ratio

James and Lucy share £350 in the ratio 3:4
Work out how much each person earns

Model the Question

James: Lucy

3 : 4



Find the value of one part

Whole: £350

7 parts to share between

(3 James, 4 Lucy)

£350 ÷ 7 = £50

□ = one part = £50

Put back into the question

James: Lucy

James = 3 x £50 = £150



Finding a value given 1n (or n:1)

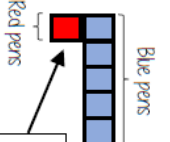
Inside a box are blue and red pens in the ratio 5:1
If there are 10 red pens how many blue pens are there?

Model the Question

Blue: Red

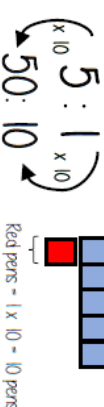
5 : 1

□ = one part = 10 pens



Put back into the question

Blue pens = 5 x 10 = 50 pens



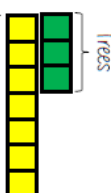
There are 50 Blue Pens

Ratio as a fraction



Trees: Flowers

3 : 7



There are 3 parts for trees

Fraction of trees

Number of parts of n group

Total number of parts

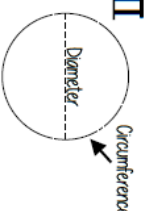
3

10

Fraction

Tree parts 3 + Flower parts 7 = 10

PII



The ratio of a circle's circumference to its diameter

YEAR 8 - PROPORTIONAL REASONING...

Multiplicative Change

@whisto_maths

What do I need to be able to do?

- By the end of this unit you should be able to:
- Solve problems and explain direct proportion
- Use conversion graphs to make statements, comparisons and form conclusions
- Understand and use scale factors for length

Keywords

- Proportion:** a statement that links two ratios
- Variable:** a part that the value can be changed
- Axes:** horizontal and vertical lines that a graph is plotted around
- Approximation:** an estimate for a value
- Scale Factor:** the multiple that increases/ decreases a shape in size
- Currency:** the system of money used in a particular country
- Conversion:** the process of changing one variable to another
- Scale:** the comparison of something drawn to its actual size.

Direct Proportion

As one variable changes the other changes at the same rate.



4 cans of pop = £2.40

4 cans of pop = £2.40

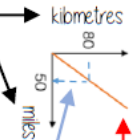
2 cans of pop = £1.20

This multiplier is the same in the same way that this would be for ratio

Sometimes this is easiest if you work out how much one unit is worth first
e.g. 1 can of pop = £0.60

Conversion Graphs

Compare two variables



Labelling of both axes is vital

This is always a straight line because as one variable increases so does the other at the same rate

To make conversions between units you need to find the point to compare – then find the associated point by using your graph.
Using a ruler helps for accuracy
Showing your conversion lines help as a “check” for solutions

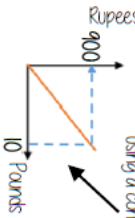
Conversion between currencies



£1 = 90 Rupees

For every £1 I have 90 Rupees

Currency can be converted using a conversion graph



£1 = 90 Rupees

£10 = 900 Rupees

Convert 630 Rupees into Pounds

£1 = 90 Rupees
£7 = 630 Rupees

Ratio between similar shapes



Angles in similar shapes do not change.
e.g. if a triangle gets bigger the angles can not go above 180°

The two rectangles are similar.

3m

8m

4.5m

7m

Corresponding sides

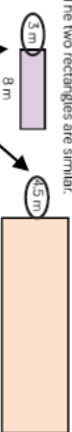
3m : 8m
4.5m : 12m
1m : 15m

1m : 15m

Note: Simplify to the same ratio

Understand Scale Factor

The two rectangles are similar.



This is a multiplicative change

3 x 15 = 45

Use corresponding sides to calculate a scale factor

8 x 15 = 120

Scale factor can also be calculated by

Bigger corresponding side
Smaller corresponding side

x SF
- SF

Draw and interpret scale diagrams

A picture of a car is drawn with a scale of 1:30

For every km on my image is 30cm in real life

The car image is 10cm

Image : Real life
10cm : 300cm

The car in real life is 210cm

Image : Real life
7cm : 210cm

Interpret maps with scale factors

10
100
1000

mm
cm
m
km

x 10
x 100
x 1000

1 cm : 250 m

1 cm : 25000 cm

For every km on my map is 25000cm in real life



YEAR 8 - PROPORTIONAL REASONING...

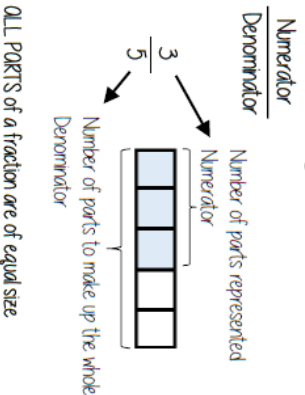
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Multiplying and Dividing Fractions

What do I need to be able to do?

- By the end of this unit you should be able to:
- Carry out any multiplication or division using fractions and integers
- Solutions can be modelled, described and reasoned

Representing a fraction



Keywords

Numerator: the number above the line on a fraction. The top number. Represents how many parts are taken

Denominator: the number below the line on a fraction. The number represent the total number of parts.

Whole: a positive number including zero without any decimal or fractional parts

Commutative: an operation is commutative if changing the order does not change the result

Unit Fraction: a fraction where the numerator is one and denominator a positive integer.

Non-unit Fraction: a fraction where the numerator is larger than one.

Dividend: the amount you want to divide up.

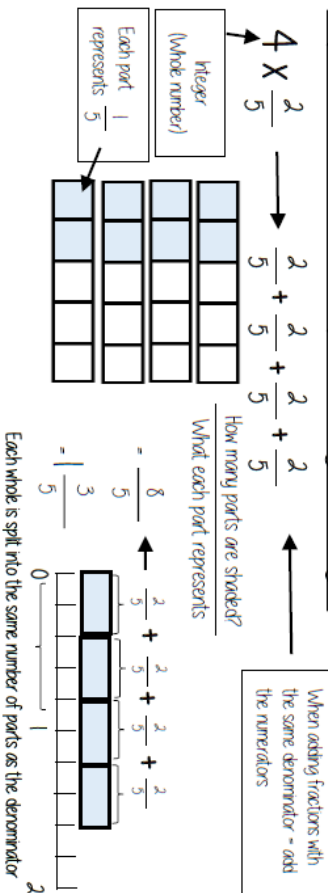
Divisor: the number that divides another number.

Quotient: the answer after we divide one number by another e.g. dividend ÷ divisor = quotient

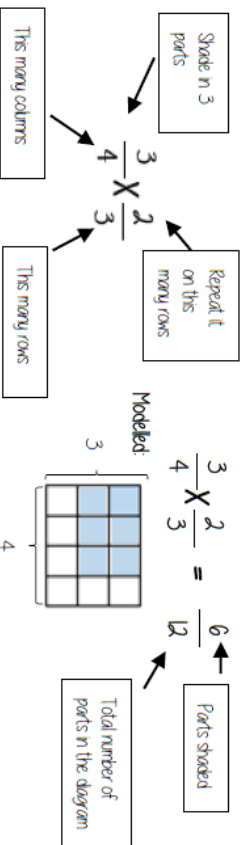
Repeat a pair of numbers that multiply together to give 1



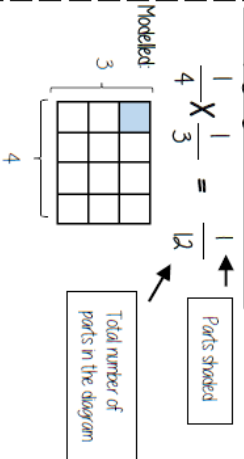
Repeated addition = multiplication by an integer



Multiplying non-unit fractions



Multiplying unit fractions



Quick Multiplying and Cancelling down

$$\frac{3}{5} \times \frac{4}{9} = \frac{1}{12}$$

The 3 and the 9 have a common factor and can be simplified

Quick Solving

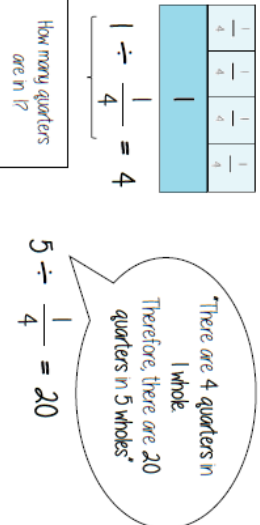
Multiply the numerators

Multiply the denominators

$$1 \times 4 = 4$$

$$5 \times 3 = 15$$

Dividing an integer by an unit fraction



The reciprocal when you multiply a number by its reciprocal the answer is always 1

Reciprocals for division

e.g.

$$3 \times \frac{1}{3} = 1$$

$$5 \div \frac{1}{4} = 20$$

$$5 \times 4 = 20$$

Multiplying by a reciprocal gives the same outcome

The reciprocal of 3 is $\frac{1}{3}$ and vice versa

Dividing any fractions Remember to use reciprocals

Represented

Multiplying by a reciprocal gives the same outcome

$$\frac{2}{5} \div \frac{3}{4} = \frac{2}{5} \times \frac{4}{3} = \frac{8}{15}$$

Year 8 RS: How do Jewish people respond to suffering?

Key words	
Empathy	the ability to understand and share the feelings of another.
Free will	The idea that humans are free to make their own moral choices.
Commandment	A law or instruction believed to be given by God.
Tree of Knowledge	A tree in the Garden of Eden that Adam and Eve ate from despite being forbidden by God.
Moral Evil	the acts of humans which are considered to be morally wrong
Natural Evil	natural disasters, such as earthquakes or tsunamis

What is evil and suffering?

Evil

Evil is a cause of human suffering. There are two types of evil:

- moral evil – the acts of humans which are considered to be morally wrong
- natural evil – natural disasters, such as earthquakes or tsunamis

These two types of evil can work together, e.g. human evil can make natural evil worse. If natural evil, e.g. a drought brought on by lack of rainfall, causes crops to fail, the policies of a government can make the food shortages for the poorest people worse (moral evil).

Religions differ in what they teach about the origins of evil:

- Some consider it to have been present in the world from the beginning as the work of evil forces.

Jewish views to evil and suffering

Every religion has its own way of explaining human suffering and the concept of evil. Many Jews believe evil originates from the first sin of Adam and Eve in the Garden of Eden.

What does Judaism say about the origin of evil?

Many Jews believe that evil originates from the first sin of Adam and Eve. The serpent tempted Eve to eat from the Tree of Knowledge against God's wishes. Evil then became a part of them and they no longer needed an external temptation to sin. Humans suffered because they were disobedient and so became separated from God.

Jews believe that Satan is not a separate being. Satan is a tendency existing in every human being which tempts them to do wrong.

What does Judaism teach about evil and suffering?

God created everything, so God must have created evil. God is omnipotent, merciful and just, therefore evil and suffering must be part of God's plan for humanity.

God gave human beings free will. With this free will comes the ability to choose between good and evil. Therefore, humans are free to make their own moral choices. Sometimes these choices are evil and cause suffering. Human beings can choose whether or not to obey God's commandments. People will be punished for the sins they commit, and rewarded for their good actions. It is important to Jews that they make good choices in their lives and try to relieve suffering.

In times of suffering, Jews may turn to the Book of Job where God allows Satan to test Job. Satan suggests that Job would not worship God if God did not protect him.

- Some consider it to have been present in the world from the beginning as the work of evil forces.
- Some believe it is part of God's creation which may have a purpose that humans cannot understand.
- Some consider it to be the outcome of ignorance and to have no beginning.
- Most religions teach that moral evil should be opposed. Attempts should be made to minimise the impact of natural evil.

Suffering

Suffering is the bearing or undergoing of pain or distress. Suffering is often a result of evil.

Most people experience suffering at some time in their life. Religions attempt to explain suffering, help people to cope with it and learn from it. For some religious people, the fact that people suffer can raise difficult questions about why God allows this to happen.

Some people say that God allows humans to make decisions for themselves and that suffering is caused by the choices that people make.

Questions raised by the existence of evil and suffering in the world

- What does the presence of evil and suffering say about God's love, power and purpose?
- Is there a purpose to suffering?
- Is suffering the price humans pay for free will?
- How do different religions respond to evil and suffering?
- How do individuals respond to evil and suffering?

God gives Satan the power to make Job suffer. His servants are attacked, his animals stolen, lightning kills all of his sheep and shepherds and a storm blows his eldest son's house down, killing all his children. Regardless, Job's faith in God remains strong. He is willing to accept whatever fate may bring and acknowledges the ultimate sovereignty of God:

How do Jews respond to evil and suffering?

Most Jews believe that everything God does is for good. From a human perspective, some actions might seem evil, but they trust that whatever happens on Earth is ultimately according to God's plan, which is good.

There are many Jewish responses to the problem of evil and suffering.

- The Tenakh teaches that suffering can be a punishment for sins.
- The Tenakh teaches that suffering can be part of a test from God of a person's faith and to see if they will freely follow God's commandments. Passing the test means they will be rewarded in this life or after death.
- Jews believe suffering can bring people closer to God. In times of trouble many people turn to religion for comfort and support.
- Some Jews believe suffering helps people to empathise with others and to assist them when necessary.
- Suffering cannot be understood by humans; this particularly relates to the suffering Jewish people endured during the Holocaust or Shoah. However, Jews believe they must do all they can to overcome and relieve suffering.
- Judaism teaches free will. God created humans with Free Will, the ability to choose the actions in their life.
- God is absolutely good and Free Will is given so people can freely choose to worship God.
- Times of suffering are seen as a learning experience for their conscience as they decide what are the right decisions to make.
- Jews look for comfort in the scriptures, the Torah and Talmud.

Year 8 Autumn Term Knowledge Organiser



Baroque Music 1600 – 1750

- ✓ Melody - a single melodic idea
- ✓ Rhythm – a continuous rhythmic drive
- ✓ Texture - a mixture of homophonic and polyphonic textures (thick and thin)
- ✓ Timbre - orchestral – strings, woodwind and harpsichord with very little percussion
- ✓ Dynamics - sudden shifts from loud to soft and vice versa – achieved by adding or subtracting instruments
- ✓ An overall characteristic of Baroque Music is that each piece has a single mood or expression of feeling – one purpose
 - ✓ Famous composers: Bach, Handel, Purcell, Pachelbel, Vivaldi

We will have studied Pachelbel's Canon and Vivaldi's Four Seasons



Classical Music 1750 – 1840

- ✓ Melody – short and clearly defined musical phrases with two or more contrasting themes
 - ✓ Rhythm – very defined and regular
- ✓ Texture – mainly homophonic (main melody and accompaniment)
 - ✓ Structure – rondo and sonata forms
- ✓ Timbre – the symphony orchestra was organised into four sections – strings, woodwind, brass and percussion. The harpsichord was seldom used.
 - ✓ Famous composers: Mozart, Beethoven, Haydn and Grieg

We will have studied Beethoven's Fur Elise and Mozart's Eine Kleine Nachtmusik



Fur Elise

Measures 1-5 of 'Fur Elise'.

Chords: C, D, Eb, C, Eb, G, Eb, G, C, B, F, G, F, G, D, C, Eb, G, C.

Spring

Measures 1-5 of 'Spring'.

Chords: C/G, C/G, C/G, C/G, C/G, C/G.

Here are three of the pieces we will have studied – can you write in the missing note names? Rhymes for the bass clef are:

If the note is on the line, Good Bike Don't Fall Apart

If the note is in a space, All Cows Eat Grass

Measures 6-17 of 'Spring'.

Chords: C/G, C/G, C, F, G.