# Knowledge Organisers
# Year 8
# Autumn 2020

# Knowledge Organisers

## Autumn Term Knowledge Organisers still need to be brought to school every day, alongside this one.

Some subjects like Design Technology organise the curriculum on a carousel, as such all the organisers for that subject are in the Autumn Term booklet.

**Contents**

# An Introduction to Knowledge Organisers

## What is a Knowledge Organiser?

A knowledge organiser is a document, usually one side of A4, occasionally two, that contains key facts and information that children need to have a basic knowledge and understanding of a topic, or in some cases a series of topics.

Students are expected to bring their Knowledge Organiser Booklet to school every day. Students will be issued with a new booklet each term. However, it is import they keep the booklets to help with revision for end of year exams.

## What are the benefits of knowledge organisers?

The main benefit of knowledge organisers is that they give students and parents the 'bigger picture' of a topic or subject area. Some topics can be complicated, so having the essential knowledge, clear diagrams, explanations and key terms on one document can be really helpful.

Research shows that our brains remember things more efficiently when we know the 'bigger picture' and can see the way that nuggets of knowledge within that subject area link together. Making links, essentially, helps information move into our long-term memory.

## How can the students use them?

As mentioned earlier, students are expected to bring their Knowledge Organiser Booklet to school everyday. In lessons they can be used in a number of ways, for example, to look up the meaning of key words, spell words correctly and do some additional work if they have finished classwork.

At home knowledge organisers can be used to support homework, independent work and revise for tests and exams. Two quick and easy ways to do this are:

1. Look, cover write, check – look at part of the knowledge organiser, cover it, write as much as you can remember and then check it
2. Word up – Pick out any words you don't understand. Use a dictionary or thesaurus to find the meaning. If they don't help as your teacher.

The more often you do this the better. YouTube has some clips on them; search 'Mr Garner look, cover, write, and check 'and 'Mr Garner word up'

## How can parents use them?

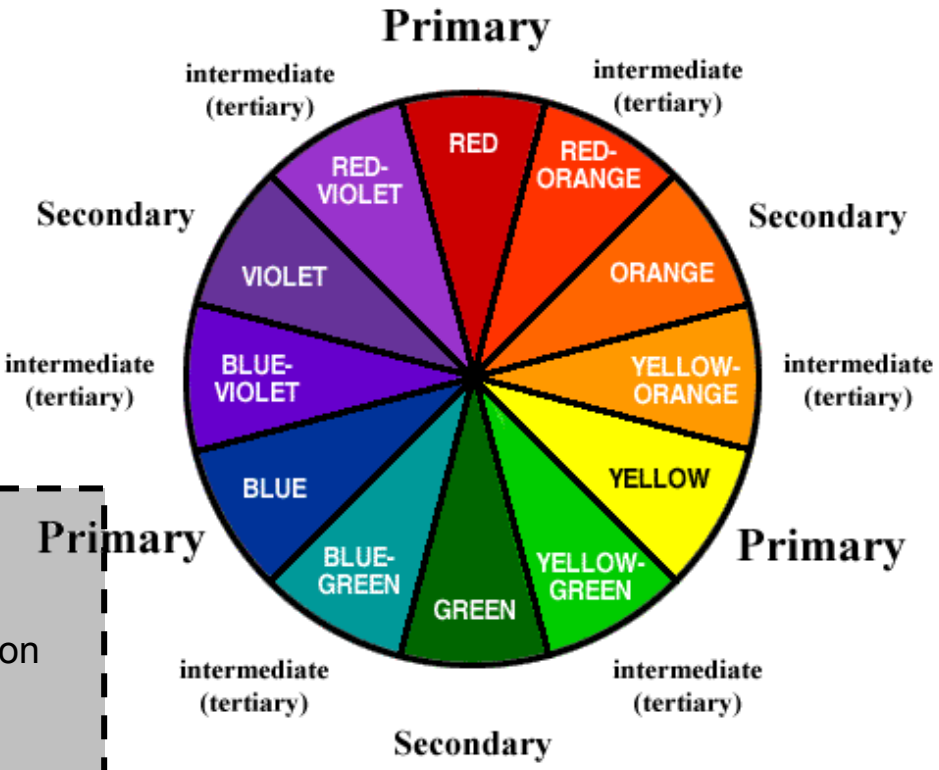
- Read through the organiser with your son/daughter – if you don't understand the content then ask them to explain it to you – 'teaching' you helps them to reinforce their learning.
- Test them regularly on the spellings of key words until they are perfect. Get them to make a glossary (list) of key words with definitions or a list of formulae.
- Read sections out to them, missing out key words or phrases that they have to fill in. Miss out more and more until they are word perfect.

## How the booklet is organised

The knowledge organisers are in alphabetical order by subject.

# YEAR 8 ART COLOUR

# Knowledge Organiser - Term 1 & 2




## KEY WORDS

- Primary
- Secondary
- Tertiary
- Complementary
- Highlight
- Abstract
- Shadow
- Shade
- Tone
- Cool
- Warm
- Application
- Foreground
- Background

## SKILLS

- Colour theory
- Colour mixing
- Colour application
- Design
- Presentation
- Composition
- Artist analysis

## Colour Theory:

The primary colours are the three main colours. They cannot be made but when mixed together they make all other colours.

The secondary colours are made by mixing two primary colours together

The tertiary colours are made by mixing a primary and secondary colour together.

Complementary colours are opposite on the colour wheel. They contrast each other to have a vibrant look.

To make a lighter colour you add white, this is called a tint.

## Artists inspired by colour

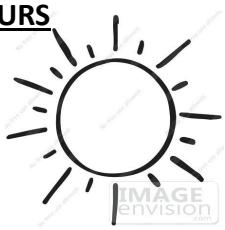
- Claude Monet
- Henri Matisse
- Barbara Rae
- Georgia O'Keeffe
- Mark Rothko
- David Hockney

Warm colours - attract attention and are generally perceived as energetic or exciting.

Cool colours– are generally perceived as soothing and calm.

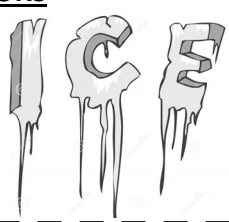
### WARM COLOURS

- RED
- ORANGE
- YELLOW



### COOL COLOURS

- BLUE
- GREEN
- VIOLET



```
from turtle import *

down()
fd(50)
rt(90)
fd(50)
rt(90)
fd(50)
rt(90)
fd(50)
rt(90)
up()
```

This program draws a square. The **sequence** of instructions is important. If they are in a different order, the outcome of the program will be different.

down() and up() tell the turtle to start and stop drawing.

fd(50) moves the turtle forward 50 steps.

rt(90) rotates the turtle 90 degrees to the right (clockwise)

```
from turtle import *

down()
for i in range(4):
    fd(50)
    rt(90)
up()
```

This program does exactly the same thing. However, it uses a loop to repeat instructions, making it shorter and therefore easier to edit if necessary. This is known as **iteration**.

`for i in range(4):`

means to repeat the instructions that are indented 4 times.

```
from turtle import *

sides = 4
steps = 50

down()
for i in range(sides):
    fd(steps)
    rt(360/sides)
up()
```

The program has been improved further here. It uses two **variables**, *sides* and *steps*.

This makes the program more flexible, by being able to draw shapes of different number of sides.

The number of degrees to rotate has been calculated by an **arithmetic operation**: 360 ÷ sides. We use '/' as the division operator (instead of ÷) in computing.

# Computing: Programming with Python

```
from turtle import *

sides = input("How many sides?")
sides = int(sides)
steps = 50

down()
for i in range(sides):
    fd(steps)
    rt(360/sides)
up()

print("I've drawn a shape with",sides,"sides")
```

This time the program asks the user how many sides the shape should be. This is known as **user input** and the answer is stored in the variable *sides*.

Once the shape has been drawn, the program **outputs** text to the screen.

```
from turtle import *

print("Type r for a red shape, or b for blue")
col = input("")
if col == "r":
    color("red")
else:
    color("blue")
```

Finally, the user is given a choice of colours.

The user enters a colour which is stored as variable 'col'

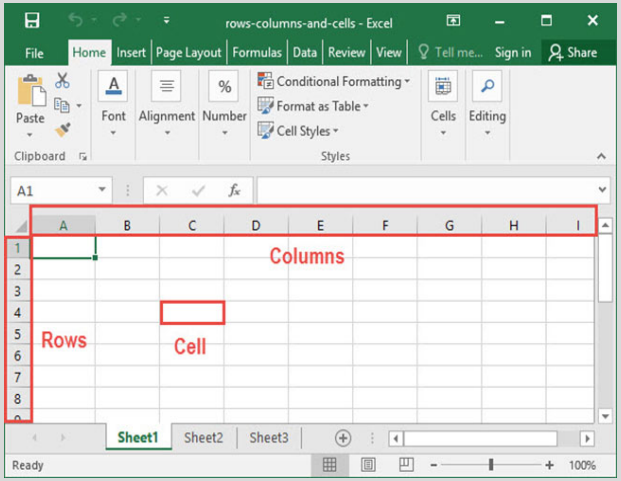
This part of the program uses a **Boolean expression** to compare col variable with 'r'.

If this is *true* (the users types 'r'), the pen colour is red.

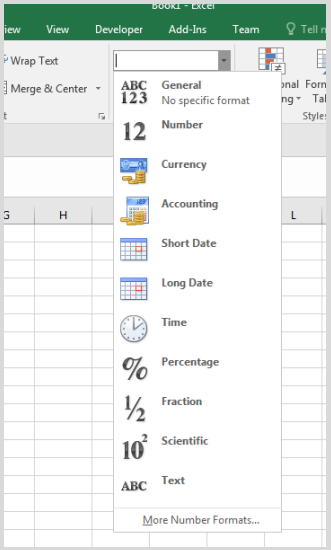
If this is *false* (the user doesn't type 'r'), the pen will be blue. *If... else* statements are known as **selection**.

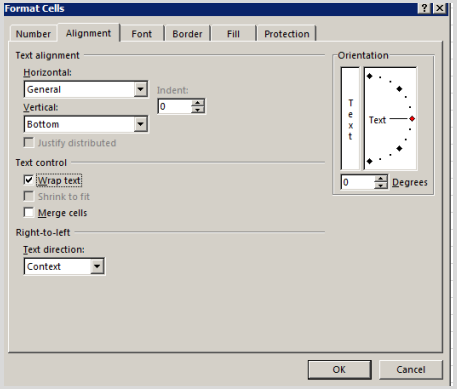
**Spreadsheets: 'My Spreadsheets are guaranteed 100% mistake free'**

## Structure




## Formatting




Every cell in a spreadsheet can be formatted to accept different types of data. Highlight the cells and then select the data format you want such as currency.

## Basic Spreadsheet Formulas

**Examples of basic formulas:**
**if using Cells B7 and C7:**

| | |
|---|---|
| Addition | =B7+C7 |
| Subtraction = | B7-C7 |
| Multiplication | =B7*C7 |
| Division | =B7/C7 |

To use basic formula, you must always begin with the = sign.

You can then use the following symbols:

Add +

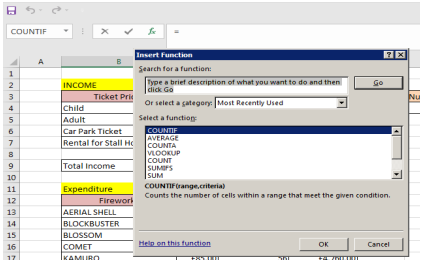
Subtract -

Multiply *

Divide /

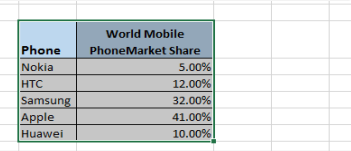
You can also use the SUM function o add up more than one cell such as =SUM(B2:B5)

The formula bar gives you access to more complex functions

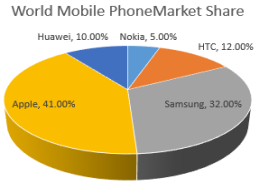



## Uses of spreadsheets

1. Create Charts to analyse and present data
2. Financial Analysis of business data
3. Computer Modelling such as Weather Forecasting
4. Project Planning and Time Management



| Phone | World Mobile PhoneMarket Share |
|---|---|
| Nokia | 5.00% |
| HTC | 12.00% |
| Samsung | 32.00% |
| Apple | 41.00% |
| Huawei | 10.00% |




# Drama Knowledge Organiser: Year 8

## Humpty Dumpty

- Creating and devising performances based around the theme 'Bullying'.
- Basic technique – Tableaux, thought track and hot seating.
- Improvisation- creating a performance on the spot.
- Using a script to create a character on stage.
- Non-naturalistic performance style.
- Sound scape – creating noise using voice and body as an ensemble.
- Engaging the audience through creating a tense atmosphere on stage.

## Soap Opera

- Soap Opera is a genre. A radio or television drama dealing with daily events and real life situations.
- Soap opera have stereotypical characters such as: The grandparent, the naughty teenager, the lad and the strong female.
- Storylines reflect real life issues such as mental health, marriages and death.
- Role on the wall- develop characterisation.
- Crosscutting – Two scenes happening at the same time with a split stage.
- Marking the moment – highlighting an important moment in the play.

## Christmas Carol

- An interpretation of the book 'A Christmas Carol' about a rich and selfish man called 'Scrooge'.
- Charles Dickens is a writer, journalist and editor in the 1800's.
- Role-play – acting out scenes from the book to develop characterisation.
- Scrooge- selfish, cruel and stubborn who has pushed his family away. His personality changes after Christmas to a joyful and selfless man who appreciates his family.
- Tiny Tim – A character who is disabled and needs the help of his uncle.
- The Ghosts – Christmas past, present and future.

## Blood Brothers

- Willy Russle wrote the play Blood Brothers in the 1970's.
- The main characters are Edward and Mickey; two twins separated by birth.
- Mrs Johnstone and Mrs Lyons demonstrate the class divides in Liverpool at the time. They are both the parents of the boys.
- Linda is both brothers' best friend and Mickey's future wife.
- Prologue – Piece of text before the action explaining what is about to happen.
- Musical theatre- Theatre created with song.

## STUDYING DRAMA THROUGH TEXT

- Understanding language and dialogue to interpret plot and character
- Monologues – One-character revealing information to an audience
- Exploring how characters develop as the plot progresses
- What is the purpose of the play? Why was it written?

## Borstal

- Borstal is a youth offending prison in the early 1900's.
- Monologue – One speech on stage in character telling the audience about yourself.
- Non- naturalistic style – Tableaux, thought tracking, transitions, ensemble and narration.
- Teacher in role – teacher acting in role to create a sense of realism for the students.
- Script writing – to develop a monologue using stage directions.
- Research into real life people using real life accounts.

## KEY WORDS FOR YEAR 8 DRAMA

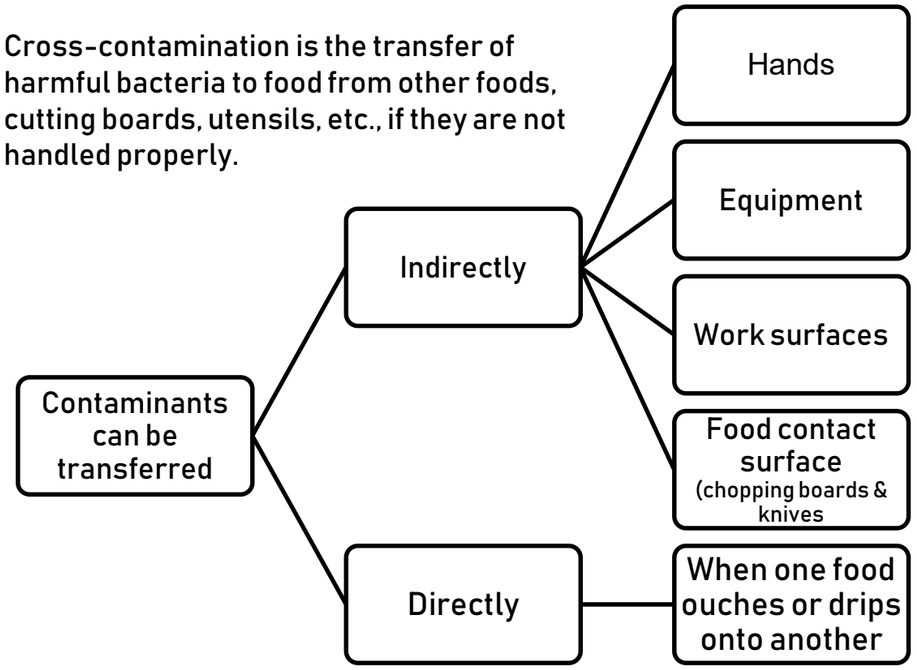
| | | | | | |
|---|---|---|---|---|---|
| Pitch | Pace | Pause | Volume | Tone | Diction |
| Choral Speaking | Role on the wall | Gait | Body Language | Facial Expression | Posture |
| Cross – cutting | Marking the moment | Direct Address | Interpretation of text | Genre | Style |

# Design Technology Subjects

# Year 8 Cooking & Nutrition Mediterranean Cuisine Knowledge Organiser

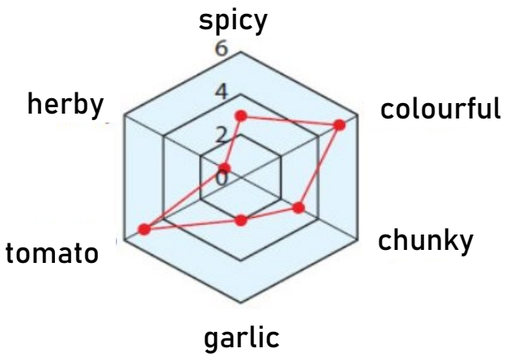
## Food Hygiene


Cross-contamination is the transfer of harmful bacteria to food from other foods, cutting boards, utensils, etc., if they are not handled properly.




## Sensory Testing/Star Profile Charts

- These kind of tests can be used to find out what people particularly like about a food product to help build up a profile of it according to a range of sensory qualities such as saltiness, smoothness, crispiness, flavour.
- Star profile –This type of test gets testers to describe the appearance, taste and texture of a food product on a star chart.




## Hygiene & Safety Rules

| |
|---|
| Tie up long hair |
| Wear an apron |
| Tuck tie in |
| Wash hands |
| No running |
| Use oven gloves when necessary |
| Clean practical equipment thoroughly |

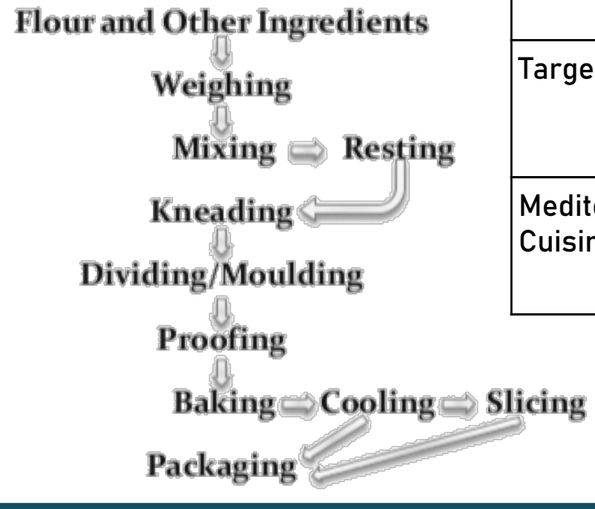
## Key abbreviations: Weights and Measurements

| | | |
|---|---|---|
| L | Litres | |
| g | Grams | |
| ml | millilitres | 1000ml =1 litre |
| Kg | kilograms | 1000g |
| Tbsp | tablespoons | 15ml |
| Tsp | teaspoon | 5ml |
| 1pt | 1 pint | 568ml |

## Example Time Plan

| Time | Process | Hygiene & Safety |
|---|---|---|
| 8:50 – 9:00 | Collect all equipment and ingredients. Wash hands. | Is fridge 0°C - 4°C? |
| 9:00 – 9:15 | Dice onion, peppers and mushrooms. | Use a green chopping board. Use bridge and claw techniques. |
| 9:15 – 9:30 | Thread vegetables onto a skewer. Make dressing. | Ensure skewer has been soaked in cold water. |

## Bread Production Flow Chart




## Key vocabulary

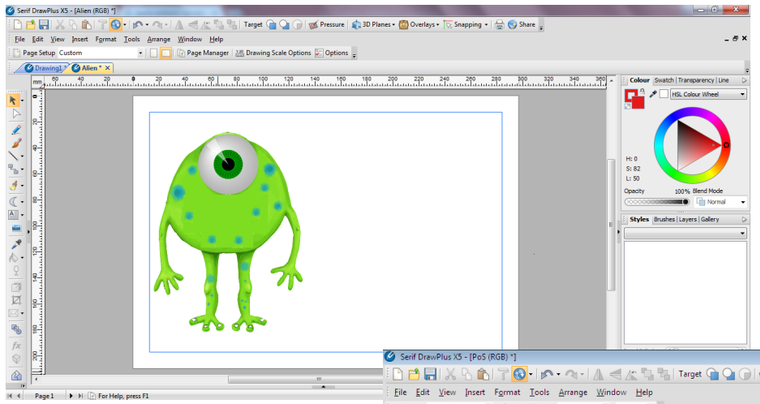
| | |
|---|---|
| Design Brief | An written outline which explains the aims and objectives and milestones of a design project. |
| Task Analysis | Breaking a design brief down to understand the requirements of the task. |
| Target Audience | The person or people most likely to be interested in your design or product. |
| Mediterranean Cuisine | Food from the countries that surround the Mediterranean Sea. |

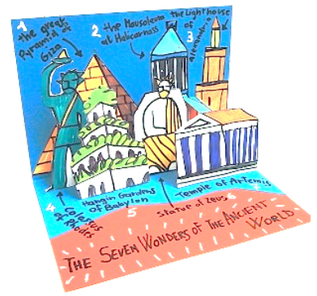
# Year 8 Design & Technology (Graphic Products) Knowledge Organiser

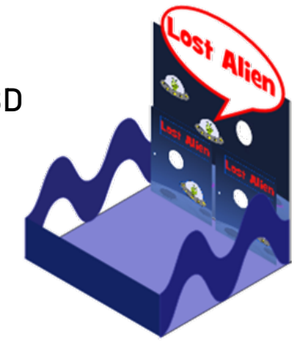
## Pop Up Story Book

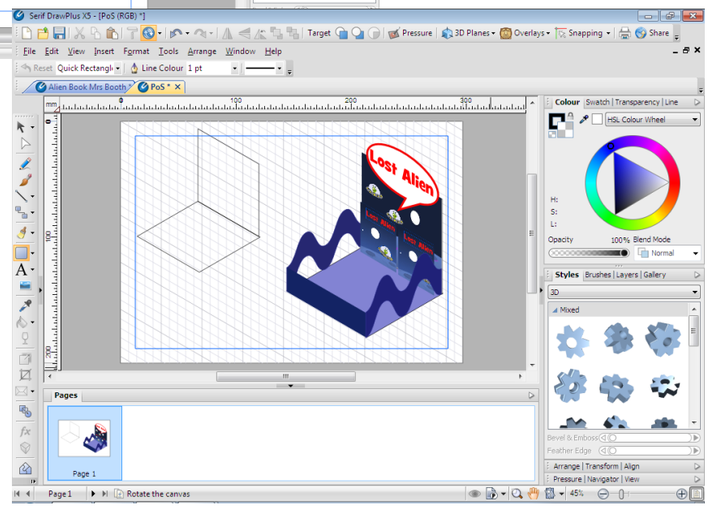
### Key Skills

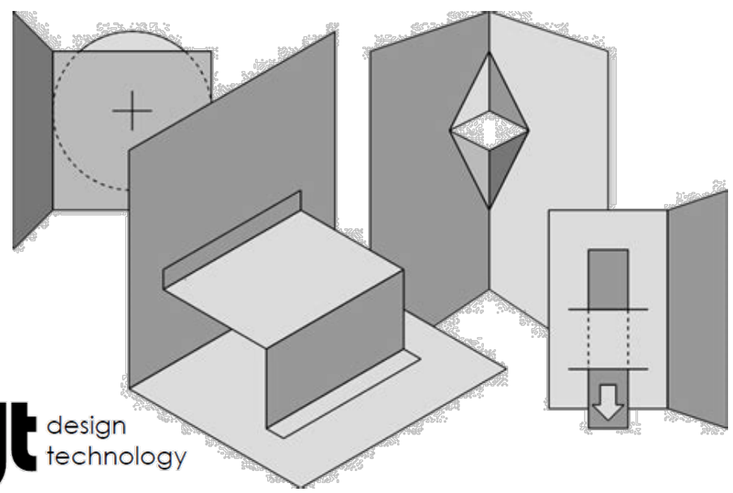
- Responding to a Design Brief
- Analysing & researching information
- Creating a suitable and appealing story idea for an identified target audience
- Developing CAD drawing skills using:
    - Serif Draw Plus
- Manipulating/ editing images & graphics in 2D & 3D
- Rendering shapes, images with colour & texture
- Layout & placement of images and text to scale
- Developing & testing Pop-Up mechanisms
- CAD modelling & presentation skills
- Using a Stanley knife (cutting mat, safety ruler) to cut, score & fold
- Manufacturing with modelling materials (card & paper)
- Marketing - point of sale display design
- Evaluating the design & making process





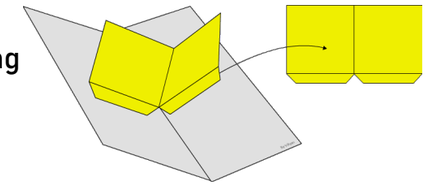



design technology

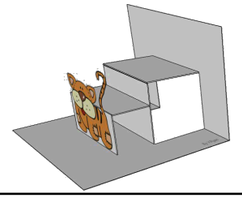
## Paper Engineering

Pop-Up mechanisms provide movement to make parts work together

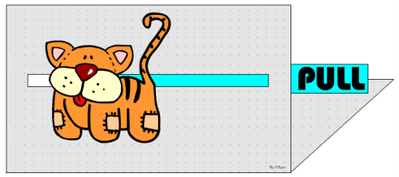
**V Folds**
Reciprocating movement



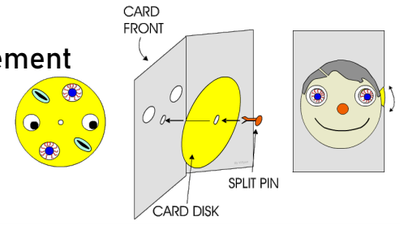
**Parallelograms**
Reciprocating movement



**Pull Strips**
Reciprocating movement




**Pivots**
Rotating movement




| Key vocabulary | |
|---|---|
| Design Brief | An written outline which explains the aims and objectives and milestones of a design project. |
| Target Audience | The person or people most likely to be interested in your design or product. |
| Function | What a product does, how it works and what it will be used for? |
| Aesthetics | How a product or design looks |
| CAD | Computer aided design |
| Rendering | The process of adding shading, colour, texture or material to a drawing. |
| Materials | What something is made from e.g. paper & card. |
| Modelling | To present ideas to the user (target audience) or client. |
| Point of sale display | A specialised form of sales promotion found near or next to a checkout to draw the customers' attention to the products, |

# Year 8 Textiles Knowledge Organiser

## Sustainable Children's Toy

### Key Skills

- Responding to a Design Brief
- Analysing existing products
- Identifying a target audience
- Designing & annotating to include a range of a range of decorative and construction techniques
- Demonstrating ability to complete decorative techniques:
    - Appliqué (hand)
    - Reverse appliqué (hand)
    - Hand embroidery stitches (running stitch, blanket stitch, French knots)
- Using a sewing machine to complete a range of construction techniques:
    - 3D features
    - Inserting wadding
    - Applying buttons & googly eyes
    - Seams

| Product features | |
|---|---|
| Consideration of a specified target market | Machine appliqué or reverse appliqué |
| Interactive | Creative & individual |
| Components used as decoration | Features are in proportion to the body shape |
| Recycled fabrics used | Accurate machine stitches |
| 3D features | Seam allowance |
| Hand embroidery | Sustainable |

design technology

| Health & safety |
|---|
| Follow teacher instructions |
| Move slowly around the room do not run |
| Tie long hair back |
| Hold scissors or shears correctly when walking around the room. |
| Only one person operating a sewing machine at one time |
| Never use a sewing machine unless supervised by a teacher/ technician |
| Turn off the sewing machine when not in use. |
| Report any injuries or breakages to the teacher immediately |

| Key vocabulary | |
|---|---|
| Interactive | Components or features that can be attached/detached or have different textures |
| Materials | What the product is made from? |
| Components | The parts/materials/threads needed to make a product. |
| 3D features | Use of wadding to make a feature stand up or raised off the backing fabric |
| Function | What a product does, how it works and what it will be used for? Is it sensory or educational or both? |
| Aesthetics | How a product or design looks . |
| Target Audience | The person or people most likely to be interested in your design or product. |
| Embroidery | Even stitch widths and lengths completed by hand sewn stitches |
| Reverse appliqué | A decorative technique whereby a fabric is sewn on the reverse of the top fabric and is visible from the front |
| Sustainable | Conserving an ecological balance by avoiding the depletion of natural resources. |
| Appliqué | A decorative technique whereby one material is sewn on top of another by machine |
| Design Brief | An written outline which explains the aims and objectives and milestones of a design project. |

# ENGLISH KNOWLEDGE ORGANISER: SHAKESPEAREAN TRAGEDY AND HISTORY

YEAR: 8 UNIT: 2

## *HAMLET* – A REVENGE TRAGEDY

**FIRST PERFORMED:** circa 1600
**PROTAGONIST:** Prince Hamlet
**SETTING:** Elsinore Castle, in Denmark; medieval era

**OTHER SIGNIFICANT CHARACTERS:**
**Claudius:** Hamlet's uncle, and the new king; the antagonist who murdered Old Hamlet
**Gertrude:** Hamlet's mother, the Queen
**Horatio:** Hamlet's friend and confidant
**Ophelia:** Hamlet's girlfriend; she is driven mad
**Laertes:** Ophelia's brother; a foil for Hamlet as he is driven to revenge
**Polonius:** Father of Ophelia and Laertes; the Lord Chamberlain
**The Ghost:** Hamlet's father returns to tell him that he was murdered by his brother

**THEMES:**
- Madness
- Revenge and Delay
- Death
- Parent-child relationships
- Machiavellian politics

**WHY THE PLAY IS A TRAGEDY:**
Hamlet is a noble prince whose flaw (hamartia) is his inability to enact the revenge on his Uncle that his father wants.

## *ROMEO AND JULIET* – A TRAGIC ROMANCE

**FIRST PERFORMED:** circa 1595
**PROTAGONISTS:** Romeo Montague and Juliet Capulet
**SETTING:** Verona, in Italy; medieval era

**OTHER SIGNIFICANT CHARACTERS:**
**The Capulet family:** Juliet's family
**The Montague family:** Romeo's family; bitter rivals with the Capulets
**Tybalt:** Juliet's cousin who hates the Montagues
**Mercutio:** Mercurial and unpredictable (like his name); Romeo's best friend
**The Friar:** Secretly marries Romeo and Juliet and creates a plan to help them be together after Romeo's banishment

**THEMES:**
- Love
- Parent-Child relationships
- Family rivalries
- Hastiness

**WHY THE PLAY IS A TRAGEDY:**
Romeo is a noble man whose flaw (hamartia) is being overhasty and reckless. He makes a lot of decisions that would have benefitted from reflection rather than acting on his emotions – mainly love and anger.

## *RICHARD III* – A HISTORY

**FIRST PERFORMED:** circa 1593
**PROTAGONIST:** Richard III
**SETTING:** England; 1483-1485

**OTHER SIGNIFICANT CHARACTERS:**
**Richmond:** The future Henry VII
**Edward IV:** the dying King
**George, Duke of Clarence:** the middle of the York brothers who Richard has killed
**The Princes:** The sons (and heirs) of Edward IV who were famously murdered in the Tower of London
**The Duke of Buckingham:** a loyal supporter of Richard until he goes too far
There are also a number of significant historical figures, including Duchess Cecily, Elizabeth Woodville, Margaret Beaufort and Anne Neville who all conspire against Richard.

**WHY THE PLAY IS AN INTERESTING HISTORY:**
This play has influenced how we have viewed Richard III, as a hunchbacked Machiavellian tyrant. He is perhaps the chief suspect in the murder of the princes but not the only one. This play also claims him responsible for many other murders, including his own wife, Anne Neville. There is no historical proof of this. This play can be seen as tutor propaganda because Henry VII, who defeated Richard at the Battle of Bosworth, was Elizabeth I's grandfather. Shakespeare wouldn't have wanted to displease the queen would he!

## TRAGIC CONVENTIONS

According to Aristotle, the famous Greek philosopher, a tragedy should feature a tragic hero of noble birth and whose fortunes go from good to bad because of a flaw (hamartia) that they have. The tragic hero always dies as a consequence.

## KEY SPELLINGS FOR THIS SCHEME OF WORK

| | | | | |
|---|---|---|---|---|
| Aristotle | hubris | dialogue | Machiavellian | Elizabethan |
| tragedy/tragic hero | revenge | gesture | exposition | propaganda |
| catharsis | soliloquy | stichomythia | climax | political |
| hamartia | aside | melancholy | denouement | dramaturgical |

# ENGLISH KNOWLEDGE ORGANISER: TRAVEL WRITING

**YEAR: 8** **UNIT: 1**

## TYPES OF TRAVEL WRITING

**Guide books:** books and websites for tourists or travellers that provides details about a geographic location, tourist destination, or itinerary. It is the written equivalent of a tour guide.

**Travel journals and blogs:** Generally in diary form, a travel journal contains descriptions of the traveller's experiences, and is normally written during the course of the journey, with the intention of updating friends or family on the journey. Travel journals may be published in printed form, or online as blogs.

Information of travel and destinations can also be found in **travel brochures** and guides. **Reviews** can be found online for destinations. Even **postcards** can be viewed as travel writing as they describe travellers' experiences.

## STYLE

**INSTRUCTIVE:** Providing information

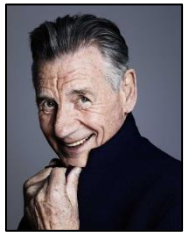
**EVOCATIVE:** Capturing the emotions of an experience

**NARRATIVE:** Retelling of events, stories and anecdotes from travel experiences

**DESCRIPTIVE:** Providing detailed information of the settings, experiences and people met on travel experiences

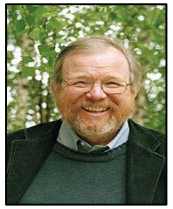
## POPULAR TRAVEL WRITERS

### MICHAEL PALIN (1943 - )



Michael Palin is a popular English writer, actor and comedian. He found fame as part of Monty Python but later in his career produced a number of travel programmes – and accompanying books – for the BBC. His books include: *Around the World in 80 Days*, *Pole to Pole*, *Himalaya*, *Sahara* and *Brazil*.

### BILL BRYSON (1951 - )



Bill Bryson is a very popular travel writer from America. Some of his most popular pieces of travel writing are: *Notes from a Small Island* which is all about the UK and *A Walk in the Woods* which was also made into a film.

### GEORGE ORWELL (1903-1950)

While famous for his political and journalistic writing, Orwell travelled extensively. He wrote about the working classes in Northern England in *The Road to Wigan Pier*, about Paris in *Down and Out in Paris*, fighting in the Spanish Civil War in *Homage to Catalonia* as well as his experiences in Burma as a policeman where he had to shoot an elephant to protect the villagers.

## CONVENTIONS OF TRAVEL JOURNAL WRITING

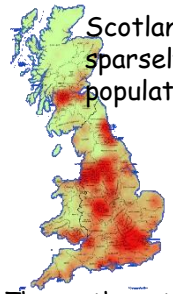
| | | | |
|---|---|---|---|
| First person narrative | Humour | Clear narrative structure | Exclamation |
| Detailed descriptions | Facts as well as opinions | References to the senses | Use of the past tense |
| Temporal (time) connectives | Dramatic tension | Emotive language | Dialogue |

## KEY SPELLINGS FOR THIS SCHEME OF WORK

| | | | | |
|---|---|---|---|---|
| Modes | instructive | conventions | juxtaposition | prioritises |
| guide book | narrative | Structural Analysis | parallel | exposition |
| blog | evocative | foregrounds | sequence | complication |
| journal | descriptive | foreshadows | zoom in/zoom out | narrative shift |

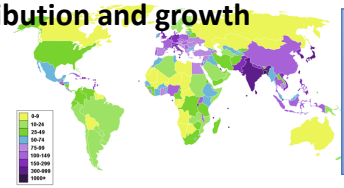
# Year 8 Geography
# Unit 1: Population and Migration

## Lesson 1-3: Distribution and growth



Scotland – sparsely populated

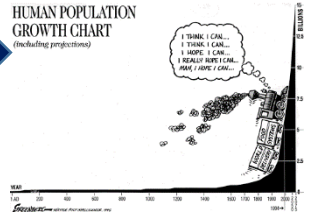
The south east of England= densely populated



UK and world population density

| Densely populated | Sparsely populated |
|---|---|
| Fertile soil<br>Jobs<br>Flat/ gently sloping land<br>Natural resources<br>Good transport links/ close to other places | Too hot/ cold<br>Steep relief<br>Little industry<br>Poor soils<br>Poor transport links |

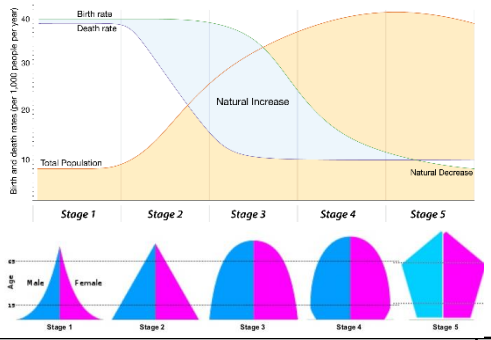
Population growth = overpopulation




Problems with population growth: Overcrowding, distribution of resources (food/water), aging populations

Skills= choropleth maps (see the world map). The darker the colour, the higher the value of an area

## Lesson 4-6: Pyramids and DTM



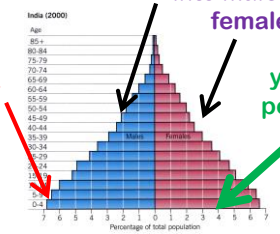

The shape changes based on how develop a country is.
This links to the 5 stages of the DTM.
Factors to consider:
Family planning, Children needed for farming, Improvements in sanitation and healthcare , Emancipation of women (women's rights), Later marriages, Religious believes
Better food/water supply

Skills= Population pyramids

The data is sorted into different age groups

They are divided up into males and females

The youngest people are at the bottom




## Lesson 7-8: Aging Population

WHY: life expectancy has increased due to better health care

PROBLEMS: increase pressure on healthcare and money spent on pensions

## Lesson 9-13: Migration

- *Voluntary* = Poland to UK (legal); Mexico to USA (Illegal)
- *Forced*= Refugee (E.G. Darfur/ Syria) Refugees are forced to migrate due to war/ instability or a natural disaster

Push factors = push AWAY (bad)

Pull factors= pull TOWARDS (good)

Impacts (similar for both types of voluntary migration)

Skills=Histogram

| | UK | Poland | People |
|---|---|---|---|
| Advantages | Help economy (jobs/ hard working)<br>Cultural diversity | Less pressure on services<br>Women= more job opportunities | Better paid jobs<br>Money sent back home |
| Disadvantages | Conflict<br>Overcrowding<br>Pressure on services | Brain drain- less skilled worker<br>Negative effect on economy | Exploitation- work very long hours<br>Families separated |

## Lesson 14-15: One Child Policy

1979. To control population/ reduce growth rate

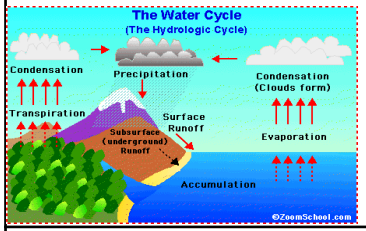
- +ve= famine never happened/ economic growth
- -ve = gender imbalance, abortions, 'little emperors', aging population

KEYWORDS


| | Definition |
|---|---|
| Birth Rate | The number of births in a year per 1000 of the total population. |
| Death Rate | The number of deaths in a year per 1000 of the total population. |
| Demographic Transition Model | A model showing how populations should change over time in terms of their birth rates, death rates and total population size. |
| Infant mortality | The average number of deaths of infants under 1 year of age, per 1000 live births, per year. |
| Life expectancy | The average number of years a person might be expected to live. |

# Year 8 Geography
# Unit 2: River Landscapes

## Lesson 1-3




The water cycle is the never ending movement of water from the **air** to the **land**, to the **sea** and back to the air again. This continues over and over. Key transfers of water from these three areas are Surface Runoff, Evaporation, Precipitation and Transpiration.

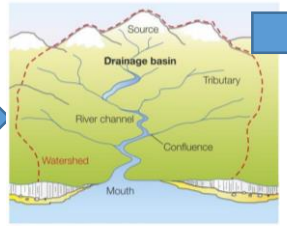
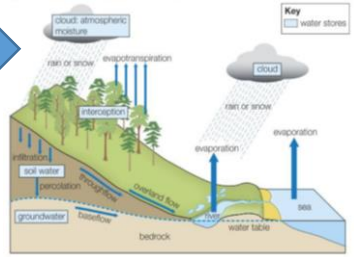
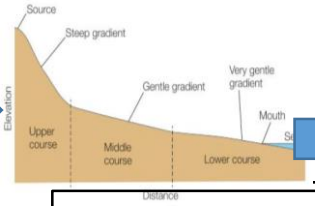



Figure 1 The drainage basin




## Lesson 4-6

The **long profile** shows the side view of the river from **source** to **mouth**. It is steepest in the upper course and more gentle in the middle and lower course. However, the river is slower in the upper course – Know why!




**Erosion** = Abrasion and Hydraulic Action
**Transport** = Traction Suspension
**Deposition** = Dropping of material

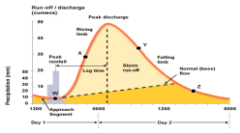
Upper Course landforms like a waterfall is formed when soft rock gets eroded quicker than hard rock and leaves a cliff . Here the soft rock undercuts the hard rock until it collapses into a plunge pool beneath.

## Lesson 9-11

**Middle course landforms are meanders and sometimes oxbow lakes.**
**These are bends in a river that get larger to faster moving water and erosion on the outside of the bend.**

In the lower course the land is flat on each side of the river, this is where flooding can occur. This is called a floodplain. Farming takes place here and the floods deposit Nutrients which is good for crops.

Flooding can be caused be different features of a drainage basin. Eg steep slopes




Hydrographs!

## Lesson 12,14 – 16 HIC FLOODING EXAMPLE

**Boscastle floods in 2004 devastated the village in August.**
**A flash flood caused by natural and human reasons.**
**The effects were environmental, social and economic.**

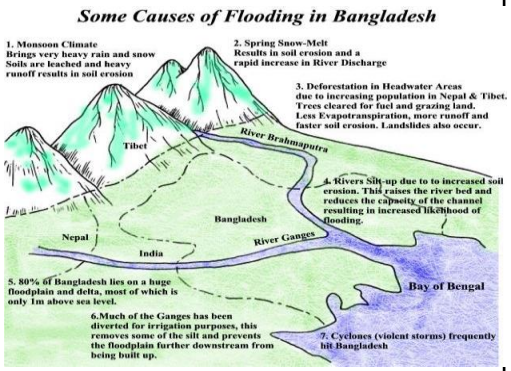
HARD

SOFT

**Since then a number of hard and soft management methods have been used to prevent this happening again.**

## Lesson 17-18 LIC FLOODING EXAMPLE

**Bangladesh flooding in 2012 devastated large parts of this very flat country. Natural and human causes are responsible for this. However, the effects are often a lot more serious – For example people rely on crops for food. Also flood water contaminates well water and cholera spreads.**
**Despite being a LIC Bangladesh has installed a number of basic but often effective flood protection methods – E.g. Earth Embankments, Stilt houses, Flood shelters and basic warning systems. Each has advantages and disadvantages. Which is best? Which are given by Aid?**




## KEYWORDS

LOOk
SAY
COVER
WRITE
CHECK

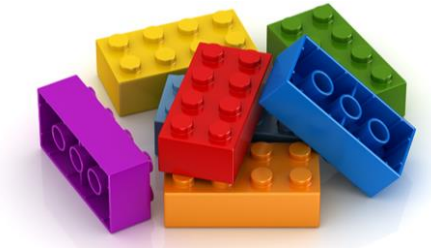
| | Definition |
|---|---|
| Drainage Basin | An area of land drained by a main river channel and it's tributaries. |
| Water Cycle | Where water is moved from the Air to the Land and then to the Sea in a never ending cycle. |
| Long Profile | The side view of a river from source to mouth. Then it enters the sea. |
| Meander | This is a bend in a river in the middle section usually. |
| Hard Engineering | Where expensive methods using concrete and steel are used to stop flooding. |
| Soft Engineering | Less expensive natural ways are used to cope with floods. |

# Wellington History
# Year 8 HT 1 Knowledge Organiser

How did we survive invasion during Elizabeth's Golden Age?

The voyages of exploration or the voyages of exploitation?

How did the world begin to change in the 15th Century and 16th Century?



- ✓ What and why? You will learn how Elizabeth I avoided invasion and decide if she solved the problems her family created.
- ○ Stop, think and link: The Tudor Dynasty and Medieval Monarchs.
- ❖ Interpretation assessment – How was the Spanish Armada defeated?

❖ **Want to explore further?**

Book: 50 Things You Should Know about the Tudors by Rupert Matthews
Book: Elizabeth I (History Heroes) by Damien Harvey
Book: Terrible Tudors by Terry Deary

Websites: https://www.english-heritage.org.uk/learn/story-of-england/tudors/
https://www.bbc.co.uk/bitesize/topics/zkrkscw/articles/zkh7bdm

**Key Questions**

- Year 7 Chronological recap – themes studied and why.
- What were Elizabeth's early problems?
- How did she deal with threats to the crown?
- Why did Spain want to invade in 1588?
- What was the Spanish plan and why did it fail?
- How diverse was Elizabethan England?
- Was Elizabethan England a Golden Age?
- How did the voyages of exploration change the world?
- How should we remember the voyages of exploration?

**Key events and Key People**

7 September 1533 Elizabeth was born in Greenwich
17 November 1558 Queen Mary I died
15 January 1559 Elizabeth I was officially crowned queen
1562 Elizabeth I became very ill with smallpox
1577-1580 Sir Francis Drake sailed around the world
1586 The Babington Plot was organised, and discovered by Sir Francis Walsingham
11 August 1586 Mary Queen of Scots was arrested for being part of the Babington Plot and executed a year later
1588 The Spanish attempted to invade England via an Armada, and were defeated at sea
24 March 1603 Elizabeth I died

Keywords

**Reformation**
A 16th-century movement against the Catholic Church which ended in the establishment of the Protestant Churches.

**Armada**
A fleet of warships.

**Protestant**
A member or follower of any of the Western Christian Churches that are separate from the Roman Catholic Church in accordance with the principles of the Reformation.

**'Golden Age'**
A period of peace and prosperity in a country.

**Heir**
A person who inherits something.

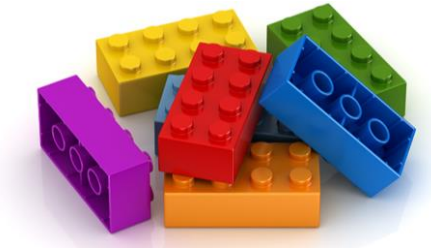
**Fireships**
Ships painted with tar, filled with combustible material and set alight.

**Beacon**
A fire or light set up in a high or prominent position as a warning signal.

**Martyr**
A person who is killed due to his / her beliefs.

**Heretic**
Someone who disagrees with accepted beliefs.

# Wellington History
# Year 8 HT 2 Knowledge Organiser
## When and why did the monarchy lose control?
### How did the Industrial Revolution change peoples lives?



- ✓ What and why? You will learn how the Monarchy lost most of their power in the United Kingdom and how the Industrial Revolution changed peoples lives.
- ○ Stop, think and link: The power of medieval kings
- ❖ Cause and Consequence assessment – How did Parliament become more powerful than the monarchy?

❖ **Want to explore further?**

Book: The English Civil War by Blair Worden
Book: Slimy Stuarts by Terry Deary
Book: Vile Victorians by Terry Deary

Websites: https://www.britannica.com/event/Industrial-Revolution

https://www.youtube.com/watch?v=G0Ycp3SiOLw

**Key Questions**

- Year 7 Chronological recap – themes studied and why.
- What was the Gunpowder Plot?
- How did Charles I cause a Civil War?
- Who won the Civil War and why?
- Who was Oliver Cromwell and how did he rule Britain?
- Why did Britain bring the Monarchy back?
- What was the Glorious Revolution?
- What was the Bill of Rights?
- What was life like before the Industrial Revolution?
- How did the Industrial Revolution change peoples lives?

**Key events and Key People**

NOVEMBER 5th 1605: The Gunpowder Plot
MARCH 27th 1625: Coronation of King Charles I
AUGUST 22nd 1642: Start of the English Civil War
JANUARY 30th 1649: The Execution of Charles I
1660: The Restoration of the Monarchy
1688: The Glorious Revolution
1689: The creation of the Bill of Rights
JULY 1st 1690: The Battle of the Boyne between William of Orange and James II

Keywords

**Assassination:** the murder of someone famous or important

**Tyrant:** a cruel and oppressive ruler

**Civil War:** a war between citizens of the same country

**Regicide:** to kill a King

**Revolution:** a forcible overthrow of a government or social order

**Dictatorship:** form of government in which one person or a small group possesses absolute power

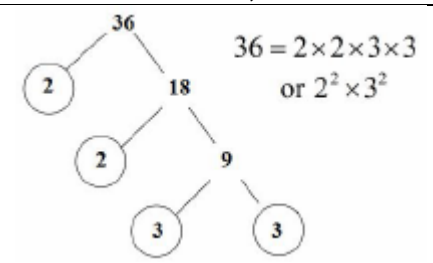
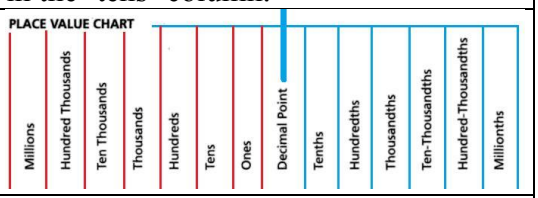
**Democracy:** government by the people; especially : rule of the majority

**Industry:** economic activity concerned with the processing of raw materials and manufacture of goods

Wellington School

# Mathematics

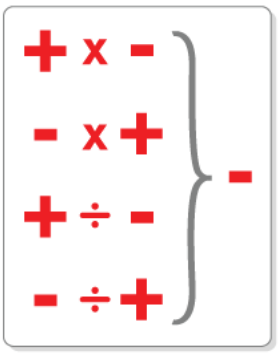
# Year 8: Numbers and the Number System

| Topic/Skill | Definition/Tips | Example |
|---|---|---|
| 1. Multiple | The result of multiplying a number by an integer.<br>The **times tables** of a number. | The first five multiples of 7 are:<br>$7, 14, 21, 28, 35$ |
| 2. Factor | A number that **divides exactly** into another number without a remainder.<br><br>It is useful to write factors in pairs | The factors of 18 are:<br>$1, 2, 3, 6, 9, 18$<br><br>The factor pairs of 18 are:<br>$1, 18$<br>$2, 9$<br>$3, 6$ |
| 3. Lowest Common Multiple (LCM) | The **smallest** number that is in the **times tables** of each of the numbers given. | The LCM of 3, 4 and 5 is 60 because it is the smallest number in the 3, 4 and 5 times tables. |
| 4. Highest Common Factor (HCF) | The **biggest** number that **divides exactly** into two or more numbers. | The HCF of 6 and 9 is 3 because it is the biggest number that divides into 6 and 9 exactly. |
| 5. Prime Number | A number with **exactly two factors**.<br><br>A number that can only be divided by itself and one.<br><br>The number **1 is not prime**, as it only has one factor, not two. | The prime numbers up to 50 are:<br><br>$2, 3, 5, 7, 11, 13, 17, 19, 23,$<br>$29, 31, 37, 41, 43, 47$ |
| 6. Prime Factor | A factor which is a prime number. | The prime factors of 18 are:<br><br>$2, 3$ |
| 7. Product of Prime Factors | Finding out which **prime numbers multiply** together to make the **original** number.<br><br>Use a **prime factor tree.**<br><br>Also known as 'prime factorisation'. |  |
| 8. Place Value | The **value** of where a **digit** is within a number. | In 726, the value of the 2 is 20, as it is in the 'tens' column. |
| 9. Place Value Columns | The names of the columns that **determine the value of each digit**.<br><br>The 'ones' column is also known as the 'units' column. |  |
| 10. Rounding | To make a number simpler but keep its value close to what it was.<br><br>If the **digit to the right** of the rounding digit is **less than 5, round down**.<br>If the **digit to the right** of the rounding digit is **5 or more, round up**. | 74 rounded to the nearest ten is 70, because 74 is closer to 70 than 80.<br><br>152,879 rounded to the nearest thousand is 153,000. |

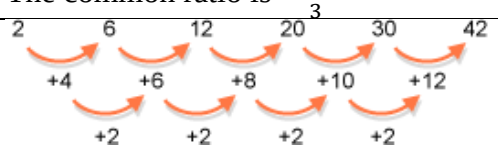
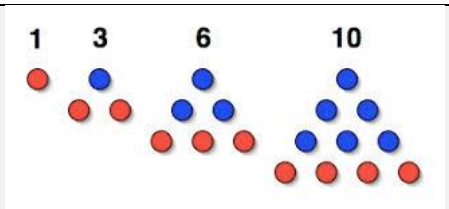
## Year 8: Numbers and the Number System

| | | |
|---|---|---|
| 11. Decimal Place | The **position** of a digit to the **right of a decimal point**. | In the number 0.372, the 7 is in the second decimal place.<br><br>0.372 rounded to two decimal places is 0.37, because the 2 tells us to round down.<br><br>Careful with money - don't write £27.4, instead write £27.40 |
| 12. Significant Figure | The significant figures of a number are the digits which **carry meaning** (ie. are significant) to the size of the number.<br><br>The **first significant figure** of a number **cannot be zero**.<br><br>In a number with a decimal, trailing zeros are not significant. | In the number 0.00821, the first significant figure is the 8.<br><br>In the number 2.740, the 0 is not a significant figure.<br><br>0.00821 rounded to 2 significant figures is 0.0082.<br><br>19357 rounded to 3 significant figures is 19400. We need to include the two zeros at the end to keep the digits in the same place value columns. |
| 13. Estimate | To find something **close to the correct answer**. | An estimate for the height of a man is 1.8 metres. |
| 14. Approximation | When using approximations to estimate the solution to a calculation, **round each number in the calculation to 1 significant figure**.<br><br>≈ means 'approximately equal to' | $\frac{348+692}{0.526} \approx \frac{300+700}{0.5} = 2000$<br><br>'Note that dividing by 0.5 is the same as multiplying by 2' |
| 15. Standard Form | $\boldsymbol{A \times 10^{b}}$<br><br>$\textit{where } \mathbf{1 \leq A < 10}$, $\boldsymbol{b = integer}$ ($\boldsymbol{whole\ number}$) | $8400 = 8.4 \times 10^{3}$<br><br>$0.00036 = 3.6 \times 10^{-4}$ |

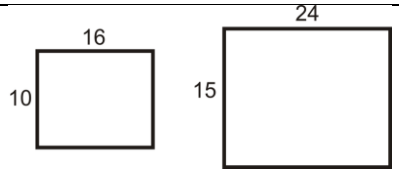
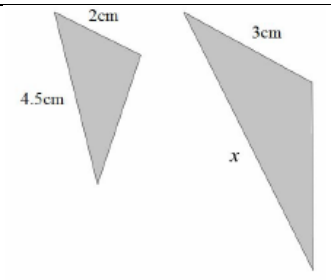
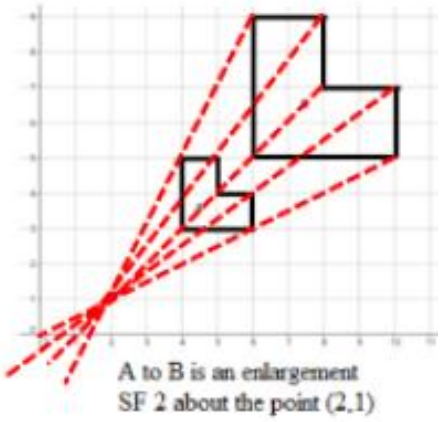
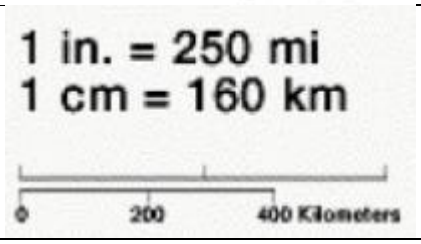
# Year 8: Calculations

| Topic/Skill | Definition/Tips | Example |
|---|---|---|
| 1. Negative Number | A number that is **less than zero**. Can be decimals. | $-8, -2.5$ |
| 2. BIDMAS | An acronym for the **order** you should do calculations in.<br><br>BIDMAS stands for **'Brackets, Indices, Division, Multiplication, Addition and Subtraction'**.<br><br>Indices are also known as 'powers' or 'orders'.<br><br>With strings of division and multiplication, or strings of addition and subtraction, and no brackets, work from left to right. | $6 + 3 \times 5 = 21, not\ 45$<br><br>$5^2 = 25$, where the 2 is the index/power.<br><br>$12 \div 4 \div 2 = 1.5, not\ 6$ |
| 3. Substitution | **Replace letters with numbers**.<br><br>Be careful of $5x^2$. You need to square first, then multiply by 5.<br><br>When using a calculator to substitute, put any substituted value into brackets. | $a = 3, b = 2\ and\ c = 5$. Find:<br>1. $2a = 2 \times 3 = 6$<br>2. $3a - 2b = 3 \times 3 - 2 \times 2 = 5$<br>3. $7b^2 - 5 = 7 \times 2^2 - 5 = 23$<br><br>e.g. a = -5, calculate the value of $3a^2$-2a<br>$3x(-5)^2$- 2x(-5) = 85 |
| 4. Adding and Subtracting Negative Numbers | Adding a negative is equivalent to subtracting.<br><br>Subtracting a negative is equivalent to adding.<br><br>+ - → -<br><br>- - → + | 5 + - 2 = 5 – 2 = 3<br><br>5 - - 2 = 5 + 2 = 7<br><br>-5+-2 = -5 -2 = -7<br><br>-5 - - 2 = -5 + 2 = -3 |
| 5. Multiplying and Dividing Negative Numbers | • When the signs are different the answer is negative.<br>• When the signs are the same the answer is positive.<br><br>  | 6 x -2 = -12<br><br>-6 x -2 = 12<br><br>6 ÷ -2 = -3<br><br>-6 ÷ -2 = 3 |

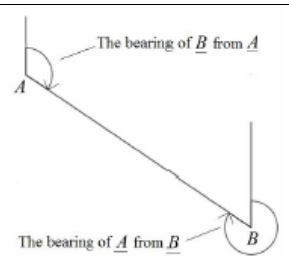
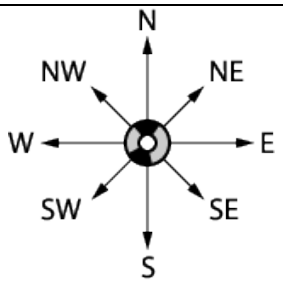
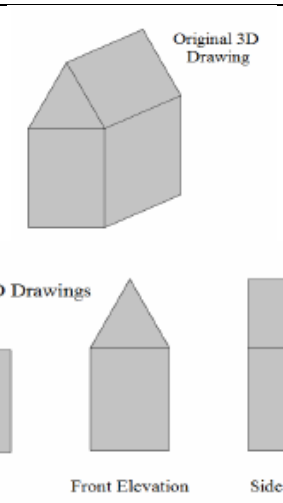
## Year 8: Sequences

| Topic/Skill | Definition/Tips | Example |
|---|---|---|
| 1. Linear Sequence | A number pattern with a **common difference**. | 2, 5, 8, 11… is a linear sequence |
| 2. Term | **Each value** in a sequence is called a term. | In the sequence 2, 5, 8, 11…, 8 is the third term of the sequence. |
| 3. Term-to-term rule | A rule which allows you to **find the next term** in a sequence if you **know the previous term**. | First term is 2. Term-to-term rule is 'add 3'<br><br>Sequence is: 2, 5, 8, 11… |
| 4. nth term | A rule which allows you to **calculate the term** that is in the **nth position** of the sequence.<br><br>Also known as the 'position-to-term' rule.<br><br>**n** refers to the **position** of a term in a sequence. | nth term is $3n - 1$<br><br>The $100^{th}$ term is $3 \times 100 - 1 = 299$ |
| 5. Finding the nth term of a linear sequence | 1. Find the **difference**.<br>2. **Multiply that by $n$**.<br>3. Substitute $n = 1$ to **find out what number you need to add or subtract to get the first number in the sequence**. | Find the nth term of: 3, 7, 11, 15…<br><br>1. Difference is +4<br>2. Start with $4n$<br>3. $4 \times 1 = 4$, so we need to subtract 1 to get 3.<br>nth term = $4n - 1$ |
| 6. Fibonacci type sequences | A sequence where the next number is found by **adding up the previous two terms** | The Fibonacci sequence is:<br>1,1,2,3,5,8,13,21,34 ...<br><br>An example of a Fibonacci-type sequence is:<br>$4, 7, 11, 18, 29$ ... |
| 7. Geometric Sequence | A sequence of numbers where each term is found by **multiplying the previous one** by a number called the **common ratio, r**. | An example of a geometric sequence is:<br>$2, 10, 50, 250$ ...<br>The common ratio is 5<br><br>Another example of a geometric sequence is:<br>$81, -27, 9, -3, 1$ ...<br>The common ratio is $-\frac{1}{3}$ |
| 8. Quadratic Sequence | A sequence of numbers where the **second difference is constant**.<br><br>A quadratic sequence will have a $n^2$ term. |  |
| 9. Triangular numbers | The sequence which comes from a pattern of dots that form a triangle.<br><br>$1, 3, 6, 10, 15, 21$ ... |  |

## Year 8: Visualising and Constructing

| Topic/Skill | Definition/Tips | Example |
|---|---|---|
| 1. Similar Shapes | Shapes are similar if they are the **same shape but different sizes**.<br><br>The proportion of the matching sides must be the same, meaning the ratios of corresponding sides are all equal. |  |
| 2. Scale Factor | The **ratio of corresponding sides** of two similar shapes.<br><br>To find a scale factor, **divide a length** on one shape **by the corresponding length** on a similar shape. |  <br>Scale Factor = $15 \div 10 = 1.5$ |
| 3. Finding missing lengths in similar shapes | 1. Find the **scale factor**.<br>2. **Multiply or divide** the corresponding side to find a missing length.<br><br>If you are finding a missing length on the larger shape you will need to multiply by the scale factor.<br><br>If you are finding a missing length on the smaller shape you will need to divide by the scale factor. |  <br>Scale Factor = $3 \div 2 = 1.5$<br>$x = 4.5 \times 1.5 = 6.75cm$ |
| 4. Enlargement | The shape will get **bigger or smaller**. Multiply each side by the **scale factor**. | Scale Factor = 3 means '3 times larger = multiply by 3'<br><br>Scale Factor = ½ means 'half the size = divide by 2' |
| 5. Finding the Centre of Enlargement | Draw **straight lines** through **corresponding corners** of the two shapes. The centre of enlargement is the point **where all the lines cross over**.<br><br>Be careful with negative enlargements as the corresponding corners will be the other way around. |  |
| 6. Scale (Map) | The **ratio** of a **distance on the map** to the actual **distance in real life**. |  |

## Year 8: Visualising and Constructing

| | | |
|---|---|---|
| 7. Bearings | 1. Measure from **North** (draw a North line)<br>2. Measure **clockwise**<br>3. Your answer must have **3 digits** (eg. 047°)<br><br>Look out for where the bearing is measured <u>from</u>. |  |
| 8. Compass Directions | You can use an acronym such as **'Never Eat Shredded Wheat'** to remember the order of the compass directions in a clockwise direction.<br><br>Bearings: $NE = 045°, W = 270°\ etc.$ |  |
| 9. Plans and Elevations | This takes 3D drawings and produces 2D drawings.<br><br>**Plan View**: from **above**<br>**Side Elevation**: from the **side**<br>**Front Elevation**: from the **front** |  |

## Stage 8: Algebraic Proficiency

| Topic/Skill | Definition/Tips | Example |
|---|---|---|
| 1. Expression | A mathematical statement written using **symbols**, **numbers** or **letters**, | $3x + 2$ or $5y^2$ |
| 2. Equation | A statement showing that **two expressions are equal** | $2y - 17 = 15$ |
| 3. Identity | An equation that is **true for all values** of the variables<br><br>An identity uses the symbol: ≡ | $2x \equiv x+x$ |
| 4. Formula | Shows the **relationship** between **two or more variables** | Area of a rectangle = length x width or A= LxW |
| 5. Simplifying Expressions | **Collect 'like terms'.**<br><br>Be careful with negatives.<br>$x^2$ and $x$ are not like terms. | $2x + 3y + 4x - 5y + 3$<br>$= 6x - 2y + 3$<br>$3x + 4 - x^2 + 2x - 1 = 5x - x^2 + 3$ |
| 6. $x$ times $x$ | The answer is $x^2$ not $2x$. | Squaring is multiplying by itself, not by 2. |
| 7. $p \times p \times p$ | The answer is $p^3$ not $3p$ | If p=2, then $p^3$=2x2x2=8, not 2x3=6 |
| 8. $p + p + p$ | The answer is 3p not $p^3$ | If p=2, then 2+2+2=6, not $2^3 = 8$ |
| 9. Expand | To expand a bracket, **multiply** each term **in the bracket** by the expression **outside** the bracket. | $3(m + 7) = 3x + 21$ |
| 10. Factorise | The **reverse** of **expanding**.<br>Factorising is writing an expression as a product of terms by '**taking out' a common factor**. | $6x - 15 = 3(2x - 5)$, where 3 is the common factor. |
| 11. Inverse | **Opposite** | The inverse of addition is subtraction.<br>The inverse of multiplication is division. |
| 12. Rearranging Formulae | **Use inverse operations** on both sides of the formula (balancing method) until you find the expression for the letter. | Make x the subject of $y = \frac{2x-1}{z}$<br><br>Multiply both sides by z<br>$yz = 2x - 1$<br>Add 1 to both sides<br>$yz + 1 = 2x$<br>Divide by 2 on both sides<br>$\frac{yz + 1}{2} = x$<br>We now have x as the subject. |
| 13. Writing Formulae | **Substitute letters for words** in the question. | Bob charges £3 per window and a £5 call out charge. |

| | | |
|---|---|---|
| | | $C = 3N + 5$<br><br>Where N=number of windows and C=cost |
| 14. Substitution | **Replace letters with numbers**.<br><br>Be careful of $5x^2$. You need to square first, then multiply by 5. | $a = 3, b = 2 \; and \; c = 5$. Find:<br>1. $2a = 2 \times 3 = 6$<br>2. $3a - 2b = 3 \times 3 - 2 \times 2 = 5$<br>3. $7b^2 - 5 = 7 \times 2^2 - 5 = 23$ |
| 15. Multiplication Index Law | When **multiplying** with the same base (number or letter), **add the powers**.<br><br>$\boldsymbol{a^m \times a^n = a^{m+n}}$ | $7^5 \times 7^3 = 7^8$<br>$a^{12} \times a = a^{13}$<br>$4x^5 \times 2x^8 = 8x^{13}$ |
| 16. Division Index Law | When **dividing** with the same base (number or letter), **subtract the powers**.<br><br>$\boldsymbol{a^m \div a^n = a^{m-n}}$ | $15^7 \div 15^4 = 15^3$<br>$x^9 \div x^2 = x^7$<br>$20a^{11} \div 5a^3 = 4a^8$ |
| 17. Brackets Index Laws | When raising a power to another power, multiply the powers together.<br><br>$\boldsymbol{(a^m)^n = a^{mn}}$ | $(y^2)^5 = y^{10}$<br>$(6^3)^4 = 6^{12}$<br>$(5x^6)^3 = 125x^{18}$ |
| 18. Notable Powers | $\boldsymbol{p = p^1}$<br>$\boldsymbol{p^0 = 1}$ | $99999^0 = 1$ |
| 19. Negative Powers | A negative power performs the reciprocal.<br>$\boldsymbol{a^{-m} = \frac{1}{a^m}}$ | $3^{-2} = \frac{1}{3^2} = \frac{1}{9}$ |

## Year 8: Fractions, Decimals and Percentages

| Topic/Skill | Definition/Tips | Example |
|---|---|---|
| 1. Simplifying Fractions | **Divide the numerator and denominator by the highest common factor**. | $\frac{20}{45} = \frac{4}{9}$ |
| 2. Equivalent Fractions | Fractions which represent the **same value**. | $\frac{2}{5} = \frac{4}{10} = \frac{20}{50} = \frac{60}{150}\ etc.$ |
| 3. Fractions to Decimals | **Divide the numerator by the denominator** using the bus stop method. | $\frac{3}{8} = 3 \div 8 = 0.375$ |
| 4. Decimals to Fractions | **Write as a fraction** over 10, 100 or 1000 and simplify. | $0.36 = \frac{36}{100} = \frac{9}{25}$ |
| 5. Percentages to Decimals | **Divide by 100** | $8\% = 8 \div 100 = 0.08$ |
| 6. Decimals to Percentages | **Multiply by 100** | $0.4 = 0.4 \times 100\% = 40\%$ |
| 7. Fractions to Percentages | Percentage is just a fraction out of 100. **Make the denominator 100 using equivalent fractions**.<br>When the denominator doesn't go in to 100, use a calculator and **multiply the fraction by 100**. | $\frac{3}{25} = \frac{12}{100} = 12\%$<br>$\frac{9}{17} \times 100 = 52.9\%$ |
| 8. Percentages to Fractions | Percentage is just a fraction out of 100. **Write the percentage over 100** and simplify. | $14\% = \frac{14}{100} = \frac{7}{50}$ |
| 9. Recurring Decimal | A decimal number that has **digits that repeat forever**.<br>The part that repeats is usually shown by placing a dot above the digit that repeats, or dots over the first and last digit of the repeating pattern. | $\frac{1}{3} = 0.333\ldots = 0.\dot{3}$<br>$\frac{1}{7} = 0.142857142857\ldots = 0.\dot{1}42857\dot{7}$<br>$\frac{77}{600} = 0.128333\ldots = 0.128\dot{3}$ |

10. Key Conversions:

| | | | | | |
|---|---|---|---|---|---|
| $\frac{1}{2}$ | 0.5 | 50% | $\frac{1}{5}$ | 0.2 | 20% |
| $\frac{1}{4}$ | 0.25 | 25% | $\frac{2}{5}$ | 0.4 | 40% |
| $\frac{3}{4}$ | 0.75 | 75% | $\frac{3}{5}$ | 0.6 | 60% |
| $\frac{1}{3}$ | $0.\dot{3}$ $(0.33333\ldots)$ | 33.33333….% | $\frac{4}{5}$ | 0.8 | 80% |
| $\frac{2}{3}$ | $0.\dot{6}$ $(0.66666\ldots)$ | 66.66666…% | $\frac{1}{10}$ | 0.1 | 10% |
| $\frac{1}{8}$ | 0.125 | 12.5% | $\frac{2}{10} = \frac{1}{5}$ | 0.2 | 20% |
| $\frac{2}{8} = \frac{1}{4}$ | 0.25 | 25% | $\frac{3}{10}$ | 0.3 | 30% |
| $\frac{3}{8}$ | 0.375 | 37.5% | $\frac{4}{10} = \frac{2}{5}$ | 0.4 | 40% |
| $\frac{4}{8} = \frac{1}{2}$ | 0.5 | 50% | $\frac{5}{10} = \frac{1}{2}$ | 0.5 | 50% |
| $\frac{5}{8}$ | 0.625 | 62.5% | $\frac{6}{10} = \frac{3}{5}$ | 0.6 | 60% |
| $\frac{6}{8} = \frac{3}{4}$ | 0.75 | 75% | $\frac{7}{10}$ | 0.7 | 70% |
| $\frac{7}{8}$ | 0.875 | 87.5% | $\frac{8}{10} = \frac{4}{5}$ | 0.8 | 80% |
| | | | $\frac{9}{10}$ | 0.9 | 90% |

**Year 8 French Knowledge Organiser HT1**
**Ma ville  *My town***

**Present tense key verbs**

| | |
|---|---|
| j'habite | I live |
| tu habites | you live |
| il/elle habite | he/she lives |
| nous habitons | we live |
| vous habitez | you (formal) live |
| ils/elles habitent | they live |
| je vais | I go |
| tu vas | you go |
| il/elle va | he /she goes |
| nous allons | we go |
| vous allez | you go |
| ils /elles vont | they go |
| on peut + infinitive | you can |

**Future ( conditional ) tense**

| | |
|---|---|
| j'aimerais | I would like |
| je voudrais | I would like |
| il/elle voudrait | he/she would like |
| il y aurait | there would be |
| ce serait | it would be |

**Connectives and sequencers**

| | |
|---|---|
| mais | but |
| cependant | however |
| aussi | also |
| puis | then |
| d'abord | firstly |
| ensuite | next |
| après | after |

**Giving an opinion**

| | |
|---|---|
| je pense que | I think that |
| à mon avis | in my opinion |
| je préfère | I prefer |
| j'adore | I love |
| j'aime | I like |
| je n'aime pas | I don't like |
| je déteste | I hate |

**Adjectives**

| | |
|---|---|
| ennuyeux | boring |
| rasant | boring |
| barbant | boring |
| passionnant | exciting |
| amusant | fun/funny |
| confortable | comfortable |
| douillet | cosy |
| beau/belle | beautiful |
| joli | pretty |
| nouveau/nouvelle | new |
| modern | modern |

**Comparisons**

| | |
|---|---|
| plus….que | more …than |
| moins ….que | less …than |

**Intensifiers**

| | |
|---|---|
| vraiment | really |
| très | very |
| assez | quite |
| trop | too |
| un peu | a bit |

**Useful phrases**

| | |
|---|---|
| il y a | there is/there are… |
| il n'y a pas de | there is/are no….. |
| on peut + infinitive | you can |
| on ne peut pas | you cannot |

**Places in town**

| | |
|---|---|
| un centre commercial | a shopping centre |
| un centre de loisirs | a leisure centre |
| un château | a castle |
| une église | a church |
| un marché | a market |
| un parc | a park |
| un stade | a stadium |
| une patinoire | an ice rink |
| une piscine | a swimming pool |
| des magasins | shops |
| des musées | museums |

**Countries**

| | |
|---|---|
| Je voudrais habiter | I would like to live… |
| en Angleterre | in England |
| en France | in France |
| en Espagne | in Spain |
| en Allemagne | in Germany |
| en Ecosse | in Scotland |
| en Australie | in Australia |
| au Portugal | in Portugal |
| au Pays de Galles | in Wales |
| aux Etats-unis | in the USA |

**Year 8 French**
**Knowledge Organiser HT2**
***La technologie***

| | |
|---|---|
| une maison | a house |
| un appartement | a flat |
| la rue | the street |
| à la campagne | in the country |
| dans un village | in a village |
| dans une ville | in a town |

**Rooms in a house**

| | |
|---|---|
| chez moi | in my home |
| la chambre | the bedroom |
| la cuisine | the kithcen |
| le jardin | the garden |
| la salle à manger | the dining room |
| la salle de bains | the bathroom |
| le salon | the living room |

**Prepositions**

| | |
|---|---|
| devant | in front of |
| derrière | behind |
| en face de | opposite |
| sur | on |
| sous | under |

**Intensifiers**

| | |
|---|---|
| vraiment | really |
| très | very |
| assez | quite |
| trop | too |
| un peu | a bit |

**Giving an opinion**

| | |
|---|---|
| je pense que | I think that |
| à mon avis | in my opinion |
| je préfère | I prefer |
| je trouve ça | I find it |
| je sui s fan de | I am a fan of |
| j'ai horreur de | I hate |
| ça me fait rire | it makes me laugh |
| ça me fait pleurer | it makes me cry |

**Present tense key verbs**

| | |
|---|---|
| Je regarde | I watch |
| Tu regardes | you watch |
| il/elle regarde | he/she watches |
| nous regardons | we watch |
| vous regardez | you (formal) watch |
| ils/elles regardent | they watch |
| je vais | I go |
| tu vas | you go |
| il/elle va | he /she goes |
| nous allons | we go |
| vous allez | you go |
| ils /elles vont | they go |
| je fais | I do |
| tu fais | you do |
| il/elle fait | he/she does |
| nous faisons | we do |
| vous faites | you do |
| ils/elles font | they do |

**Weather**

| | |
|---|---|
| Il fait beau | it is nice |
| Il pleut | it is raining |
| Il fait chaud | it is hot |
| Il fait froid | it is cold |

***On TV***

| | |
|---|---|
| les dessins animés | cartoons |
| les infos | the news |
| les jeux télévisés | game shows |
| la météo | the weather |
| les séries | series |
| les documentaires | |
| les émissions de sport | |
| les émissions de télé-réalité | |

**Internet**

| | |
|---|---|
| Je fais des achats en ligne | I do online shopping |
| Je fais des recherches | I do searches |
| J'envoie | I send |
| Je mets à jour | I update |
| Je joue à des jeux en ligne | I play games on line |

**Time phrases: When?**

| | |
|---|---|
| le weekend | at the weekend |
| le matin | in the morning |
| l'après midi | in the afternoon |
| le soir | in the evening/at night |
| samedi matin | on Saturday morning |
| dimanche après-midi | on Sunday afternoon |

**Past tense**

| | |
|---|---|
| J'ai discuté | I discussed |
| J'ai écouté | I listened |
| J'ai envoyé | I sent |
| J'ai joué | I played |
| J'ai posté | I posted |
| J'ai regardé | I watched |
| J'ai surfé | I surfed |
| J'ai tchatté | I chatted |
| J'ai téléchargé | I downloaded |

**Connectives and sequencers**

| | |
|---|---|
| cependant | however |
| aussi | also |
| puis | then |
| d'abord | firstly |
| ensuite | next |
| après | after |
| avant | before |

**Adjectives**

| | |
|---|---|
| ennuyeux | boring |
| rasant | boring |
| barbant | boring |
| passionnant | exciting |
| amusant | fun/funny |
| confortable | comfortable |
| douillet | cosy |
| assez bien | quite good |
| chouette | excellent |
| effrayant | frightening |
| émouvant | moving |
| passionnant | exciting |
| pratique | practical |

## Activities (Aktivitäten)

| **Was machst du im Winter ?** | **What do you do in winter ?** |
|---|---|
| Ich spiele… | I play… |
| Fußball | football |
| Tennis | tennis |
| am Computer | on the computer |
| Ich gehe… | I go… |
| einkaufen | shopping |
| ins Kino | to the cinema |
| Ich fahre Snowboard | I go snowboarding |
| Ich lese | I read |
| Ich faulenze | I laze about |

## Countries (Die Länder)

| | |
|---|---|
| Amerika | America |
| England | England |
| Frankreich | France |
| Griechenland | Greece |
| Irland | Ireland |
| Italien | Italy |
| Österreich | Austria |
| Portugal | Portugal |
| Schottland | Scotland |
| Spanien | Spain |
| Wales | Wales |

| **Was hast du gemacht?** | **What did you do?** |
|---|---|
| Ich habe… | |
| Volleyball gespielt | I played volleyball |
| Postkarten gekauft | I bought postcards |
| einen Film gesehen | I saw a film |
| Croissants/Pizza gegessen | I ate croissants/pizza |
| Mineralwasser getrunken | I drank mineral water |
| eine Radtour gemacht | I did a bike ride |
| Ich bin… | |
| schwimmen gegangen | I went swimming |
| ins Café gegangen | I went to the café |
| Ski/Snowboard gefahren | I went skiing/snowboarding |
| wander gegangen | I went hiking |

# Past tense

## The Seasons (Die Jahreszeiten)

| | |
|---|---|
| im Frühling | in the spring |
| im Sommer | in the summer |
| im Herbst | in the autumn |
| im Winter | in the winter |

## Time Phrases/frequency phrases

| | |
|---|---|
| für eine Woche | for a week |
| für zwei Wochen | for 2 weeks |
| für zehn Tage | for 10 days |
| manchmal | sometimes |
| oft | often |
| nie | never |

## The Summer Holidays (Die Sommerferien)

| **Wo warst du in den Sommerferien?** | **Where were you in the summer holidays?** |
|---|---|
| Ich war in (+ country) | I was in (+ country) |
| Ich war zu Hause | I was at home |
| **Für wie lange?** | **For how long?** |
| Für… | For… |
| **Wie war es?** | **How was it?** |
| Es war… | It was… |
| **Wie was das Wetter?** | **How was the weather?** |
| **Es war…** | It was… |
| **Es hat geregnet** | It rained |
| **Wo hast du gewohnt?** | **Where did you stay?** |
| Ich habe… | I stayed… |
| in einem Hotel | in a hotel |
| in einer Ferienwohnung | in a holiday apartment |
| in einer Jugendherberge | in a youth hostel |
| in einem Ferienhaus | in a hoiday house |
| auf einem Campingplatz | on a campsite |
| bei Freunden | with friends |
| bei meiner Familie | with my family |

…gewohnt.

## Weather (Das Wetter)

| **Wie ist das Wetter?** | **What is the weather like?** |
|---|---|
| Es ist… | It is… |
| schön | nice |
| sonnig | sunny |
| windig | windy |
| wolkig | cloudy |
| neblig | foggy |
| frostig | frosty |
| heiß | hot |
| kalt | cold |
| Es regnet | It's raining |
| Es schneit | It's snowing |
| Es donnert und blitzt | It's thundering and lightning |

## Connectives

| | |
|---|---|
| und | and |
| aber | but |
| denn | because |
| weil | because |
| (+verb to end) | |

## Qualifiers and Intensifiers

| | |
|---|---|
| sehr | very |
| ziemlich | quite |
| ganz | totally |
| zu | too |

# Year 8 German Knowledge Organisers

## Was hast du gemacht? — What did you do?

Ich habe…

| | |
|---|---|
| Volleyball gespielt | I played volleyball |
| Postkarten gekauft | I bought postcards |
| einen Film gesehen | I saw a film |
| Croissants/Pizza gegessen | I ate croissants/pizza |
| Mineralwasser getrunken | I drank mineral water |
| eine Radtour gemacht | I did a bike ride |

Ich bin…

| | |
|---|---|
| schwimmen gegangen | I went swimming |
| ins Café gegangen | I went to the café |
| Ski/Snowboard gefahren | I went skiing/snowboarding |
| wandern gegangen | I went hiking |

## The Summer Holidays (Die Sommerferien)

**Wo hast du gewohnt? Where did you stay?**

Ich habe… — I stayed…

| | |
|---|---|
| in einem Hotel | in a hotel |
| in einer Ferienwohnung | in a holiday apartment |
| in einer Jugendherberge | in a youth hostel |
| in einem Ferienhaus | in a holiday house |
| auf einem Campingplatz | on a campsite |
| bei Freunden | with friends |
| bei meiner Familie | with my family |

…**gewohnt**.

## Die Uhrzeit — The time

| | |
|---|---|
| Wie viel Uhr ist es? | What time is it? |
| Wie spät ist es? | What time is it? |
| Es ist zwei Uhr. | It's two o'clock. |
| Es ist Viertel vor zwei. | It's quarter to two. |
| Es ist zehn vor zwei. | It's ten to two. |
| Es ist Viertel nach zwei. | It's quarter past two. |
| Es ist zwanzig nach zwei. | It's twenty past two. |
| Es ist halb drei. | It's half past two. |

## Im Café — In the café

| | |
|---|---|
| Was möchtest du … ? | What would you like … ? |
| als Vorspeise | as a starter |
| als Hauptgericht | as a main course |
| als Nachtisch | as dessert |
| Was möchtest du trinken? | What would you like to drink? |
| **Ich möchte …** | **I'd like …** |
| den Fisch. | the fish. |
| den Salat. | the salad. |
| die Pizza. | the pizza. |
| die Tomatensuppe. | the tomato soup. |
| die Torte. | the cake / gateau. |
| das Eis. | the ice-cream. |
| das Hähnchen. | the chicken. |
| das Steak. | the steak. |
| einen Milchshake. | a milkshake. |
| eine Limo. | a lemonade. |
| ein Mineralwasser. | a mineral water. |
| Nichts, danke. | Nothing, thanks. |

| | |
|---|---|
| **Was isst / trinkst du gern?** | ***What do you like to eat / drink?*** |
| Ich esse gern … | *I like (eating) …* |
| Ich esse nicht gern … | *I don't like (eating) …* |
| Brot. | *bread.* |
| Joghurt. | *yoghurt.* |
| Käse. | *cheese.* |
| Kuchen. | *cake.* |
| Marmelade. | *jam.* |
| Schinken. | *ham.* |
| **Ich trinke gern (Saft).** | ***I like drinking (juice).*** |
| **Ich trinke nicht gern (Cola).** | ***I don't like drinking (cola).*** |
| Was gibt es nicht? | *What isn't there?* |
| Es gibt … | *There isn't any …* |
| keinen Joghurt. | *yoghurt.* |
| kein Brot. | *bread.* |

## Auf dem Markt — At the market

| | |
|---|---|
| Bitte sehr? | *Can I help you?* |
| Haben Sie … ? | *Do you have any … ?* |
| Äpfel | *apples* |
| Bananen | *bananas* |
| Birnen | *pears* |
| Champignons | *mushrooms* |
| Erdbeeren | *strawberries* |
| Karotten | *carrots* |
| Kartoffeln | *potatoes* |
| Kirschen | *cherries* |
| Orangen | *oranges* |
| Tomaten | *tomatoes* |
| Trauben | *grapes* |
| Zwiebeln | *onions* |
| Ich möchte fünfzig Gramm (Kirschen), bitte. | *I'd like 50 g of (cherries), please.* |
| hundert Gramm | *100 g* |
| zweihundert Gramm | *200 g* |
| zweihundertfünfzig Gramm | *250 g* |
| fünfhundert Gramm | *500 g* |
| siebenhundertfünfzig Gramm | *750 g* |
| ein Kilo | *1 kg* |
| zwei Kilo | *2 kg* |
| Sonst noch etwas? | *Anything else?* |
| Das ist alles. | *That's all.* |
| Das macht (neun) Euro (fünfzig), bitte. | *That will be (nine) euros (fifty), please.* |

# Music Year 8 Knowledge Organiser: Improvisation (Autumn Term)

## Blue Notes in C Major

C D E F G A B C

Blue Notes

$E_b$ $G_b$ $B_b$

**Chord:** 2 or more notes played at the same time. There are many types of chords – major, minor, diminshed, augmented. 7th chords are also very common.

**Triad:** A type of chord that has only 3 notes. You can work out the notes in a triad by playing the chord note, miss a note, play a note, miss a note and play a note.

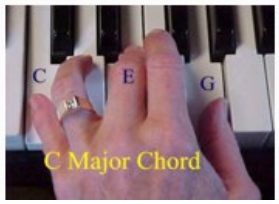
**Raga** – The melody. Melodic improvisations are based on rags and ragas

**Tala** – The rhythm. The number of beats are called tals or talas. Talas are cycles of 4 – 16 beats.

**Drone**– The harmony. In Indian music there are no chords – just drones. This will usually be played on the tambura

## Learning to Play the 12-Bar Blues

| | | | |
|---|---|---|---|
| C / / / | C / / / | C / / / | C / / / |
| F / / / | F / / / | C / / / | C / / / |
| G / / / | F / / / | C / / / | C / / / |






**Interval:** the space between one note and another note.

**Tone:** When the interval between one note and another is 2 steps (that includes the black notes).

**Semitone:** When the interval between one note and another is 1 step (that includes the black notes).

## C triad
(Chord I in C major)

C - E - G

## F triad
(Chord IV in C major)

F - A - C

## G triad
(Chord V in C major)

G - B - D

# Unit 1: Drugs
# Year 8

## Skills

- Engage with and reflect on different ideas, opinions and beliefs to help develop personal opinion.
- Express and explain opinions through discussion and written assessments.
- Reflect on the knowledge and skills needed for setting realistic targets and personal goals.
- Work individually and with others to negotiate, plan and take action.
- Analyse and reflect upon action taken and progress made.

## Knowledge

Develop awareness about the different families of drugs and their effects.

Develop knowledge about the legal categories of drugs.

Develop our awareness of the prevalence of drug use.

Understand the dangers of drug use and the reasons why people use them.

Understand the UK drug laws.

Personal Social Health Education

# Y8: Unit 1 Judaism

Judaism is one of the oldest religious traditions with Abraham as the 'founding father'. It is a monotheistic religion (i.e. they believe in one God only). Judaism shares a lot of similarities with the religions of Christianity and Islam as will be explored. In this unit of work you will be examining various parts of Jewish history and how these events effect both Jewish traditions, lifestyle and practices today.

Knowledge Organiser

## Religions

### Lesson 1

**What are the key features of Judaism?**

What does "a monotheistic religion" mean?
Can you name 5 key features of Judaism?
Find out about 3 new facts not covered in this lesson.

### Lesson 4

**Judaism and slavery - what is Passover?**

What was the Passover story?
Can you give three reasons why the Passover story would make Jewish people think Moses is important?
What are the 10 plagues and what order did they come?

### Lesson 7

**Bar/Bat Mitzvah- what happens at a coming-of age ceremony?**

Why do Jewish children go through a bar/bat mitzvah?
What are key features of a bar mitzvah? What is done/worn? List at least 5
Do you think everyone should have an event where they take on more responsibility? One reason for and one against.

## Ethics

### Lesson 2

**Kosher food laws – why bother?**

Can you name two foods that aren't Kosher and why they aren't?
Create a flowchart that shows the process that meat goes through to become kosher.
Give two reasons why Jewish people follow Kosher laws.

### Lesson 5

**Modern day slavery – does it still happen?**

What are three facts about modern slavery?
Explain the link between modern slavery and the history of the Jewish people
Modern slavery provides a better life for some. Give 2 reasons why it is and 2 reasons why it is not.

### Lesson 8

**What age are we responsible for our behaviour?**

Jews follow the 10 commandments, which do you think are the three most important and why?
What new rule would you make that everyone should follow?
"Following the 10 commandments make you a better person" Give 2 reasons why it might and 2 reasons why it might not.

## Philosophy

### Lesson 3

**Is it worth being religious?**

Jews follow 613 rules but does this make them a better person? Give 3 ideas
What do people gain from having a faith?
Is religion a force for good. Give 2 reasons why it is and 2 reasons why it is not.

### Lesson 6

**The Holocaust: How has Jewish persecution challenged faith in God?**

Why were the Jewish people persecuted in the Holocaust? Can you list at least 3 reasons?
What effect might the Holocaust have on Jewish people today?
How do Jewish people justify their belief in God after the holocaust?

### Lesson 9

**Are our actions ever truly free?**

Can you give two examples of actions out of our control?
Can you give two examples of actions that we DO control?
Create a list of 5 things that you can do to make the lives of those around you better.

**Following these 9 lessons pupils will be assessed and feedback will be given in exercise books.*

# Y8: Unit 2 Hinduism

Hinduism is the third biggest religion in the world, existing for around 4000 years. Hinduism is made up of a variety of different religious beliefs and practices which originated near the river Indus in India. In this unit of work, you will learn about the Hindu religion, analyse and understand ethical ideas such as potential consequences of actions and equality among all and philosophical questions surrounding human existence.

**Curriculum Organiser**

## Religions

Lesson 1

**Hinduism: What is it all about?**

*How and where did Hinduism originate?*

*Describe a day in a life of a typical Hindu teenager.*

*Give 3 ways that Hinduism is different to Judaism (Unit 1).*

Lesson 4

**Hindu festivals – what is celebrated?**

*What is the story behind Diwali?*

*Name and explain the traditions behind one other Hindu festival.*

*"Religious festivals are just an excuse for a party". Give 3 reasons to agree and disagree.*

Lesson 7

**Samskaras – what are significant events in the life of a Hindu?**

*What does the term samskara mean?*

*Explain 5 different samskaras.*

*Compare 3 samskaras with 3 Jewish life events. What are the similarities and differences?*

## Ethics

Lesson 2

**Karma, samsara and rebirth – how does it work?**

*How do Hindus reach moksha?*

*Explain the concept of karma and how it relates to the samsara cycle.*

*Is there any evidence for rebirth? Give 2 reasons for and against.*

Lesson 5

**Equality P4C - Are some people more important than others?**

*What is the difference between equality and fairness?*

*What are the 9 protected characteristics of the Equality Act 2010?*

*Some people say that we don't need a law to tell us that we're all equal – do you agree or disagree? Explain your view.*

Lesson 8

**Should we all have goals that benefit others? Or just ourselves?**

*What are the 4 key goals in a Hindu's life?*

*Do you think that you are achieving your dharma in life?*

*"Money doesn't bring happiness" – what would a Hindu say to this?*

## Philosophy

Lesson 3

**How do Hindus understand God?**

*Explain the difference between monotheism and polytheism. Which is Hinduism?*

*Explain how the Trimurti represents Brahman.*

*How might a Hindu's belief in God influence their daily lives?*

Lesson 6

**The Caste system - What is the perfect way to organise society?**

*Describe the different levels of the caste system.*

*What decides the caste that someone is in?*

*"Life is easier if everyone knows their place." Give 2 reasons to agree and disagree.*

Lesson 9

**Is this whole world an illusion? What is real?**

*Explain the terms maya and moksha.*

*Could a Hindu still be a scientist?*

*How could the belief in maya influence a Hindu's daily life?*

**Following these 9 lessons pupils will be assessed and feedback will be given in exercise books.*

# Science

# 8C3 Combustion Knowledge Organiser

## Burning Fuels

Fuels are usually **hydrocarbons** which are burnt to release **energy.**

Examples of fuels are: wood, methane, petrol and diesel.

When a hydrocarbon burns it reacts with oxygen from the air to produce **carbon dioxide** and **water**.

However, when Hydrogen burns it reacts with oxygen from the air to produce water only.

## Fire Safety

Flammable

Oxidising

Explosive

The three sides of the fire triangle are: fuel, oxygen and heat.

If you want to put out a fire you remove at least one side of the fire triangle. It is easier to remove the heat or oxygen than the fuel.

## Burning Candles

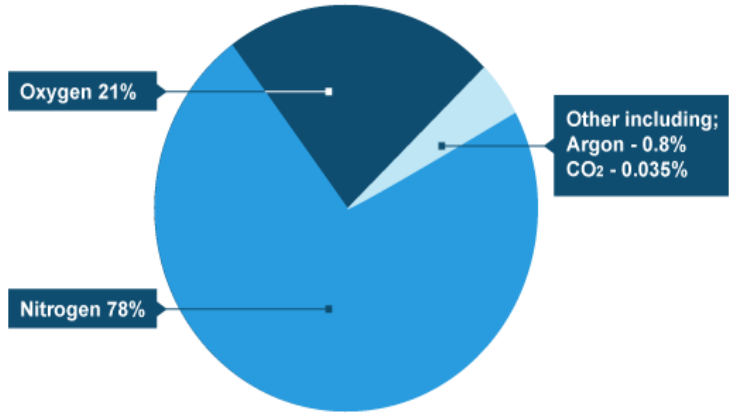
An experiment to find the effect of volume of air on the burning time of a candle.

The method is:

1. Place a small candle on a safety mat.
2. Light the candle.
3. Place a 100 $cm^3$ beaker over the candle and start the stop clock.
4. Time how long it takes for the candle to go out.
5. Repeat with four more different sized beakers.
6. Repeat each beaker 3 times.

Result: As the size of the beaker increases the time taken also increases.

## Gases in the atmosphere




## Air Pollution

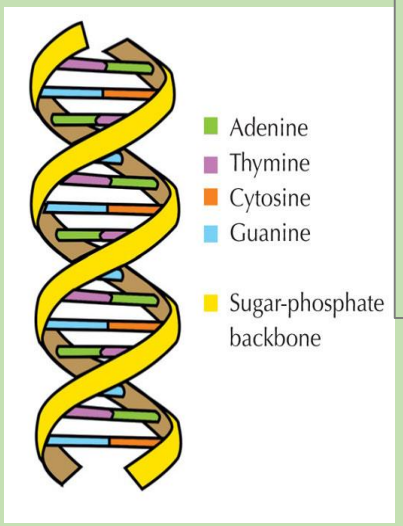
Lots of pollutants are released when fuels burn.

For example;

Carbon dioxide, nitrogen oxides and sulphur dioxide.

These gases cause environmental problems such as acid rain. This happens when sulphur reacts with oxygen to make sulphur dioxide and then it dissolves in rain water to make it acidic

# Year 8 Knowledge Organiser : 8A – Genes and inheritance




In DNA, the complementary base pairs are held together by hydrogen bonds.

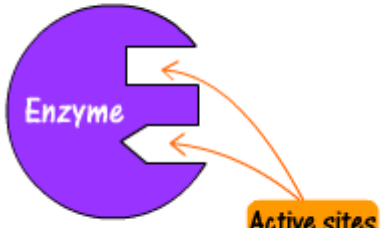
DNA is the molecule which controls our characteristics. It makes up 'genes' which code for proteins

| | |
|---|---|
| carbohydrase = | breaks carbohydrate into sugar molecules |
| lipase = | breaks fat into glycerol and fatty acids |
| protease = | breaks protein into amino acids |

## Enzymes

Enzymes are biological catalysts. They speed up chemical reactions within the cell.

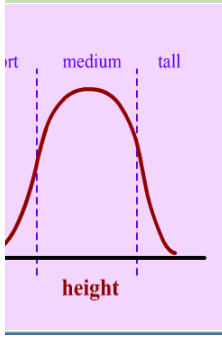
Play

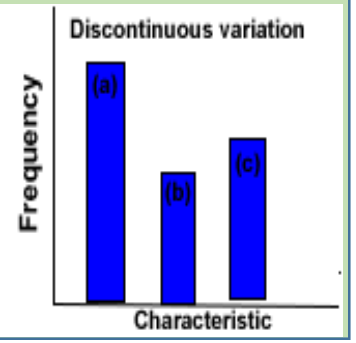



Enzymes are found in the cells of all living things

They are protein machines.

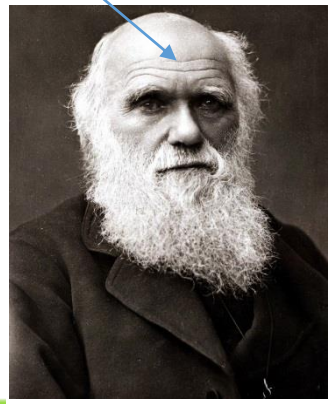
Variation is the difference between members of the same species. It can be caused by environmental or genetic factors.

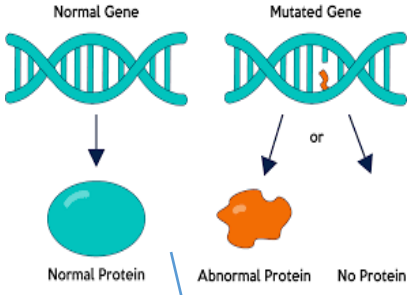



| Term | Description |
|---|---|
| Species | A group of individuals that are physically similar that can produce fertile offspring |
| Variation | The presence of differences between living things of the same species |
| Competition | Interaction between groups of organisms seeking to access limited supplies of factors required for life e.g. light, space, food |
| Natural selection | A process that causes populations to change over time. |
| Evolution | The change in species over long periods of time |
| Gene | The basic units of genetic material inherited from our parents. A gene is a section of DNA which controls part of a cell's chemistry - particularly protein production. |

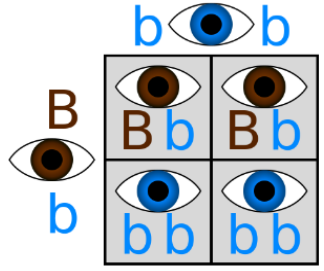
Charles Darwin proposed the theory of 'natural selection' to explain evolution

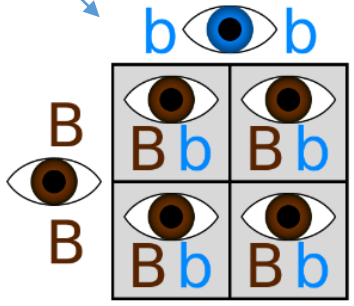





*Mutation is the change in the base sequence of DNA.*

Punnett squares are used to help you determine what genes the child of two parents will have. Everyone has 2 copies of a certain gene (called an **allele**): 1 copy comes from your mum and 1 copy comes from your dad. But since your mum and dad each have 2 copies, how do you know which ones you will get?



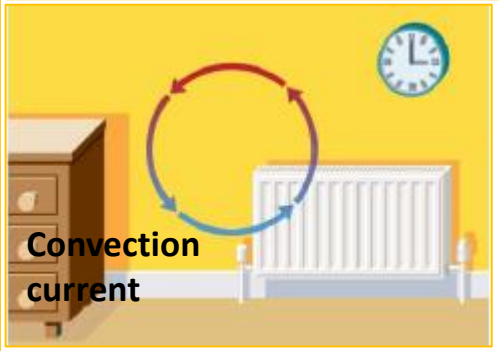
# Year 8 P3 Knowledge Organiser : Energy Transfers

## Thermal energy vs Temperature

**Thermal energy** – The total kinetic energy of the particles in a material, measured in joules or J.

**Temperature**- A measure of the average kinetic energy of the particles in a material. The temperature of an object is to do with how hot or cold it is, measured in degrees Celsius.

e.g. A swimming pool at 30°C is at a lower **temperature** than a cup of tea at 80°C. But the swimming pool contains more water, so it stores more **thermal energy** than the cup of tea.




Energy cannot be created or destroyed, only transferred from one form to another.

## Power

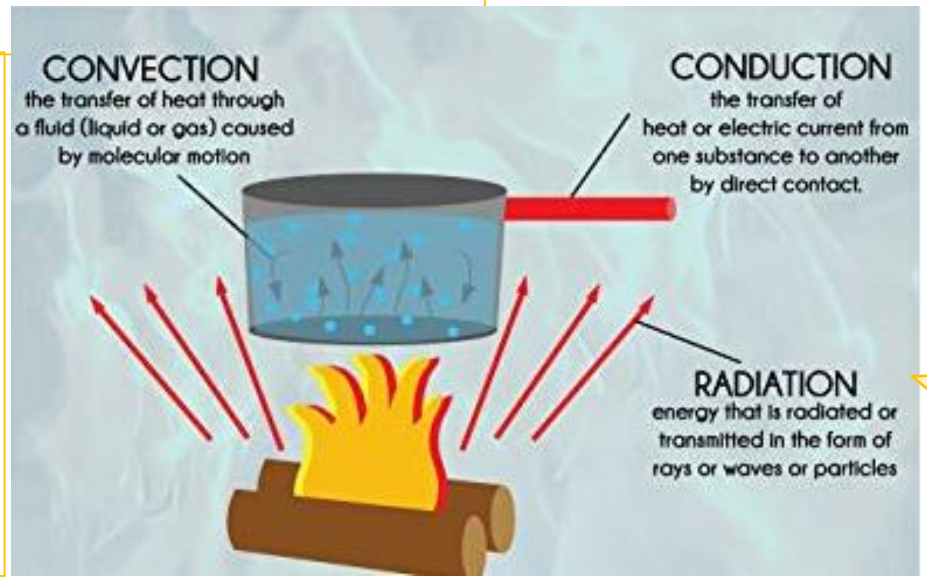
- Power is the rate at which energy is used and is measured in Watts.
- The power of an electrical appliance is shown on the rating plates in Watts

## Conduction

Particles bump into nearby particles and make them vibrate more. This passes the thermal energy through the substance by conduction, from the hot end to the cold end.

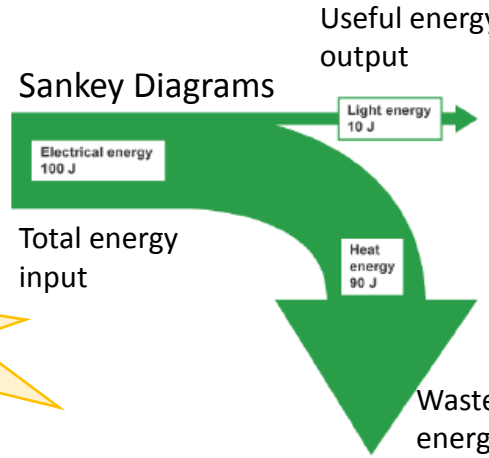
## Convection

Particles with a lot of thermal energy in a liquid or gas move apart, the liquid or gas becomes less dense and rises, taking the place of particles with less thermal energy.




Infra-red radiation can travel through a vacuum

## Sankey Diagrams




## Infra-red Radiation

All objects transfer thermal energy by emitting **infra-red radiation,** the hotter an object is the more infra-red radiation it emits. Infra-red radiation is part of the electromagnetic spectrum.

$$Efficiency\ (\%) = \frac{Useful\ energy\ output}{Total\ energy\ input} (\times 100)$$

$$Power\ (W) = \frac{Energy\ transferred\ (J)}{Time\ taken\ (s)}$$

**Specific Heat Capacity** is how much energy can be stored as heat in 1kg of material.
**Specific Latent Heat** is how much energy is required to melt or to evaporate 1kg of material.

Insulation (if a material is a poor conductor we say it is an insulator) is used to reduce energy transfers by heating. You will have some insulation in your own home e.g. double glazed windows or cavity wall insulation. This acts to stop conduction and convection through the walls and roof of your house.