



Great Wyrley Academy

Year 8

Knowledge Organiser

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Introduction

Knowledge - why does it matter?



Welcome to your knowledge organiser booklet! Here you will find the powerful knowledge that you need to succeed in each of your subjects so that you can flourish and be the best you can be.

Your challenge is to master this knowledge so that you have it at your fingertips, ready to apply to whatever question or challenge you are set.

One of the best habits you can instill in yourself is **regular self-quizzing**. This will help you to recalibrate your understanding of what you know and don't know. To put it simply, self-quizzing will help you learn better and remember longer. To do this you will need to self-regulate, to spend some time each day devoted to memorising and testing what you have learned and relearning. Your teachers will train you to self-quiz effectively, using the techniques that have been shared in this booklet. We have even provided you with a section at the back where you can complete all different types of self-quizzing!

Memory

How can we remember things forever?



Before we can understand how our memory works we need to understand a little about how your brain works. You have 2 types of memory:

1. **Working memory:** you use this when you're dealing with a new question or problem and you have to think hard.
2. **Long term memory:** your stored memories, for example, you all know that $2+2 = 4$ without having to work it out. Each set of information such as the plot of a favourite book, or your times table is called a '**schema**'. Each schema stored in your long term memory only uses one 'slot' in the working memory when you access it. So, if you already have your times tables schema stored in your memory, you are able to solve multi stage maths problems mentally because you don't have to work out the times tables bit in your working memory. Luckily, there is no limit to your stored memory, you just need to fill it up!

Now, cognitive scientists have investigated how the brain puts knowledge into your long term memory. We have compiled an overview on the following pages of the most effective techniques that you can use to remember knowledge and improve understanding in your studies.

SELF-QUIZZING TECHNIQUES THAT WORK

"Know More, Remember More"



Flash Cards

Question and Answer Format

Flappies

Grab some scissors and start cutting!



Blurt

List everything you know on a topic

Online Quizzing

Testing your knowledge online



Voice Memo

Use the voice memo app on your phone to create a bank of questions and answers

Look, Cover, Check

Cover the answers and recall



Collaboration

Self-Quiz with your classmates

Spaced learning

Learning and revisiting your work over time



How to use your knowledge organiser

Techniques Explained

This knowledge organiser provides you with the key information for each of your subjects. You can learn this information by using remembering strategies. There are templates on the back pages of this booklet to help you get started. Here are some of our recommended techniques.

Flashcards: Take a page of A4, cut into quarters (see back pages). On the front write the topic title or key question e.g. 'What is Circle Theorem'. On the reverse write 4-5 short facts/phrases that are the most important part of the topic. To test yourself, look at the front, say what you remember and then turn over to check the reverse – highlight any that you missed; these are areas to recap next time.

Flappies: Take a page of A4, fold in half, and cut the top half into strips (see back pages). On the top strip write your question and underneath on the bottom page write the answer.

Blurt: Choose a topic and write down everything that you can remember about it. Go back to your notes and see what you missed – these are areas to recap next time.

Online quizzes: Quizlet and Anki are useful apps for building up a bank of online flashcards.

Voice memo: Use the voice memo app on your phone to create a bank of questions and answers e.g. Question. 'When was the Battle of Hastings – *pause* – Answer. 1066'. When you play back you say the answer in the pause and then hear if you were correct.

Look - Cover - Check for definitions of key words in this knowledge organiser to check that you can explain the word.

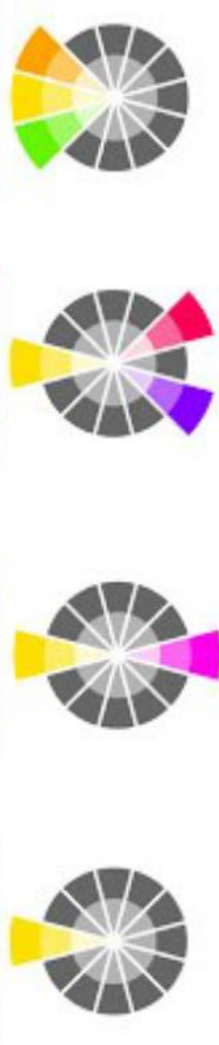
Collaborative learning: Self-quiz with your classmates by thinking together, sharing and discussing your knowledge.

Spaced Practice - Learning and revisiting your work over several days or weeks allows you to forget a little and then relearn which builds stronger long term remembering. **Review information from each class**, but not immediately after class. For example, if you have classes Monday, Wednesday, and Friday, you might review the information on Tuesday, Thursday, and Saturday respectively for each of those classes. **Make a spaced practice checker** to help you to space out your review (see back pages). Cover a variety of small topics in your study time. If you do lots of practice on one big subject you will seem good at it then, but this is short term and quickly forgotten

Wallpaper Design

Colour Schemes

TC1 Visual Elements



MONOCHROMATIC COMPLEMENTARY SPLIT COMPLEMENTARY ANALOGOUS

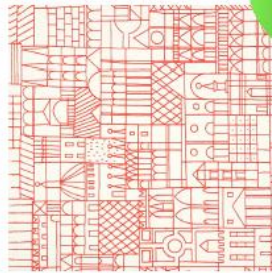
TC5 The Meaning of Artworks

What is Interior Design?

Interior design is all about how we experience spaces. It's a powerful, essential part of our daily lives and affects how we live, work, play, and even heal.

Wallpaper is a material used in interior design to decorate the interior walls of domestic and public buildings. Wallpaper printing techniques include surface printing, silk screen-printing and digital printing. Wallpaper is made in long rolls which are hung vertically on a wall.

Possibly the most famous historical wallpaper designer is William Morris, however there are many contemporary designers such as Michelle Mason, Matthew Williamson and Alexander Girard.



Alexander Girard



Matthew Williamson

TC3 Influences



Michelle Mason



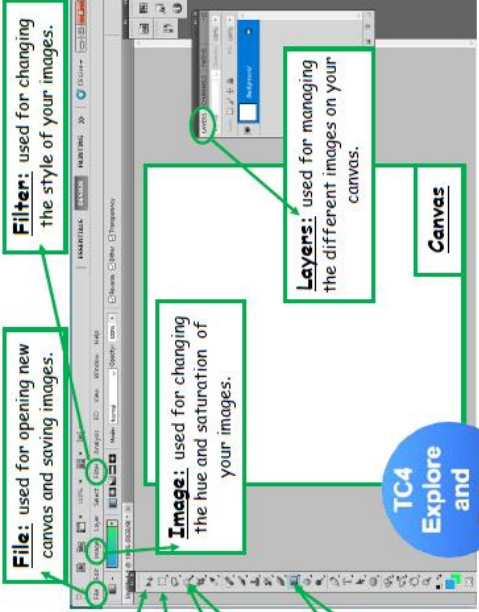
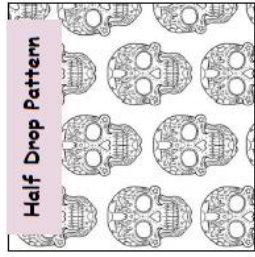
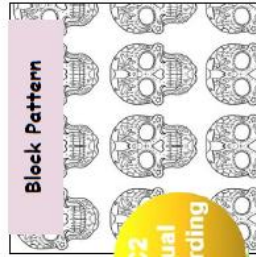
William Morris

Key Vocab

composition, contrast, repetition, design, interior, photoshop, hue, saturation, block, half-drop, pattern, creative, inspiration, alignment, split complementary, analogue,

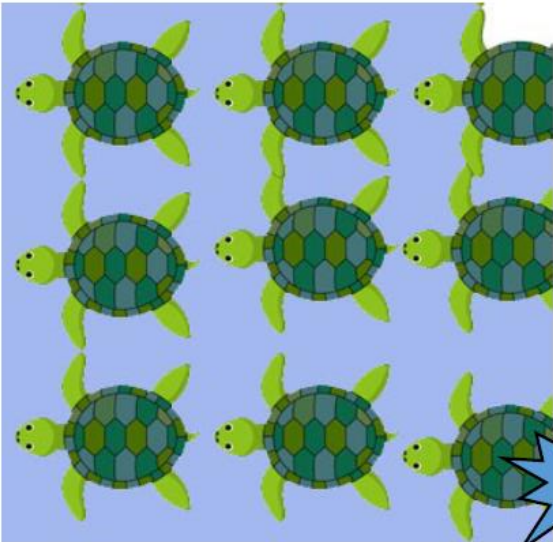
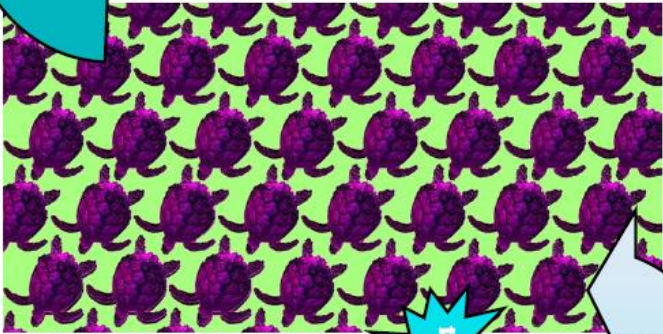
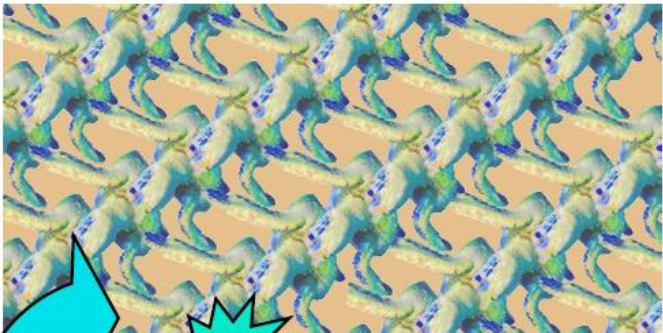


TC2 Visual Recording



TC4 Explore and Refine

Art – Knowledge Organiser 1

<div> <div>Wallpaper Design: KAT</div> <div>How far can your go?</div> </div>		
<p>What Went Well ...</p> <p>Most images are lined up correctly. Simple and eye catching colours. Good use of block pattern .</p>	<p>What Went Well...</p> <p>All images are lined up correctly. A clear complementary colour scheme has been used. A simple half drop pattern has been used.</p>	<p>What Went Well...</p> <p>A split complementary colour scheme has been used. A complex overlapping half drop pattern has been used. Photoshop filters have been experimented with.</p>
		
<p>Even Better If ...</p> <p>More complicated pattern. <i>(Try using a half drop pattern next time)</i> Clear colour scheme choice. <i>(Try using a complementary or analogue colour scheme)</i> Correct size of the canvas. <i>(Try changing the size to 50x100cm)</i></p>	<p>Even Better If ...</p> <p>More complex patterns. <i>(Try to overlap images)</i> More complex colour scheme. <i>(Try a split complementary colour scheme)</i> A wider range of Photoshop tools <i>(Try using the gradient tool in the background)</i></p>	<p>Even Better If...</p> <p>More complicated patterns <i>(Try using alternating images)</i> More examples of colour choices. <i>(Provide two or three different colours)</i> Show a wider range of Photoshop skills <i>(Try using a gradient tool or different filters)</i></p>

Art – Knowledge Organiser 2

Landscapes



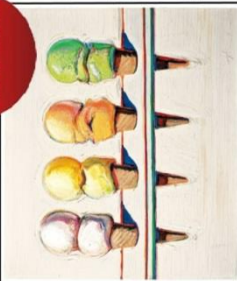
TC3
Influences

David Hockney (born 9 July 1937)

Hockney is an English painter, printmaker, stage designer, and photographer. As an important contributor to the Pop Art movement of the 1960s, he is considered one of the most influential British artists of the 20th century.

UNITY

Unity makes the viewer feel as though all parts of the composition are working together. For example using a clear colour scheme or arranging objects together.



Key Words
Balance
Composition
Shapes
Colour
scheme
Similar
Equilibrium
Calmness

MOVEMENT

You can create movement by using elements to direct the viewer across the art work. For example using shapes that link together or using line to point to a focal point.



Key Words
Line
Shape
Link
Direct
Focal point
Focus
Fast
Slow

TC5
The Meaning of Artworks

TC3
Influences

Vincent Van Gogh (1853 - 1890)

Van Gogh was a Dutch painter who is among the most famous figures in the history of art. In just over a decade he created about 2,100 artworks, including around 860 oil paintings.

TC4
Explore and Refine

Oil Pastels

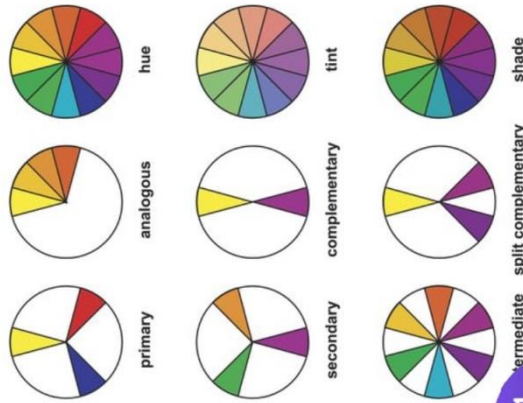


Top Tips

- ⇒ Press firmly to create vivid colours and to show no paper underneath.
- ⇒ Overlap oil pastels so that they blend together gradually.
- ⇒ Use analogous colours for colour blending.
- ⇒ Use white to create lighter tints.
- ⇒ Use complementary colours to make darker shades.
- ⇒ Use sgraffito and mark making to add movement.

Key Words

- Movement
- Unity
- Complementary
- Primary
- Secondary
- Analogues
- Oil Pastel
- Watercolour
- Landscape
- Mark-making
- Colour-wash
- Layering
- Sgraffito
- Background
- Foreground



Colour Theory

TC1
Visual Elements

Water Colour

Top Tips

- ⇒ Keep water colours clean to create bright colours.
- ⇒ Use watery paint for the colour wash.
- ⇒ Use thicker paint for adding details.
- ⇒ Blend analogous colours together for a colour wash.
- ⇒ Use complementary colours to make darker tones.



Art – Knowledge Organiser 3

TC3 Influences



Philip Treacy Born: 26 May 1967

Treacy is an award-winning Irish milliner (hat designer) based in London, who has been described by *Vogue* magazine as: "perhaps the greatest living milliner". He has created hats for celebrities such as, Lady Ga-Ga, Madonna and British Royalty.

Steampunk

a genre of science fiction that has a historical setting and typically features steam-powered machinery rather than advanced technology.

"If you like steampunk, this is a great book for you"

- a style of design and fashion that combines historical elements with anachronistic technological features inspired by science fiction.
- "the essence of steampunk is homage to vintage fashion with a modern, sassy twist"





TC4 Explore and Refine




Key Words

Texture describes the surface of an object. Artists use real textures and implied textures create work.



Key Words

Texture, Refine, Control, Accuracy, Creative, Mark-making, Manipulate, Structure, Recycled, Milliner, Steampunk, Decayed, Rusted, Paper Mache, Stippling, Tone, Unique, Emphasis

Key Words

Forma are three-dimensional objects and can be viewed from any angle. Artists can make 2-dimensional work look as though they have form by using tone.



Key Words

Forma are three-dimensional objects and can be viewed from any angle. Artists can make 2-dimensional work look as though they have form by using tone.



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Forma are three-dimensional objects and can be viewed from any angle. Artists can make 2-dimensional work look as though they have form by using tone.



TC5 The Meaning of Artworks








Base Building

Paper Mache

Recycled add-ons

Base paint layer

Rusted textures

Finishing touches

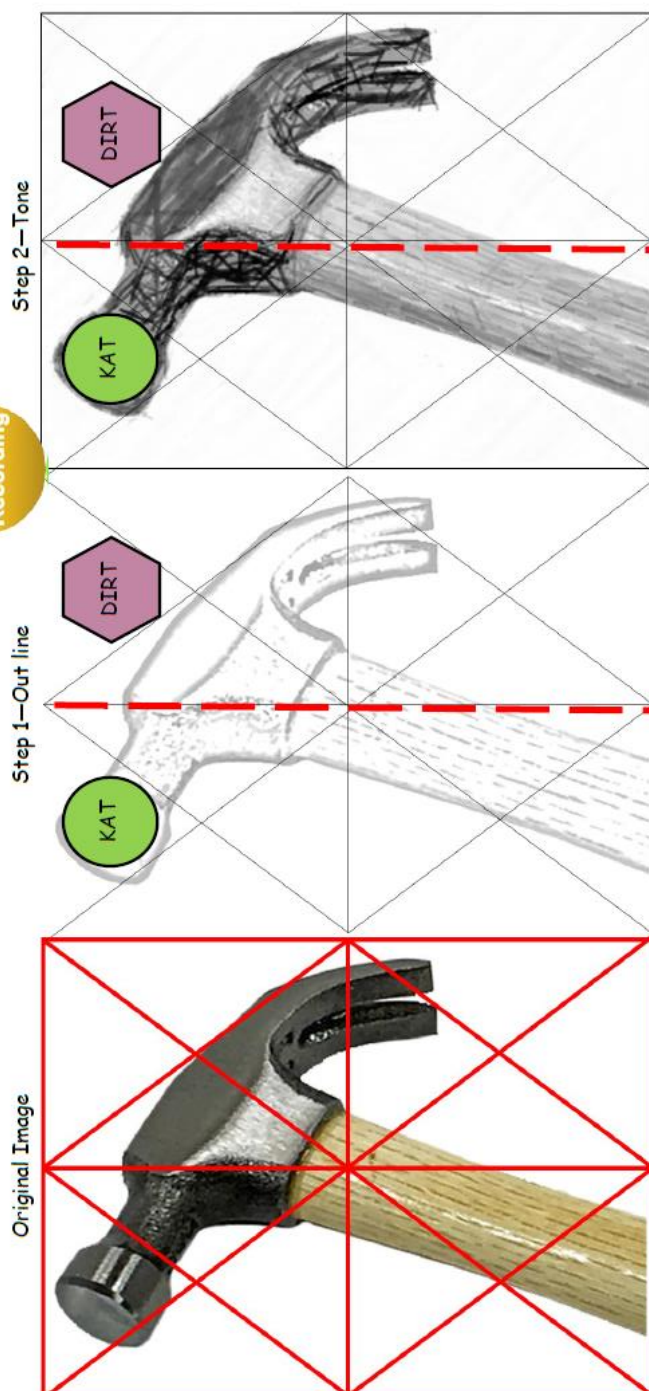
HOT GLUE GUN

Art – Knowledge Organiser 3

Steampunk: KAT



TC3
influences



TC2
Visual
Recording

Step 2—Tone

Step 1—Out line

Original Image

Jim Dine (Born June 16, 1935)

Jim Dine is an American painter, graphic artist, sculptor, and poet who started to create work during the Pop art period. His work is part of the Pop Art movement as he combines brightly painted canvas's with ordinary objects of daily life.

He is famous for drawing and painting in many styles, such as tools, flowers and hearts. His tools collection uses dramatic tones to show the forms of every day tools found around the house.

IONE

Tone describes the lightness or darkness of a surface. Artists add tone to work to make it look more realistic.

7

Medium	Light	Shade	Highlight	Realistic	Three-dimensional	Value
Medium						
Light						
Shade						
Highlight						
Realistic						
Three-dimensional						
Value						

FORM

Forms are three-dimensional objects and can be viewed from any angle. Artists can make 2-dimensional work look as though

Best

Two-dimensional
Three-dimensional
Curved
Angular
Textured
Smooth

EXTENDING

Texture
describes the surface of an object. Artists use real textures and implied textures create

Simons

Flat	
Ruffled	
Spliny	
Rough	
Shiny	
Silky	
Hairy	
Coarse	

Top Tips

- Look carefully at the shapes in each section.
- Use a ruler to mark out correct sizes.
- Use a sharp pencil for neat outlines.
- Draw with soft pencil marks.

Top Tips

- ⇒ Press down firmly to create dark tones in the background.
- ⇒ Press lighter to create the mid tones.
- ⇒ Leave some spaces the white of the paper.
- ⇒ Use a cotton bud to blend gradually from dark to light.
- ⇒ Use a rubber to add in highlights.
- ⇒ Add texture marks with little pencil strokes.

Data Representation Year 8 Cycle 1

Binary to Decimal

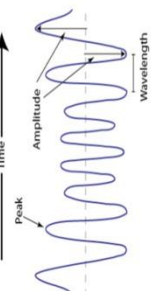
Complete these Conversions

8	4	2	1	Denary
1	0	1	1	10
0	1	1	1	7
1	0	1	1	11
1	1	1	1	15
0	1	0	1	5
0	1	1	0	6

Representing Sound

Explain how a sound is represented by a Computer

Sound needs to be converted into binary for Computers to be able to process it. To do this sound is captured Usually by a microphone and then converted into a digital Signal. An analogue to digital converter will sample a sound wave at regular intervals.



Hexadecimal to Binary

Examples of Hexadecimal to Binary

0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

D	E	1	B
1101	1110	0001	1011

1011	0111	1000	1010
B	7	8	8

Binary Addition

Rules

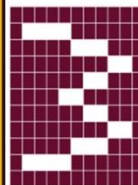
These are four rules that need to be followed when adding two binary numbers. These are:

$0 + 0 = 0$
 $1 + 0 = 1$
 $1 + 1 = 0$ Carry 1
 $1 + 1 + 1 = 1$ Carry 1

128	64	32	16	8	4	2	1
0	0	1	1	0	0	1	1
1	0	0	0	1	1	1	1
Carry	1	1	1	1	1	1	1
1	1	0	0	0	1	0	0

Representing Images

To store an image on a computer the image is broken down into tiny elements called pixels. (short for picture element)
Represents one colour. An Image with a resolution Of 1024 by 798 has 1024 x 798 pixels (817,152 pixels. Each Pixel is represent with 0's or 1's



Difference between ASCII and Unicode

ASCII stands for American Standard Code for Information Interchange. These are 128 standard ASCII codes, each of which Can be represented by 7 digit binary number from 0000000 through to 1111111

Unicode uses between 8 and 32 bit per Character. So it can represent characters from languages from all Around the world. It is commonly used Across the Internet. As it is larger than ASCII, it might take up more storage space when saving documents

Letter	ASCII Code	Binary
A	065	01000001
B	066	01000010
C	067	01000011
D	068	01000100



TC4: How Computers Work

To understand how a computer works (including number bases).

Programming

Year 8 Cycle 2

Sequencing

In programming, instructions are executed in the order in which they are given. This is important to ensure the functionality of the program. This is sequencing.

Example:
INPUT price
INPUT quality
total = price * quality
OUTPUT price

Selection (If, Elif, Else)

Selection is used in programming when a condition determines which of the statements should be executed.

```
a = 33
b = 200
if b > a:
    print("b is greater than a")
else:
    print("b is less than a")
```

Iteration (For, While, Repeat)

Iteration is when a set of instructions are repeated within a program. This could be a particular number of times (definite) or until a condition is met (indefinite).

Examples are:
- FOR
- WHILE
- REPEAT

```
fruits = ["apple", "banana", "cherry"]
for x in fruits:
    print(x)
```

```
apple
banana
cherry
```

```
for i in range(1, 5):
    print(i)
```

```
i = 1
while i < 5:
    print(i)
    i = i + 1
```

```
1 2 3 4
```

```
1 2 3 4
```

Unit keywords

Programming	The process of writing computer software.	Program	Sequences of computer instructions.
Algorithm	A set of instructions used to solve a problem.	Condition	A statement or sum that is either TRUE or FALSE.
Execute	Run a computer program.	Flowchart	An algorithm in the form of a diagram.
Instruction	A single action performed by a processor.	Loop	Repetition (iteration) of a set of instructions.
Statement	The smallest element of a prog. language.	Pseudocode	An algorithm in the form of plain english.



TC5: Decomposition

To be able to look at a problem and decompose this into its component parts.



TC6: Abstraction

To be able to take the component parts of a problem and remove what is not needed.



TC7: Algorithms

To design and create algorithms for real world problems.

Networking

Year 8 Cycle 3

Types of Network

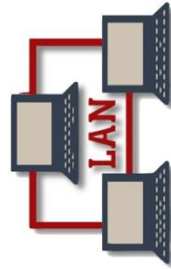
PAN - Personal Area Network

Used to connect devices to your personal computer without the use of wires. Most commonly uses Bluetooth. Examples include connecting a mobile phone to a car or wireless headphones to your phone.



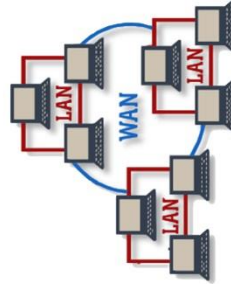
LAN - Local Area Network

Connects devices together over a small geographical location like a building or office. Computers are connected using a combination of Ethernet cables and switches, and require a Network Interface Card.



WAN - Wide Area Network

A computer network in which devices are connected over a large geographical area like the Internet. They require access to the Internet via a router / modem.



Hardware

Router

A router is responsible for transferring data between different devices within a network. The data is stored in packets.



Server

A server stores all users' data and information within a network in a central location. This allows users to log in to any work station within the network to access and share files.



Switch

A switch takes the data that it receives from the server and transmits it to every device connected to the network.



Network Security

Firewall

Controls which programs on your computer have permission to send and receive data from inside / outside of the network.

Anti-Virus

Specialised software is used to detect viruses and limit their damage by removing them.

Encryption

Scrambles data to make it unreadable

Decryption

Unscrambles data to make to readable

Packet

A piece of data sent over a network. Messages have to be broken down into binary data packets before they are transferred.



TC5: Decomposition

To be able to look at a problem and decompose this into its component parts.



TC6: Abstraction

To Be able to take the component parts of a problem and remove what is not needed.



TC8: Network Protocols

To recognise and understand the different properties of network protocols.

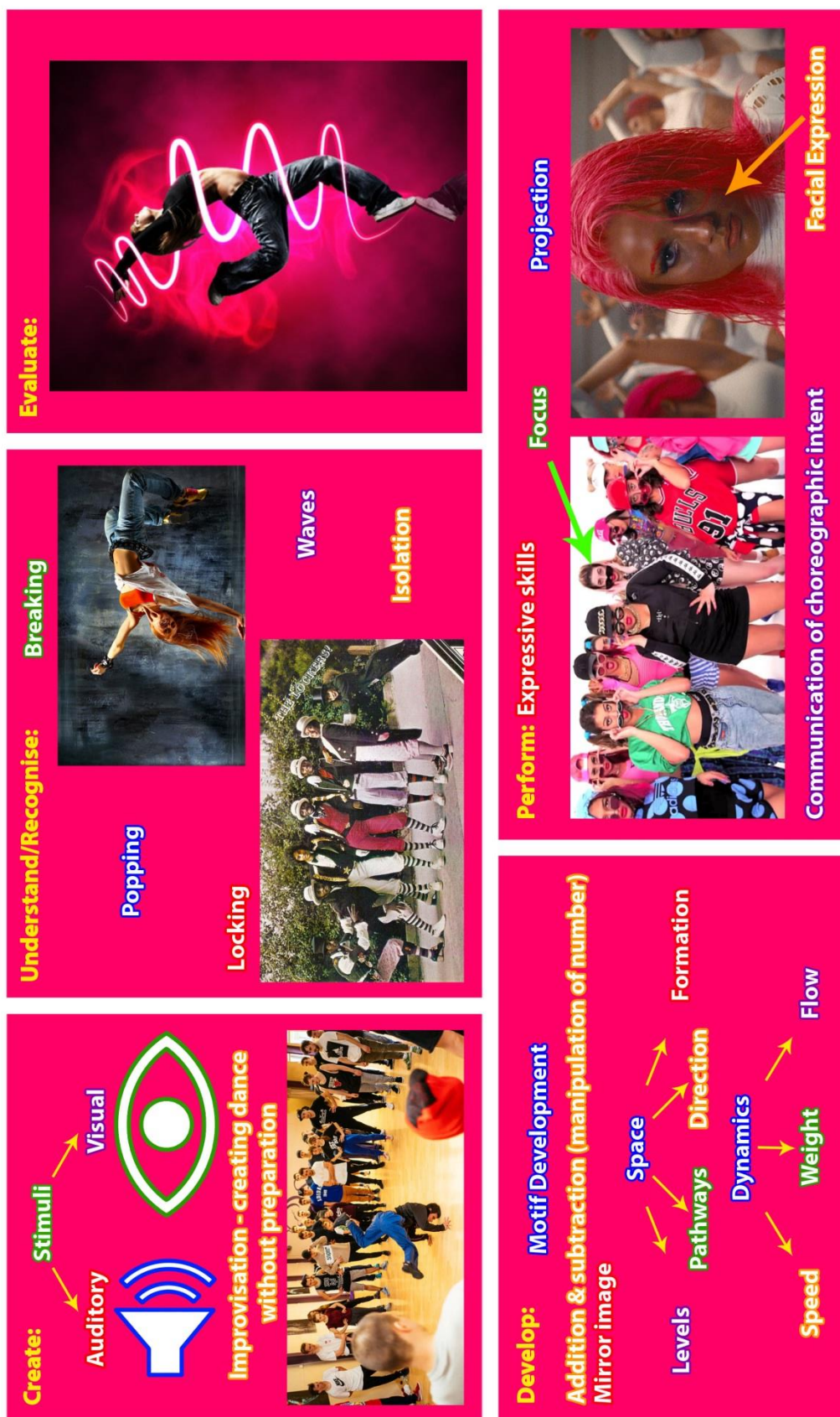
Dance - Knowledge Organiser 1

Dance Knowledge Organiser

Actions, Space, Dynamics and Relationships



Knowledge Organiser Street Dance

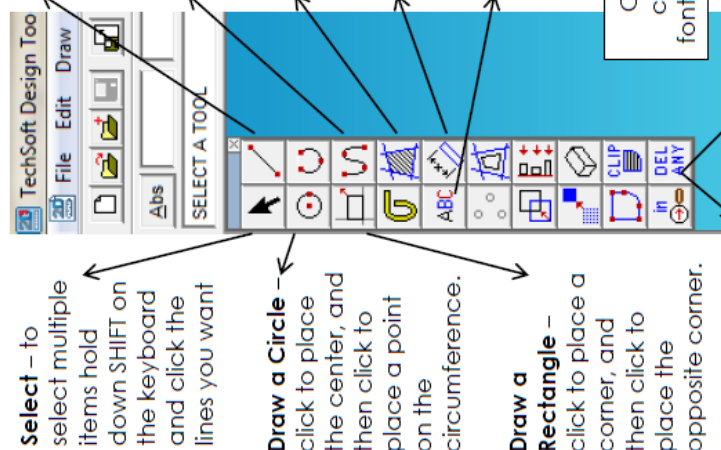


Design Technology – Knowledge Organiser 1

2d Design Key Tools

This sheet aims to give you a brief introduction into the key tools that you will need to use 2d Design efficiently.

The drawing tools are all located on the right hand side of your screen. At the top of your screen here, you will also find the default 'File', 'Open' and 'Save' buttons.



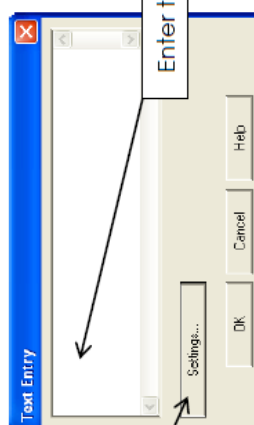
Straight line tool – click to place the start of the line, click to place end of line

Curved line tool – click to place the start of the line, click to place the first bend, second bend, etc., and right click to finish the line

Fill– select the area you want to fill. 'Are there any islands?' Click 'Yes' if you don't want to fill these in, or 'No' if you do.

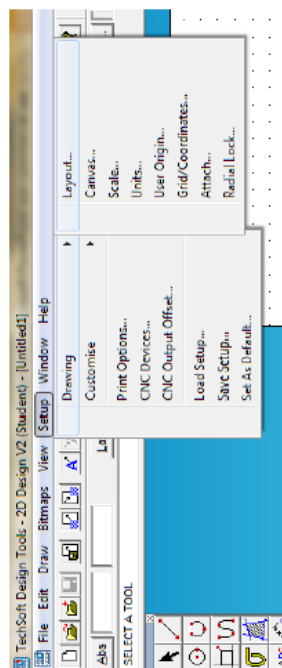
Dimensions – Click at the beginning of where you want to measure, then again at the end. This will give you the measurement in millimeters.

Text – click to place text. The box below appears



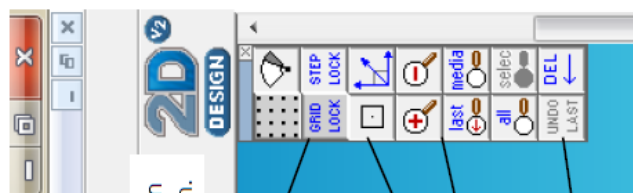
Click to change font, size etc.

Draw a box, and delete the contents



Before you start anything, please make sure your page is Setup correctly. Use the options in this toolbar to do this.

Your grid tools are all located on the left hand side of your screen.

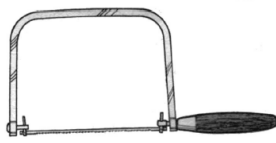


Name:

Date:

Design Technology – Knowledge Organiser 1

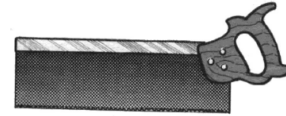
Coping Saw



Steel Rule



Tenon Saw



Hand File



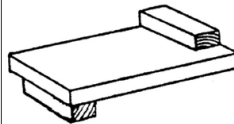
Materials & Tools

Plastics 1

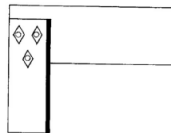
Thermoplastic These are altered by the application of heat. They can be melted and reset many times, making them suitable for recycling. Most plastic products are made from thermoplastic materials.

Polystyrene	Vacuum formed. Yoghurt pots etc
Nylon	Injection moulded. Washers, nuts, bolts
Polypropylene	Injection moulded. Bottle tops,
Acrylic	Hand/CAM cut. Sales display, CD rack
ABS	Injection moulded. Car bumpers
PVC	Extruded. Drain pipes, Packaging
PET	Blow moulded. Coke bottles
HDPE	Injection moulded. Buckets, wheelbarrow
LDPE	Blow moulded. Shampoo, hair gel packs

Bench Hook



Try-Square



Plastics 2

Thermosetting plastics These cannot be altered by heat once they are made. Used where melting plastic would be dangerous. E.g. electrical plug sockets. Not easy to recycle.

Polyester Resin	Used for casting (pouring into a mould) Mixed with glass fibres to make fibreglass
Epoxy Resin	Adhesive (Araldite) for bonding wood to metal. Plastic to metal etc.
Melamine	Plastic coating for chipboard kitchen worktops
Urea Formaldehyde	Electrical components. Plugs, fuse boxes, light switches etc. Compression moulded

Woods 1

Hard Wood from Deciduous trees grows slowly, over many decades (50 – 60 years). It is close grained, strong and relatively expensive. Used in high quality applications and for its aesthetic qualities. Examples:

Ash Oak Mahogany Teak Birch

Soft Wood from coniferous trees grows quickly (10-20 years). It is widely available and used in many applications including building (roof trusses, timber frames), cheaper furniture and paper making. Examples:

Pine Spruce

Woods 2

Man-made boards are the most economical method of using wood products. They allow much bigger sheets to be produced than could be cut from a tree, are stable and free of defects (knots, splits etc).

They can be covered in a **veneer** (thin sheet) of more expensive material to improve their aesthetic qualities. Chipboard is often covered in a layer of thermosetting plastic to give the impression of a higher quality product. Kitchen worktops are a good example of this.

Plywood
Chipboard
Medium Density Fibreboard (MDF)
Block board
Hardboard

Access fm

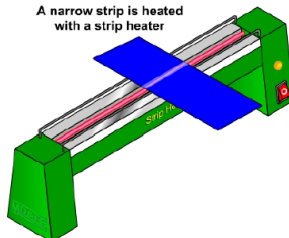
This is a good way of producing a specification in an exam as it prompts you to address the important points.

Aesthetics	What should it look like?
Customer	Who will use the product?
Cost	How much will it cost to make?
Environment	How will the product affect the world?
Size	How big in mm?
Shape	Shaped for a particular purpose?
Function	What it should do
Material	What it is made from and why

Scroll Saw



A narrow strip is heated with a strip heater



Deciduous



Coniferous

Design Technology – Knowledge Organiser 1

Why use wood?

All types of wood fit into one of the following categories...

- **Softwoods**
 - Come from *coniferous* trees which grow quickly
 - Are generally cheaper than hardwoods
 - Are easy to work with
- **Hardwoods**
 - Come from *deciduous* trees which grow slowly
 - Are more expensive than softwoods
 - Are more durable than softwoods
 - Are more difficult to work with
- **Manufactured Boards**
 - Are made from the waste produced when processing wood
 - Are available in a wide range of sizes and finishes
 - Are inexpensive
 - Do not look as good as real wood
 - Plywood is very strong for its weight and thickness due to its construction

- It is **readily available**

- It is **easy to use**

- It is **versatile**

- It is **renewable**

Shaping and forming wood

<ul style="list-style-type: none"> • Veneers 		<ul style="list-style-type: none"> • Carving 	
<ul style="list-style-type: none"> • Lathe 		<ul style="list-style-type: none"> • Kerfs 	
<ul style="list-style-type: none"> • Steam bending 		<ul style="list-style-type: none"> • Laminating 	

Wood is used to make a wide variety of products.....





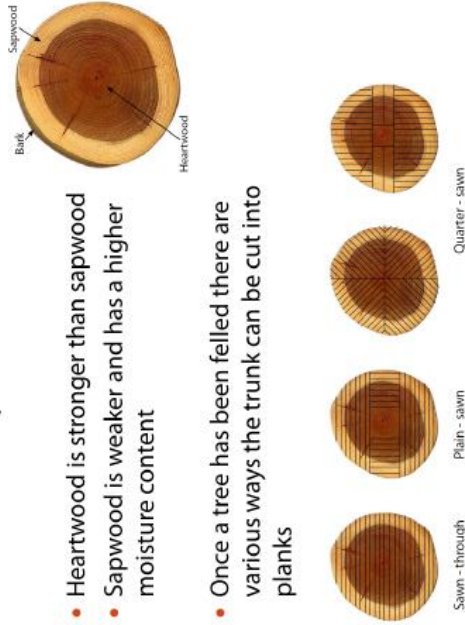






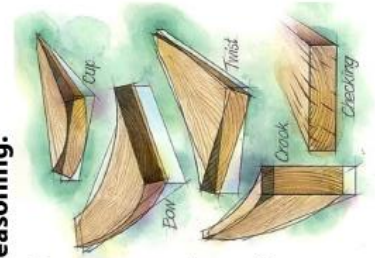
How wood is processed...

- Heartwood is stronger than sapwood
- Sapwood is weaker and has a higher moisture content
- Once a tree has been felled there are various ways the trunk can be cut into planks



How wood is processed...

- Most wood used today has its moisture content reduced during a process called **seasoning**.
- Timber is dried in one of two ways
 - **Kiln drying**
 - **Stacking** in open air drying racks
- During the seasoning process, **shrinkage movement** can occur
- Shrinkage movement is different depending on where in the trunk cut.



Design Technology – Knowledge Organiser 1

Yoni Alter - Graphic Artist
Born 1980 in Israel, lives in London.

TC1
Research
Purposefully

Annotation Words...
Shape, form, space.
Tone
Pattern and Texture
Line
Colour

Using Photoshop – Tools/menus

TC3
Safe Working
Practice

Photo Contact Sheet -
Collection of photos to use for your project.

Yoni Alter – Knowledge Organiser

Design Technology – Knowledge Organiser 1

MOVEMENTS

- There are 4 different types of mechanism movements.
- Linear
- Oscillating
- Rotary
- Reciprocating

LINEAR

RECIPROCATING

ROTARY

OSCILLATING

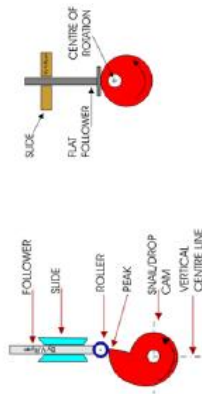
How do cams make life easier?

- Cams turn rotary motion into up-and-down motions.
- Cams allow machines to apply pressure at particular moments in the cam's cycle. They are used in sewing machines to push the needle and thread through material in regular patterns.

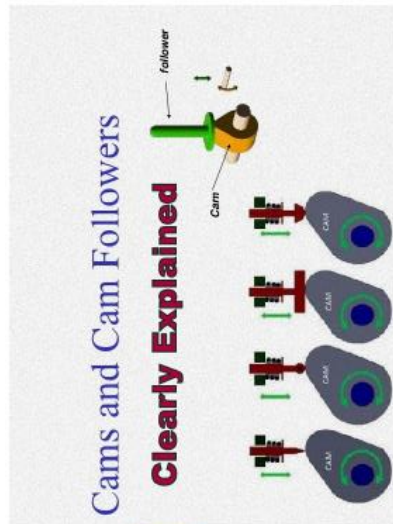
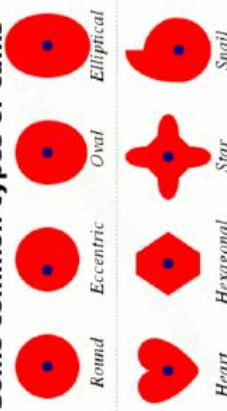


CAMS AND MECHANISMS

- There are different types of cam that form mechanisms



Some common types of cams



What are cams?

Cams convert rotary oscillating or linear motion into a linear or reciprocating action to carry out useful work.

Types of Followers

- Roller:** least frictional drag, little or no lubrication
- Tapered roller:** Used with grooved plate or cylindrical cams
- Flat or plunger:** Used to transmit large forces and requires lubrication
- Knife-edge, pointed:** Used on intricate cams (follows sharp contours)

Design Technology – Knowledge Organiser 1

Screws



Countersunk Screws

Used when the top of the screw needs to be flush with the timber. Pozidriv or Sixhead are available.

Round Head Screw

Used when the screws do not need to sit flush in the timber. These can look decorative when made from brass.

Machine Screw/Wing Nut

The machine screw is different due to it's flat bottom. Often used like a bolt for joining wood. (Some tables have them, along with a corner plate.)

The wing-nut helps to tighten the fixing. The wing-nut can look unsightly.

Knock Down Fittings

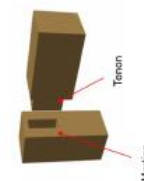
- Knock-Down Fittings are components that can be put together quickly and more efficiently than traditional joints
- Usually a temporary joint but can be permanent
- Very simple to understand how to use
- Manufactured in very high volume – makes them very cost effective
- Ideal for use on man made boards: chipboard, MDF etc.
- Wide range of options available to suit an application
- Use only basic tools such as allen keys and screw drivers
- Spares are readily available



- After time, fixings can become tired and worn when constantly reassembled
- Sometimes need to be reinforced with glue to make them stronger
- If a fixing is lost, this can compromise the furniture



Wood Joints



Mortise and Tenon

A rectangular hole is chiselled in one piece of timber, and the other part has a section that fits flush. Very strong when glued together (PVA)



Lap

Areas of wood are removed on each piece of wood so that the joint lines up. Easy to mark out and used where joints do not need to be strong.

Bolts



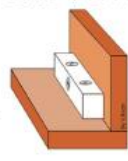
Coach Bolt

The coach bolt has a square collar under the domed head. A washer is normally placed before the nut to stop it sinking into the wood as it is turned.



Machine Bolt

Two spanners are needed to tighten this nut and bolt. The first spanner fits round the hexagonal head of the bolt and a second spanner is used to tighten the hexagonal nut. Used mostly with metals.



PLASTIC CORNER BLOCK

The corner block is pressed against the two pieces of material (normally wood based). Screws are used to fix the block into position.

- This type of joint is used to fix modern kitchen cabinets.
- Can be dismantled using only a screwdriver
- Good for difficult corners!



TWO BLOCK FITTING

Two blocks of wood are joined by a bolt passing through the first fitting into the head of the second.

- As the bolt is tightened it draws the two fittings together.
- Strong
- Can be dismantled
- Quick way to hold two corner pieces together



RIGID JOINT:

These are normally injection moulded in plastic which makes them durable and rigid. Screws pass through the four holes which hold the sides at each corner firmly together.

- Often used on bookcases
- Can look a little unsightly!

Wood Joints



Dovetail

Very intricate and attractive joint. Extremely strong and almost impossible to pull apart. Used on items that make a feature of the joint.



Bridle

Used in construction of lightweight things where little strength is needed. Sections of material are removed, similar to a mortise and tenon joint.

Hinges



Most common types are "Butt" and "Butterfly" hinges. They ideally should sit flush by recessing.

Other types include:

- Flush
- Concealed
- Piano

Products hinges are used on include...



BARREL NUT AND BOLT

Often used in flat pack furniture, the bolt is inserted into the 'barrel' which contains a thread. This locks the frame together.

- Quick to dismantle
- Excellent replacement for lap joints

CAM LOCK FITTING

You will have seen this one on IKEA furniture (MALM). The cam has a slot that 'catches' the head of the screw, and as it turns, locks into position.

- Only need a screwdriver
- No glue needed, very sturdy



CORNER PLATE

Often made from galvanneal steel, or even aluminium, these plates are used on the underside of tables. The two plates are joined by the wing nut bolt. This device is used to locate the table leg and tightens everything together.

- Ideal for joining 3 components
- Quick to assemble
- Needs to be tightened occasionally

Wood Joints



Dowelled Mortise and Tenon

Same as normal, but using pieces of dowel to join the wood (with PVA glue). Used in modern furniture, not overly strong.



Cross Halved

This joint takes even amounts of wood away to fit the 2 pieces together. Glued together and strong.

Drama – Knowledge Organiser 1

HISTORICAL CONTEXT

Margaret Thatcher: When she became Prime Minister in 1979 she wanted to make big changes on how the country was run. She did this by choosing to reduce the power of trade unions and privatise the coal industry. Margaret started to close coal pits around the country, which meant up to 200,000 jobs would be lost. This sparked anger amongst the working class, therefore, miners across the country went on strike for a year!

Working class: The working class were heavily affected by the recession that hit the UK in 1981. As a result, unemployment rates shot up amongst the working class as many industrial businesses closed due to policies brought in by Margaret Thatcher. Due to the industrial and social changes that Britain suffered during the 1980s this created a big divide between the working class and the upper class as many people blamed the conservatives for destroying the industrial industry.



STILL IMAGES

This is a frozen picture which communicates meaning. This can be used to mark a key moment of a scene, making the drama more interesting by adding in a visual dimension



THOUGHT TRACK

This is when a character steps out of a scene to address the audience about how they're feeling. This provides deeper insight into the character for an audience.

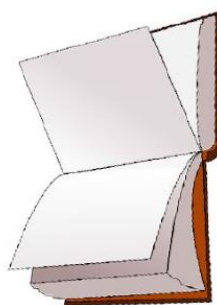
KNOWLEDGE ORGANISER CYCLE ONE DEVISING FROM A STIMULUS: 1980S HISTORY

NON-LINEAR NARRATIVE

This is when the story doesn't follow a chronological order. For example, the piece could start with the ending. This can make the piece more dramatic by creating tension which will draw in the attention of the audience.

MARKING THE MOMENT

Marking the moment is used when the actors want to make a key moment stand out within a scene. This can be used by using techniques such as a freeze frame or slow motion movement so that the moment stands out clearly.



STIMULUS

David was a police officer during the Miners' Strike and Allan was a miner. Allan was referred to as a 'scab' by striking miners and consequently, he suffered both emotional and physical abuse.

David was labelled as 'evil' due to the violence and brutal physical force used by police officers on striking miners at picket lines.



Drama – Knowledge Organiser 2

KEY THEMES

Bullying:

The act whereby someone seeks to harm or intimidate someone on purpose. There are lots of types of bullying which include being bullied at school, on social media, emotional bullying, physical bullying or blackmail.

Isolation:

The idea of being lonely and not having anyone to turn to. This can also contribute to having anxiety issues.

KEY ACTING SKILLS

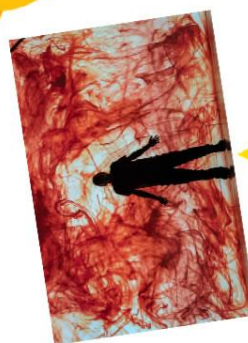
Voice

Facial expressions

Body language

Space

Movement



ABSTRACT STYLE

Abstract drama is the idea of representing events, situations and feelings rather than acting them out in a realistic manner.

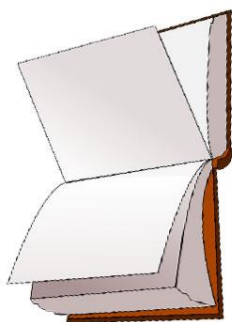


MIME & MOVEMENT

This can be an effective tool to highlight key moments of a story in an abstract style. By not using spoken language it can draw in the audiences attention as they have to work harder to understand the deeper meaning

FLASHBACK/FLASHFORWARD

Flashbacks are used to recount events from the past and flashforwards are used to show what might happen in the future.



STIMULUS

Conor has the same dream every night, ever since his mother first fell ill. But tonight is different. Tonight, when he wakes, there's a monster at his window. It's elemental, a force of nature, and it wants something from Conor. It wants the truth.

KNOWLEDGE ORGANISER CYCLE TWO TEXT BASED DEVISING: A MONSTER CALLS



DIRECTOR'S VISION

"I wanted to make sure that a big part of how we'd tell the story would rely on the audiences imagination"

"The most surprising discovery is that the story doesn't need loads of complex props to bring it to life. Using the ensemble to show what's going on inside Conor's head proved to be effective."



Drama – Knowledge Organiser 3

Verfremdungseffekt

The distancing effect used by Brecht to remind audiences that they were not watching real life.

Techniques included:

- Characters would often speak in the third person. They would also say the stage directions.
- Actors would often multi role
- Banners and slides would be used to tell the audience what was happening on stage, and to destroy the illusion that they were witnessing 'real' events on stage.



Shakespeare

William Shakespeare was a renowned English poet, playwright, and actor born in 1564 in Stratford-upon-Avon. His many works are about life, love, death, revenge, grief, jealousy, murder, magic and mystery. He wrote the blockbuster plays of his day - some of his most famous are Macbeth, Romeo and Juliet, and Hamlet.

Shakespeare lived through the plague and wrote the play 'King Lear'. A common feature in his plays are soliloquies (used to convey information about characters or events). Soliloquies are similar to a monologue: an act of speaking one's thoughts aloud when by oneself.

Brecht

Bertolt Brecht was a theatre practitioner who made and shaped theatre in a way that had a huge impact upon its development. He wanted to give his audience the ability to think rather than become emotionally involved in the drama. He wanted his audiences to instead make judgements about any social comment or issues in his work. To do this he used a range of techniques so that the audience were reminded throughout that they were watching theatre; a presentation of life, not real life itself.



THEATRE PRACTITIONERS

A theatre practitioner is a person or theatre company that creates practical work or theories to do with performance and theatre.

Greek Theatre

Greek theatre began in the 6th century in Athens. The Ancient Greeks took their entertainment very seriously and used drama as a way of investigating the world they lived in, and what it meant to be human. The three genres of drama were comedy, satyr plays, and most important of all, tragedy.

The actors wore heavy costumes and masks, and performing in Greek theatre required strenuous physical and vocal exertion, which would have been impractical in hot weather.

Each play was usually only ever performed once. Greek theatres were huge.



Greek Chorus

The chorus in Classical Greek drama was a group of actors who described and commented upon the main action of a play with song, dance, and recitation. The chorus offered a background and summary information to help the audience follow the performance.

Drama – Knowledge Organiser 3

KEY ACTING SKILLS



Voice

Facial expressions

Body language

Space

Movement

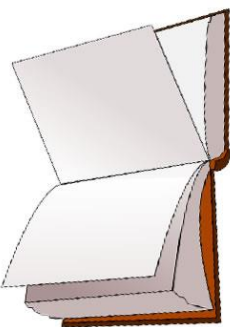
Voice	Pitch Volume Pace Tone Accent Diction Inflection Stress
Facial expressions	Eyes Eyebrows Mouth/lips Nose
Body language/gestures	Gesture Posture Touch Arms Hands Shoulders Feet Head
Movement	Walk Run Move
Use of Space	Levels Proxemics Blocking/positioning



To identify the use of vocal and physical skills used by a performer

To be able to describe in detail how an actor has used their acting skills within a key moment

To analyse why an actor has chosen skills use their acting skills in a certain way and the affect this has on the audience



PLOT SUMMARY

In 1960s Baltimore, dancing teen Tracy Turnblad auditions for a spot on "The Corny Collins Show" and wins. She becomes an overnight celebrity, a trendsetter in dance, fun and fashion. Perhaps her new status as a teen sensation is enough to topple Corny's reigning dance queen and bring racial integration to the show.

PARAGRAPH STRUCTURE

Moment: State the moment you have chosen to discuss. Including the key quote for your chosen actor

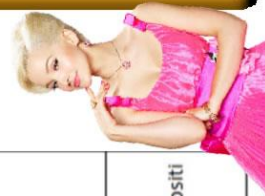
Recall: Discuss in DETAIL how your chosen character used their acting skills (using key terms sheet to help you)

Impact: How does this make the audience feel? What impact did the actor create in this moment? You

KNOWLEDGE ORGANISER CYCLE THREE (B) LIVE THEATRE REVIEW: HAIRSPRAY

ACTOR NAMES:

Tracy Turnblad: Marie Baillio
Edna Turnblad: Harvey Fierstein
Link Larkin: Garrett Clayton
Penny Pingleton: Ariana Grande
Amber Von Tussle: Dove Cameron
Velma Von Tussle: Kristin Chenoweth
Motormouth Mable: Jennifer Hudson



English – Knowledge Organiser 1

The BIG question

How do peoples' experiences of the world shape who we are?

My assessment Q:

Start your sentences in different ways (TC6)

ADVERBIAL- PLACE: on/under/beneath

ADVERBIAL-TIME: yesterday, next week

ADVERBIAL- FREQUENCY: sometimes, often, always

ADVERBIAL- MANNER: slowly, quickly,

NON-FINITE VERB: Walking around the corner...

Thinking about it

ADJECTIVE: Confused, he turned to others for advice.

X2 Magnificent and proud, the sun watched.

QUESTION: Wouldn't it be fantastic if...

IMPERATIVE: Imagine a world where...

CONDITIONAL: IF...

TC1

Exclamation marks !

TC2a

Question marks ?

TC2b

Semi Colons ; and Colons :

TC3

Speech marks "

TC4

Brackets {}

TC5

Apostrophe 's

TC6

Ellipses ...

TC7

Dash -

TC8

Hyphen -

TC9

Comma ,

FORMAL

NARRATIVE PERSPECTIVE (TC5)

- 1st person
- Relay events from your point of view
- Use of pronouns 'I', 'me', 'we'
- Has a personal impact on the reader
- 2nd Person
- Narrator addresses the audience with 'you'
- Creates a connection with the reader, involves the reader directly
- 3rd Person
- Allows the reader to have an objective approach to the characters and their situation
- Pronouns include 'he', 'she', 'they'

INFORMAL LETTER (TC5)

- Address and date in the top right of the page
- Greeting: e.g. Hi, Hello, Dear ...
- Use of contractions: e.g. don't, can't ...
- Short introductory paragraph
- 3/4 middle paragraphs
- Closing paragraph to round off the purpose of the letter
- Chatty style: shown through language and punctuation.

FORMAL LETTER (TC5)

- Address and date in the top right of the page
- Greeting: e.g. Dear Mr Jones, or Dear Sir/Madam.
- Short introductory paragraph
- 3-4 main ideas- paragraphs
- Closing paragraph to round off the letter
- No contradictions: e.g. do not, cannot.
- Formal style

BLOGS TC5

- Easily accessible through smart devices
- Conversational tone – often 1st person narrative
- Includes visual content
- Headings and subheadings
- Includes internal links to other sites which link to the content
- Provides information

AUTOBIOGRAPHICAL / TRAVEL WRITING TC5

- Written using 1st person
- Makes links to connect with the reader – 2nd person
- Events are written in chronological order
- Use of sensory language: see, hear, taste, touch, smell
- Descriptive language: interesting adjectives, verbs etc
- Imagery: simile/metaphor/personification
- Includes facts and key information

TC5 Possible methods I will use in my own writing:

- A range of sentences, including interesting starters (see above)
- Descriptive language
- Including adjectives, verbs and adverbs
- Imagery- simile/metaphor, personification
- THE SENSES
- Challenge: irony/sarcasm

What do we already know?

Learn the following words and their meaning.

Challenge: use these words in your own sentences

autobiography

viewpoint

perspective

narrative voice

tourist

escapism

urban

rural

attractions

landscape

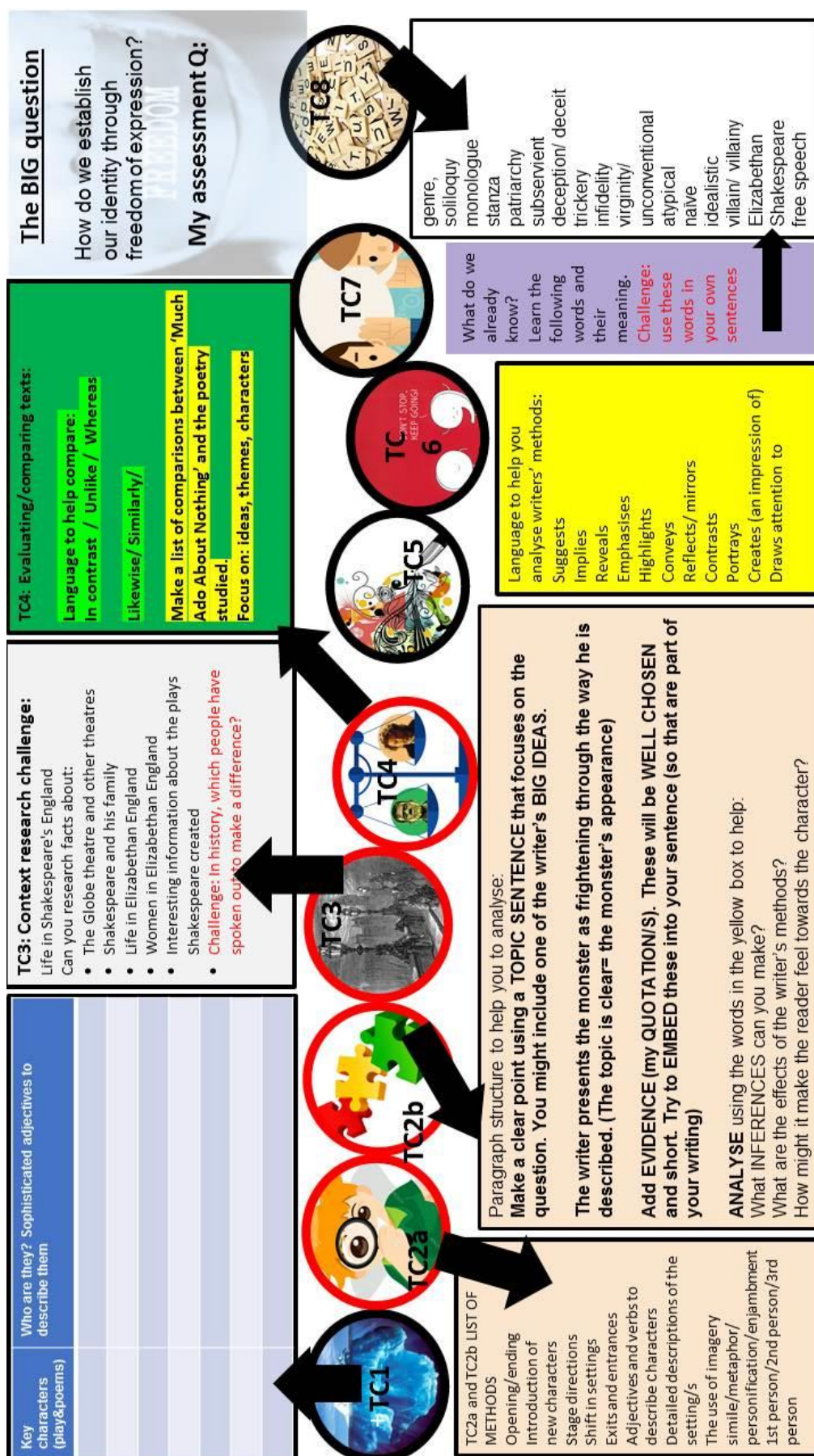
bilingual

commute

epiphany

unique

English – Knowledge Organiser 2



Food – Knowledge Organiser 1

Year 8 Food Studies – Knowledge Organiser






KEY PROCESSES:

Kneading:
to work dough, to develop the gluten that is found in flour, this gives baked goods their structure and texture. When making dough, the flour and other dry ingredients are combined with the wet ingredients, usually warm water, along with yeast.

Handling Raw Meat -
Always wash hands with warm water and soap for 20 seconds before and after handling raw meat.

Don't cross-contaminate!
Keep raw meat, poultry, fish, and their juices away from other food. Wash cutting board, utensils, and countertops with hot, soapy water after use.

Reducing – heating up a sauce based product to evaporate the water and making the sauce thicker in consistency.

ESSENTIAL NUTRIENTS

1. Protein
2. Fat
3. Carbohydrate
4. Vitamins
5. Minerals

PLUS Water and Fibre
(neither are nutrients but are required for a healthy diet).

COOKING SKILLS

- Chop
- Fold
- Roll
- Knead
- Shape
- Simmer
- Boil
- Bake
- Fry

METHODS OF COOKING
Heat transfers in three ways:

Conduction
Metal is a conductor of heat and carries the heat from the heat source to the food

Convection
When heated, gas or air particles expand and rise, causing colder particles to sink, creating convection currents which distribute heat

Radiation
Heat is transferred directly onto the surface

SPECIAL DIETS

Lactose intolerance. People must avoid milk, cheese, butter, yogurt and processed foods that contain milk products.

Celiac disease (gluten intolerance). People must avoid wheat, wheat products, pasta, noodles, semolina, bread, pastry, sauces, rye, barley and oats (including breakfast cereals). They can eat rice, potatoes, corn and corn products.

Nut allergy. People must avoid nuts, blended cooking oils and margarines that contains nut oils.

Diabetes. Diabetics find it difficult to control their blood sugar levels, so they need to eat starchy foods at regular intervals. They avoid foods high in sugar.

Vegans do not eat the flesh of any animal or any animal product e.g. cheese.

Lacto-vegetarians do not eat the flesh of any animal but they will eat eggs, milk, cheese, honey etc.

Muslims do not eat pork. They eat Halal meat.

Hindus do not eat beef.

Some Sikhs avoid meat and fish.

SOURCES OF FOOD

Ingredients can be grown, gathered, caught, reared or made / manufactured.

This aspect of food is known as **FOOD PROVENANCE**

Why do we need to know this?
How food is produced has an impact on its quality, its nutritional properties, the environment, as well as its cost.

The general rule is **'the closer to its original form, the better the food is for us.'**

FOOD MILES

WHAT ARE THEY AND HOW DO THEY AFFECT OUR WORLD?

June + distance FROM THE POINT & TIME WHERE FOOD IS GROWN TO WHERE IT IS CONSUMED. THE SMALLER THE BETTER!




Wider thinking / further reading:
www.foodfactoflife.org.uk www.grainchain.com

Multicultural Foods

Pizza and Pasta - Italy

Curry and Naan Bread - India

Fish and chips - UK


Food – Knowledge Organiser 2

Fat-soluble Vitamins. ADE&K

VITAMIN A (Fat soluble)

I help your eyesight and keep your skin healthy. I am also an antioxidant.

You can find me in:
Fish, Eggs, Butter, Green vegetables, Dairy foods, Peppers, Carrots




VITAMIN D (FATS SOLUBLE)

I keep your bones and teeth strong as I help absorb calcium

Deficiency common – rickets in children

I am found in:
Sunlight, Eggs, Oily fish



VITAMIN E (Fat Soluble)

I keep your skin and eyes healthy. I am also an antioxidant

I am found in:
Leafy veg, nuts, vegetable oils and wheat germ


Deficiency is rare



VITAMIN K (FAT SOLUBLE)

I help clot blood, heal wounds and fight infections

I am found in:
Leafy green veg, Cereals, Some meats and dairy foods



Water-soluble Vitamins. B group and C

B1

I helps energy to be released from carbohydrate in the body

Meat, milk, cheese, eggs, veg, fresh + dried fruit, wholemeal bread, fortified breakfast cereal, flour



B3

Helps energy to be released from food in the body

Beef, pork, wheat flour, maize flour, eggs, milk



Vitamin B12

I help make healthy red blood cells • Keeps nerve cells healthy

Liver, meat, fish, cheese, fortified breakfast cereals, yeast. **Vegetarians need supplements**



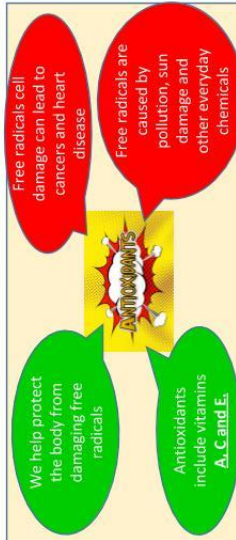
Antioxidants

We help protect the body from damaging free radicals

Free radicals cell damage can lead to cancers and heart disease

Free radicals are caused by pollution, sun damage and other everyday chemicals

Antioxidants include vitamins **A, C and E**



B2

Helps energy to be released from food in the body

Milk + milk products, eggs, fortified breakfast cereals, mushrooms



B9

Green leafy veg, marmite, peas, chickpeas, wholegrain rice, fruits, fortified breads & breakfast cereals

I make healthy red blood cells • I helps to reduce the risk of unborn babies developing spina bifida

Pregnant women need supplements

Folate or folic acid



VITAMIN C (WATER SOLUBLE)

I am found in:
Fruit and vegetables - peppers, citrus fruit, peas

A deficiency is called SCURVEY

I fight infection in the body and keep the body healthy. I am also an **antioxidant**



Retaining Water Soluble Vitamins in fruit and veg

Storage:

- Store away from heat and light
- Store in airtight containers in a cool place
- Store for minimum amount of time

Cooking:

- Use low water cooking methods e.g. stir frying and steaming.
- Do not overcook
- Use cooking water for gravy and sauces

During preparation:

- Buy undamaged and unbruised produce
- Tear rather than rip leafy vegetables
- Do not prepare too far in advance; vitamin C will be exposed to oxygen and lost when the vegetables are cut or peeled

Food – Knowledge Organiser 3

Year 8 Food – Knowledge Organiser

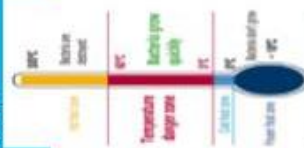
What are Nutrients?

Nutrients are the building blocks that make up food and have specific and important roles to play in the body. Some nutrients provide energy while others are essential for growth and maintenance of the body.

Macro Nutrient	Role in the body	Food Example
Carbohydrate	The main source of energy for the body.	Bread, rice, pasta, potatoes
Protein	Provides the body with growth and repair.	Meat, poultry, beans, eggs, lentils, tofu, fish
Fat	Provides the body with insulation and a small amount protects vital organs. Provides essential fatty acids	Butter, oil, cheese, cream, nuts, oily fish, crisps

Understand the 4 C's Concept

- C** – Good Hygiene practice prevents **Cross Contamination**
- C** – Effective **Cleaning** removes harmful bacteria and stops them spreading
- C** – Effective **Chilling** prevents harmful bacteria multiplying
- C** – Thorough **Cooking** kills bacteria



Weighing and Measuring

For good results in most recipes, **accurate** weighing and measuring is essential. When you are baking with flour, sugar and liquids, you must measure accurately or your cooking will be spoiled. If you weigh out too much sugar or too little raising agent, your cakes would not rise or you could spoil the taste and/or texture.

Food can be weighed in **Grams (g)** and there are **1000g** in a **Kilogram (kg)**. Liquid is measured in **Millilitres (ml)** or **litres**.

Clean hands. Hair tied back. Wear an apron. Wear blue plasters. Don't cough/sneeze over food. Use the bridge and claw methods for cutting/chopping.



8 tips for healthy eating

- 1) Base your meals on starchy foods
- 2) Eat lots of fruit and veg
- 3) Eat more fish
- 4) Cut down on saturated fat and sugar
- 5) Eat less salt
- 6) Get active and be a healthy weight
- 7) Drink plenty of water
- 8) Don't skip breakfast

Vitamins - Help to keep our immune system up and help our body to stay healthy – they important for body maintenance.

Vitamin	Role in the body	Food examples
A	Helps to keep the eyes healthy and strengthen the immune system.	Dark green leafy vegetables, carrots, liver
B	Helps to release the energy from the food we eat.	Bread, milk, cereals, fish, meat
C	Help with skin healing and healthy skin. Help with the absorption of Iron.	Fresh fruit, broccoli, tomatoes
D	Important for absorbing calcium and help with healthy bone structure.	Oily fish, eggs, butter, Sunshine

Minerals - Help to keep our immune system up and help our body to stay healthy. Vitamins and minerals are Micronutrients.

Mineral	Role in the body	Food Examples
Calcium	Important for strong teeth and bones. It also helps with blood clotting.	Milk, yoghurt, soya, dark green leafy vegetables
Iron	Needed for red blood cells which help to transport oxygen around the body.	Nuts, whole grains, dark green leafy vegetables, meat, liver

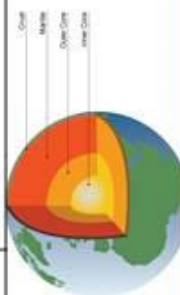
Minerals - Help to keep our immune system up and help our body to stay healthy. **Vitamins and minerals are Micronutrients.**

Equipment: Weighing scales, knife, chopping board, saucepan, wooden spoon, tablespoon, teaspoon, dessert spoon, mixing bowl, grater, pan-stand, baking tray, cooling rack, peeler, pastry brush, spatula.



Geography – Knowledge Organiser 1

Hazard Key Terms		The structure of the Earth	
Hazard	a naturally occurring event that threatens human life and/or damages property.	Crust	A thin (up to 60km), solid layers of different rocks.
Risk	the likelihood of an event causing harm to humans.	Mantle	The thickest layer made of semi-molten rock called magma.
Magnitude	The size of an event. This is important because generally the bigger the magnitude the more dangerous the natural event is.	Outer core	Liquid iron and metal
Tectonic hazard	A hazardous event caused by the movement of the Earth's crust. These include earthquakes, volcanoes and tsunamis.	Inner core	Solid iron and nickel, around 5500°C



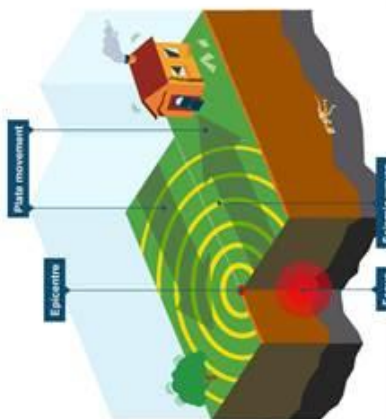
Y8 Tectonic Hazards Knowledge Organiser

The main types of plate boundary (margin)

PLATE MOVEMENT	
Conservative margins occur where the plates are moving alongside each other in opposite directions.	
Constructive margins occur where two plates pull apart, allowing magma to erupt at the surface.	
Destructive margins occur where two plates collide. The denser oceanic plate subducts under the lighter continental plate.	

The features of an earthquake

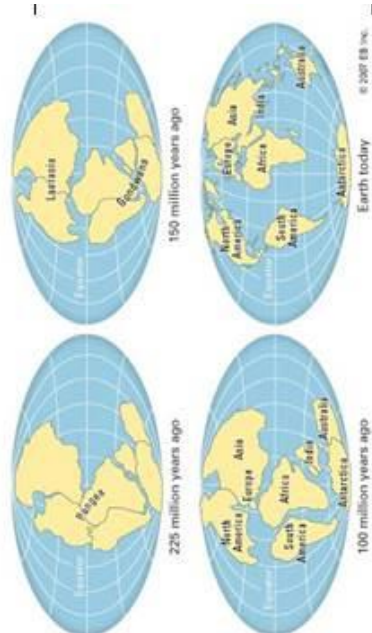
This diagram represents what happens at a conservative boundary. Earthquakes can also occur at destructive and constructive boundaries too.



Continental drift: this theory explains that the Earth has not always looked the way it does today. Over 100s of millions of years the movement of the Earth's tectonic plates has caused continents to form.

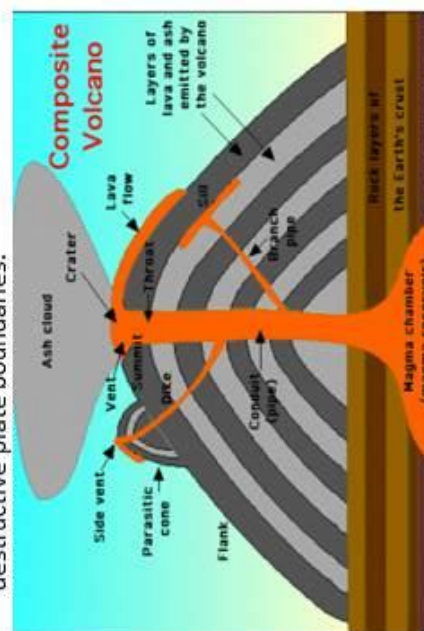
The evidence to support this theory comes from:

- A jigsaw like fit of Africa and South America.
- Matching ancient geology
- Matching fossils records
- Recent precise measurements of continental movements.



Features of a composite volcano

These volcanoes typically occur close to destructive plate boundaries.



Geography – Knowledge Organiser 2

The Water Cycle

Evaporation - When the sun heats up water from the sea and it goes into the air

Condensation - When water vapour cools and turns into clouds

Precipitation - Rain, snow, sleet, or hail that falls to or condenses on the ground

Surface run off - When water runs off the surface of the ground

Infiltration - precipitation soaks into subsurface soils and moves into rocks through cracks and pore spaces

Evapotranspiration - When the sun heats up water from the leaves of the trees

How to measure weather?

Rain gauge: A device for collecting and measuring the amount of rain which falls

Thermometer: Shows the degree of hotness or coldness of the temperature

Anemometer: This device measures wind speed in km/h.

Bartometer: An instrument measuring atmospheric pressure, used especially in forecasting the weather

Wind vane: Shows the direction the wind is blowing

Oktas: Show the amount of cloud cover.

Factors that influence our weather and climate:

Latitude: Our distance from the equator

Altitude/Relief: Height above sea level

Distance from the sea: A sea breeze keeps the coast cool in summer and warmer in winter.

Prevailing winds: The wind brings rain from the coast to places near the sea

Types of Rainfall:

- Relief:** Prevailing winds bring warm, moist air to the western British Isles. Air is forced to rise over high areas. Air cools and condenses. Clouds form and it rains.
- Frontal:** When cold air and warm air meet the warmer air rises over the top of the colder, heavier air. Condensation occurs and clouds form resulting in rain.
- Convectional:** When the land warms up, it heats the air above it. This causes the air to expand and rise. As the air rises it cools and condenses. If this process continues then rain will fall.

High and Low pressure systems

Cyclone: Area of low atmospheric pressure where air is rising

Anticyclone: they are an area of high atmospheric pressure where the air is sinking.

Weather and Climate Knowledge Organiser

Global warming and the greenhouse effect

Effects of Climate Change

In the Arctic ice sheets are melting, causing polar bears to become extinct.	Countries like Greenland will be able to grow crops	Low lying islands like the Maldives are predicted to disappear
In North America a warmer climate can mean there is an 20% increase in crops	People living in the Caribbean (Jamaica) will suffer water shortages	In Africa up to 200 million people will experience water shortages.

Climate: Climate is what the weather is like over a long time period. For example over 30 years. It uses records of the weather to say what the climate is like.

Geography – Knowledge Organiser 3

What is a global issue?

A **global issue** refers to a topic, concern or problem, debate, or controversy related to a natural and/or cultural environment, which includes a spatial dimension.

Key global issues around the world:

Flooding	Climate Change	Forest Fires
Over population	Deforestation (Cutting down trees)	Habitat Destruction
Lack of Food	Disease	War and Conflict
Plastic Pollution	Unemployment	Homelessness

Where is Antarctica?



Who owns Antarctica?

No one actually owns Antarctica, instead it is governed by the Antarctic Treaty, a collection of countries - including the UK, Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, the USA and the Soviet Union - who work together to manage and protect the vast continent in a sustainable way.



Global Issues Knowledge Organiser

Inequalities in the UK

- **Poverty:** Poverty can be caused for many reasons. Not everywhere in the UK is in poverty, but some places are. It is thought over 4 million people live in poverty in the UK currently.
- **Quality of housing:** In the UK, it is becoming increasingly difficult to own your own house, and some housing is of a less quality compared to others. The rise in house prices has been a huge cause for this.
- **Education:** Inequality in education is one of the highest in the UK compared to other HICs. Girls usually do better than boys in education which can cause inequalities.
- **Healthcare:** Inequalities in the quality of healthcare can cause changes in life expectancy (the age people are expected to live to). People living in deprived areas could have a life expectancy of 10 years less than those who live in richer areas.

Sustainability in Antarctica: The Antarctic treaty has a few aims to be able to manage the continent sustainably. They are:

- To make the natural reserve devoted to peace and science
- To allow scientists freedom to work,
- To share scientific knowledge
- To set aside territorial claims
- To ban nuclear and radioactive waste
- To make sure visits comply with the treaty
- To ban commercial mining
- To ensure waste is disposed without harming the environment
- To protect all animals and plants.

Challenges in Antarctica

Due to its vast geographical location, climate, vast space, and range of resources there are many challenges that are present in Antarctica.

Climate change: Over the past 50 years, the West coast of the Antarctic Peninsula has been one of the most rapidly warming parts of the planet leading to several disastrous impact.

Mining: There are a vast amount of resources present on the continent of Antarctica which are extremely valuable such as freshwater, minerals, fossil fuels. However, at present, any mining is banned by the Antarctic treaty.

Tourism: Antarctica's first tourists arrived in 1958 and since then visitor numbers have increased to 30000 a year creating both positives (increased awareness of protection and research) and negatives (increase in pollution and disruptions to ecosystems)

Habitat Loss: The ecosystems are constantly changing in Antarctica, however, due to changes in the environment through climate change, tourism and impacts on the food chain habitats are being destroyed.

Whaling and Overfishing: Commercial hunting of fish including krill and whales has led to their near extinction and changes to the ecosystem. Since the massive amounts of hunting started in the 1970s, conservation has been put in place to protect their species from illegal hunting.

History – Knowledge Organiser 1

TC6: Change and Continuity



Year 8 Knowledge Organiser:

Cycle 1: Monarchy-Republic-Monarchy: What changed?

The 1600s saw some of the most famous events in our history -- assassination attempts, civil war, the execution of a king, abolition of monarchy and creation of a Republic. But at the end of the century, had anything really changed?



Gunpowder Plot - 1605: King James I came to power in 1603, and within a few years there had been more than one attempt on his life. The most famous was the Gunpowder Plot (Guy Fawkes -- "remember remember the Fifth of November"). This was (almost) carried out by a group of Catholics desperate for religious change. They thought that things would get better under James as his mother had been a Catholic, but when change did not happen they decided to take matters into their own hands. They failed, but disputes about religion were never far away.



English Civil War - 1642-49: When King Charles I came to power in 1625, he and his Parliament briefly got on well as they agreed that England should be involved in the European wars that were raging between Protestants and Catholics (unlike James who had been a pacifist!). However, as the war went badly, relations between king and parliament quickly fell apart. Parliament blamed the king for poor leadership, wasting money, and for having married a Catholic. Charles blamed Parliament for not having given him enough money and for questioning his decisions! This eventually led to civil war, people fighting to decide who should have power. Over the next decade, about 200,000 British people (out of a population of only 6 million) died from the fighting or war-related disease. Thanks to the leadership of Oliver Cromwell and the formation of the New Model Army, Parliament won and King Charles was arrested.



The reign of Oliver Cromwell - 1653-58: A small minority of MPs and members of the army decided that King Charles I could no longer be trusted, and so he was executed on 30th January 1649. A republic was declared and it was dominated by Oliver Cromwell, the leading civil war general. He successfully ended rebellion in Scotland and Ireland but there is a lot of debate about the manner in which he did this, especially when Cromwell had anyone who surrendered murdered after the siege of Drogheda. Cromwell also successfully prevented Charles I's son (later Charles II) from recapturing England. Cromwell's rule was seen as overly harsh, with some of his puritan generals even banning pubs! Mary became fed up with the Republic and in the end Cromwell had to accept the title of Lord Protector and he became a King in all but name.



Restoration: King Charles II 1660-1685: By 1658 Cromwell was dead and there was a lack of political control. A leading army general decided to arrange the restoration of the monarchy under Charles I's son, Charles II. Charles II ruled quite well until his death in 1685. He returned to England promising not to undo all of the power given away by his father before the English Civil War and he tried to share power with Parliament. He became much more absolutist towards the end of his reign, especially when he was given money by France so he could rule without Parliament for four years. This was because some MPs had wanted Charles' heir to the throne, his brother James, to be excluded from becoming king because he was a Catholic and might end Protestantism in England.



Glorious Revolution 1688: James II had a huge amount of support at first, especially when he promised to work with Parliament. However, within a few months he tried to make it easier to be a Catholic in England, he promoted Catholics into the army and he dismissed Parliament because they wouldn't support him. He even tried to call a new Parliament hoping he could dominate it with Catholics. Protestants were in despair but hoped that James would die within just a few years and his Protestant daughter Mary, would become Queen. In 1688 however, James announced that his Catholic wife had just given birth to a baby boy. This new heir to the throne would obviously be brought up as Catholic, and so leading Protestants invited Mary's husband, Dutch Prince William to invade, forcing James II to run away. The new King and Queen, William and Mary, gave up a lot of power. William was forced to let Parliament meet every year to vote money to fund his wars against France, plus William had to agree to a Bill of Rights in 1689 that limited the King's power.

History – Knowledge Organiser 1

So what had really changed by 1700 ?

Power of monarchy	While monarchy was able to influence parliament, monarchy was almost wholly reliant on parliament for money and power. The monarch was still in charge of some things, though, such as foreign policy. They could also dissolve Parliament whenever they wanted, although they would quickly be forced to elect a new one if they wanted to have any money!
Role of Parliament	Parliament was central to the government of the country. Kings were reliant on Parliament for funding, and because of this had to allow regular elections and freedom of speech within Parliament. Later on in the 1720s the role of Prime Minister would occur as a leading MP who had the support of a majority of MPs.
Finance	Finance for the monarchy had to be agreed by Parliament. The King could not just raise taxes on the people without their agreement. However, Carta looked to limit the king in terms of raising taxes!
Religion	Britain was a Protestant country and Catholics had few rights. Britain's monarch had to be a Protestant by law. Think back to events around 1600 - is this evidence of change or continuity?
Population	Population rose slowly from about 7 million people to 10 million. In the 18th century population would explode in England. With printing presses becoming more developed and the first newspapers being created, more people were politically aware. The involvement of the army in politics during the Republic made a difference to this also.

Key terms

		New Model Army	
Absolutism	When a ruler has complete power over their country, allowing them to make any decision they want.		The army which was reorganised by Oliver Cromwell and enabled Parliament to win the Civil Wars.
Cavalier	The nickname for the soldiers who fought for Charles I in the Civil Wars.	Republic	A type of government that does not have a King. Britain had a Republic between 1649 and 1660.
Civil war	When there are two sides who fight each other within a country. There were three civil wars in the 1600s.	Restoration	When a monarchy is restored. In 1660 Charles II returned from exile and became the King of England and Scotland.
Constitution	A set of rules drawn up so that a country's government rules fairly. Charles I ignored a lot of unwritten rules.	Roundhead	The nickname for the soldiers who fought for the Parliamentary side in the Civil Wars.
Divine Right	An idea that Kings are made by God. This idea got Kings like Charles I into trouble with Parliament.	Tory	A group of MPs in Parliament after 1679 who believed that a King should have control over Parliament.
Glorious Revolution	What Whigs named the event where James II ran away and William and Mary became Protestant King and Queen.	Whig	A group of MPs in Parliament after 1679 who believed that Parliament should have more power than Kings.

Notes:

History – Knowledge Organiser 2

TCL : Interpretation Year 8 Knowledge Organiser Cycle 2: How civilised was the British Empire?



The British in India

British rule in India was always turbulent, although some princes did benefit. Things hit a terrible height at Amritsar in 1919. After the Indian soldiers brave contribution to



WW1, many wanted freedom. They met in a large group one day and the leader of the British forces,

Reginald Dyer, opened fire without warning. 1600 bullets were fired, 379 people murdered. After that, Mohandas Gandhi, began a non violent campaign to win India's independence.

Empire	A group of states or countries ruled over by a single monarch or leader.	Imperialism	To extend a country's power and influence through colonisation.
Abolition	To get rid of something	Slave	Someone with no rights of their own who belongs to someone else.
Civilised	To bring a country to a more developed point of social and cultural development	Independence	When a country starts to govern (make the rules) itself
Plantation	Areas on the colonies where crops were grown on a large scale to be transported around the world.	Colony	An area of land controlled and inhabited by people from another country
Discrimination	The unjust treatment of certain groups of people, often due to race, age or sex.	Civilisation	A people or nation with an organised system of social development

Was the spread of British Culture a good thing?

	Good thing	Bad thing
Missionaries (people who saw it as their duty to convert people to Christianity)	Popular as people were often given food and medical equipment as well as the Bible. Millions of people converted as they liked the idea.	Belief by the missionaries that other cultures/beliefs were worthless.
Schools	Many saw education as the key to a good job and a better standard of living.	Only a tiny minority of children were educated (around 4%)
English Language	Advantages in communication across countries that were part of the British Empire.	Destroyed the cultures of Native Americans, aborigines and others. Many felt pressured to learn the language to be successful.

The British in Ireland

Problems in Ireland had started early on in the Empire's days, with Oliver Cromwell causing trouble in his role as Lord Protector. Throughout the Empire's history, Ireland struggled for her independence, which resulted in a division between Northern Ireland



(part of the UK) and the republic of Ireland (Eire). This was drawn up by Irish politician Michael Collins in 1921 and was the best the British government would allow Ireland to have. This led to years of fighting between the North and the South, and gave way to the IRA emerging as a terrorist organisation.



History – Knowledge Organiser 2

What was triangular trade?

At least 12 million Africans were taken to the Americas as slaves between 1532 and 1832 and at least a third of them in British ships.

For the British slave traders it was a three-legged journey called the 'triangular trade':

- West African slaves were exchanged for trade goods such as brandy and guns.
- Slaves were then taken via the 'Middle Passage' across the Atlantic for sale in the West Indies and North America.
- Finally, a cargo of rum and sugar taken from the colonies, was taken back to England to sell.



What was life like on the middle passage?

As many as 2 million slaves died during the journey via the Middle Passage. Journeys lasted from as little as six weeks to several months, depending on the weather. The ships were often too small to carry the hundreds of slaves on board. Slaves were tightly packed into cramped spaces with one person's right leg chained to the left leg of another person. Conditions on the ships were terrible and slaves died from diseases such as smallpox, scurvy and measles.

Notes/any additional points?

Why did the English abolish the slave trade in 1807?

At the end of the 18th century, public opinion began to turn against the slave trade. In 1787, the Committee for the Abolition of the Slave Trade was set up. William Wilberforce represented the committee in Parliament.

- The campaigners boycotted sugar, wrote letters and presented petitions.
- Thomas Clarkson went on a speaking tour, showing people chains and irons and a model of a slave ship.
- Other campaigners published leaflets describing conditions on the Middle Passage.

British Africans such as Olaudah Equiano formed the 'Sons of Africa' and campaigned against the slave trade.



William Wilberforce



Thomas Clarkson



Olaudah Equiano



Hannah Moore



John Newton



William Pitt

How and why do interpretations differ?

How? What does interpretation A suggest about the topic? What does interpretation B suggest about the topic? Is one more positive than the other?

Why? Who wrote the interpretation? What might be the purpose of the author in the interpretation? Are they trying to praise or criticise someone or something? Is the author closely connected to the person/topic? Does the author not know them at all?

How convincing? How far does all the knowledge that you have fit in with the interpretations? Do they agree? How much? Does your knowledge say something different?

Assessment Skills

History – Knowledge Organiser 3

TC7: Similarity and Difference



Year 8 Knowledge Organiser: The Industrial Revolution

The Industrial Revolution was a time of great change in Britain between 1750 to 1900. Owing to a revolution in agriculture, farm workers began to move from rural to urban areas. Instead of working at home they now worked in factories. Whereas before the revolution wind power and horse power were important, now machines were powered by coal.

Living conditions

Overcrowding: due to large numbers of people moving to the cities, there were not enough houses for all these people to live in.

Disease: typhus, typhoid, tuberculosis and cholera all existed in the cities of England. Overcrowding, low standard housing and poor quality water supplies all helped spread disease.

Waste disposal: gutters were filled with litter. Human waste was discharged directly into the sewers, which flowed straight into rivers.

Poor quality housing: houses were built very close together ("back to backs") so there was little light or fresh air inside them. They did not have running water and people found it difficult to keep clean.



Gangs began to form owing to the extreme poverty in cities. Groups such as the **Peaky Blinders** (Birmingham) and the **Scuttlers** (Manchester) terrorised the streets. When the govt introduced compulsory schooling in 1880, and working lad's clubs promoted sports in the 1890s, gang membership began to decline.

Why did the IR start in the UK?

- ★ The colonies in the British Empire could be used as a source for raw materials & a marketplace for manufactured goods.
- ★ The UK had lots of coal and an excellent banking system!



A ray of hope?

Philanthropists such as George Cadbury and Titus Salt built housing for their workers (Bournville and Saltaire), which gave them access to fresh air, gardens to grow food and schools to educate their children.



Workhouses were intended to provide work and shelter for poverty stricken people. Instead they became known for their terrible conditions forced child labour, long hours, malnutrition, beatings and neglect. This led to opposition from the likes of Charles Dickens, who wrote *Oliver Twist*.

Chartists

The Chartists were a group of working class people who demanded change. They were called chartists because they had created a Charter (a list - remember Magna Carta) of demands which they wanted the government to make law. Here are some of the changes they asked Parliament for ...

- ☐ A vote for every man 21 years of age.
- ☐ The ballot should be secret.
- ☐ No property qualification - rich or poor should be able to be MPs.



Life in factories

Long working hours: normal shifts were usually 12-14 hours a day, with extra time required during busy periods.

Low wages: a typical wage for male workers was about 15 shillings (75p) a week, but women and children were paid much less, with children three shillings (15p). For this reason, employers preferred to employ women and children.

Cruel discipline: there was frequent "strapping" (hitting with a leather strap). Other punishments included nailing children's ears to the table, and dowsing them in water butts to keep them awake.

Accidents: forcing children to crawl into dangerous, unguarded machinery led to many accidents and deaths.

Health: The air was full of dust, which led to chest and lung diseases and loud noise made by machines damaged workers' hearing.

Suffragists and Suffragettes

Both groups believed that Britain was not a true democracy until women had the vote.


Their methods differed: the Suffragists were peaceful protesters (wrote to MPs, peaceful marches/ processions, made pamphlets) and the Suffragettes were militant (vandalism and arson, marches, criminal damage).

Emily Davison died for the cause after being killed during a horse race following her attempts to throw a Votes for Women scarf on the royal horse.

History – Knowledge Organiser 3



TC7 focuses on the extent of **similarity and difference** between different types of people, or even between people within the same group! What has been the nature and extent of diversity that you have seen so far? Can you **contrast and compare**? How **typical** were experiences?



<div> <div>Social diversity</div> <div> <p>Did you notice any differences between typical factories and those built by philanthropists such as George Cadbury/ Titus Salt?</p> <p>How did living conditions for lower class people contrast to those for the middle class/ landowners?</p> </div> </div>			
<div> <div>Political diversity</div> <div> <p>What similarities and differences did you see between the beliefs and methods of the Suffragettes and Suffragists?</p> <p>In your lesson on the Chartists, did you see the similarities and differences between the views of the various classes in industrial Britain?</p> </div> </div>			
<div>Key terms</div>			
Act	creates a new law or changes an existing law, and 'Act of Parliament'	Philanthropist	a person who seeks to promote the welfare of others, especially by the generous donation of money to good causes e.g. George Cadbury.
Bill	A Bill is a proposal for a new law, or a proposal to change an existing law that is presented for debate before Parliament	Political	Something that relates to the power in a country, government or public affairs of a country. The Prime Minister is the head of the UK elected government.
Democracy	In a democracy the people have a say in how the government is run. They do this by voting. In a full democracy everyone would be able to vote.	Slums	Areas of poor quality housing, often including back to back housing.
Domestic	Either, matters relating to the home e.g. domestic service, or the domestic system, or matters occurring inside a particular country; not foreign or international.	Radical	a person who takes action for political or social change e.g. the Chartists were radicals because they wanted to change who had the vote.
Franchise	the right to vote in public elections. The suffragettes wanted to get the franchise for women.	Reform	make changes in something (i.e. an institution or place) in order to improve it. Reform acts changed who could vote.
Industrialisation	the development of industries in a country or region on a wide scale.	Revolution	A great change. The industrial revolution changed how people lived and worked.
Liberal	willing to respect or accept behaviour or opinions different from one's own; open to new ideas.	Sanitation	Sanitation is how clean somewhere is and the system that disposes of human waste. Poor sanitation in towns was a problem in the IR as they used cesspits instead of sewers.
Manufacturing	the process of making products, or goods in a factory - factories were originally called 'manufactories'	Social deprivation	describes a person who is disconnected from his or her society because of poverty.
Mass production	The production of many products in one go e.g. textiles	Suffrage	the right to vote or the exercise of this right.

Inventions

Something new which is created, can be an object or an idea.

The Steam Engine - 1717 Thomas Newcomen invents the first steam engine. It would later be improved by James Watt in 1783 which meant steam engines could replace water and horse power in a wide variety of industries, which in turn allowed factories to be built anywhere.	The Water Frame - 1769 Richard Arkwright invented a machine, powered by water, to spin cotton into yarn, quickly and easily. His machines did not need skilled operators so Arkwright paid unskilled women and others to work on them.	The Spinning Jenny - 1770 James Hargreaves, a British carpenter and weaver, invents the spinning jenny. The machine spins more than one ball of yarn or thread at a time, making it easier and faster to make cloth. This allows more workers to make cloth more cheaply and increases the amount of factories built.	The Powerloom The first loom was designed in 1784 by Edmund Cartwright and built in 1785. The power loom is a mechanized device used to weave cloth and tapestry.	Englishman Abraham Darby found a cheaper, better way to make cast iron using coal rather than charcoal as a source of power.
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Maths – Knowledge Organiser 1

Inverse and Modelling – TC13/TC14

Inverse (TC13) - To undo mathematical operations in the correct order to solve problems.

Modelling (TC14) - To construct and solve from real life contexts.

Definitions:

A **variable** is a letter or symbol representing a varying or an unknown quantity.

A **term** is either a single number, variable or combination of numbers and variables multiplied together or divided.

An **expression** is a combination of terms that are added or subtracted.

An **equation** is a mathematical statement containing an equals sign, to show that two expressions are equal.

An **integer** is a whole number.

Inverse operations

Definition: **Inverse** operations are opposite operations.

Operation	Inverse
+	—
—	+
×	÷
÷	×
x^2	\sqrt{x}

Solving Equations

Definition: **Solving an equation** is finding the unknown by inverting.

Examples – solve the following equations:

$$\begin{array}{l} 2x + 3 = 7 \\ \downarrow -3 \\ 2x = 4 \\ \downarrow \div 2 \\ x = 2 \end{array}$$

$$\begin{array}{l} \frac{x+3}{7} = 6 \\ \downarrow \times 7 \\ x+3 = 42 \\ \downarrow -3 \\ x = 39 \end{array}$$

$$\begin{array}{l} \frac{x}{6} - 3 = 7 \\ \downarrow +3 \\ \frac{x}{6} = 10 \\ \downarrow \times 6 \\ x = 60 \end{array}$$

$$\begin{array}{l} 3(x+5) = 12 \\ \text{expand} \downarrow \\ 3x + 15 = 12 \\ \downarrow -15 \\ 3x = -3 \\ \downarrow \div 3 \\ x = -1 \end{array}$$

$$\begin{array}{l} 2x + 4 = 6x + 9 \\ \downarrow -2x \text{ (smallest amount of 'x')} \\ 4 = 4x + 9 \\ \downarrow -9 \\ -5 = 4x \\ \downarrow \div 4 \\ x = \frac{-5}{4} \end{array}$$

Maths – Knowledge Organiser 1

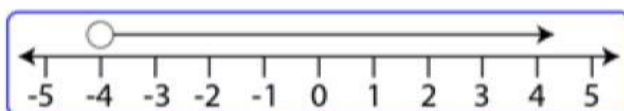
Inequalities

Definition: **Inequalities** are used to compare the relative size of values.

Symbol	Meaning	Closed or Open Circle
$<$	Less Than	Open \circ
$>$	Greater Than	Open \circ
\leq	Less Than or Equal to	Closed \bullet
\geq	Greater Than or Equal to	Closed \bullet

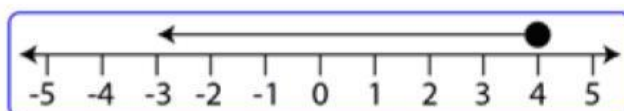
Examples:

$$x > -4$$



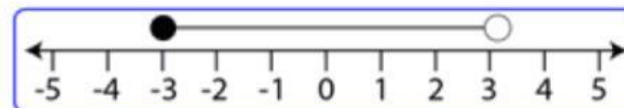
Integers: -3, -2, -1, 0, 1,
...

$$x \leq 4$$



Integers: 4, 3, 2, 1, 0, -1,
...

$$-3 \leq x < 3$$



Integers: -3, -2, -1, 0, 1, 2

Simultaneous equations

Definition: **Simultaneous equations** are pairs of equations with two unknown variables, which are both solved at the same time.

Example:

Solve simultaneously to find the value of 'x' and 'y':

$$\begin{aligned} 2x + 1y &= 66 \\ 5x + 4y &= 201 \end{aligned}$$

$$\text{Pencils} = x \quad \text{Pens} = y$$



2 pencils
and 1 pen
cost £0.66



5 pencils
and 4 pens
cost £2.01

Maths – Knowledge Organiser 1

Collect, Display, Analyse, Interpret, Predict TC15, TC16, TC17, TC18, TC19

Collect (TC15) – To specify, plan and collect appropriate data to test hypotheses.

Display (TC16) – To select and construct appropriate charts and diagrams.

Analyse (TC17) – Calculate measures of central tendency and spread.

Interpret (TC18) – To compare distributions.

Predict (TC19) – To calculate risk through probabilities.



Collect – TC15

Types of data

Definitions:

Quantitative data is numerical data that can be counted or measured.

- **Discrete data** is data that can be counted and has only a certain number of possible values e.g. days of the week.

- **Continuous data** is data that can be measured. It has an infinite number of possible values within a selected range e.g. temperature range.

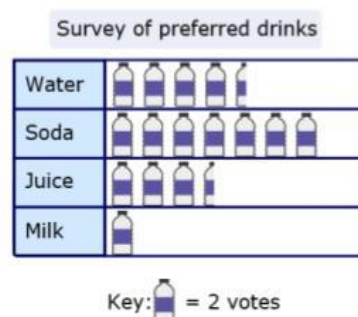
Qualitative data is data that describes something, and cannot be expressed as a number.

Display and Analyse – TC16/TC17

Javed runs the school tuck shop. He does a survey on what drinks students prefer.

Results displayed in a Pictogram

A pictogram must include a **key**.



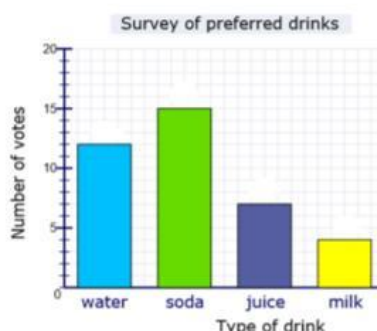
Here are his results:

Type of drink	Water	Soda	Juice	Milk
Number of votes	9	14	7	2

Results displayed in a Bar Chart

All bars must be of **equal width**.

Both axes need to be **labelled**.



Displaying data in a Pie Chart

24 people were asked for their favourite football team. The results are in the table.

$360 \text{ (degrees)} \div 24 \text{ (people)} = 15$. Each person is worth 15°

football team	frequency	degrees
Liverpool	3	$3 \times 15 = 45^\circ$
Birmingham City	7	$7 \times 15 = 105^\circ$
Manchester Utd	4	$4 \times 15 = 60^\circ$
Arsenal	2	$2 \times 15 = 30^\circ$
Newcastle	8	$8 \times 15 = 120^\circ$
	24	



Maths – Knowledge Organiser 1

Interpret – TC18

Averages and Range

Mean

The mean is the most frequently used average.

To find the mean, calculate the sum of the values and then divide by how many values there are.

Mode

The mode is the most frequently occurring value.

If all values occur the same amount of times there is **no mode**.

There can be **more than one mode** if more than one value is the most frequent.

Median

The median is the middle value, when ordered.

If there are **two middle values**, the mean of these two values is the median.

Range

The range is the difference between the largest and smallest value.

Example

8, 13, 10, 5, 8, 4

Mean: $8 + 13 + 10 + 5 + 8 + 4 = 48$
 $48 \div 6 = 8$

Mode: 8 (occurs most frequently)

Median: ~~4~~, ~~5~~, 8, 8, ~~10~~, ~~13~~ (Mean of 8 and 8 = 8)
Median = 8

Range: $13 - 4 = 9$ (largest value – smallest value)

Definitions:

An **average** is a calculated central value of a set of numbers. The mean, mode and median are all types of averages.

The **range** is a measure of spread; it describes how similar or varied the set of values are within a data set.

Averages from a frequency table

10 people were asked how many sports they played. The results are listed below and then recorded in a table.

0, 0, 1, 1, 1, 1, 1, 2, 3, 3

Number of sports played	Frequency	Number of sports x frequency
0	2	$0 \times 2 = 0$
1	5	$1 \times 5 = 5$
2	1	$2 \times 1 = 2$
3	2	$3 \times 2 = 6$
TOTAL	10	13

Mean number of sports played = $13 \div 10 = 1.3$

Modal (mode) number of sports played = 1

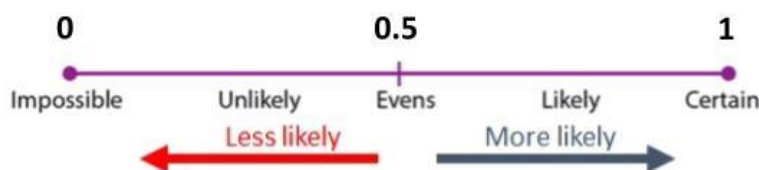
Median = 1

Predict – TC19

The Probability scale

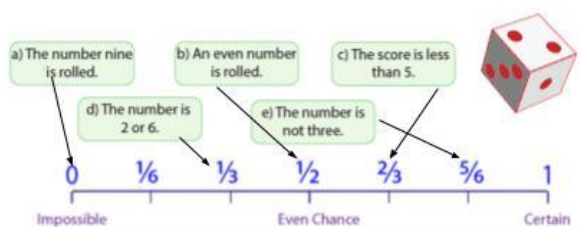
Definition:

Probability is the chance or likelihood that a particular outcome will occur. It can be expressed as a number between 0 and 1, a fraction or a percentage.



An event with a probability of 0 is impossible; it cannot happen.

An event with a probability of 1 is certain; it will happen.



Maths – Knowledge Organiser 2

Formulaity – TC20

To understand, use and construct a variety of formulae.

Algebraic notation

$$4a = 4 \times a$$

$$a^2 = a \times a$$

$$\frac{a}{b} = a \div b$$

b

$$2b^2 = 2 \times b \times b$$

$$(2b)^2 = 2 \times b \times 2 \times b$$

Order of Operations

Brackets are calculate first.

Indices, powers and roots follow.

Then division and multiplication, which have **equal priority**.

Finally, addition and subtraction, which also have **equal priority**.

When two or more operations of the **same priority** appear one-after-another, the operations should be **carried out from left to right**.

Examples:

$$\begin{aligned} 3 - 4 + 7 \\ = -1 + 7 \\ = 6 \end{aligned}$$

$$\begin{aligned} 2 \times 6 \div 3 \\ = 12 \div 3 \\ = 4 \end{aligned}$$

$$\begin{aligned} (2^2 + 6)^2 \times 4 \\ = (4 + 6)^2 \times 4 \\ = 10^2 \times 4 \\ = 100 \times 4 \\ = 400 \end{aligned}$$

Perimeter

The distance around the outside of a shape, calculated by adding the length of all sides together.

Volume of a cuboid

Volume (cuboid) = length x width x height

Circles

Area

$$= \pi \times \text{radius}^2$$

Circumference

$$= \pi \times \text{diameter}$$

Definitions:

A **formula** is a mathematical rule written using symbols, usually as an equation describing a certain relationship between quantities.

A **variable** is a letter or symbol representing a varying or an unknown quantity.

An **expression** is a combination of terms that are added or subtracted.

An **equation** is a mathematical statement containing an equals sign, to show that two expressions are equal.

Example – substitution into a formula

$$v = u + at$$

When $u = 3$, $a = 2$ and $t = 1$

$$v = 3 + 2 \times 1$$

$$v = 3 + 2$$

$$v = 5$$

Writing a simple formula

Pens are sold in packs of 6 and rulers are sold in boxes of 10. A teacher buys p packs of pens and r boxes of rulers. Write an formula for the total (T) number of pens and rulers bought.

$$\begin{aligned} T &= 6 \times p + 10 \times r \\ T &= 6p + 10r \end{aligned}$$

Area

Rectangle

$$\text{Area} = \text{base} \times \text{height}$$

Triangle

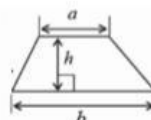
$$\text{Area} = \frac{\text{base} \times \text{perpendicular height}}{2}$$

Parallelogram

$$\text{Area} = \text{base} \times \text{perpendicular height}$$

Trapezium

$$\text{Area of trapezium} = \frac{1}{2}(a + b)h$$



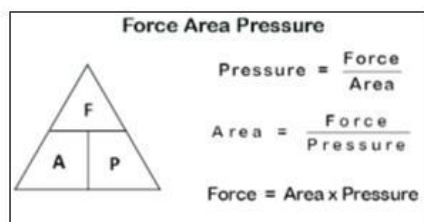
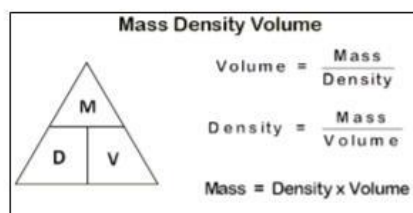
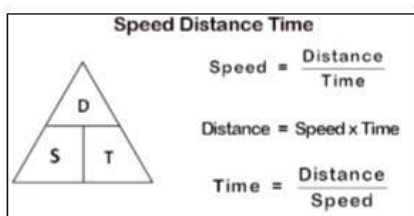
Maths – Knowledge Organiser 2

Rearrange – TC21

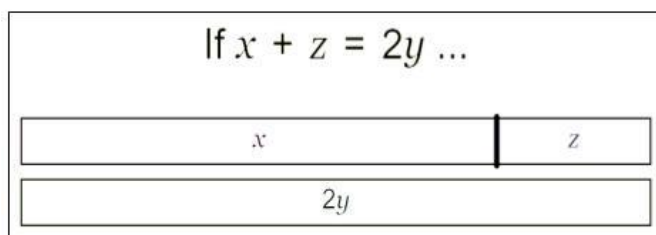
To manipulate formulae into equivalent forms.

Compound measures

Definition: Compound measures are made up of two or more measurements.



Rearranging formulae

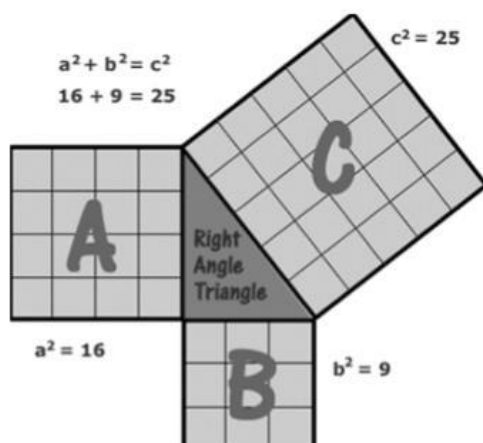


Make 'x' the subject of the formula:
 $x = 2y - z$

Make 'z' the subject of the formula:
 $z = 2y - x$

Make 'y' the subject of the formula:
 $y = \frac{1}{2}x + \frac{1}{2}z$

Pythagoras' Theorem



Definition: The **hypotenuse** is the longest side on a right-angled triangle, the side opposite the right angle.

The square of the longest side is equal to the sum of the squares of the two sides.

$$a^2 + b^2 = c^2$$

(c is always the hypotenuse)

Maths – Knowledge Organiser 2

Proportionality – TC22

The application of multiplicative reasoning.

Definitions:

Two quantities are said to be in **direct proportion** if there is a constant multiplicative relationship between the two quantities.

A **multiplicative relationship** is one which maintains a constant ratio when scaled (multiplying or dividing).

Direct proportion

6 bags of gravel cost £15. Find the cost of 14 bags of gravel.

$$\begin{array}{l} \div 6 \quad \left(\begin{array}{l} 6 \text{ bags} = £15.00 \\ 1 \text{ bag} = £2.50 \end{array} \right) \div 6 \\ \\ \times 14 \quad \left(\begin{array}{l} 1 \text{ bag} = £2.50 \\ 14 \text{ bags} = £35.00 \end{array} \right) \times 14 \end{array}$$

Exchange rates

The exchange rate is £1 to \$1.70.

I need to convert £56 into US Dollars:

$$\times 56 \quad \left(\begin{array}{l} £1 = \$1.70 \\ £56 = \$95.20 \end{array} \right) \times 56$$

On my return journey I have \$12 left.

What is this worth in Pounds (£)?

$$\times 7.06 \quad \left(\begin{array}{l} £1 = \$1.70 \\ £7.06 = \$12.00 \end{array} \right) \times 7.06$$

$$(12.00 \div 1.70 = 7.06)$$

Recipes

$$6 \div 4 = 1.5$$

So **1.5** lots of each ingredient

Ratatouille	
Serves 4	
2 large aubergines	
4 small courgettes	
2 yellow peppers	
4 large tomatoes	
5 tablespoons olive oil	
1 onion	
3 garlic cloves	

$$\times 1.5$$

6 people

$$\begin{array}{l} 2 \times 1.5 = 3 \text{ large aubergines} \\ 4 \times 1.5 = 6 \text{ small courgettes} \\ 2 \times 1.5 = 3 \text{ yellow peppers} \\ 4 \times 1.5 = 6 \text{ large tomatoes} \\ 5 \times 1.5 = 7.5 \text{ tablespoons olive oil} \\ 1 \times 1.5 = 1.5 \text{ onions} \\ 3 \times 1.5 = 4.5 \text{ garlic cloves} \end{array}$$

Work with ratio

Example:

Steve and Bill share money in the ratio 3:5. Bill gets £10 more than Steve...

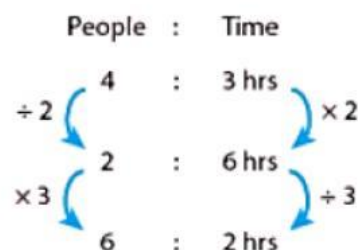
	Steve	Bill	Total	Difference
Ratio	3	5		
Work				
Value				£10

	Steve	Bill	Total	Difference
Ratio	3	5	8	2
Work	X 5	X 5	X 5	X 5
Value	£15	£25	£40	£10

Inverse proportion

Definition: Two quantities are said to be **inversely proportional** if as one quantity gets larger the other gets smaller.

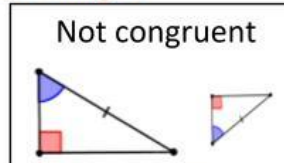
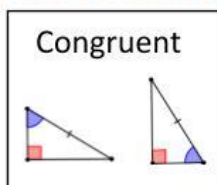
Example: 4 people can take 3 hours to dig a trench. How long would it take 6 people working at the same rate?



Maths – Knowledge Organiser 2

Congruence – TC23

To construct and describe transformations that result in congruent images.



Definitions:

Congruent shapes have corresponding sides and angles exactly the same size.

Similar shapes are identical in shape but not in size. Corresponding sides are in proportion and corresponding angles are equal.

Transformations of shapes are a change in position or size of the shape.

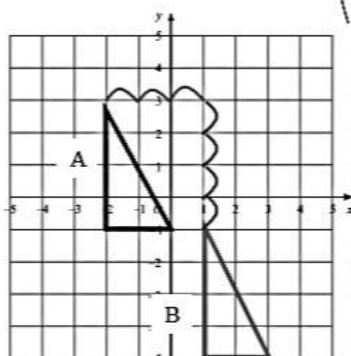
A **scale factor** is the ratio of corresponding sides in similar shapes.

Translation

You need to know:

- Vector from A to B e.g.

$\begin{pmatrix} 3 \\ -4 \end{pmatrix}$ Right
Down



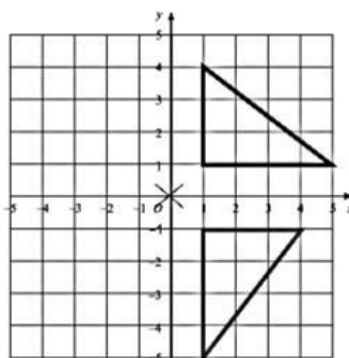
- The new shape is the same size (congruent)

Rotation

You need to know:

- Angle e.g. 90°
- Direction e.g. clockwise
- Centre of rotation e.g. (0,0)

$90^\circ = \frac{1}{4}$ turn
 $180^\circ = \frac{1}{2}$ turn
 $270^\circ = \frac{3}{4}$ turn
 $360^\circ = \text{full turn}$

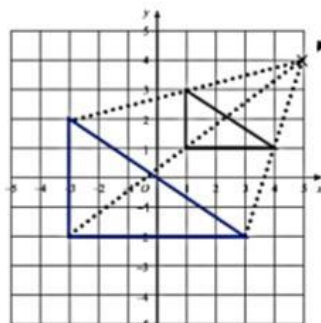


- The new shape is the same size (congruent)

Enlargement

You need to know:

- Centre e.g. (5, 4)
- Scale factor e.g. 2

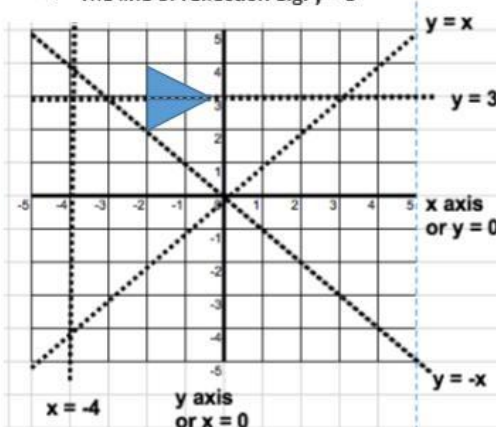


- The new shape is **similar** to the original
- An enlargement with a fractional scale factor will make the new shape **smaller**.

Reflection

You need to know:

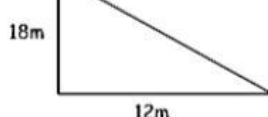
- The line of reflection e.g. $y = 3$



- The new shape is the same size (congruent)

Similarity

These two shapes are similar.
Calculate 'x'



$$\text{Scale factor} = 18 \div 6 = 3$$

$$x = 12 \div 3 = 4\text{m}$$

Maths – Knowledge Organiser 3

Turn – TC24

To understand that turn is represented by angles and can be measured in degrees.

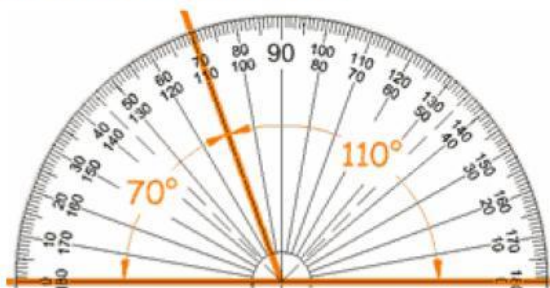
Definitions:

A **degree** is a unit for measuring the size of an angle. There are 360 degrees in a complete turn.

An **angle** is the amount of turn between two lines connected at a common point (vertex).

A **protractor** is an instrument used to measure angles in degrees.

Measuring angles



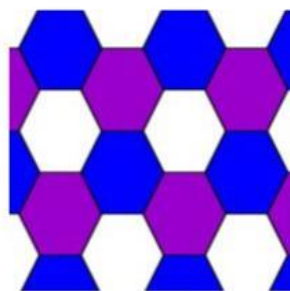
When measuring from **left to right**, use the **outside** scale of numbers.

When measuring from **right to left**, use the **inside** scale of numbers.

Tessellatio

Definition:

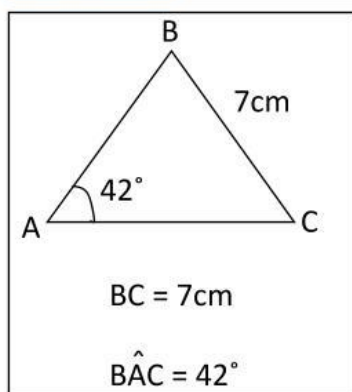
A **tessellation** is a pattern of repeated shapes that fit together without any gaps.



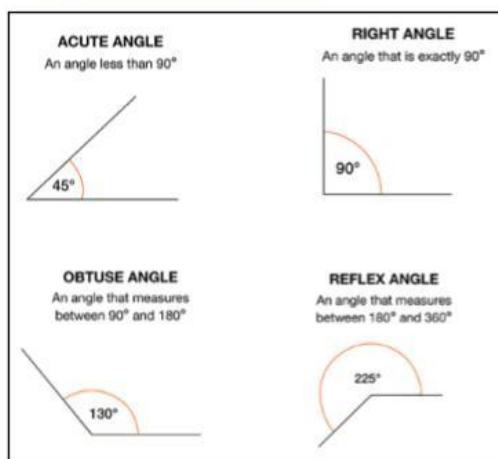
Angles – TC25

To know and use angle facts in a variety of contexts.

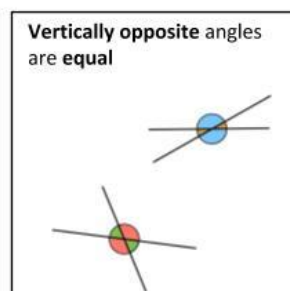
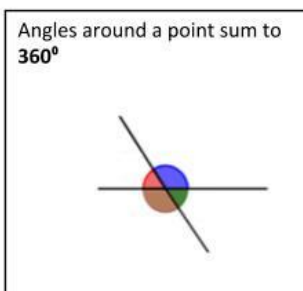
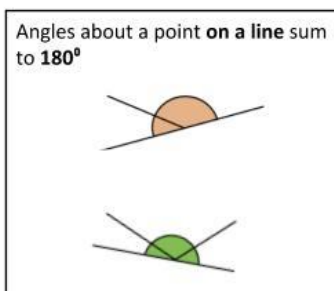
Notation



Types of angles



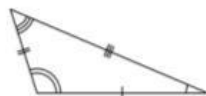
Angle rules



Maths – Knowledge Organiser 3

Angle rules

Angles in a **triangle** sum to 180°



Angles in an **equilateral** triangle are **equal**.



An **isosceles** triangle has **two equal angles** (base angles).



Angles in a **quadrilateral** sum to 360°

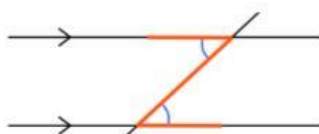


Angles in parallel lines

Definition:

Parallel lines are lines that are the same distance apart, never touching.

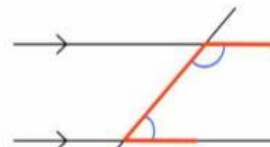
Alternate angles are **equal**



Corresponding angles are **equal**



Co-interior angles sum to 180°



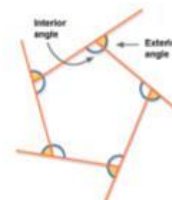
Interior and exterior angles of polygons

Definitions:

A **polygon** is a closed 2D shape with straight sides.

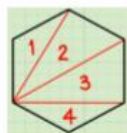
An **interior** angle is an angle formed by two sides of a polygon.

An **exterior** angle is an angle formed outside a polygon when one side is extended.



The **sum** of **interior** angles of a polygon is calculated using the formula: $(n - 2) \times 180^\circ$ where **n** is the number of sides.

Hexagon
 $n = 6$
 $(6 - 2) \times 180^\circ$
 $= 720^\circ$



Angles in a hexagon sum to 720°

Exterior angles of any polygon sum to 360°



360°

The **interior** angle and **exterior** angle at a vertex of a polygon **sum to 180°** (as they are on a straight line).



Constructions

When using a compass, make sure the tip of the pencil is level with the metal pin.



Definitions:

To **construct** is to draw a shape, line or angle accurately using a pencil, ruler, protractor and compass.

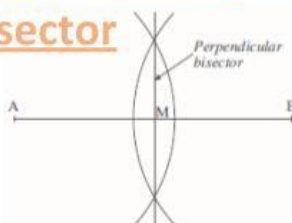
To **bisect** means to cut in half exactly.

Equidistant means equal distance.

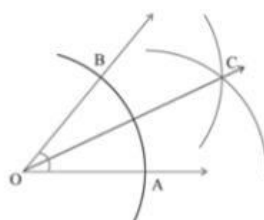
Perpendicular lines are lines that are at right angles to each other.

Locus (loci) is a set of points that satisfy a particular condition.

Perpendicular bisector



Angle bisector



Loci example



The set of points a given distance from a single point, **P**, is a circle

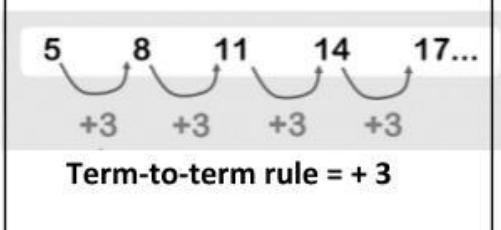
Maths – Knowledge Organiser 3

Linearity – TC26

To understand the relationship between sequences and graphical representations.

Term-to-term rule

A **term-to-term** rule finds the next term in a sequence, if the previous terms are known.



Definitions:

A **sequence** is an ordered set of numbers or shapes arranged according to a rule or pattern.

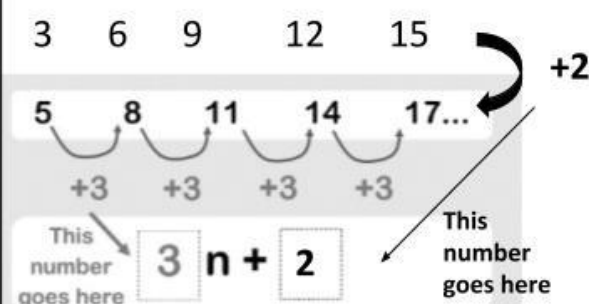
A **term** is one of the numbers or shapes in a sequence.

Numbers in **ascending** order are arranged from smallest to largest.

Numbers in **descending** order are arranged from largest to smallest.

Nth term rule

The **nth term** rule gives the value of each term with respect to its position in the sequence.



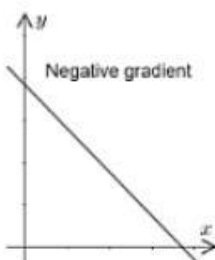
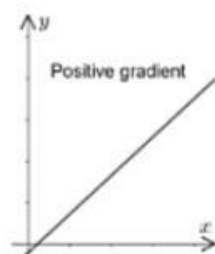
The sequence is **2 more** than the **3 times table**.

Gradient – TC27

To understand the concept of rate of change.

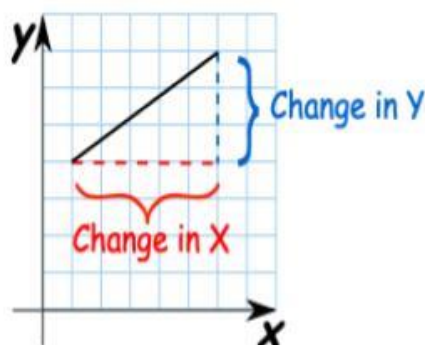
Definition:

The **gradient** is the steepness of a line.



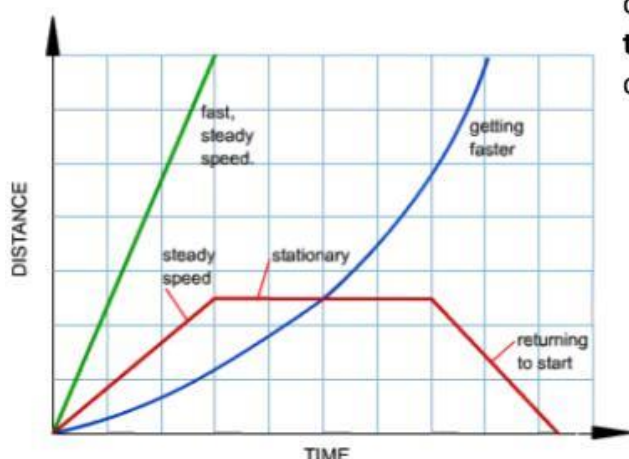
To calculate the gradient of a line, divide the change in height by the change in horizontal distance.

$$\text{Gradient} = \frac{\text{Change in Y}}{\text{Change in X}}$$

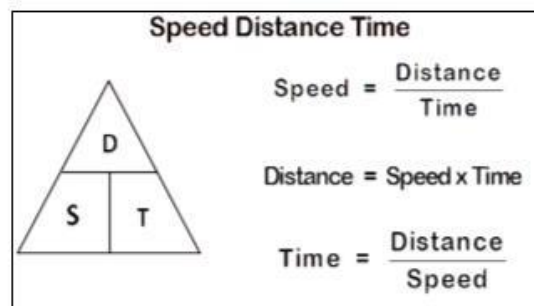


Maths – Knowledge Organiser 3

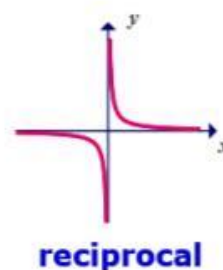
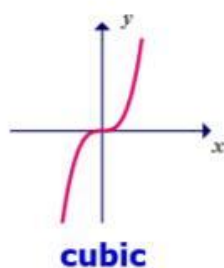
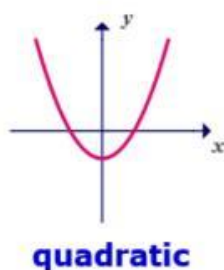
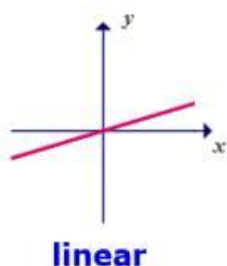
Distance-time graphs



The **gradient** of each distinct section of a distance-time graph represents the rate of change of the **distance** with respect to **time**. Hence, the **speed** of each section can be calculated.



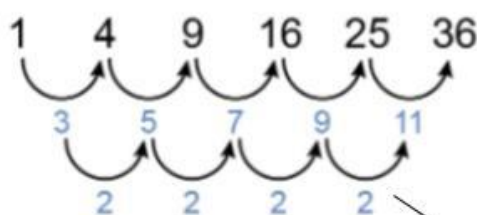
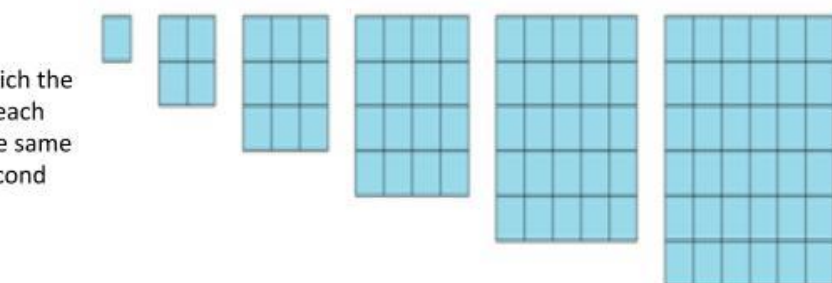
Types of graphs



Quadratic sequence

Definition:

A **quadratic sequence** is a sequence of numbers in which the second differences between each consecutive term differ by the same amount, called a common second difference.



'2' is the common second difference

MFL – French – Knowledge Organiser 1



Knowledge Organiser Cycle 1 Year 8 French Me Voici! Lifestyle and Leisure Interests

In this cycle of work I will talk about some of my hobbies including online activities; I will also learn to use the passé composé to talk about past tense events

I will be assessed on this cycle of work will by writing an account of what I did last weekend.



Structures: To make a question you can add "est-ce que" to the front of the phrase.

E.g: *Est-ce que tu aimes* = Do you like?

J'ai une passion = I have a passion for

Je suis fan de = I am fan of

Je ne suis pas fan de = I am not a fan of

Vocabulary to talk about language learning in cycle 1

auxiliary verb - the avoir or être part of the verb in the perfect tense

past participle (pp) - the part of the perfect tense that expresses the completed action.

This does not usually change.

time phrases - phrases which tell you when something was done

sequencers - phrases which express the order of events such as then, next, afterwards

Avoir = to have *J'ai* = I have *Tu as* = you have
il/elle /on a = he /she has/ we have
nous avons = we have *ils /elles ont* = they have

Les vêtements—clothes

Qu'est-ce que tu portes? What do you wear?
je porte ... un jean = I wear ...jeans
un tee-shirt = a T shirt

un chapeau = a hat

un sweat à capuche = a hoodie

un pantalon = trousers

un pull = a jumper

une jupe = a skirt

une veste = a jacket

une chemise = a shirt

THE PERFECT TENSE er verbs

Use correct part of avoir

Remove er from infinitive

Add é to form the pp

Elle regarde - she watches
elle a regardé - she watched

Regarder = to watch

J'ai regardé = I watched

Porter = to wear

J'ai porté = I wore

Manger = to eat

J'ai mangé

Visiter = to visit a place

J'ai visité = I visited

C'était = it was

Les émissions de télévision

Une émission de (sport) = (sports) programme

la télé-réalité = reality TV

les infos = the news

les musicales = music programmes

la météo = the weather

les séries = TV series

Les feuilletons = soaps

les jeux télévisés = game shows

les dessins animés = cartoons

les documentaires = documentaries

les films d'action = action films

les films fantastiques = fantasy

les films d'aventure = adventure films

les films d'arts martiaux = martial arts films

les films d'amour = love films

les films de science fiction = science fiction films

les comédies = comedies

Les magazines = magazines **je lis** = I read

un magazine sur les célébrités = a celebrity magazine

... sur les animaux = about animals

d'épouvante = horror

fantastique= fantasy

policier= crime

d'amour = love/ romance

un manga = a manga

une BD = comic

Ma vie connecté je fais.. = I do

des achats =some shopping

des recherches =some research

des quiz some quizzes

je vais... sur mes sites préférés = I go on my favourite sites

sur des blogs = on blogs

sur des forums =on forums

j'envoie des mails = I send emails

je mets à jour page perso - I update my page


je joue a des jeux en ligne = I play games online

Ne....jamais = never

Ne....pas = not

1 un	2 deux	3 trois	4 quatre	5 cinq	6 six	7 sept	8 huit	9 neuf	10 dix
11 onze	12 douze	13 treize	14 quatorze	15 quinze	16 seize	17 dix-sept	18 dix-huit	19 dix-neuf	20 vingt
21 vingt-et-un	22 vingt-deux	30 trente	31 trente-et-un	40 quarante	41 quarante-et-un	50 cinquante	51 cinquante-et-un	60 soixante	61 soixante-et-un
70 soixante-dix	71 soixante-et-onze	72 soixante-douze	80 quatre-vingts	81 quatre-vingt-et-un	82 quatre-vingt-deux	90 quatre-vingt-dix	91 quatre-vingt-et-onze	92 quatre-vingt-douze	100 cent


MFL – French – Knowledge Organiser 2





Knowledge Organiser Cycle 2 Year 8 French Chez Moi Chez toi. Home, food and drink, and celebrations


In this cycle of work I will learn to talk about my world — where I live, what I eat and drink, and I will learn to describe an event using 3 time frames

The assessment of this cycle of work will be through a student presentation given to the teacher









Ma Région—my local area

J'habite = I live

au bord de la mer = at the seaside

dans une grande ville = in a big town

dans un village in a village

à la campagne = in the countryside

à la montagne = in the mountains

un appartement, = a flat

une maison jumelle= a semi detached house,

une maison individuelle = a detached house,

une ferme = a farm

une maison mitoyenne = a terraced house

Chez (e.g. chez moi) = at someone's home (at my house)

il y a = there is /there are **Il n'y a pas de = there isn't/there aren't**

la cuisine = kitchen

la salle à manger = dining room

le salon = sitting room

le garage = garage

l'escalier = stairs

le sous-sol = basement

La cuisine—food

le beurre = butter

les céréales = cereals

la brioche = brioche

le lait = milk

le jus d'orange = orange juice

Les adjectifs = adjectives

beau/belle = beautiful

vieux / vieille = old

neuf/neuve = new / brand new

confortable = comfortable

démodé = old-fashioned

joli = pretty

nouveau/nouvelle = new

gros(se) = big (animals/objects) fat

spacieux/se = spacious

agréable = pleasant

Near Future Tense A reminder

aller	+	infinitive
Je vais		manger
I am going		to eat

Tu vas = you are going
Il/elle va = he/she is going
On va = we are going
Ils/elles vont = they are going
On va acheter de la pizza - we are going to buy pizza

Perfect tense—er verbs

avoir	+	past participle
J'ai		mangé
I have		eaten

Tu as = you have
Il/elle a = he/she has
On a = we have
Ils/elles ont = they have
On a acheté de la pizza we have bought pizza

Vocabulary to talk about language learning in cycle 2

Irregular verbs—verbs that do not follow the grammar rules

Partitive article - used to say "some" & here with some prepositions

Near future - to express what you are "going to do"

eg: I am going to eat.....

Comparative - an adjective used to compare eg—bigger than, smaller than

Preposition - a word which tells you where something is.

Les Prépositions

Dans = in

devant = in front of

derrière = behind

entre = between

sous = under

en face de = opposite


sur = on

À côté de = next to

À droite de = on the right


à gauche de = on the left of


MFL – French – Knowledge Organiser 3





Knowledge Organiser Cycle 3 Year 8 French Voyage Ados... Travel, Tourism and Discovery

In this cycle of work I will go on a virtual visit of Paris. I will learn how to talk about a visit using three time frames
The assessment of this cycle of work will be through an extended piece of writing.









Numbers over 60

60= soixante
61 = soixante-et-un
62 = soixante-deux
70 = soixante-dix
71 = soixante-et-onze
72 =soixante-douze
80= quatre-vingts
81 = quatre-vingt-et-un
82= quatre-vingt-deux
90 = quatre-vingt-dix
91 = quatre-vingt –onze
100=cent

Words to narrate

Aujourd'hui = today
hier =yesterday
avant-hier =the day before yesterday
demain = tomorrow
Puis = then
Ensuite = next
Après ça = after that

Structures:

On peut = you can
On ne peut pas = you cannot
Aller+infinitive to say what you are going to do:
Je vais manger du chocolat!
I am going to eat chocolate
Perfect tense—correct part of avoir/ être +
er verbs—remove er add é
ir verbs—remove ir add i
re verbs—remove re add u

Words

aller+ infinitive = going to do (near future)
la cathédrale = the cathedral
le musée = the museum
le feu d'artifice = the fire works
la tour = the tour
les grands magasins = the department stores
la rivière = the river
les sites touristiques = the tourists' sites
les bateaux moches = sight seeing boats
les places = town squares
le syndicat d'initiative = Tourist Information Office
des souvenirs = souvenirs
cartes postales = postcards
faire la fête-vitrine = to go window shopping
Envoyer = to send
allez tout droit = carry straight on
Tournez = turn
(c'est) à gauche/à droite = (it's) on the left/ the right
première/ deuxième/ troisième etc rue 1st/ 2nd/ 3rd street
Continuez = carry straight on
Jusqu'au rond-point/ aux feux = to the roundabout
traversez le pont = cross the bridge
attendre, = to wait for vendre = to sell
Finir = to finish choisir = to choose

Vocabulary to talk about language in cycle 3

Present tense
Infinitive
Perfect tense
Auxiliary verb
Past participle
Near future (tense)

Aller = to go

Je vais = I am going
Tu vas = you are going
Il/elle/on va = he/ she/ we are going
Nous allons = we are going
Vous allez= you are going
Ils/elles vont = they are going

Key Past Participles:

J'ai attendu = I waited
J'ai vendu = I sold
J'ai fini = I have finished
J'ai choisi = I finished
J'ai fait = I did
J'ai vu = I saw
J'ai découvert = I discovered
Je suis allé(e) = I went
Je suis resté(e) = I stayed

Be sure your opinion sparkles: C'était comment, le voyage? What was the trip like? J'ai trouvé ça =I found that

marrant = funny nul = rubbish
intéressant = interesting dégoûtant= disgusting

World Music 1

Irish Jig Composition

6/8 metre

6 quaver beats per bar.

Compound time

Where the pulse can be counted in 3s.

Fiddle

Irish violin.

Accordion

A keyboard instrument that uses wind to produce the sound.

Phrasing

A way of structuring a melody to create balanced lines.

Jig

A lively dance, played in 6/8. Usually instrumental.

Indian Raga

Rag / Raga

Indian musical scale used to create a piece of music.
A piece of Indian classical music.

Tala

A rhythmic cycle used in Indian Raga, often including improvisation.

Sitar

Popular Indian string instrument. Plays the melody.

Tambura

An Indian string instrument used to play the drone.

Tabla

An Indian percussion instrument with two

Bhangra

Popular Indian music style.

Music – Knowledge Organiser 2

Ensemble Skills



Performance Skills 2



Ensemble

A group of musicians, actors, or dancers who perform together.

Pop Song Structure (Strophic Form)

verse-chorus-verse-chorus

It is a song structure in which all verses are sung to the same music.

Riff

A short repeated phrase in popular music, typically used as an introduction or refrain in a song.

Chorus

A section of a song which is repeated after each verse using the same lyrics and music.
The chorus is the part of the song that summarises the lyrics, and often includes the song title.

Verse

A section in a song that is repeated, each time with different lyrics.
The verse is the **part of the song that tells a story**

Rehearsal

The process of practising either as a group or alone.

Score

A written representation of a musical composition showing all the vocal and instrumental parts arranged one below the other.

Performance Directions

A series of instructions for a musician or musicians relating to a piece of music and how to play it.

Percussion

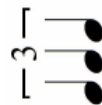
Musical instruments played by striking with the hand or with a stick or beater, or by shaking, including drums, cymbals, xylophones, gongs, bells, and rattles.

Tie

'Ties notes together'

A curved line connecting the heads of two notes of the same pitch, indicating that they are to be played as a single note with a duration equal to the sum of the individual notes' values.

Triplet



Triplets are a group of three notes, or notes and rests that are played in the same time as two notes of the same value.

Music – Knowledge Organiser 3

Reggae (Performing) **Popular Studies 1** Reggae (Composing)



Off-beat

A syncopated rhythm where the stress is on beat 2 and 4 or in-between the beats.

Syncopation

An irregular rhythm that is against the beat.

Riff

A short repeated phrase in popular music, typically used as an introduction or refrain in a song.

Rastafarianism

A religion in Jamaica where people believe in freedom and democracy. They are known for wearing red, green and gold.



Chords / Chord Progression

A group of two or more notes to create an accompaniment.
A pattern of different chords played one after another.

Lyrics

Song words to accompany a melody. Lyrics usually rhythm and are sang in rhythm.

Texture

Layers of sound in a composition.

Dynamics

Volume of a piece of music or sounds.

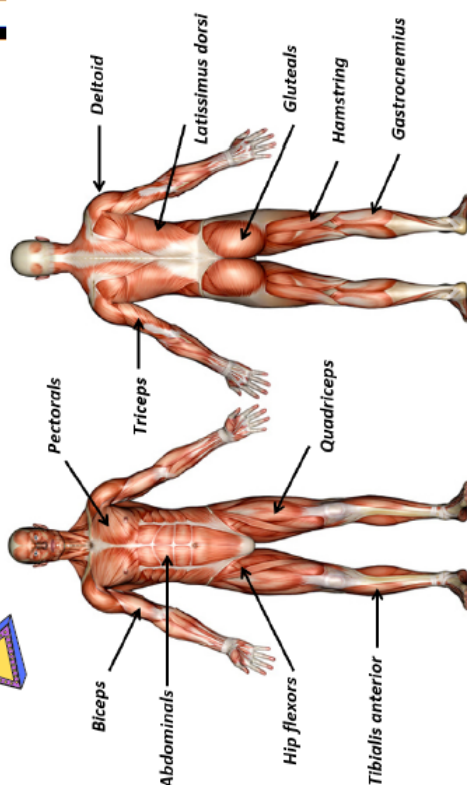
Piano - soft
Forte - loud

Physical Education – Knowledge Organiser 1

KS3

Fitness

The Muscles



Components of Fitness

Agility - The ability to move and change direction quickly, at speed, whilst maintaining control.

Balance - The ability to keep the body stable by maintaining the centre of mass over the base of support. There are two types of balance: Static: A balance is performed with little or no movement. E.G a handstand.

Dynamic: A balance is performed when movement takes place. E.G a cartwheel.

Cardiovascular endurance - The ability of the heart and lungs to supply oxygen to the working muscles.

Flexibility - The range of movement possible at a joint.

Muscular endurance - The ability of a muscle or muscle group to undergo repeated contractions, avoiding fatigue.

Power - Strength X Speed

Reaction time - The time taken to start responding to a stimulus.

Speed - Distance ÷ time.

Strength - The ability to overcome resistance

Coordination - The ability to use two or more different parts of the body together, smoothly and efficiently.

Types of Training

Circuit Training

Involves completing a series of exercise, called stations, which are completed one after another, with a brief period of rest inbetween.

Interval Training

Involves alternating between periods of work and periods of rest.

Static Stretching

Involves holding a stretch for up to 30 seconds.

Plyometric Training

Involves high-impact exercises that teach the muscles to perform their maximum contractions faster; to be more powerful. E.G jumping, hopping and bounding.

Fartlek Training

Fartlek is a Swedish word meaning 'speed play'. It involves periods of fast work with intermittent periods of slower work.

Continuous Training

Involves working for a sustained period of time without rest.

Weight Training

Weight training involves the use of weights or resistance to cause adaptations to the muscles.

Repetitions

The number of times an individual activity is performed.

Sets

A group of repetitions.

Maximum heart rate =

220-age

Aerobic

Anaerobic

Physical Education – Knowledge Organiser 2

The Netball Court

Goal Shooter (GS) - To score goals and to work in and around the circle with the GA.

Goal Attack (GA) - To feed and work with the GS and to score goals.

Wing Attack (WA) - To support the circle players, giving them shooting opportunities.

Centre (C) - To take the centre pass and to link the defence and the attack.

Wing Defence (WD) - To look for interceptions and prevent the WA from feeding the circle.

Goal Defence (GD) - To win the ball and reduce the effectiveness of the GA.

Goal Keeper (GK) - To work with the GD and to prevent the GA/GS from scoring goals.

Netball

Player positions

Lesson Overview

1. Footwork
2. Passing and receiving
3. Timing of pass
4. Attacking play
5. Shooting
6. Defensive play
7. Assessment

Footwork

A player can receive the ball...

1. With both feet grounded or jump to catch the ball and land with both feet at the same time. The player can then choose one foot to move (not both).
2. Landing on one foot then the other. The first foot is the landing foot and this foot cannot be moved, other than to pivot on the spot. The second foot can move.

If you break the footwork rule, a free pass will be awarded to the other team.

Rules of the Game

Held ball - A player is only allowed to hold the ball for 3 seconds. A free pass is awarded to the opposing team if the ball is held for longer than 3 seconds.

Obstruction - A player attempting to intercept the ball must be at least 3ft away from the player with the ball. The distance is measured from the landing foot of the player with the ball. If you are closer than 3ft, a penalty pass will be awarded.

Contact - This occurs when a players actions interfere with an opponent's play, this can be accidental or deliberate. This includes; physical contact, using any part of the body to limit an opponent's ability to move freely (pushing, tripping or holding), placing a hand on the ball held by an opponent, removing it from an opponent's possession or pushing the ball in to an opponent when holding it.

Over a third - The ball cannot be thrown over a complete third without being touched or caught by a player. A free pass shall be taken from where the ball crossed the second line (i.e where the ball shouldn't have been)

Replayed ball - A player can not; toss the ball in to the air and catch it again without it being touched by another player, catch a rebound from a shot on goal if it has not touched the post or another player, or pick it up again after losing control if it has not been touched by another player.

Offside - A player with or without the ball cannot move into an area of the court that is not designated for their position. This will result in a free pass to the other team.

Key Vocabulary

Passing - sending the ball

Receiving - catching the ball

Footwork - how you land when in control of the ball

Dodging - a way to change direction quickly

Defending - preventing the other team from gaining possession of the ball and scoring

Attacking - making an attempt to score

Marking - a way to prevent your opponent from receiving or passing the ball or shooting

Shoot - attempt to score a goal

Offside - moving into an area where you're not permitted

Interception - preventing a pass between players

Throw in - a free pass taken off court

Centre Pass - taken to start or restart the game

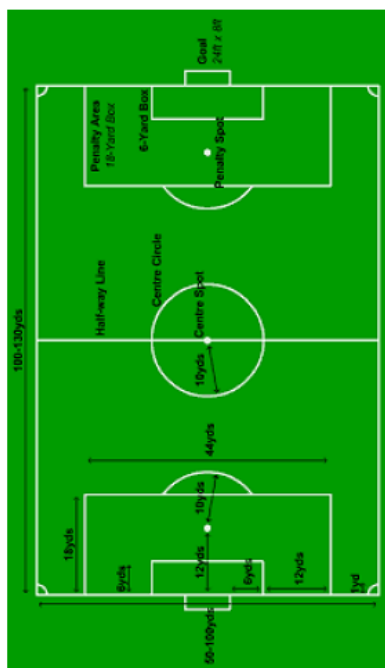
Free Pass - awarded when there is an infringement of the rules by a player

Penalty Pass - as above, when two players are involved

Goal Third & Centre Third - areas of the court

Physical Education – Knowledge Organiser 3

The Football Pitch



Key terminology

- Passing** - Sending the ball to another player
- Receiving** - Getting the ball from another player
- Dribbling** - Running with the ball in an attempt to beat an opponent
- Jockeying** - Is the defender's skill of keeping between the attacker and their intended target (usually the goal)
- Tackling** - To dispossess an opponent of the ball
- Marking** - A way to prevent your opponent from receiving or passing the ball, or taking a shot
- Attacking** - Making an attempt to score
- Crossing** - A cross is a medium to long range pass from a wide area of the field towards the opposition's goal
- Shot** - Attempting to score a goal
- Offside** - Moving into an area where you're not permitted
- Interception** - Preventing a pass between players

Football

Lesson Overview

1. Passing and receiving
2. Dribbling and turns
3. Shooting
4. Heading
5. Attacking
6. Defending
7. Assessment



KS3

- Goalkeeper** - To prevent the opposing team from scoring.
- Defenders** - A defender is an outfield player whose primary role is to prevent the opposing team from scoring goals.
- Midfielders** - Midfielders are generally positioned on the field between their team's defenders and forwards.
- Strikers** - Strikers are the players on a football team who play nearest the opposing team's goal, and are therefore the most responsible for scoring goals.

Rules of the Game



- Starting the game** - The game begins with the toss of a coin, and the winning captain decides which goal to defend or to take the first kick off.
- Method of scoring** - A goal is scored when the ball has completely crossed the goal line, provided that no other infringements have taken place.
- Fouls** - A foul has been committed if a player trips, kicks, pushes, charges another player recklessly, striking of any kind, makes a tackle but connects with the player before the ball, deliberately handles the ball, obstructs an opponent or prevents them from releasing the ball.
- Freekicks** - Used to restart play after a foul or infringement has taken place. They are usually taken from the place from which the offence was committed. Free kicks can be direct (where the free kick taker may score directly) or indirect (where the free kick taker and a second player must touch the ball before a goal can be scored).
- Penalty kick** - A penalty kick is awarded for a foul committed by a defending player in their own penalty area. The kick is taken from the penalty spot and all other players except for the goal keeper and penalty taker must be at least 9.15m from the spot.

Religious Education – Knowledge Organiser 1

Threshold Concept Religious Education Curriculum Year 8 Cycle 1: Creation, Preservation and Death

Key Tier 3 Terms

Creation: The act of making something; in religion it commonly refers to the beginning of the universe.

Environment: The place in which we live.

Stewardship: Our responsibility to look after something on behalf of someone else; in religion it refers to how humans look after the earth on behalf of God.

Dominion: The power and authority to rule over the world.

Global Warming: A gradual increase in overall temperature of the earth, linked to the greenhouse effect.

Pollution: A substance in the environment that has harmful or poisonous effects.

Deforestation: Clearing wide areas of trees.

After Life: Where we go when we die on this planet.

Heaven: An afterlife reward, with God.

Hell: An afterlife location of eternal suffering, a punishment given to those who do not follow God's teachings.

Key Quotes and Teachings

What two word Bible quote summarizes stewardship?

'take care' (Genesis 2:15).

What two word Bible quote summarizes dominion?

'rule over' (Genesis 1:28).

What Bible quote summarizes what Hell is like?

'Fiery lake of burning sulfur'. (Revelation 21:8).

What Bible quote, for some Liberal Christians, implies God caused the Big Bang (a theory often associated with Scientist Stephen Hawking)?

'Let there be light.' (Genesis 1:3).

What have I studied this Cycle?

Creation stories:



Christians believe God made the world over six days, resting on the seventh. Literalist Christians take these days to mean 24 hour periods whereas Liberal Christians see them as time periods.



Many Atheists and some theists believe in the Big Bang theory, when 13.8 billion years ago there was a very hot expansion that cooled to form stars and galaxies - either by chance or God's direction...

How should we treat the planet?

Most religious believers see us as stewards, so we should not abuse our dominion and address the following concerns:



Deforestation



Air pollution



Land pollution



Water pollution



Global warming

Where do we go when we die?

For many religious believers where we go depends on God's judgment, God is the ultimate judge as he can give us the ultimate reward or punishment – further he is omniscient so can see everything we do.

Christians and Muslims: God sends the good to Heaven and the wicked to Hell.

Hindus: Believe in the rebirth of a soul into another life, samsara, until they reach Moksha.



Can someone who sins access Heaven?

If someone repents for their sins, they can access Heaven - if they are genuinely sorry!

Focus Threshold Concepts of Cycle 1

TC1: To understand the different interpretations of how life began and how life ends.

TC2: To understand the varying levels of adoption of stewardship and dominion.

TC5: To understand the secular based challenges to religious understandings of the start of life, end of life and actions in life.

TC6: To understand the influence of beliefs about life and the environment, to how to treat it.

Religious Education – Knowledge Organiser 2

Threshold Concept Religious Education Curriculum Year 8 Cycle 2: Religious Expression

Key Tier 3 Terms

Freedom of Religious Expression: A person's right to believe in and practice a religion of their choice.

Tolerance: To allow the existence of something that you personally dislike without interference.

Human Rights: Rights that every human being have, simply because we are human beings.

Cross: A symbol of Christianity, representing Jesus' sacrifice.

Burqa: A long piece of clothing covering the whole body from head to feet worn by some Muslim women.

Niqab: A veil worn by some Muslim women covering all the face apart from the eyes.

Hijab: A head scarf worn in public by some Muslim women.

Haram: Forbidden, not allowed, in Islamic law.

Halal: Permissible, allowed, in Islamic law.

Kirpan: A small sword worn as one of the five Ks of Sikhism.

Key Quotes and Teachings

Why does the Quran say about Muslims covering their bodies?

'They shall not reveal any parts of their bodies, except which is necessary' (Quran 24:31).

What does the Bible say about body modifications?

'You shall not make any gashes in your flesh for the dead or tattoo any marks upon you'. (Leviticus 19:28).

What is Article 18 from the UN Human Rights?

'Everyone has the right to freedom...of religion...teaching, practice, worship and observance.'

What have I studied this Cycle?

Different styles of religious dress:



Christianity



Islam



Judaism



Sikhism

Challenges to body modesty:



Tattoos and piercing are increasingly common in today's society and many religious believers accept them. However, some view them as going against scriptural teachings.

MY RELIGION IS NOT A FASHION STATEMENT

Religious items of clothing are often seen in fashion retail shops or even fancy dress shops. This offends many religious believers as it undermines the purpose of wearing items of religious importance.

Religious food practices:

Buddhism: There are not set religious dietary laws, though many follow a lacto-vegetarian diet and fast occasionally.

Christianity: There are not set religious dietary laws, many eat meat as God told Noah he could.

Hinduism: Many follow a lacto-vegetarian diet, beef is strictly prohibited as the cow is considered sacred.

Islam: Eat what is halal and not what is haram – pig is haram regardless of how it is killed.

Judaism: Follow kashrut dietary laws, so eat only kosher foods – like Islam pig is not permitted.

Sikhism: Many Sikhs are vegetarian, though they don't have to be – but they cannot eat ritual meat – halal/kosher meat.

Religious views on alcohol and drugs:

All religious believers oppose the use of illegal substances, as it harms our bodies that God created for us. Further they do not support a harmonious society, as the use of drugs is linked to other organized crimes also. Alcohol is used in some Christian and Jewish celebrations, but completely prohibited in Islam.



Focus Threshold Concepts of Cycle 2

TC2: To understand that religious dress, food and lifestyles have varying levels of adoption.

TC3: To understand the misconceptions surrounding religious dress and food.

TC7: To understand the variety of sources and their teachings on food, dress and lifestyle.

TC8: To understand the symbolisms behind religious dress and lifestyle.

Religious Education – Knowledge Organiser 3

Threshold Concept Religious Education Curriculum Year 8 Cycle 3: Social Justice and Equality

Key Tier 3 Terms

Prejudice: Having a preconceived opinion that is not based on reason or actual experience. When we pre-judge.

Discrimination: Acting negatively on a prejudgment of a person.

Positive Discrimination: Treating people more favourably because have been discriminated against in the past or have disabilities.

Racism: Discrimination based on someone's ethnicity.

Stereotype: A widely held but fixed and oversimplified idea of a particular person or group.

Persecution: Hostility and ill-treatment of people.

Poverty: The state of being extremely poor.

Charity: An organization set up to provide help and raise money for those in need.

Zakah: Charity in Islam, one of the five pillars.

Alms: Money or food given to poor people.

Key Quotes and Teachings

What Bible quote implies we are all made equal?

'So God created mankind in his own image' (Genesis 1:27).

What Bible quote summarizes the ideas we are all equal in the eyes of Jesus?

'There is neither Jew nor Gentile, neither slave nor free, nor is there male or female, for you are all one in Christ Jesus'. (Galatians 3:28).

What teaching supports the idea we should treat others how we wish to be treated?

The Golden Rule – 'Do unto others as you would have them do unto you' (Matthew 7:12).

What have I studied this Cycle?

Prejudice and discrimination



Prejudice occurs, for example in the work place when someone is reading through CVs. However, prejudice is often based on stereotypes – and therefore leads to discrimination

Discrimination can be positive, such as giving disabled people access to parking spaces closer to a venue – however, it is often negative and leads to persecution, as seen in the below examples.

Examples of studied activists who fought against discrimination:



Martin Luther King (Racism)



Libby Lane (Gender)



Oscar Romero (Religion)



Nick Vujicic (Disability)

What are the causes of poverty?



Living in conflict



No access to work



Poor infrastructure



Poor food or water



No access to school

Religious responses to poverty:

Charity organizations such as - Christian Aid, TearFund, Cafod, Islamic Relief.

Personal actions: donating to charity, working in a soup kitchen and donating food/clothes.

Focus Threshold Concepts of Cycle 3

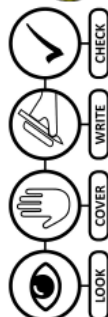
TC3: To understand the misconceptions surrounding teachings about discrimination.

TC4: To understand how religious beliefs towards equality, prejudice and discrimination can be adopted by non-religious believers.

TC5: To understand the Secular based challenges that question traditional religious views.

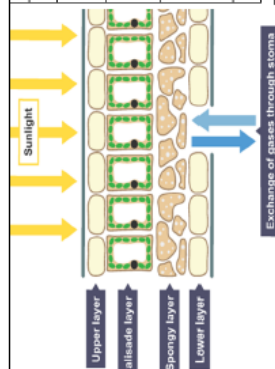
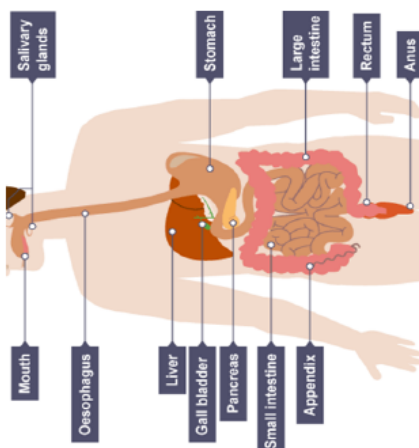
Science - Biology – Knowledge Organiser 1

Knowledge Organiser Year 8 A Biology



Glossary	
Enzymes	Proteins that speed up the body's chemical reactions.
Digestion	The process of breaking down large food molecules into smaller ones and absorbing them into the blood.
Producer	Green plant or algae that makes its own food using sunlight.
Food chain	Part of a food web, starting with a producer, ending with a top predator.
Pyramid of number	The population of each organism in a food chain.
Photosynthesis	A process where plants and algae use the energy from light to make glucose from carbon dioxide and water.
Chlorophyll	The green pigment found in plants and algae that absorbs light energy.
Stomata	Pores in the bottom of a leaf which can open and close to let gases in and out.
Starch	A complex carbohydrate used by plants to store the glucose made in photosynthesis.
Iodine	An orange/brown chemical which turns blue/black in the presence of starch.

Enzymes break large molecules into smaller ones.
Amylase and other carbohydrase enzymes break down **starch** into **sugar**. This happens in the mouth and small intestine.
Protease enzymes break down **proteins** into **amino acids** in the stomach. Stomach acid helps the enzymes to work properly and kills microorganisms.
Lipase enzymes break down **lipids** (fats and oils) into **fatty acids** and **glycerol** in the small intestine. Bile breaks fat droplets into smaller ones so that lipase enzymes work more quickly.

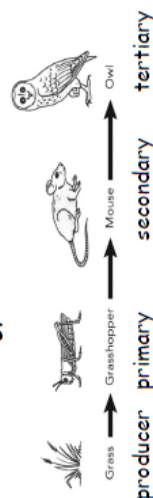


Pyramids of number show the number of **organisms** in a **food chain**. Each bar in a pyramid of number represents the number of organisms at each **trophic** level. The bigger the bar the more organisms there are. Not all pyramids of number are shaped like a pyramid.



Plants make their own food in **photosynthesis** which takes place in organelles called **chloroplasts**. Chloroplasts contain a green substance called **chlorophyll**. This absorbs the light energy needed to make photosynthesis happen. Plants and algae can only carry out photosynthesis in the light
 The word equation for photosynthesis is:
carbon dioxide + water → glucose + oxygen

Food chains always start with a **producer**. The arrows in a food chain or food web show the direction of **energy transfer**.



Food Tests		
Test for...	Description	Colour change
Starch	Add a few drops of iodine solution.	Orange to Blue-black
Simple sugars	Add Benedict's solution, heat to 80°C in a water bath.	Blue to orange-red
Lipids	Add ethanol, pour mixture onto water in another test tube.	White emulsion (layer) forms in water
Proteins	Add biuret reagent.	Pale blue to lilac

Nutrient	Use in the body	Good sources
Carbohydrate	Provide energy	Cereals, bread, pasta, rice, potatoes
Protein	Growth and repair	Fish, meat, eggs, beans, pulses, and dairy products
Lipids (fats and oils)	Provide and store energy. Insulation against cold	Butter, oil and nuts
Minerals	Needed for many processes such as muscle contraction	Salt, milk (for calcium) and liver (for iron)
Vitamins	Prevent deficiency diseases such as scurvy and anaemia	Fruit, vegetables, dairy foods
Dietary Fibre	Provide roughage to keep food moving through the gut	Vegetables, bran
Water	To keep cells hydrated	Water, fruit juice, milk

Science - Biology – Knowledge Organiser 1

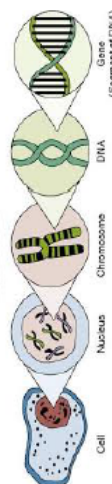
Knowledge Organiser Year 8 B Biology



Glossary

Adaptation	How an organism is suited to its specific habitat.
Community	The total number of individuals of all species present in a given area.
Competition	Organisms compete with each other for resources e.g. food, water, territory etc.
Environment	The conditions where an organism lives - both living & non-living factors.
Habitat	The specific location which provides a living organism with all of its requirements.
Interdependence	Species depend on each other for food, shelter, pollination, seed dispersal etc. Removing a species can affect the whole community.
Population	The total number of individuals of one species in a given area.
Species	A group of individuals that are capable of reproducing fertile offspring.
Variation	The differences between individuals of the same or different species.

INSIDE THE CELL



Cells: The basic unit of life. Most cells contain a nucleus.

Nucleus: A large organelle containing the chromosomes/genetic information of a cell.

Chromosomes: Coils of DNA. Human cells contain 46 chromosomes.

DNA: The genetic code for cells to build proteins.

Gene: A section of DNA coding for one protein.

Classification: This is the process of placing living organisms into groups based on shared characteristics.

Invertebrates: Animals without backbones.

Vertebrates: Animals with backbones.

- Mammals
- Birds
- Fish
- Reptiles
- Amphibians

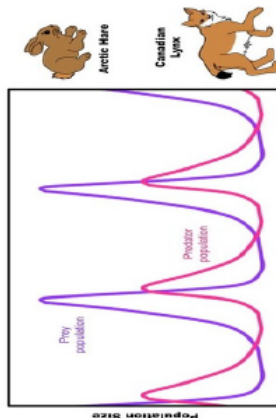


When conditions are good for the prey, the population will increase.

The **population of the predator** increases at a later point as there is more food available.

The population of the **prey** then decreases as there are more predators.

As there are fewer prey, the number of predators decreases.



Adaptation Cactus in dry, hot desert **conditions**.

No leaves to reduce water loss. Wide deep roots for absorbing water. Polar bear in extreme cold **artctic conditions**. Hollow hairs to trap layer of heat. Thick

Genetic variation: Variation caused by the differences in the DNA

Environmental variation:

Variation caused by the differences in the diet, lifestyle etc. of an individual.



Sampling techniques		
Quadrats	Organisms are counted within a randomly placed square	
Transects	Organisms are counted along a belt (transect) of the ecosystem.	



Experimental methods are used to determine the distribution and abundance of a species.

One pair of chromosomes carry the genes that determine sex

	Female	Male
	XX	XY
Gametes	X	Y
	XX	XY
	XX	XY

50% probability of a male or female child.

Using a Punnett square (using mouse fur colour as an example)

Parent phenotype	Black fur	White fur
Parent genotype	BB	bb
What gametes are present	In each egg: B	In each sperm: b

Gametes	B	b
B	Bb	Bb
b	Bb	bb

100% probability of black fur offspring.

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Science - Chemistry – Knowledge Organiser 2

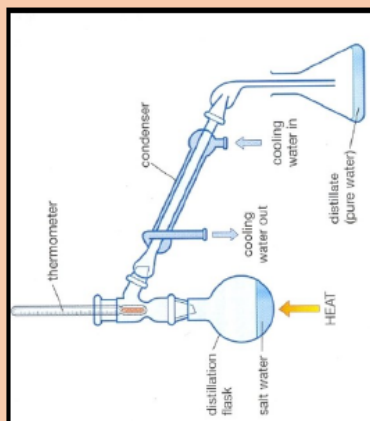
Knowledge Organiser Year 8B Chemistry



Glossary	
Solute	The solid or gas that dissolves in a liquid.
Solvent	The liquid in which a solid or gas dissolves.
Solution	A mixture of a liquid with a solid or gas.
Dissolve	The particles of solute are evenly spread through the solvent.
Solubility	The mass of a substance that dissolves in 100g of water.
Soluble	A substance that will dissolve.
Insoluble	A substance that will not dissolve.
Mixture	Made up of substances that are not chemically joined together.

Distillation

- Separates **solvent** from **solution**.
- Solution is heated.
- At 100°C water **boils** and the particles gain enough energy to become a gas (water vapour).
- Water vapour rises and travels past the thermometer into the **condenser**.
- The thermometer identifies the gas from its **boiling point**.
- The condenser cools the water vapour so that it **condenses** back to liquid water.

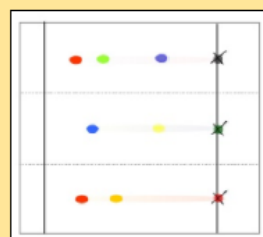
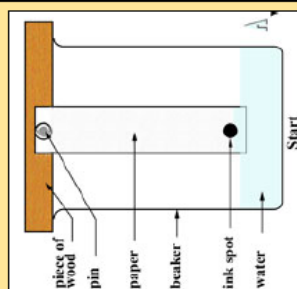


Chromatography

- Separates **soluble** solids.
- The more soluble the solid the higher up the paper it travels.
- The number of spots equals the number of solutes.
- Spots of the same height are the same solute.

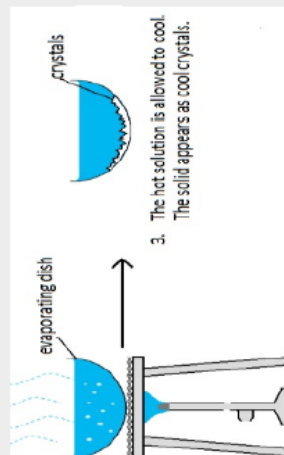
Method

- Draw pencil line. Put spot on line.
- Dip paper (below dot) into the solvent.
- Leave the solvent to rise up to almost the top of the paper.
- Remove paper from the solvent and compare heights of spots



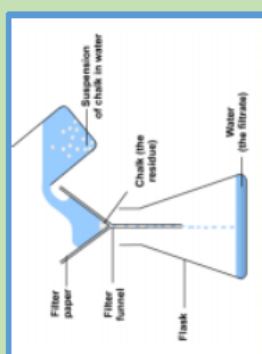
Evaporation

- Separates a **soluble solid** from a **solvent**.
- The solvent is heated and evaporates until the solution is **saturated** when hot.
- As the solution cools the solute **crystallises**.
- The solvent is left to **evaporate**.



Filtration

- Separates an **insoluble solid** from a **liquid**.
- The solid pieces are too big to fit through the holes in the filter paper.



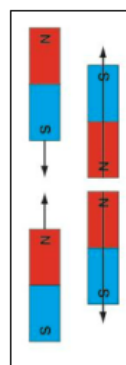
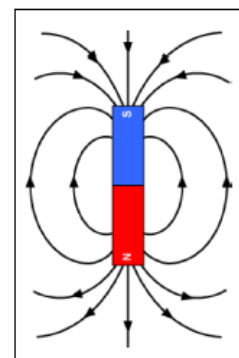
Science - Physics – Knowledge Organiser 3

Knowledge Organiser Year 8A Physics

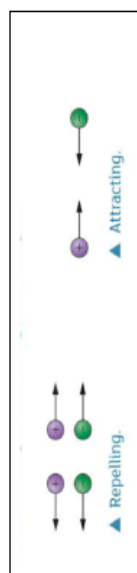
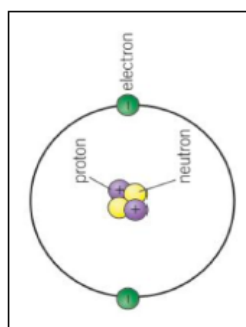


Glossary	
Battery	Two or more electrical cells joined together.
Cell	A chemical store of energy, which provides the push that moves charge around a circuit.
Current	The flow of electrical charge (electrons) around a complete circuit per second. Measured in Amps (A) using an ammeter.
Parallel circuit	A circuit in which there are two or more paths or branches for the current.
Potential difference	A measure of the push of a cell or battery, or the energy that the cell or battery can supply. Measured in Volts (V) using a voltmeter.
Resistance	How difficult it is for current to flow through a component in a circuit. Measured in Ohms (Ω).
Series circuit	A circuit in which components are joined in a single loop.

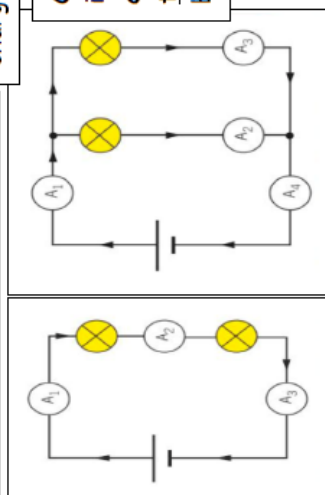
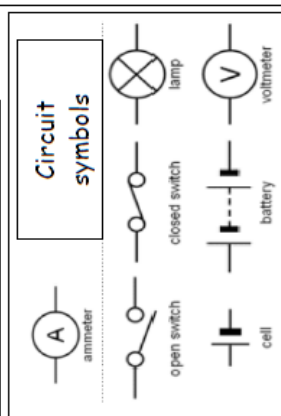
When you complete a circuit, charged particles or charges move in the metal wires. The **cell** or **battery** pushes the charge around the circuit. The **battery** does not produce the charges that move. They were already there in the wires. In metals the charged particles are electrons. We call the flow of charges **current**.



$$\text{current (A)} = \frac{\text{potential difference (V)}}{\text{resistance } (\Omega)}$$

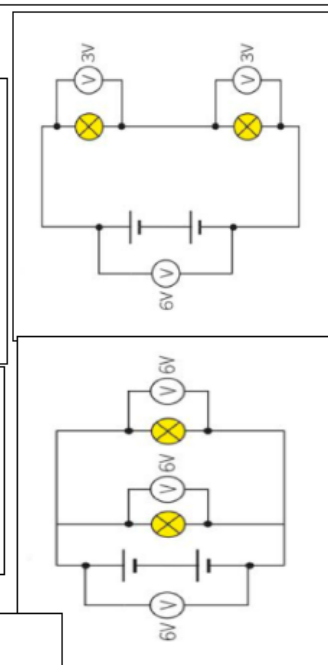


Static electricity. There are 2 types of electric charge -positive and negative. Atoms have the same number of **protons** and **electrons**, so an atom has no overall charge. It is neutral. When you rub a balloon on your jumper some **electrons** are **transferred** from the jumper to the balloon. The balloon now has an overall **negative charge**. Your jumper has an overall positive charge. They will **attract**.



Current is the same everywhere in a **series circuit**. In **parallel circuit** the **current splits** down the **branches** and then comes back together again.

A wire with an electric current flowing through it has a magnetic field around it. You can make an **electromagnet** stronger by having more turns on the coil, increasing the current through the wire or using a magnetic material such as iron as a core. Electromagnets can be turned on and off so they are temporary.



Science - Physics – Knowledge Organiser 3

Knowledge Organiser

Year 8B Physics

Glossary	
Conduction	The transfer of thermal energy through particles in solids.
Convection	The transfer of thermal energy through particles in fluids.
Gears	Simple machines that make it easier to do work.
Kinetic	Energy contained in moving objects.
Non-renewable	Energy resources that cannot be reused and will eventually run out.
Power	The amount of energy transferred between stores in 1 second, measured in Watts.
Thermometer	A device that measures temperature, in degrees Celsius.

Thermal energy can be transferred by conduction, convection or radiation.

Convection: transfer of heat in fluids.

Particles spread out when hot and become less dense, because particles gain more kinetic energy, and vibrate more or faster.

Conduction: transfer of heat in solids.

Energy is transferred when particles collide.

Infrared radiation transfers energy without particles - it is a wave.

Radiation

best emitter → worst emitter
best absorber ← worst absorber

Renewable energy resources produce greenhouse gases when built, not when used, and will not run out. Produced by wind, water, sunlight and tides.

Non-renewable energy resources produce greenhouse gases such as carbon dioxide: Produced by burning fossil fuels, coal, oil and gas, in power stations, turning water into steam which turns a turbine which spins a generator to create a current.

Law of conservation of energy: energy cannot be created or destroyed, only transferred.

total energy before = total energy after

Energy, measured in joules (J), can be transferred to other useful energy stores or dissipated.

Energy stores can be: **chemical** (food, fuel, batteries), **kinetic** (movement), **thermal** (heat), **gravitational**, **magnetic**, **electric** or **elastic**.

Work done (J) = force (N) × distance (m)

When work is done by a force, it results in an energy transfer and leads to energy being stored by an object.

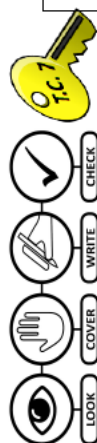
Simple machines like levers and gears can make it easier to do work but you still get the energy out that you put in.

Temperature measures the **average energy** of the particles. Heat / **thermal energy** measures the **total energy** of the substance.

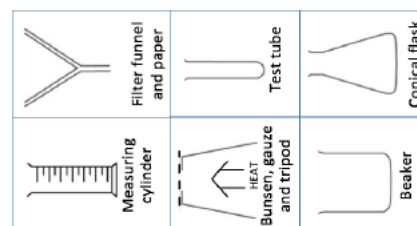
An object at a higher temperature transfers thermal energy to the surroundings until they are at the same temperature. This is called reaching **equilibrium**. The **thermal conductivity** of a material alters how quickly equilibrium is reached.

Science – Working Scientifically 1

Knowledge Organiser Planning



Glossary	
Prediction	A statement suggesting what will happen in the future, based on observation, experience or a hypothesis.
Hypothesis	A proposal intended to explain certain facts or observations.
Independent variable	Variable for which values are changed or selected by the investigator.
Dependent variable	Variable of which the value is measured/recorded for each and every change in the independent variable.
Control variables	Variable which may affect the outcome of the investigation and therefore has to be kept constant or at least monitored.
Range	The maximum and minimum values of the independent or dependent variables.
Repeats	Repeat the investigation enough to identify anomalous results.
Hazard	Anything that can cause harm
Risk	Likelihood hazard would cause significant harm.
Control measures	What to do to minimise risk.



Apparatus

- 1) Draw in pencil
- 2) Draw with a ruler
- 3) Draw in 2D
- 4) Do not put lids on open apparatus.
- 5) No waves in liquids.

How can I safely investigate a question?

Prediction – from observations e.g. sugar dissolves in hot drinks easier than cold

Hypothesis – write a question that we can test using this writing frame:

As the **(independent variable)** increases the **(dependent variable)** (increases, decreases, stays the same...)

e.g. as the **temperature** increases the **volume of sugar** that dissolves increases.

Research – explain the science behind your hypothesis.

- Use the connectives 'because'
- Use as many science key words as possible

e.g. At higher temperatures the solvent particles gain kinetic energy, therefore the forces holding the solute particles together are more readily broken.

Method – how to carry out the investigation e.g.

1. Using a 100cm³ measuring cylinder add 100cm³ of water into a 250cm³ beaker.

2. Using a water bath, heat the water to 30°C.

3. Add a spatula of sugar to the water and stir 3 times.

4. Repeat until no more sugar dissolves.

5. Record the number of spatulas needed.

6. Repeat two more times.

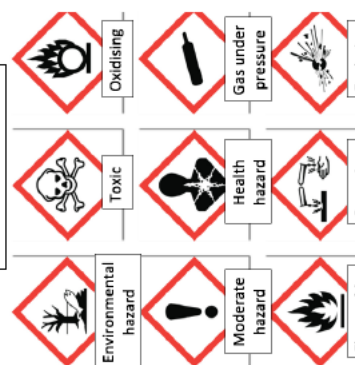
7. Repeat again at different temperatures (40, 50, 60 and 70°C).

Imperative sentences

Numbered bullet points

Range and intervals

Hazard symbols



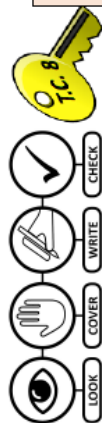
banned words	change to...
amount	mass/volume/concentration' etc
pronouns i.e. it	the proper noun i.e. beaker

Risk Assessment is a judgment of how likely it is that someone might come to harm if a planned action is carried out.

Hazard	Type of hazard	Control measures
Bunsen Burner	Burns	Light on a yellow flame.

Science – Working Scientifically 2

Knowledge Organiser Obtaining



Glossary	
Accurate	The data or results are close to the true value of what you are measuring.
Anomalies	values in a set of results which are judged not to be part of the variation caused by random uncertainty.
Calibration	Marking a scale on a measuring instrument. For example, placing a thermometer in melting ice to see whether it reads zero, in order to check if it has been calibrated correctly.
Data	Information, either qualitative or quantitative, that has been collected.
Interval	The quantity between readings, e.g. 11 readings equally spaced over 1m = an interval of 10 cm.
Precise	Measurements where there is very little spread about the mean value. The repeat measurements are close together.
Reliable	The data has no errors and the investigation data is repeatable and reproducible.
Repeatable	The person repeats the investigation using the same method/equipment and obtains the same results.
Reproducible	Another person, using different equipment or techniques gets the same results as the investigator.
Resolution	The smallest change in the quantity being measured (input) of a measuring instrument that gives a perceptible change in the reading.
True value	The result obtained in an ideal measurement.

How do I collect and record data to answer a question?

Drawing results tables – draw out before the collecting data

Mass / kg	Test 1	Test 2	Test 3	Mean
0.01				
0.02				
0.03				
0.04				
0.05				

Independent variable goes in the left hand column.

Dependent variable goes in the right hand column.

Headings should have titles and units.

Repeats and means under one heading

Add independent variable range and intervals.

Collecting data in the results table

Mass / kg	Test 1	Test 2	Test 3	Mean
0.01	3.3	3.4	3.5	
0.02	3.9	3.8	4.0	
0.03	4.9	5.1	5.0	
0.04	5.9	5.8	5.7	
0.05	6.5	6.6	6.4	

All data should be collected to same number of significant figures.

Tables should only have the units in the headings and NOT next to each number/result in the table.

Each different apparatus has a different resolution.

Digital apparatus: resolution is the last digit on the apparatus.



Analogue apparatus: interpolate between the graduated scales (read half way between the readings).



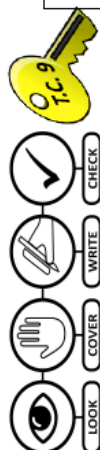
Each graduation is 0.1 cm
Resolution is half of 0.1cm = 0.05 cm
The reading here is 1.25 cm.

Correct apparatus for the job

If you need 40cm³ of a solution, you would not use a 10, 25 or 100cm³ measuring cylinder. You would use a 50cm³ measuring cylinder. Incorrect apparatus leads to larger errors in accuracy.

Science – Working Scientifically 3

Knowledge Organiser Analysing

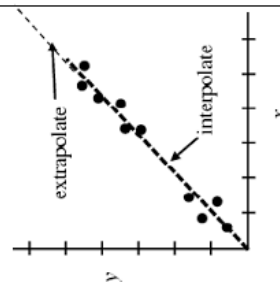


Glossary	
Validity	Suitability of the investigative procedure to answer the question being asked. For example, if temperature is the independent variable, only temperature must be changed in the investigation.
Categorical data	variables have values that are labels, eg names of plants or types of material.
Continuous data	variables can have values (called a quantity) that can be given a magnitude either by counting (as in the case of the number of shrimp) or by measurement (eg light intensity, flow rate etc).
Average mean	Add together all the numbers and divide by how many numbers there are. Don't include any anomalous results in the mean.
Bar chart	A way of summarising a set of categorical data.
Histogram	Is similar to a bar chart, but groups numbers into ranges.
Scatter graph	A way of summarising a set of continuous data.
Line of best fit	A way of showing a pattern of data on a scatter graph.
Interpolate	Estimate data between those collected (use the line of best fit).
Extrapolate	Estimate data beyond the data collected (continue the line of best fit).

Average Mean			
Mass / kg	Length /cm		
	Test 1	Test 2	Test 3
0.01	3.3	1.2	3.5

1. Test 2 is anomalous - ignore it.
2. Add test 1 and 2.
3. Divide by how many numbers there are.

$$= 3.3 + 3.5 = 6.8 / 2 = 3.4$$



- Line of best fit**
- Show the PATTERN of data.
 - Do not join data to data point.
 - Must be smooth.
 - Must be with a sharp pencil.
 - Should ignore anomalous data.

How do I present my results in the best way and explain what they mean?

Statement - State if your data agrees or disagrees with your hypothesis

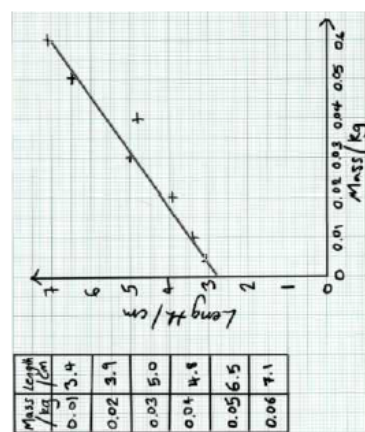
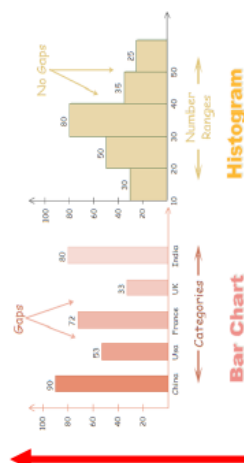
Conclusion - write a description of the pattern of results. Include data where possible:
As the (independent variable) increases the (dependent variable) (increases, decreases, stays the same...)

e.g. as the **temperature** increases the **volume of sugar that dissolves** increases. At 10°C the volume dissolved was 1 spoonful, at 50°C the volume was 5 spoonfuls.

Conclusion - explain the science behind the pattern of your results.

- Use the connectives 'because'
 - Use as many science key words as possible
- e.g. At higher **temperatures** the **solvent particles gain kinetic energy**, therefore the **forces holding the solute particles together are more readily broken**.

- Graphs**
- Doesn't matter landscape or portrait
 - Always include the **origin (0,0)**
 - Use the range of the independent variable to work out the **x-axis scale**.
 - Scales should be multiples of 1, 2 and 5 e.g. 20, 50, 0.1, 0.2 etc.
 - Scales must go up in regular **intervals** e.g. 5, 10, 15...
 - Label the graph with the same **titles** and **units** as the results table.

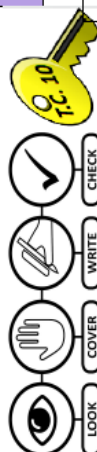


Y-axis
Dependent variable

X-axis
Independent variable

Science – Working Scientifically 4

Knowledge Organiser Evaluating



Glossary	
Measurement error	The difference between a measured value and the true value.
Random error	These cause readings to be spread about the true value, due to results varying in an unpredictable way from one measurement to the next.
Systematic error	These cause readings to differ from the true value by a consistent amount each time a measurement is made.
Zero error	Any indication that a measuring system gives a false reading when the true value of a measured quantity is zero.
Evidence	Data which has been shown to be valid.
Sketch graph	A line graph that shows the general shape of the relationship between two variables.
Uncertainty	The interval within which the true value can be expected to lie.

How can I make my method better?

Selection of **apparatus** can reduce error in reading.

For example: If you need to measure 40cm^3 of a solution, you would not use a 10, 25 or 100cm^3 measuring cylinder. You would use a 50cm^3 measuring cylinder.



How can I spot and deal with errors in my data?

The effect of **random** errors can be reduced by making more measurements and calculating a new mean.

temp/ $^{\circ}\text{C}$	test 1	test 2	test 3
10	15	53	

A third reading is needed to know if 15 or 53 is correct.

If a **systematic** error is suspected, the data collection should be repeated using a different technique or a different set of equipment, and the results compared.

This ammeter has a systematic error.

The needle doesn't return to zero, so all readings will be equally too low.



Controlling variables

Is there a control variable that you have not accounted for, that might explain potential errors?

For example: A water bath will maintain a constant temperature more effectively than a Bunsen burner.



Repeatable

Repeating the same method will allow identification of random errors.

Reproducible

Someone else repeating another valid method will allow accuracy to be identified if both investigations obtain similar patterns of results.

	Accurate	Not accurate (systematic error)
Precise		
Not precise (reproducibility error)		

Whenever a measurement is made, there will always be some **uncertainty** or doubt about the result obtained.

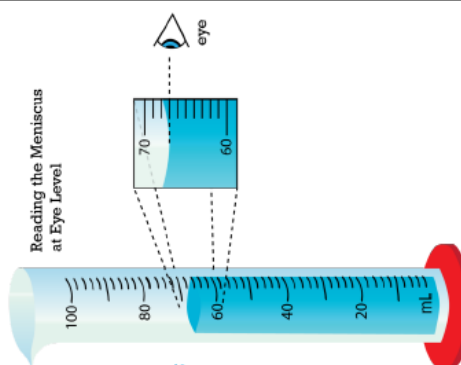
For example,

This reading is 67 cm^3 .

The intervals are 1 cm^3 apart.

The uncertainty is half an interval (0.5 cm^3).

The reading could actually be $66.5 - 67.5\text{ cm}^3$.





Great Wyrley Academy

Year 8

Self-Quizzing Templates

Self-Quizzing

Subject: _____ **Topic:** _____

Date: _____

[illegible]

Self-Quizzing

Subject: _____ **Topic:** _____

Date: _____

[illegible]

Self-Quizzing

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[illegible]

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[illegible]

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[illegible]

Self-Quizzing

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[illegible]

Self-Quizzing

Subject: _____ **Topic:** _____

Date: _____

This image shows a single page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page, leaving a small margin at the top. There is no handwriting or other markings on the page.

Self-Quizzing

Subject: _____ **Topic:** _____

Date: _____

[illegible]

Self-Quizzing

Subject: _____ **Topic:** _____

Date: _____

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Self-Quizzing

Subject: _____ **Topic:** _____

Date: _____

[illegible]

Spaced Practice Checker

Put questions in here from topics that you have studied over the last 4 weeks. You could build up this grid over a month and then see which questions you can answer on the last day.

State two factors would change the birth rate of a country?	What is fertility rate? Why might it decrease as a country develops?	Why is the Scottish highlands a sparsely populated area?
What is urbanisation? Why did it impact the population density and distribution in the UK?	Why does the death rate decrease as a country develops? Use an example for a bonus point.	Define infant mortality rate? What is the difference between that and child mortality rate?
Describe the growth of world population in the last 150 years. Try and include figures where possible.	Describe the difference between sparsely and densely populated. Can you name 3 examples of each in the UK?	Explain why HICs have a lower birth rate than LICs. Try and include more than one reason.
Last lesson – 1 mark	Last week – 2 marks	2 weeks ago – 3 marks

1 week ago	2 weeks ago	3 weeks ago	4 weeks ago

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Flappy Template



Flashcard Template - we've made the first one for you

Maths
Order of
Operations

- Brackets are calculated first
- Indices, powers and roots follow
- Then division and multiplication, which have **equal priority**
- Finally, addition and subtraction, which also have **equal priority**
- When two or more operations of the **same priority** appear one-after-another, the operations should be **carried out from left to right**