

Year 8 – HT3



Knowledge Organisers

Name:

Team:

Our students will:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

What do I need to be able to do?

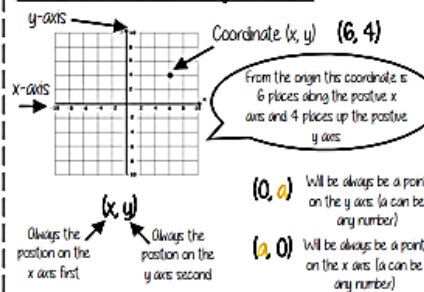
- By the end of this unit you should be able to:
- Label and identify lines parallel to the axes
 - Recognise and use basic straight lines
 - Identify positive and negative gradients
 - Link linear graphs to sequences
 - Plot $y = mx + c$ graphs

Keywords

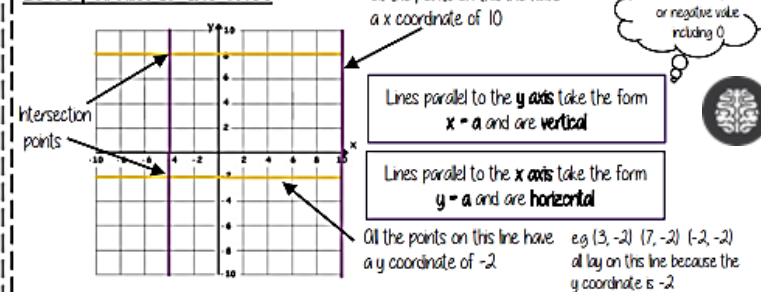
- Quadrant:** four quarters of the coordinate plane.
- Coordinate:** a set of values that show an exact position.
- Horizontal:** a straight line from left to right (parallel to the x axis)
- Vertical:** a straight line from top to bottom (parallel to the y axis)
- Origin:** (0,0) on a graph. The point the two axes cross
- Parallel:** Lines that never meet
- Gradient:** The steepness of a line
- Intercept:** Where lines cross



Coordinates in four quadrants



Lines parallel to the axes



Career Focus - Where could this take you?



I am a forensic investigator. I calculate specific evidence to help convict criminals.



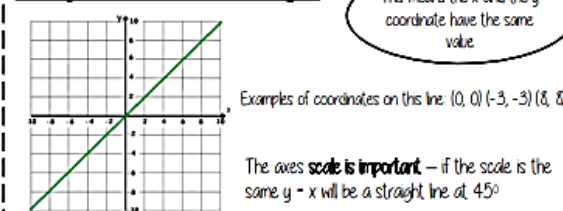
Retrieval Practice

- A bag contains red and blue counters in the ratio 1 : 4. Three counters are red. How many are blue?
- Write all the factors of 20
- Here is a probability scale. Estimate the probability the arrow points to.
- What do the angles in a quadrilateral add up to?

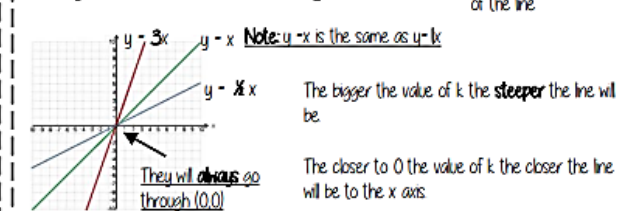


Vocabulary check: Factor

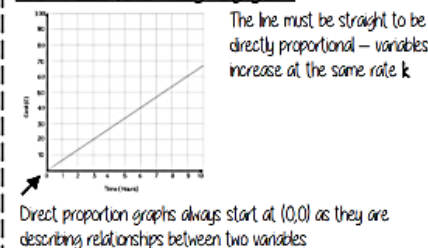
Recognise and use the line $y=x$



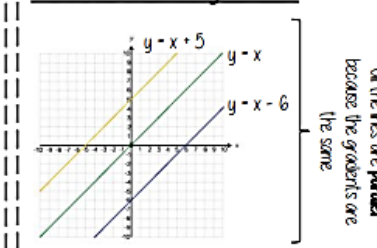
Recognise and use the lines $y=kx$



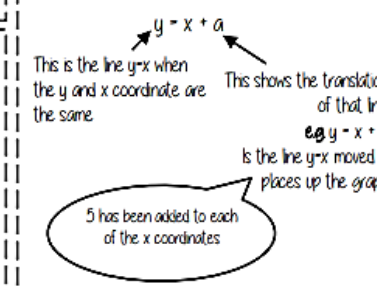
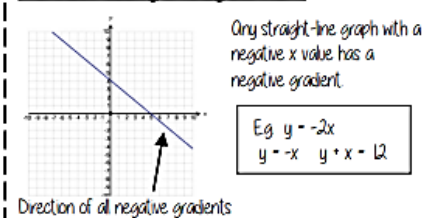
Direct Proportion using $y=kx$



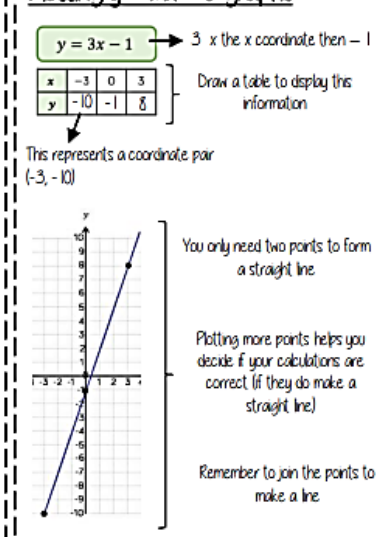
Lines in the form $y = -x + a$



Lines with negative gradients



Plotting $y = mx + c$ graphs



Challenge Activities

Which of the following lines is parallel to the x-axis? Circle your answer.

$y = 7$ $y = 7x + 2$ $y = 7x$ $x = 7$

Write the equation of a line that is parallel to the y-axis.

Topic Links

- This topic links to:
- Drawing conversion graphs, scatter graphs and correlation.

Additional Resources

- To further practise and develop your knowledge see:
- Videos: 84 - 88

Corbettmaths

What do I need to be able to do?

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

- Draw and interpret scatter graphs
- Describe correlation and relationships
- Identify different types of non-linear relationships
- Design and complete an ungrouped frequency table
- Read and interpret grouped tables (discrete and continuous data)
- Represent data in two way tables

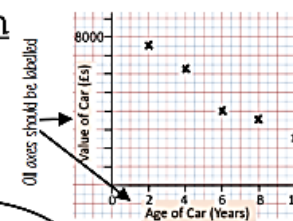
Keywords

Variable: a quantity that may change within the context of the problem
Relationship: the link between two variables (items). Eg. Between sunny days and ice cream sales
Correlation: the mathematical definition for the type of relationship.
Origin: where two axes meet on a graph
Line of best fit: a straight line on a graph that represents the data on a scatter graph
Outlier: a point that lies outside the trend of graph
Quantitative: numerical data
Qualitative: descriptive information, colours, genders, names, emotions etc.
Continuous: quantitative data that has an infinite number of possible values within its range.
Discrete: quantitative or qualitative data that only takes certain values
Frequency: the number of times a particular data value occurs.



Draw and interpret a scatter graph

Age of Car (Years)	2	4	6	8	10
Value of Car (£s)	7500	6250	4000	3500	2500



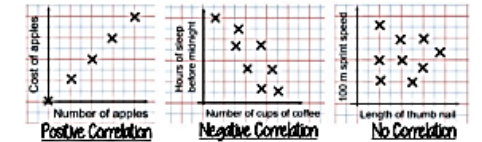
- This data may not be given in size order
- The data forms information pairs for the scatter graph
- Not all data has a relationship

This scatter graph shows as the age of a car increases the value decreases

The link between the data can be explained verbally

The axes should fit all the values on and be equally spread out

Linear Correlation



As one variable increases so does the other variable

As one variable increases the other variable decreases

There is no relationship between the two variables

Career Focus - Where could this take you?



Mathematics plays a crucial role in many criminal investigations.

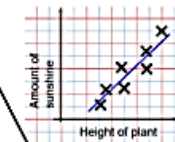
Retrieval Practice

- 1) A bag contains red and blue counters in the ratio 1 : 3. Fifteen counters are blue. How many are red?
- 2) Which of the numbers are prime?
1, 6, 7, 15, 35
- 3) Write a sample space for the outcomes of a fair six-sided dice.
- 4) Write 30% as a decimal.

Vocabulary check: Product

The line of best fit

The Line of best fit is used to make estimates about the information in your scatter graph



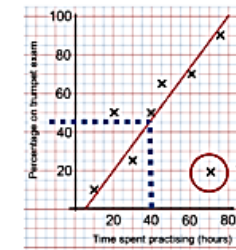
- Things to know:**
- The line of best fit **DOES NOT** need to go through the origin (the point the axes cross)
 - There should be approximately the same number of points above and below the line (it may not go through any points)
 - The line extends across the whole graph

It is only an estimate because the line is designed to be an average representation of the data
It is always a **straight line**

Using a line of best fit

Interpolation is using the line of best fit to estimate values inside our data point.

eg 40 hours revising predicts a percentage of 45



Extrapolation is where we use our line of best fit to predict information outside of our data

This is not always useful – in this example you cannot score more than 100%. So revising for longer can not be estimated

This point is an **'outlier'** it is an outlier because it doesn't fit this model and stands apart from the data

Challenge Activities



On a bookcase

- $\frac{5}{8}$ of the books are fiction books.
- The rest are non-fiction.
- There are 72 non-fiction books.

How many books are fiction?

Topic Links

This topic links to:

- Averages from frequency tables and comparing data.

Additional Resources

Corbettmaths



To further practise and develop your knowledge see:

- Videos: 51, 52, 165, 380

Ungrouped Data

The number of times an event happened

The table shows the number of siblings students have. The answers were
3, 1, 2, 2, 0, 3, 4, 1, 1, 2, 0, 2

Number of siblings	Frequency
0	2
1	3
2	4
3	2
4	1

2 people had 0 siblings. This means there are 0 siblings to be counted here

2 + 2 + 2 + 2 OR 2 x 4 = 8

3 + 3 OR 3 x 2 = 6

2 people have 3 siblings so there are 6 siblings in total

OVERALL there are 0 + 3 + 8 + 6 + 4 Siblings = 21 siblings

Best represented by discrete data (Not always a number)

Grouped Data

If we have a large spread of data it is better to group it. This is so it is easier to look for a trend. Form groups of equal size to make comparison more valid and spread the groups out from the smallest to the largest value.

Cost of TV (£)	Tally	Frequency
101 - 150	THL II	7
151 - 200	THL THL I	11
201 - 250	THL	5
251 - 300	III	3

Discrete Data
The groups don't overlap

We do not know the exact value of each item in a group – so an estimate would be based to calculate the overall total (Midpoint)

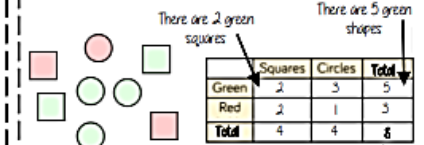
x	Frequency
40 < x ≤ 50	1
50 < x ≤ 60	3
60 < x ≤ 70	5

Continuous Data
To make sure all values are included we represent the subgroups

eg this group includes every weight bigger than 60kg up to and including 70kg

Representing data in two-way tables

Two-way tables represent discrete information in a visual way that allows you to make conclusions, find probability or find totals of sub groups



Using your two-way table

To find a fraction eg What fraction of the items are red? $\frac{3}{8}$ red items

but 8 items in total $\frac{3}{8}$

Interchange Use your fraction, decimal, percentage equivalence knowledge.

What do I need to be able to do?

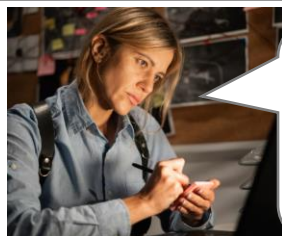
By the end of this unit you should be able to:

- Construct a sample space diagram
- Systematically list outcomes
- Find the probability from two-way tables
- Find the probability from Venn diagrams

Keywords

- Outcomes:** the result of an event that depends on probability
Probability: the chance that something will happen
Set: a collection of objects
Chance: the likelihood of a particular outcome
Event: the outcome of a probability – a set of possible outcomes
Biased: a built in error that makes all values wrong by a certain amount
Union: Notation 'U' meaning the set made by comparing the elements of two sets

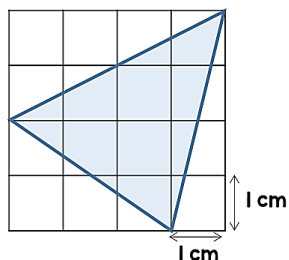
Career Focus - Where could this take you?



I also attend court as an expert witness to present my evidence.

Challenge Activities

What is the area of the triangle?



Retrieval Practice

- 1) A class has boys and girls in the ratio 2 : 3
There are 10 boys. How many girls are there?
- 2) Complete the sentence.
"For every __ blue there are __ yellow."
- 3) Which of the numbers are square numbers?
2, 4, 6, 9, 10
- 4) Solve $x + 35 = 62$

Vocabulary check: Prime

Topic Links

- This topic links to:
- Listing outcomes, fractions.

Additional Resources

Corbettmaths

- To further practise and develop your knowledge see:
- Videos: 245, 246, 319, 380

Construct sample space diagrams



Sample space diagrams provide a systematic way to display outcomes from events

The possible outcomes from rolling a dice

	1	2	3	4	5	6
H	1H	2H	3H	4H	5H	6H
T	1T	2T	3T	4T	5T	6T

The possible outcomes from tossing a coin

This is the set notation to list the outcomes S =

$$S = \{H, 2H, 3H, 4H, 5H, 6H, 1T, 2T, 3T, 4T, 5T, 6T\}$$

In between the { } are a, the possible outcomes

Probability from sample space

The possible outcomes from rolling a dice

	1	2	3	4	5	6
H	1H	2H	3H	4H	5H	6H
T	1T	2T	3T	4T	5T	6T

The possible outcomes from tossing a coin

This is the set notation that represents the question P

What is the probability that an outcome has an even number and a tails?

$$P(\text{Even number and Tails}) = \frac{3}{12}$$

In between the () is the event asked for

There are three even numbers with tails
 Numerator: the event
 Denominator: the total number of outcomes
 There are twelve possible outcomes

Probability from two-way tables

	Car	Bus	Wak	Total
Boys	15	24	14	53
Girls	6	20	21	47
Total	21	44	35	100

$$P(\text{Girl wak to school}) = \frac{21}{100}$$

The event
 The total in the set
 The total number of items

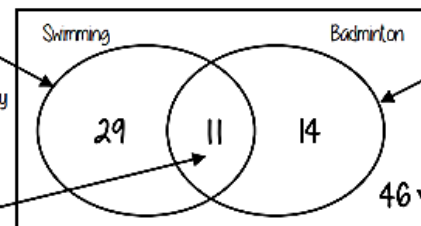
Product Rule

The number of items in event a x The number of items in event b

Probability from Venn diagrams

100 students were questioned if they played badminton or went to swimming club
 40 went swimming, 25 went to badminton and 11 went to both

This whole curve includes everyone that went swimming
 Because 11 did both we calculate just swimming by 40 - 11



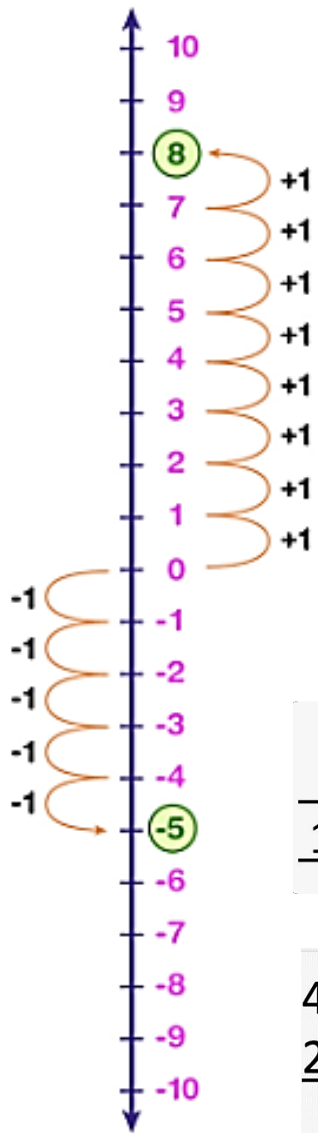
This whole curve includes everyone that went to badminton
 Because 11 did both we calculate just badminton by 25 - 11

$$P(\text{Just swimming}) = \frac{29}{100}$$

The intersection represents both Swimming AND badminton

The number outside represents those that did neither badminton or swimming
 $100 - 29 - 11 - 14$

Maths: Quick Reference: Number Skills



100 Hundreds	10 Tens	1 Units	$\frac{1}{10}$ Tenths	$\frac{1}{100}$ Hundredths
3	5	2	7	1

addition

- add
- more
- plus
- sum
- total
- altogether

subtraction

- subtract
- minus
- leave
- less
- take away
- difference between

multiplication

- lots of
- times
- multiply
- groups of
- product
- multiplied by
- multiple of
- repeated addition
- array

division

- divide
- divided by
- divided into
- share
- share equally
- equal groups of

$$\begin{array}{r} 476 + \\ 874 \\ \hline 1350 \\ 11 \end{array}$$

$$\begin{array}{r} 586 \\ \times 7 \\ \hline 42 \\ 560 \\ \hline 3500 \end{array}$$

$$8 \overline{) 045} \\ \underline{36} \\ 80$$

$$\begin{array}{r} 7 \\ 4,783 - \\ 2,349 \\ \hline 4 \end{array}$$

156000. = 1.56×10^5
Move decimal point 5 places left,
exponent goes up by 5

0.0000053 = 5.3×10^{-6}
Move decimal point 6 places right,
exponent goes down by 6

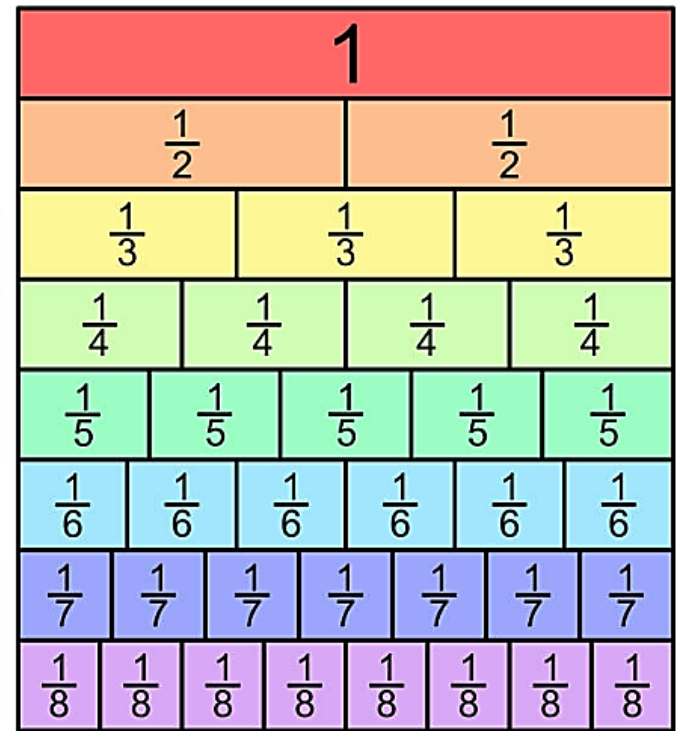
X	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

1 P Parentheses
2 E Exponents
3 M Multiply
4 D Divide
A Add
S Subtract

() e^2 (×) (÷) (+) (-)

Left to Right (whichever comes first) Left to Right (whichever comes first)

1% of $\div 100$ $\frac{1}{100}$ of $\times \frac{1}{100}$ $\times 0.01$	5% of $\div 10, \div 2$ $\frac{1}{20}$ of $\times \frac{1}{20}$ $\times 0.05$	10% of $\div 10$ $\frac{1}{10}$ of $\times \frac{1}{10}$ $\times 0.1$	20% of $\div 5$ $\frac{1}{5}$ of $\times \frac{1}{5}$ $\times 0.2$
25% of $\div 4$ $\frac{1}{4}$ of $\times \frac{1}{4}$ $\times 0.25$	50% of $\div 2$ $\frac{1}{2}$ of $\times \frac{1}{2}$ $\times 0.5$	75% of $\div 4, \times 3$ $\frac{3}{4}$ of $\times \frac{3}{4}$ $\times 0.75$	



Maths: Quick Reference: Geometry & Measures

Quadrilaterals

<p>Square</p> <p>Four sides of equal length, four internal right angles.</p>	<p>Rectangle</p> <p>Four internal right angles, opposite sides of equal length.</p>	<p>Parallelogram</p> <p>Opposite sides are parallel and equal in length, opposite angles are equal.</p>	<p>Rhombus</p> <p>All four sides are the same length, like a square that has been squashed sideways.</p>
<p>Trapezium (or trapezoid)</p> <p>Two sides are parallel. Side lengths and angles are not equal.</p>	<p>Isosceles Trapezium (or trapezoid)</p> <p>Two sides are parallel and base angles are equal, non-parallel sides are equal length.</p>	<p>Kite</p> <p>Two pairs of adjacent sides are of equal length, the shape has an axis of symmetry.</p>	<p>Irregular Quadrilateral</p> <p>No sides are equal in length and no internal angles are the same.</p>

3D shapes

Cone	Cylinder	Sphere	Square Based Pyramid
Cube	Triangular Prism	Tetrahedron	Cuboid

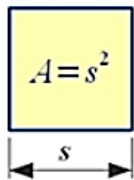
Triangle	Quadrilateral	Pentagon	Hexagon
Heptagon	Octagon	Nonagon	Decagon

Pentagon		$180^{\circ} \times 3 = 540^{\circ}$
Hexagon		$180^{\circ} \times 4 = 720^{\circ}$
Heptagon		$180^{\circ} \times 5 = 900^{\circ}$

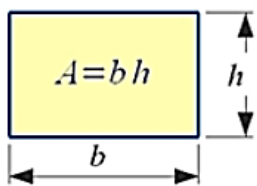
Length					
cm	mm	m	cm	km	m
$\times 10$	$\times 100$	$\times 1,000$	$\div 10$	$\div 100$	$\div 1,000$
Mass					
g	mg	kg	g	t	kg
$\times 1,000$	$\times 1,000$	$\times 1,000$	$\div 1,000$	$\div 1,000$	$\div 1,000$
Volume					
l	ml	cl	ml	l	cl
$\times 1,000$	$\times 10$	$\times 100$	$\div 1,000$	$\div 10$	$\div 100$

Maths: Quick Reference: Geometry (Areas & Volumes)

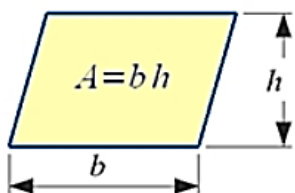
Square



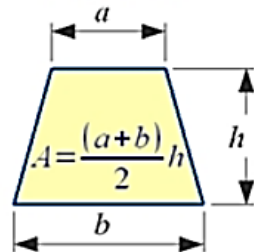
Rectangle



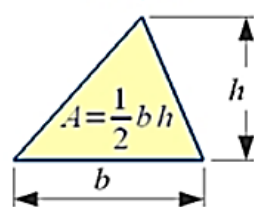
Parallelogram



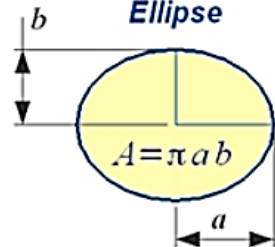
Trapezoid



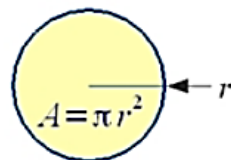
Triangle



Ellipse


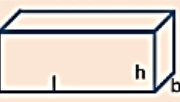




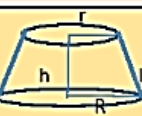


Circle



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Area and volume of 3d figures

S.No	Name	Figure	Curved Surface Area	Total Surface Area	Volume
1)	Cube	 $a = \text{side}$	$4a^2$	$6a^2$	a^3
2)	Cuboid	 $l = \text{length}$ $b = \text{breadth}$ $h = \text{height}$	$2h(l + b)$	$2(lb + bh + lh)$	$l \times b \times h$
3)	Sphere	 $r = \text{radius}$	$4\pi r^2$	$4\pi r^2$	$\frac{4}{3}\pi r^3$
4)	Solid Hemisphere	 $r = \text{radius}$	$2\pi r^2$	$3\pi r^2$	$\frac{2}{3}\pi r^3$
5)	Right circular cylinder	 $r = \text{radius}$ $h = \text{height}$	$2\pi rh$	$2\pi r(h+r)$	$\pi r^2 h$
6)	Right circular cone	 $r = \text{radius}$ $h = \text{height}$ $l = \text{slant height}$	πrl	$\pi r(l+r)$	$\frac{1}{3}\pi r^2 h$
7)	Frustum of a cone	 $r = \text{top radius}$ $R = \text{base radius}$ $h = \text{height}$ $l = \text{slant height}$	$\pi l(R + r)$	$\pi l(R+r) + \pi r^2 + \pi R^2$	$\frac{1}{3}\pi h(R^2 + r^2 + Rr)$

Maths: Quick Reference: Algebra Skills

Simplifying Expressions

Like terms

$$3y + 2x + 4x - y = 2y + 6x$$

Like terms

$$C \times C \times C \times C = C^4$$

$$C + C + C + C = 4C$$

Expanding Brackets

multiply

$$7(x + 2)$$

$$7x + 14$$

multiply

$$5a(b - 4)$$

$$5ab - 20a$$

Expand & Simplify...

$$5(x + 3) + 6(x - 4)$$

$$5x + 15 + 6x - 24$$

$$11x - 9$$

FOIL Method

F O

$$(2x + 3)(5x - 8)$$

I L

First: $(2x)(5x) = 10x^2$

Outer: $(2x)(-8) = -16x$

Inner: $(3)(5x) = 15x$

Last: $(3)(-8) = -24$

$$(2x + 3)(5x - 8)$$

$$= 10x^2 - 16x + 15x - 24$$

$$= 10x^2 - x - 24$$

Grid Method

$$(2x + 3)(5x - 8)$$

	$2x$	$+ 3$
$5x$	$10x^2$	$+ 15x$
$- 8$	$- 16x$	$- 24$

$$10x^2 + 15x - 16x - 24$$

$$= 10x^2 - x - 24$$

An Expression

$$4a + 7b$$

A Formula

$$A = \pi r^2$$

An Equation

$$4a + 12 = 60$$

An Identity

$$(a + b)^2 = a^2 + 2ab + b^2$$

Factorising Brackets

Common factor?

$$7x + 14$$

$$7(x + 2)$$

Common factor?

$$5ab - 20a$$

$$5a(b - 4)$$

Substitution

b = 9

$12b + 10 = 118$ $\frac{b}{3} = 3$ $-b = -9$ $3(b+1) = 30$
 $3b = 27$
 $\frac{2b}{3} = 6$
 $7b = 63$
 $\frac{b+11}{4} = 5$
 $3b - 4 = 23$ $b^2 = 81$ $b+15 = 24$
 $b-5 = 4$
 $b-20 = -11$

Solving Equations

$$6x - 5 = 7$$

$$\boxed{+ 5} \qquad \boxed{+ 5}$$

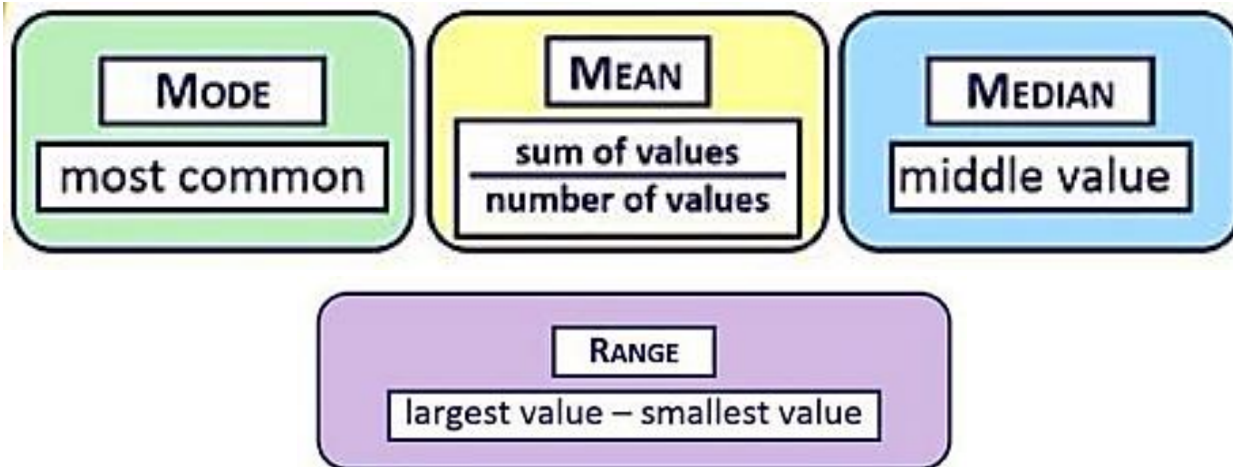
$$6x = 12$$

$$\boxed{\div 6} \qquad \boxed{\div 6}$$

$$x = 2$$



Maths: Quick Reference: Statistics



<p>Mean 7, 3, 4, 1, 7, 6 Sum of numbers divided by the total numbers Mean = $(7+3+4+1+7+6)/6$ $= 28/6 = 4.66$</p>	<p>Median 7, 3, 4, 1, 7, 6 Arrange in order and pick the middle value 1, 3, <u>4</u>, <u>6</u>, 7, 7 Median = $(4+6)/2 = 5$</p>
<p>Mode 7, 3, 4, 1, 7, 6 Most common number <u>7</u> 3, 4, 1, <u>7</u> 6 Mode = 7</p>	<p>Range 7, 3, 4, 1, 7, 6 Difference between highest and lowest Range = $7 - 1 = 6$</p>

Mean from the Frequency Table

Discrete Data Frequency Table

$$\text{Mean} = \frac{\text{Sum of (value} \times \text{frequency)}}{\text{Total frequency}}$$

Grouped Data Frequency Table

$$\text{Mean of grouped data} = \frac{\text{Sum of (interval midpoint} \times \text{frequency)}}{\text{Total frequency}}$$

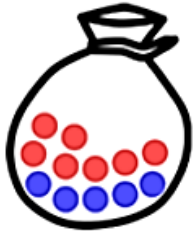
Length (x cm)	Frequency	Midpoint	Midpoint × frequency
$0 < x \leq 10$	4	× 5	= 20
$10 < x \leq 20$	10	× 15	= 150
$20 < x \leq 30$	7	× 25	= 175
$30 < x \leq 40$	4	× 35	= 140
	25		485

estimated mean = $485 \div 25 = 19.4 \text{ cm}$

Simple Probability

$$\text{Probability} = \frac{\text{Favorable outcomes}}{\text{Total outcomes}}$$

Example:



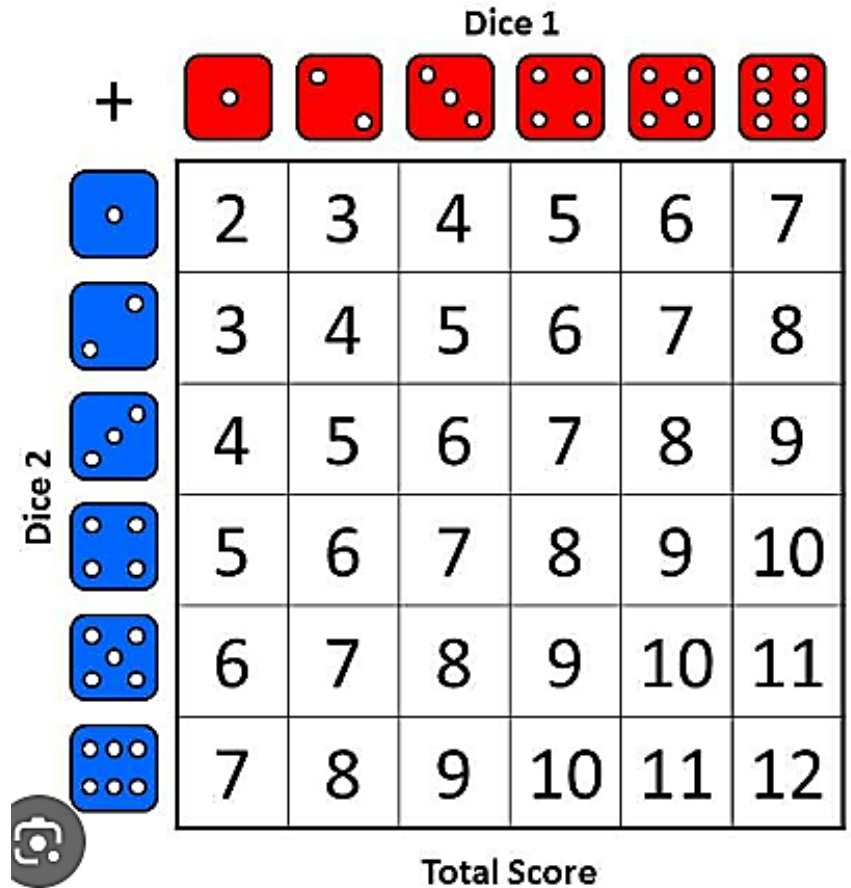
$$P(\text{red}) = \frac{7}{12}$$

← Number of red marbles
← Total number of marbles (sample space)

$$P(\text{blue}) = \frac{5}{12}$$

← Number of blue marbles
← Total number of marbles (sample space)

Sample Space Diagrams



		Dice 1					
	+						
Dice 2		2	3	4	5	6	7
		3	4	5	6	7	8
		4	5	6	7	8	9
		5	6	7	8	9	10
		6	7	8	9	10	11
		7	8	9	10	11	12
		Total Score					

In words:	Impossible	Very unlikely	Unlikely	Even chances	Likely	Very likely	Certain
As decimal fractions:	0	0,2	0,4	0,5	0,6	0,8	1
As fractions:	0	$\frac{1}{5}$	$\frac{2}{5}$	$\frac{1}{2}$	$\frac{3}{5}$	$\frac{4}{5}$	1
As percentages:	0%	20%	40%	50%	60%	80%	100%



Our students will:

- read easily, fluently and with good understanding
- develop the habit of reading widely and often, for both pleasure and information
- acquire a wide vocabulary, an understanding of grammar and knowledge of linguistic conventions for reading, writing and spoken language
- appreciate our rich and varied literary heritage
- write clearly, accurately and coherently, adapting their language and style in and for a range of contexts, purposes and audiences
- use discussion in order to learn; they should be able to elaborate and explain clearly their understanding and ideas
- are competent in the arts of speaking and listening, making formal presentations, demonstrating to others and participating in debate.

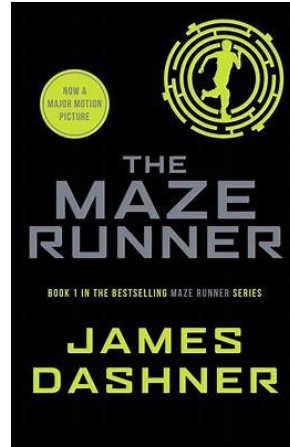
- Recognise different genres and conventions of writing;
- reference the text and use evidence;
- analyse the writer's methods of language and form;
- demonstrate understanding of 'Genre, Audience and Purpose';
- be able to craft creative writing to engage the audience;
- use sentences for effect.



Key Concepts - Knowledge

The Maze Runner

The Maze Runner is the first in a series of young adult dystopian science fiction novels written by American author James Dashner. The series consists of:
 The Maze Runner (2009),
 The Scorch Trials (2010)
 The Death Cure (2011), as well as two prequel novels:
 The Kill Order (2012) and The Fever Code (2016)



When Thomas wakes up in the lift, the only thing he can remember is his name. He's surrounded by strangers—boys whose memories are also gone.

'Nice to meet ya, shank. Welcome to the Glade.'

Outside the towering stone walls that surround the Glade is a limitless, ever-changing maze. It's the only way out and no one's ever made it through alive.

Everything is going to change.

Then a girl arrives. The first girl ever. And the message she delivers is terrifying.

'Remember. Survive. Run.'



Dystopian worlds

Dystopian worlds are works of science fiction. Juxtaposed with utopian writing typically sketches a future in which technology improves the everyday life of human beings and advances civilization, dystopian writing offer an opposite view.

The society in The Maze Runner is dystopian because the inhabitants are there against their own will. They were placed in the Maze by the creators, who survey them constantly. There are creatures in the Maze that will harm anyone they come across and the inhabitants of the Glade must face them to try to escape.

Dystopian worlds are popular in fiction because they let us explore what life would be like in an alternative version of society. It helps us to appreciate how societies need to function in order to work properly for those who live within them. Dystopian fiction is like a fun-house mirror being held to society. It reflects the society we live in but also distorts it, emphasising a certain aspect of it.

Other popular dystopian novels:

The Hunger Games series by Suzanne Collins

Divergent by Veronica Roth

Ender's Game by Orson Scott Card

1984 by George Orwell

Fahrenheit 451 by Ray Bradbury

Handmaid's Tale by Margrette Atwood



- Recognise different genres and conventions of writing;
- reference the text and use evidence;
- analyse the writer's methods of language and form;
- demonstrate understanding of 'Genre, Audience and Purpose';
- be able to craft creative writing to engage the audience;
- use sentences for effect.



Key Concepts - Skills

Slow writing – Practise using a range of sentence types and punctuation in your descriptive writing by slowly crafting paragraphs. Follow the prompts and use one of the pictures in the skills practice box to help you.

Sentence 1: a **short sentence** to explain the character's feelings of waking up in a strange place

Sentence 2: a **complex sentence** to describe the character.

Sentence 3: a **compound sentence** to describe what happens.

Sentence 4: an **exclamatory sentence** to express emotions with an exclamation mark.

Sentence 5/6: two sentences with a similar focus joined with a **semi-colon**.

Sentence 7: a sentence of dialogue using **speech marks**.

Sentence 8: a **short sentence** using an ellipsis.

Challenge Activities - Skills practice

Task 1 - Write a description of a dystopian world. Choose one of the images and use the 'Z' technique to ensure you focus on different parts of the image.

Don't forget to use plenty of writer's methods to make your writing really engaging.

Task 2 - Create your own dystopian world. Write a description of your version of a dystopian future. Maybe the world is run by super-intelligent cats? Or robots? It could be futuristic or post-apocalyptic (after the end of the world).

You could include: simile, metaphor, personification, repetition, alliteration, onomatopoeia.



Career Focus - Where could this take you?



I'm a book reviewer, and it's the coolest job ever. Picture this: I read fantastic stories and then spill all the juicy details to help other people find their next favourite book. The key skills? Well, I've mastered the art of reading between the lines, understanding characters' vibes, and expressing my thoughts in a way that's as fun as a video game. It's like being a storyteller's sidekick!

Topic Links

This topic links to:

- Year 7 - Victorian Heroines, Frankenstein
- Year 9 - Speeches, Boys Don't Cry, Ghost Stories, Poetic forms
- GCSE Language Paper 1 Sections A & B

Additional Resources

To further practise and develop your knowledge see:

<https://www.writingexercises.co.uk/>

<https://www.bbc.co.uk/bitesize/topics/zpcc/wm>



Vocabulary

You will be tested on five words per week.



Keyword	Definition
Allegory	A story that represents abstract ideas or moral qualities; an allegory has both a literal and a symbolic level of meaning.
Allusion	A reference to a person, place, poem, book, event, etc., which is not part of the story, that the author expects the reader will recognize.
Antagonist	The person or force that is in conflict with, or opposes, the protagonist.
Characterisation	The methods, incidents, speech, etc., an author uses to reveal the people in the book; characterization is depicted by what the person says, what others say, and by his or her actions.
Cliffhanger	literature or other art forms in which episodes or adventures end in suspense, with their outcomes uncertain; this technique helps increase reader or viewer interest.
Crisis	the decisive point, or one of numerous points in a literary work, which forces other things to occur.
Dramatic Irony	The audience or reader knows more about a character's situation than the character does and knows that the character's understanding is incorrect.
Hero	The central character, usually one who possesses noble qualities such as self-sacrifice, courage, wisdom, etc.
Villain	A character in a book, play, film, etc. who harms other people.

Keyword	Definition
Inference	The act of drawing a conclusion that is not actually stated by the author.
Foreshadowing	The use of hints or clues in a story to suggest what action is to come; foreshadowing is frequently used to create interest and build suspense.
Flashback	A scene that interrupts the ongoing action in a story to show an event that happened earlier.
Utopia	An ideal or perfect version of a world or society.
Dystopia	A supposed utopia, but one that has gone wrong.
In media res	A Latin expression that means "beginning in the middle of the action."
Irony	A perception of inconsistency, sometimes humorous, in which the significance and understanding of a statement or event is changed by its context. Example: The firehouse burned down.
Structural irony	The use of a naïve hero, whose incorrect perceptions differ from the reader's correct ones.
Verbal irony	A discrepancy between what is said and what is really meant; sarcasm. Example: a large man whose nickname is "Tiny"
Metaphor	A comparison of two things that are basically dissimilar in which one is described in terms of the other.
Motif	A situation, incident, idea, or image that is repeated significantly in a literary work.

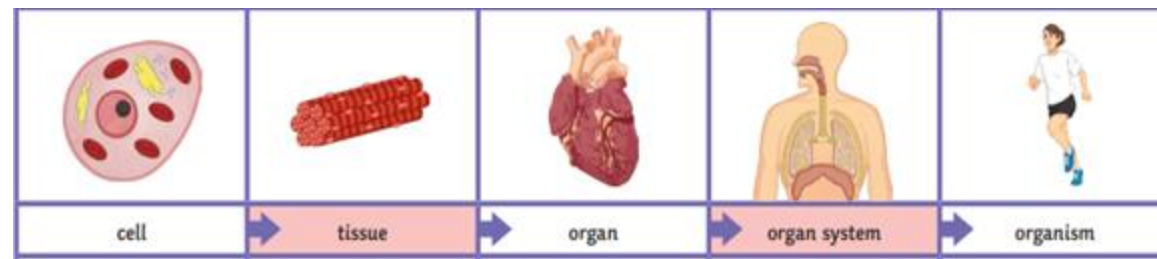


Our students will:

- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics
- develop understanding of the **nature, processes and methods of science** through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the **uses and implications** of science, today and for the future.

Keyword	Definition
Tissue	A group of cells with a similar structure and function.
Organ	A group of tissues carrying out a particular function.
Organ System	Organs working together as a system.
Organism	Organ systems all working together to form a living organism.
Digestive system	A system that breaks down large molecules into smaller molecules and absorbs them into the bloodstream.
Oesophagus	A muscular tube that connects the mouth to the stomach
Pancreas	An organ that produces the digestive enzymes that are added to the small intestine
Bile	A substance produced by liver that emulsifies fats (separates into small droplets)
Enzyme	A biological catalyst that speeds up reactions in the body.
Balanced diet	A system that transports substances around the body in the blood.
Alcohol	The organ that pumps blood around the body.
Nicotine	A condition where the arteries supplying the heart become narrowed or blocked.

Principles of Organisation

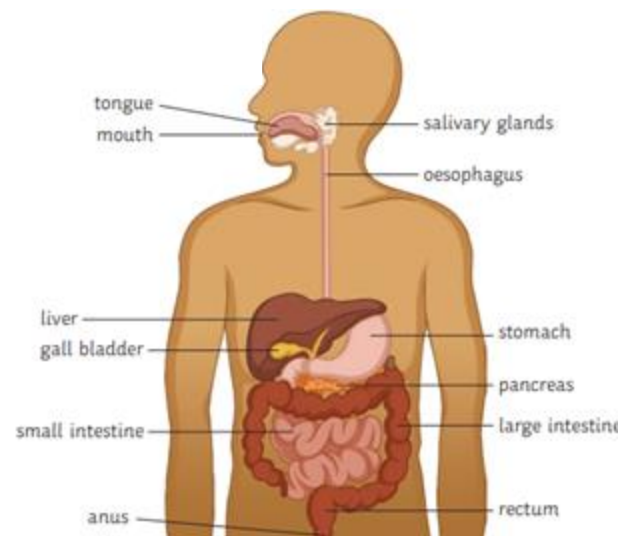


Healthy Eating

A balanced diet contains the correct amount of all food groups.

The food groups are: carbohydrates, lipids, proteins, vitamins, minerals, dietary fibre and water. Each food group has its own role to play within a healthy diet.

The Digestive System



The purpose of the digestive system is to break down large molecules into smaller soluble molecules that can then be absorbed into the bloodstream. The rate of these reactions is increased by enzymes.

Enzymes



An enzyme is a biological catalyst; enzymes speed up chemical reactions without being used up. This happens because it lowers the activation energy required for the reaction to occur. They have an active site which the molecules fit into and they will only work on certain substrates.

Smoking and Alcohol

Alcohol is a depressant slows down messages in the nervous system, which includes the brain, spinal cord and other nerves. This often makes you feel less alert and lengthens reaction times. Alcohol is found in beer, wines and spirits such as vodka. Excessive alcohol consumption can lead to heart disease, stroke, liver disease, high blood pressure and cancer,

Nicotine is the most addictive drug in tobacco. It is found in both cigarettes and some e-cigarettes/vapes. The nicotine from smoking cigarettes or vaping causes the person to want more. Nicotine also increases heart rate and blood pressure, and makes narrower than normal. This can lead to .

- Describe a healthy diet and the consequences of diet imbalances
- Explain how the digestive system, enzymes and bacteria help us to digest food

Retrieval Practice



Questions	Answers
What are the levels of organisation?	Cell, Tissue, Organ, Organ System, Organism.
Name the parts of the digestive system.	Specialised structures that perform various jobs inside cells.
What is the function of the mouth?	The teeth mechanically digest food, and the salivary glands add the enzyme amylase to break down starch
What is the function of the stomach?	Creates digestive juices containing enzymes and breaks down food.
What is the function of the small intestine?	Break down food and absorb nutrients into the bloodstream
What is the function of the large intestine?	To absorb water.
Enzymes are biological catalysts. What does this mean?	Speeds up specific chemical reactions inside the body.
What are the different types of digestive enzymes?	Carbohydrases that break down carbohydrates, Proteases that break down protein and Lipases that break down fats (lipids).
What does a healthy diet consist of?	The correct quantities of carbohydrates, lipids, proteins, vitamins, minerals, dietary fibre and water.
What lifestyle factors can affect health?	Diet, Smoking, Alcohol and Exercise.
What is the addictive chemical in tobacco?	Nicotine
What diseases can alcohol consumption lead to?	Heart disease, stroke, liver disease, high blood pressure and cancer
What is cancer?	Uncontrolled cell growth that leads to the formation of tumours.

Career Focus - Where could this take you?



I am a pathologist. This is a medical healthcare provider who examines bodies and body tissues, I am also responsible for performing lab tests. I help other healthcare providers reach diagnoses and I play an important role in the treatment team. I could work in an NHS or private hospital or in a laboratory. My job is exciting and fulfilling because I get to use my problem solving and analytical skills to come up with a better solution to fight viruses, infections, and other life-threatening conditions.



Challenge Activities

1. Make flashcards for the definitions and retrieval practice questions.
2. Make a mindmap for this topic. Remember to include keywords and the links between information.
3. Research the organ systems of the body in more detail. What is the nervous system? How does the endocrine system work?
4. Carry out some research into how diet can influence our likelihood of developing diseases.
5. Find out more about pathologists and what they do. What qualifications would you need for this career? What current research is being done? What is the salary?
6. Construct a fact file about a famous historical scientist that helped us to understand more about the human body and how it works.

Topic Links



This topic links to other science topics such as

- Cells
- Energy

We will also be practising how to

- Construct a leaflet using imperative language to warn about the dangers of smoking and alcohol

Additional Resources



Educake - <https://www.educake.co.uk/>

YouTube Cognito -
<https://www.youtube.com/watch?v=VO2OkpwAG9o>
<https://www.youtube.com/watch?v=vMl46qGQMDw>
<https://www.youtube.com/watch?v=6jz9WvfKDvc>
<https://www.youtube.com/watch?v=UN5BIPfMUkg>

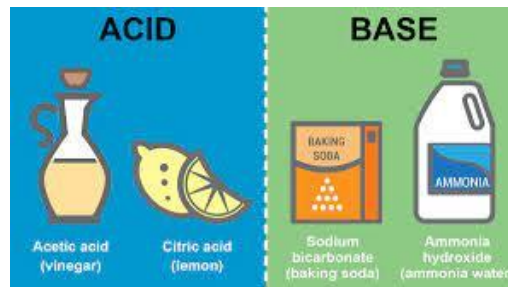
The aims of the sequence of learning are to ensure that all students:

- Identify acids and alkalis using the pH scale
- Explain how neutralisation is used to make salts

Keyword	Definition
Physical changes	When a substance changes state. It does not make any new chemical substances forming.
Chemical changes	When a chemical reaction occurs leading to the formation of new elements or compounds.
Acid	A sour tasting substance with a pH 1-6.
Alkali	A soapy substance with a pH 8-14 (liquid)
Base	A soapy substance with a pH 8-14 (solid)
Neutral	A substance that is neither acidic or alkaline with a pH of 7
Strong acid	An acid with a pH of 1-3
Weak acid	An acid with a pH of 4-6
Strong alkali	An alkali with a pH of 11-14
Weak alkali	An alkali with a pH of 8-10
pH scale	A scale used to indicate how acidic or alkaline a substance is.
Indicator	A substance that changes colour in the presence of a chemical i.e. acid or alkali.
Neutralisation	A reaction between an acid and an alkali to produce salt and water (neutral substance).

Key Concepts

Acids and Alkalis



Acids are a group of chemicals that contain a H⁺ ion examples of which are vinegar, Hydrochloric acid and Sulphuric acid. Citric acid is found in citrus fruit and is an example of a weak acid.

Alkalis are a group of chemicals that contain the OH⁻ ion and have a soapy feel. An example is Sodium Hydroxide. In solid form they are called bases and in solution alkalis.

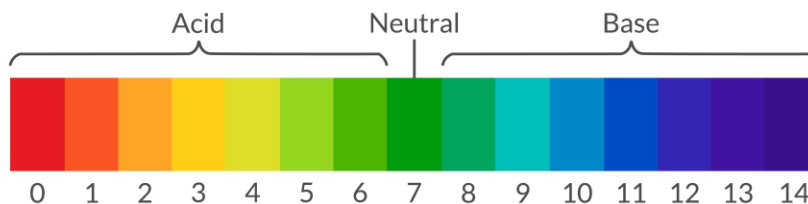
The pH scale

The pH scale is a number scale from 0 to 14. It tells us how acidic or alkaline an *aqueous solution* is. The pH scale is used to classify *solutions* as acidic, alkaline or neutral.

Neutral solutions are exactly pH 7.

Acidic solutions have pH values less than 7. The closer to pH 0, the more acidic a solution is.

Alkaline solutions have pH values more than 7. The closer to pH 14, the more alkaline a solution is.



The pH Scale

Neutralisation


A chemical reaction happens if you mix together an acid and a base (alkali). The reaction is called a neutralization because a neutral solution is made if you add just the right amounts. The products are salt and water.



Salts have scientific names such as sodium chloride (table salt). The names of salts can be worked out from the acid and the alkali that react to make them.

1. The first word is the metal taken from the name of the alkali.
2. The second word ends with ide or ate and is taken from the name of the acid. Hydrochloric acid = chloride, Sulphuric acid = sulphate, Nitric acid = nitrate.

- Identify acids and alkalis using the pH scale
- Explain how neutralisation is used to make salts

Retrieval Practice 	
Questions	Answers
What is a physical change?	When a substances change state; solid, liquid or gas (reversible)
What is a chemical change?	When substances react to form new substances (irreversible)
What is an acid?	A sour tasting substance with a pH 1-6.
What is an alkali?	A soapy substance with a pH 8-14
What is the difference between a base and an alkali?	A base is a solid and an alkali is a liquid (base dissolved in water)
What is the difference between a dilute or concentrated solution?	A dilute solution has more water added so it is weaker. Vice versa.
What is an indicator?	A substance that changes colour in the presence of a chemical i.e. acid or alkali.
What colour/number is a strong acid on the pH scale?	Red-Orange, pH 1-3
What colour/number is a strong alkali on the pH scale?	Purple, pH 12-14
What colour/number is a weak acid on the pH scale?	Yellow, pH 4-6
What colour/number is a weak alkali on the pH scale?	Blue, pH 8-10
What colour/number is neutral on the pH scale?	Green, pH 7
What is a neutralisation reaction?	The reaction between an acid and an alkali to produce a neutral solution. They produce water and a salt.

Career Focus - Where could this take you?



I am an environmental chemist so I need to understand the fate and behaviour of chemicals in the environment. I have to evaluate their effects (hazards) and risks to human health and other organisms in the environment. My work is done through desk-based research, fieldwork and/or laboratory work, including measurements, data interpretation and computer modelling. Environmental chemists may be exposed to contaminants and hazardous conditions in the course of their work and wear appropriate personal protective equipment.

Challenge Activities

1. Produce a poster to show the pH scale: acids and alkalis, with examples of substances for each pH.
2. Produce flash cards to describe the key terms: reversible, irreversible, chemical change and physical change.
3. Make a model of atoms, elements, compounds and mixtures.
4. Antacid tablets are taken to relieve indigestion, the tablets contain alkalis such as calcium hydroxide.
5. Describe how you think antacid tablets may work.

Topic Links

This topic links to:

- States of matter
- Chemical Reactions
- Energy

We will also be practising how to

- Carry out practical work safely using the scientific method
- Calculate the rate of a reaction

Additional Resources

To further practise and develop your knowledge see:

Educa ke - <https://www.educake.co.uk/>
 BBC Bitesize - <https://www.bbc.co.uk/bitesize/topics/zyzsgk7>
 YouTube Cognito - <https://www.youtube.com/watch?v=vt8fB3MFzlk>



Our students will:

- know and understand the history of these islands as a coherent, chronological narrative, from the earliest times to the present day: how people's lives have shaped this nation and how Britain has influenced and been influenced by the wider world
- understand historical concepts such as continuity and change, cause and consequence, similarity, difference and significance, and use them to make connections, draw contrasts, analyse trends, frame historically-valid questions and create their own structured accounts, including written narratives and analyses
- understand the methods of historical enquiry, including how evidence is used rigorously to make historical claims, and discern how and why contrasting arguments and interpretations of the past have been constructed
- develop contextual knowledge of the location of globally significant places – both terrestrial and marine – including their defining physical and human characteristics and how these provide a geographical context for understanding the actions of processes
- understand the processes that give rise to key physical and human geographical features of the world, how these are interdependent and how they bring about spatial variation and change over time

- Describe the Middle Passage
- Evaluate the reasons for the abolition of the Slave Trade

Keyword	Definition
Slave	A person owned by another person. They are forced to work and are not paid.
The Trade Triangle	The system of trade between Europe, West Africa and the Americas.
Trade	The buying, selling and exchanging of goods and services.
Capture	To take hold or gain control by force or through planning.
Shackles	Iron chains used to fasten the legs or hands of a slave or prisoner.
Branding	To mark a person or animal with a hot iron to show ownership.
Middle Passage	The second (<i>middle</i>) journey of the Trade Triangle, carrying slaves from Africa to the Americas.
Auction	A place where people can buy and sell things, often people bid against each other and the highest bid wins.
Plantation	A large area of farmland, or estate, planted with particular crops like tobacco, cotton and sugar cane.
Overseer	Person on a plantation paid a wage to organise the work of the enslaved people (manager).
Resistance	To strive against, or refuse to comply (sometimes secretly) with a decision or established ways of doing things.
Underground Railroad	Network of routes that were underground and helped slaves escape.
Quaker	A member of the Religious Society of Friends (a Christian movement).
Campaign	Working in an organised way to achieve a goal.
Abolish / Abolition	To bring to an end; in this context to end the slave trade and slavery.

Key Concepts

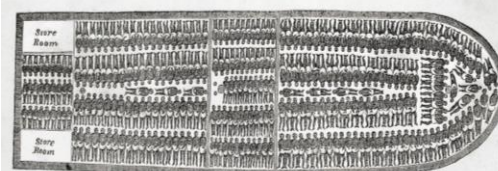
The Triangular Trade:

The trade of slaves was called the triangular trade because it had trade in three stages, making a triangle between Europe, Africa and the Americas. Manufactured goods were taken from Europe, e.g. textiles and weapons to Africa, where they were exchanged for slaves. Then slaves were transported from Africa to the Americas. This was known as the 'middle passage'. The final route was to take goods produced as a result of slave labour in the Americas, e.g. sugar, cotton and tobacco back to Europe.



Capture and Transport:

Early slave traders from Europe occasionally raided the coast of Africa in order to capture slaves but this was both dangerous and often ineffective. Instead European slave traders formed allegiances with African rulers to trade goods for slaves. Africans who became slaves therefore were most likely to have been captured in raids or wars by fellow Africans and then sold into slavery. Other possible, but less likely routes into slavery, included being kidnapped, being found guilty of a crime, or offending tribal customs.

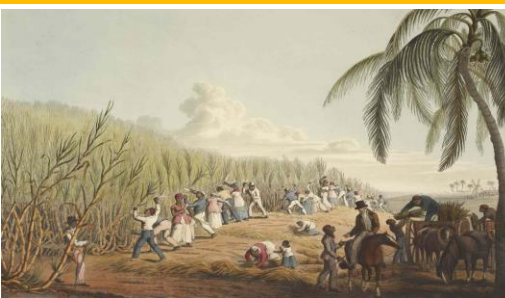


The Middle Passage:

The Middle Passage was the alternative name for the second part of The Trade Triangle which involved a 12-week journey across the Atlantic Ocean. Slaves were kept in appalling conditions: They were packed into the ship in very tight quarters below deck and were chained lying down for most of the journey. Many died during the journey due to illnesses like dysentery and injuries they received from the crew. Very little food was given to them – just enough to keep them alive. If they disobeyed orders, they were severely punished. Some threw themselves overboard in order to avoid their fate.

Plantations:

After being bought at an auction, slaves were transported to their new "home" on a plantation, given a new name and branded with their new owners initials to reinforce the fact that they were now 'property'. On these plantations slaves were forced to complete the many varied tasks required to grow and refine cash crops like sugar, cotton and tobacco. Slaves of course worked for nothing, therefore maximising profit, and had no rights; their owners could do whatever they wanted with their 'possessions'. Slaves lived in 'huts' and conditions were tough, with working hours being extremely long – sometimes 18-20 hours a day. Punishments could be severe if you were brave enough to disobey your master and could include being whipped, maimed or even killed.

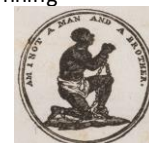


Rebellion and Resistance:


There were various forms of resistance, including: running away, breaking tools and ruining crops. One of the most famous rebellions was in Virginia; a slave called Nat Turner killed his master and his family along with 55 other white people. Turner was executed as a result.

Abolition of the Slave Trade:

In 1787, the Society for the Abolition of the Slave Trade was set up to campaign against slavery. They boycotted sugar, distributed leaflets and presented petitions to Parliament through their representative MP - William Wilberforce. As well as political action, religious outcry and economic concerns about rising costs of running plantations all played a part in Britain abolishing The Slave Trade in 1807, then finally slavery in 1833.



- Describe the Middle Passage
- Evaluate the reasons for the abolition of the Slave Trade

Retrieval Practice 	
Questions	Answers
What goods were traded at each point of the Triangular Trade?	Manufactured goods like textiles and weapons were taken from Europe. Slaves were taken to the Americas. Then sugar, cotton and tobacco were taken back to Europe.
What kind of conditions did slaves endure during the Middle Passage?	Slaves were chained, lying down in a stuffy and smelly environment. They were given very little food and diseases were common,
How were slaves prepared for auction?	They were hosed down with water, scrubbed clean and any wounds were disguised with pine tar.
What happened to a slave once they had been sold at auction?	Most often separated from their family, their names were changed and they were branded. They were now the property of their masters.
Name two ways slaves could rebel / resist:	Slaves would resist by refusing to eat, running away, breaking tools and damaging crops. They also used the 'underground railroads'.
How were slaves punished if they disobeyed their masters?	Slaves were often whipped or put in shackles and sometimes they could be maimed or even killed.
What methods of campaigning took place against slavery?	Boycotting sugar, distributing leaflets, petitions and speeches in Parliament
How did Olaudah Equiano help the Abolition Movement?	Equiano wrote an autobiography, wrote letters and campaigned. He also gave speeches and spoke to members of the public about his life as a slave.
Why did people oppose the abolition of the Slave Trade?	Many people and Members of Parliament (MP's) were slave owners or owned plantations.
When was the Slave Trade and Slavery abolished in Britain?	The Slave Trade was abolished in Britain on 25 th March 1807 and later slavery was abolished on 28 th August 1833.

Career Focus - Where could this take you?



I am an MP: My job is to represent my local area and constituents. I do this by making speeches in Parliament and highlighting campaigns that I feel strongly about or that have been brought to my attention by the public. I will debate and discuss my views, present petitions and challenge the Government. I vote on new laws and changes to existing laws.

Challenge Activities

1. Research and write a newspaper article about the Slave Ship Zong. There is a link in the additional resources box to help you get started, but you should conduct your own in-depth research. Don't forget to include a picture with your article.
2. QR Research Tacky's rebellion in 1760 and write a newspaper report explaining what happened and why? Think about the causes, events and consequences.
3. Produce a mini-project on some aspect of the topic we are currently studying. You might choose to:
 - Write a biography of a slave who survived or was freed (i.e. Olaudah Equiano).
 - Create a PowerPoint on the campaigns that have occurred over time.
 - Write a poem about the abolition of the Slave Trade.

Topic Links

This topic links to other Humanities topics such as:

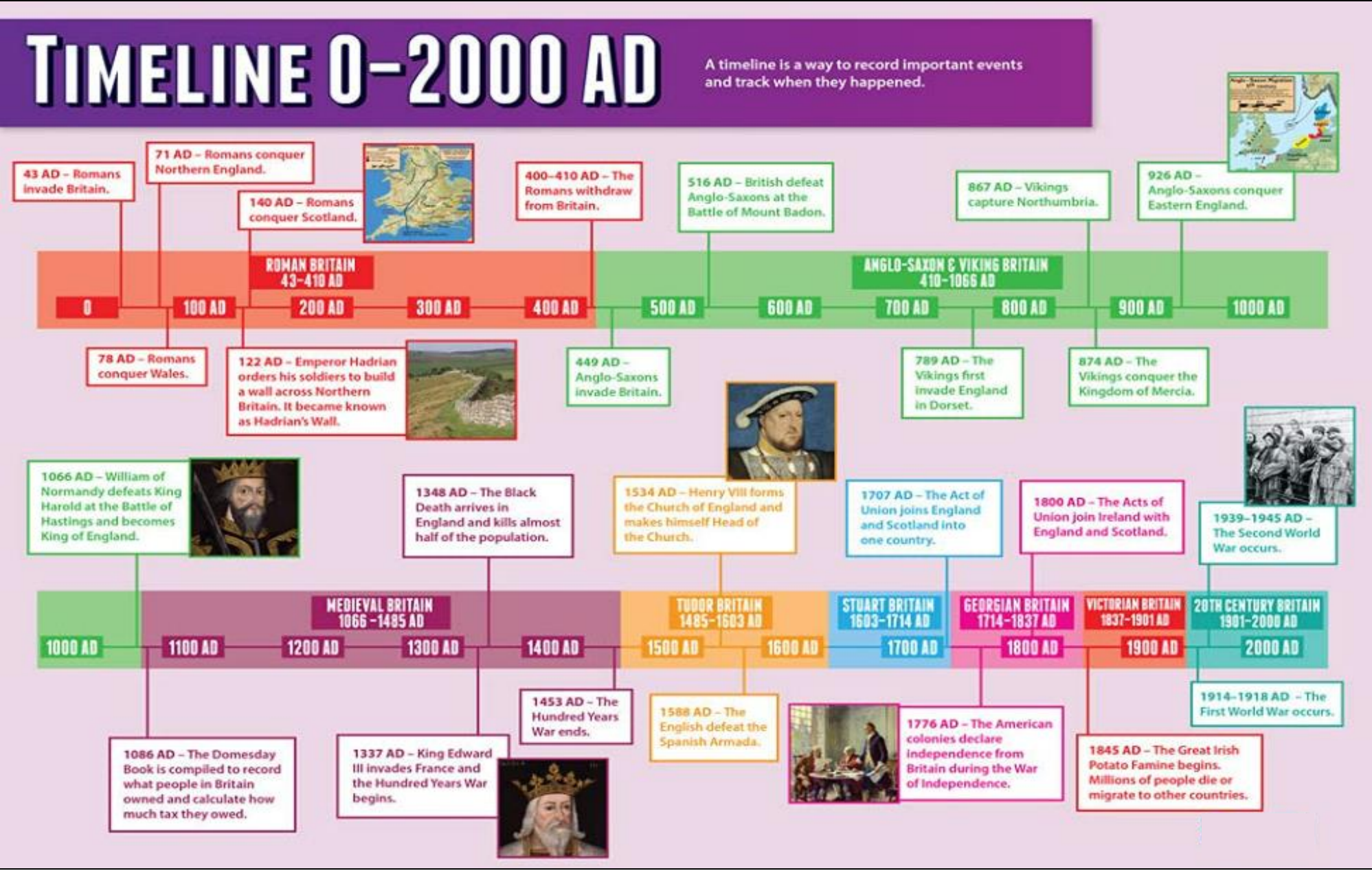
- Queen Elizabeth I
- Industrial Revolution
- Africa
- Christianity

Additional Resources

To further practise and develop your knowledge see:
<https://www.theguardian.com/law/2021/jan/19/the-story-of-the-zong-slave-ship-a-mass-masquerading-as-an-insurance-claim>
<https://www.bbc.co.uk/bitesize/guides/zqv7hyc/revision/9>
<https://www.bbc.co.uk/bitesize/topics/z2qj6sg>
<https://www.bl.uk/learning/histcizen/campaignforabolition/abolitionbackground/abolitionintro.html>



Timeline



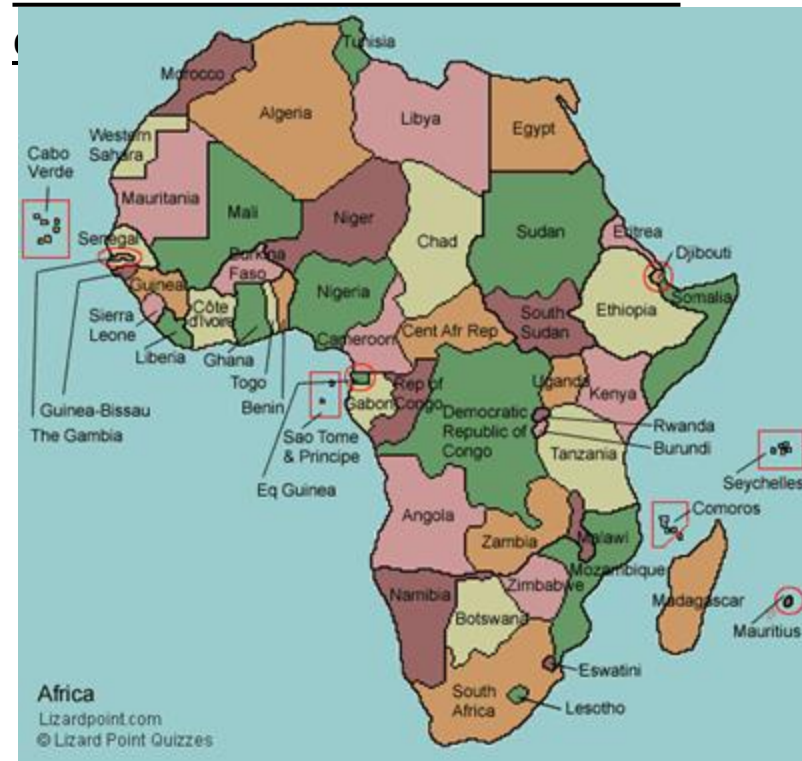
The aims of the sequence of learning are to ensure that all students:

- Describe the human and physical geography of Africa
- Evaluate the impacts of colonialism on Africa
- Africa is it rich or poor?
- Explain how plants and animals have adapted to Africa's biomes

Keyword	Definition
Adaptations	The process of change by which an organism or species becomes better suited to its environment
Biomes	A large area with similar climate, plants and animals
Climate	What the weather in a place is usually like, over the year
Colonised	When people settle in a place and establish political control over it
Density	How crowded/packed together an area is
Desert	A large, dry, barren area, usually having sandy or rocky soil and little or no vegetation
Desertification	Process where fertile land turns to desert, often through overuse
Distribution	The way in which something is shared out among a group or spread over an area
Exploited	To make use of a place, or people for your own benefit
Independence	When a country governs itself
Rainforests	Area with lush vegetation, with many different species of plants and animals
Relief	The difference in height from the surrounding terrain
Savanna	Area with grassy plains and scattered trees
Stereotype	Fixed opinions people have that do not reflect reality
Tropics	The region between the tropics of Cancer and Capricorn

Key Concepts

Africa is a continent and it has 54



History

Historically, Africa was home to many civilisations, empires and kingdoms (such as Ancient Egypt and Mali Empire). In the 1400's Europeans arrived and traded with Africa for gold, ivory and slaves. Eventually, European countries colonised parts of Africa and in 1884 they carved up Africa into different countries, which they would rule. Over time, these colonies grew tired of being exploited and struggled to gain independence (the first to gain this was Libya in 1951).

The continents by land area

Continent	millions of square km
Asia	44.6
Africa	30.1
North America	24.5
South America	17.8
Antarctica	13.2
Europe	9.9
Oceania	8.1

Africa's natural wealth

Africa has large deposits of aluminium, copper and uranium. It has 10% of the world's known oil deposits. It can grow a wide variety of crops to export (such as tea and coffee). It is also one of the top continents for gold and diamonds.



- The aims of the sequence of learning are to ensure that all students:
- Describe the human and physical geography of Africa
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Key Concepts



Africa's Population Distribution

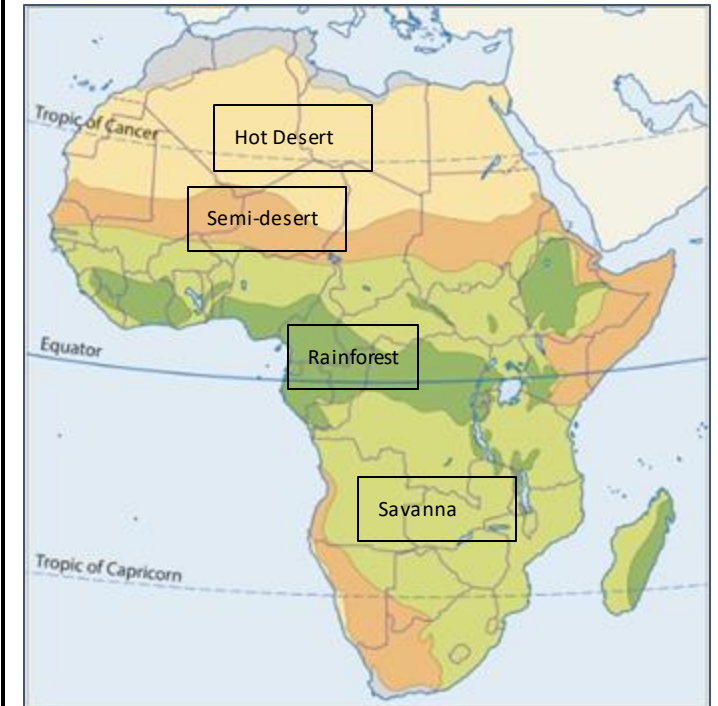


Key	
Population density people per square kilometre	Major cities population in millions
over 100	over 3
10-100	1-3
1-10	0.5-1
under 1	0.1-0.5

Africa's Physical Features



Africa's Biomes



Semi-desert

- Some rain
- Grass, shrubs and scattered trees, some rodents
- Most people farm - maize, chickpeas, cattle and goats

Hot desert

- Hot in the day and little rain
- Plants have to find and store water - some have long tap roots
- Camels, ostriches, snakes and scorpions

Biomes

Savanna

- Warm all year with a wet season
- Grassland and acacia trees
- Lions, elephants and giraffes
- Desertification is a problem here

Rainforest

- Warm and wet all year round
- Thousands of species of plants and trees
- Gorillas, snakes, hippos and birds

- The aims of the sequence of learning are to ensure that all students:
- Describe the human and physical geography of Africa
 - Evaluate the impacts of colonialism on Africa
 - Africa is it rich or poor?
 - Explain how plants and animals have adapted to Africa's biomes

Retrieval Practice



Questions	Answers
How many countries is Africa comprised of?	54
Name 2 resources which contribute to Africa wealth	Gold and diamonds
Name an ancient African kingdom	The Mali Empire
Where is population density highest in Africa?	On the coast in particular around Nigeria and Central Africa
What is the longest river in Africa?	River Nile
Name 2 deserts in Africa	Sahara and Kalahari
Name 3 African biomes	Hot desert, Rainforest and Savanna
Where is the semi-desert biome found?	North and south of the equator, next to the savanna and hot-desert
How do plants adapt to survive in hot deserts?	They are able to find and store water - some have long tap roots
What is desertification?	Process where fertile land turns to desert, often through overuse

Career Focus - Ecologist



I am an ecologist. I research the impact of human activity, like housing and intensive agriculture, on the environment. I build computer models to predict the effects of development or climate change and research and contribute to legislation and policy. We manage and create wildlife conservation areas, woodland and meadows. We also monitor species and habitats



Challenge Activities

- Create top trumps cards for 8 African cities- include size, population, highest mountain, number of cities, birth rate and death rate
- Create a model in a box of one of these African biomes (Rainforest, Desert or Savanna Grassland). Include models/images of the vegetation, animals, climate and labels to describe what it is like
- Design a quiz or game to help students remember the names and capital cities of African countries

Topic Links



This topic links to themes in:

- History - slavery and empire
- Music - African music
- Science – Biomes
- French – Francophonie (French speaking countries)

Additional Resources



The QR code will take you to the united learning platform website. Click on lessons, Geography, Year 8 Africa



<https://continuityoak.org.uk/lesso...>



- Describe religious beliefs on caring for the environment
- Describe how a belief in God affects someone's view on the treatment of animals

Keyword	Definition
Free Range	Farming that allows the animals to roam free and behave naturally.
Factory Farming	An intensive system of farming to rear animals quickly and cheaply indoors with very little space and low welfare.
Animal Experimentation	Procedures performed on living animals for purposes of research into basic biology and diseases, assessing the effectiveness of new medicinal products.
Inhumane	Lacking pity, kindness or mercy, being cruel.
Sanctity of Life	Life is sacred (holy) because it is God-given.
Responsibility	To be in charge of own actions.
Extinction	When all members of a species has died and will never exist again.
Vegetarianism	The belief/view held by people who do not eat meat.
Vegan	A person who will not eat or use any animal products.
Exploitation	Act of selfish needs to take advantage of something in order to profit or benefit from it.

Key Concepts

Animal rights

Animal rights refers to the idea that animals should be entitled to live lives that are free from **abuse** by humans. In the UK, there are laws designed to protect animals from **cruelty**. For instance, it is a crime to neglect or mistreat an animal, including when an animal is being transported or slaughtered. It is also **illegal** to stage fights between animals for entertainment or to test cosmetics on animals. Some forms of hunting are also illegal and people can be fined or face imprisonment if they cause unnecessary suffering to animals.

Islam

Muslims believe that animals exist for the benefit of human beings, but also that they should be treated with kindness and compassion.

Christianity

As humans, they should avoid harming animals because it is sinful. Likewise, they believe that all of God's creatures – human and non-human – are sentient and capable of pain and suffering. And while this belief is not mainstream for all Christians, it does reveal that Christians interpret man's dominion differently.

Buddhism

Buddhism is known to be a religion that practices and promotes peace for both human and non-human animals. The First Precept, do not kill or harm others, is highly debated over as it relates to animal suffering.

Judaism

Judaism places a large amount of stress on the proper treatment of animals because they are seen as a part of God's creation. The Jewish tradition clearly states that it is forbidden to be cruel to animals. Humans must avoid *tsa'ar ba'alei chayim* – causing pain to any living creature.

Hinduism

Hindu teachings hold the belief that all living creatures have a soul, and that they are a part of the supreme soul. Therefore, all living creatures – both human and non-human – are respected similar to Buddhist traditions.

Sikhism

Animals should be respected. We are also taught that there is no difference between the human sphere and the sphere of nature. Both were created from the same divine light. This is our golden opportunity to achieve closeness to God and indeed our responsibility that we look after all those life forms.





Key Concepts

The RSPCA

Founded in 1824, it is the oldest and largest animal welfare organisation in the world and is one of the largest charities in the UK. We were the first to introduce a law to protect animals and work hard to ensure that all animals can live free from pain and suffering. Through our campaigns we raise standards of care, and awareness of issues, affecting animals today. Through investigations and prosecutions, we stand up to those who deliberately harm animals to send out a clear message - we will not tolerate animal abuse. Our highly trained officers tackle neglect and cruelty on every level working to stamp out animal cruelty. Animals can rely on us to rescue them when they need us most. To rehabilitate them wherever possible, provide them with the very best veterinary care and to find them new homes, either through rehoming or release.



The Five Freedoms

The Five Freedoms of animal welfare present a standard of care that is followed across the globe. Included in the UK government's Animal Welfare Act 2006, they state that every living being deserves the right to humane treatment.

- **Freedom from hunger and thirst** – by ready access to fresh water and a diet to maintain full health and vigour;
- **Freedom from discomfort** – by providing an appropriate environment including shelter and a comfortable resting area;
- **Freedom from pain, injury or disease** – by prevention, rapid diagnosis and treatment;
- **Freedom to express normal behaviour** – by providing sufficient space, proper facilities and company of the animal's own kind; and
- **Freedom from fear and distress** – by ensuring conditions and treatment which avoid mental suffering.

Animal Welfare Labels UK



FREE RANGE

Unfortunately, Free Range is not always the promise of open space and prancing lambs we often imagine. Welfare standards can vary wildly between different free range producers, from small-scale egg farmers with hens in a field to industrial producers who adhere to the minimum standards.

FACTORY FARMING


Industrial farming involves large-scale intensive production of crops and animals for human consumption. The most extreme example is factory farms, where animals are reared year-round in huge numbers. They are bred to grow quickly and are fed on cheap food. Farmers are continually pushed to produce more for less.

ANIMAL EXPERIMENTATION

Animal experiments are widely used to develop new medicines and to test the safety of other products. Many of these experiments cause pain to the animals involved or reduce their quality of life in other ways. If it is morally wrong to cause animals to suffer then experimenting on animals produces serious moral problems. Animal experimenters are very aware of this ethical problem and acknowledge that experiments should be made as humane as possible. They also agree that it's wrong to use animals if alternative testing methods would produce equally valid results.



- Describe religious beliefs on caring for the environment
- Describe how a belief in God affects someone's view on the treatment of animals

Retrieval Practice 	
Questions	Answers
What different ways are animals used?	Animals can be used as domestic animals such as pets, as well as used for food and in some cases for testing certain products. Animals can also be used as a mean of transport, as well as helping workload.
What does vegan mean?	A person who does not eat any food from animals.
What does Buddhism say about animals?	Animals need to be respected. Buddhism promote peace and freedom for both animals and humans.
Why is the NCPCA important?	NCPCA looks after and cares for animals that are suffering within the world. Their objective is to serve and protect all animals.
Explain the term factory farming.	When animals are used for food, but are kept indoors in very small and populated places.
Define the term free range.	Farming that allows the animals to roam free and behave naturally.
What is the main statement that all religions believe in?	All animals need to be respected.

Career Focus - Where could this take you?



"I am a free range farmer, I love to see my animals make the most of the wider space around them. The care and importance of maintaining free animals is vital to provide healthy and ethical produce. Religious Education has given me the skills and knowledge to explore and know more about free-range as well as the benefits it has on the animals as well as identifying ethical views on animal rights."

Challenge Activities

- Create a leaflet for someone to explain animal rights and why it is important to look and care for animals.
- Design a poster to campaign against animal cruelty.
- Do you think human life is valued more than an animal's life? Explain your question in more detail. Include a quote within your answer.
- Research the history on animal rights. Do you think it has changed over the years?
- How can we protect animals? Explain your answer.

Don't forget!
Point
Explain
Evidence (Quote)

Topic Links

This topic links to other RE topics such as:

- Islam
- Sikhism
- Buddhism

This topic links with other subjects such as:

- Science
- English

We will also be practising how to

- Argue a point and practise our Voice 21
- Participate in debates
- Write PEE sentences/how to answer exam questions

Additional Resources

To further practise and develop your knowledge see:







<https://www.bbc.co.uk/bitesize/topics/zkdk382/articles/zns2kmn>
<https://study.com/academy/lesson/animal-rights-ethics-arguments.html>





Key Concepts

SIX WORLD RELIGIONS (spellings vary)

Religion name	Follower	SYMBOL	NAME OF GOD/GODS	COUNTRY OF ORIGIN	FOUNDER /MESSENGER	HOLY BOOK/S	PLACE OF WORSHIP	MAIN FESTIVALS	Denominations /schools/type/	Followers in the UK (approx.)	Followers in the world (approx.)
BUDDHISM	Buddhist	 Dharmachakra	none	India (Today in Nepal)	Siddhartha Gotama (The Buddha)	Tripitaka	Temple Shrine room Vihara	Wesak Dharma day	Theravada Mahayana Zen Triratna Pure Land	98,000	376 million
HINDUISM	Hindu	 Om/Aum	Brahman (Shiva Vishnu Brahma)	Indus Valley	none	Vedas Bhagavad Gita Mahabharata	Mandir Temple	Holi Diwali		272,000	1 billion
CHRISTIANITY	Christian	 Cross	God	Palestine Israel	Jesus of Nazareth	Bible	Church Cathedral	Easter Christmas	Catholic Eastern Orthodox Church of England Baptist Quaker	30 million	2.2 billion
JUDAISM	Jew	 Star of David	G_d	Israel	Abraham	Torah Tenakh	Synagogue	Rosh Hashanah Pesach Yom Kippur	Hasidic Orthodox Reform Liberal	214,000	14 million
SIKHISM	Sikh	 The Khanda	God Waheguru	Punjab, India	Guru Nanak The ten Gurus	Guru Granth Sahib	Gurdwara	Vaisakhi Diwali	Sahajdhari Amritdhari	239,000	23 million
ISLAM	Muslim	 Five pointed star & crescent moon	Allah (God)	Saudi Arabia	Muhammad (pbuh)	Quran	Mosque	Eid-ul-Fitr Eid-ul-Adha	Sunni Shi'a Sufi	1,278,000	1.6 billion

Theist = Someone that believes in God

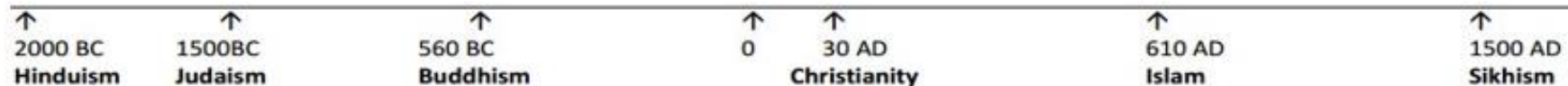
Atheist = Someone that doesn't believe in God

Agnostic = Someone that is not sure about the existence of God

Monotheist = Someone that believes in one God

Polytheist = Someone that believes in many gods

Timeline of religions (all dates approximate)





Our students will:

- understand and respond to spoken and written language from a variety of authentic sources
- speak with increasing confidence, fluency and spontaneity, finding ways of communicating what they want to say, including through discussion and asking questions, and continually improving the accuracy of their pronunciation and intonation
- can write at varying length, for different purposes and audiences, using the variety of grammatical structures that they have learnt
- discover and develop an appreciation of a range of writing in the language studied.

- The aims of learning are to ensure that all students can:
- Give more complex opinions using connectives and sentence openers.
 - Translate simple sentences comparing 2 things into French.
 - Complete a more detailed role play.

- Pick out key information in a longer passage of listening.
- Translate Key verbs in 3 tenses from French into English.



Keywords and phrases	Definition
Quand est-ce que tu regardes la télé?	When do you watch TV?
Qu'est-ce que tu regardes à la télé?	What do you watch on TV?
Comment est-ce que tu regardes la télé?	How do you watch TV?
Je regarde.....	I watch.....
Quels sont tes loisirs?	What are your hobbies?
Tu viens au cinéma?	Are you coming to the cinema?
Qu'est-ce que tu vas voir?	What are you going to see?
Je vais regarder une comédie ,	I'm going to watch a comedy .
Quel est ton film préféré?	What is your favourite film?
Pourquoi?	Why?
Rendez-vous où ?	Where shall we meet?
Rendez-vous à quelle heure ?	What time shall we meet?
Tu as fait des achats?	Did you go shopping?
C'était comment ?	What do you eat?
À mon avis c'était extra !	In my opinion it was great !

Essential vocabulary, grammar and phonics.

Grammar - Present tense

je bavarde / parle avec mes copains	I chat with my friends
je fais du cyclisme / du vélo	I go cycling
je lis/ je fais de la lecture	I read
je nage / je fais de la natation	I swim
je ne lis pas beaucoup	I don't read much
je ne joue jamais à des jeux vidéos	I never play video games
je ne fais rien	I don't do anything
je télécharge des chansons	I download songs
je crée des playlists	I create playlists


Past tense

Tu as fait des achats?	j'ai fait les magasins/des achats - I went shopping j'ai lu une annonce pour les soldes - I saw an advert for the sales
Tu as fait des achats? Did you go shopping?	j'ai fait une balade/promenade - I went for a walk j'ai attendu une demi-heure - I waited half an hour j'ai dépensé trop d'argent - I spent too much money j'ai découvert un café - I discovered a café j'ai essayé plein de vêtements - I tried on lots of clothes
	je suis allé(e) au centre commercial I went to the shopping centre

Normalement, hier et demain

Normalement - Normally	je vais au cinéma - I go to the cinema j'écoute de la musique - I listen to music je lis des BD - I read comics nous jouons en ligne - we play online
Le weekend dernier - Last weekend	je suis allé(e) ... I went j'ai choisi - I chose j'ai visité - I visited
Le weekend prochain - Next weekend	je vais aller - I'm going to go je vais visiter - I'm going to visit on va prendre - we are going to take

Phonics and Vocabulary










quatre
4

qu

musique
🎵

é

joué
⚽🎾

<ul style="list-style-type: none">  les comédies (f)  les dessins (m) animés  les documentaires (m)  les feuillets (m)  les infos (f)  les jeux (m) (télévisés)  les séries (f) (policieres) 	<p>les émissions (f) de ...</p> <ul style="list-style-type: none">  cuisine  musique  science-fiction  sport  télé-réalité
---	--



c
un film d'action



d
un film d'horreur



a
une comédie



b
un film d'animation



e
un film de super-héros

Retrieval Practice – Essential vocabulary and grammar.



Questions	Answers
Quand est-ce que tu regardes la télé?	Je regarde la télé <u>tous les soirs dans ma chambre</u>
Qu'est-ce que tu regardes à la télé?	J'aime <u>les dessins animés</u> parce qu'ils sont <u>divertissants</u> mais je n'aime pas <u>les jeux</u> .
Comment est-ce que tu regardes la télé?	Je regarde <u>sur Netflix</u> .
Quels sont tes loisirs?	Je fais du cyclisme et je crée des playlists. J'adore la musique.
Tu viens au cinéma?	Bonne idée! Je veux bien.
Qu'est-ce que tu vas voir?	Je vais voir un film d'action. Mon film préféré c'est Top Gun Maverick.
Rendez-vous où ?	Rendez-vous chez moi.
Rendez-vous à quelle heure?	Rendez-vous à 19h
Tu as fait des achats?	Oui je suis allé au centre commercial et <u>j'ai dépensé trop d'argent</u> .
C'était comment?	À mon avis je pense que c'était <u>nul</u> .

Career Focus - Where could this take you?



I am a news reporter. I work all over Europe and even worldwide. It helps me that I can speak another language, because I can communicate with people who live in the country I am reporting from.

Challenge Activities



- 1) Research a French television series. What is it about? Who are the main actors?
- 2) Watch one of your favourite programmes in French.
- 3) Complete the activities on Sentencebuilders.com
- 4) Make a page for a French TV guide. Include the names of the programmes and what kind of programme it is in French.

Topic Links



This topic links to:

- Sports and leisure.
- Holidays (past tense).
- Giving likes and dislikes
- Giving extended opinions.

Additional Resources



To further practise and develop your knowledge see:

- Sentencebuilders.com
- Active learn.

avoir (to have)

j'ai I have
 tu as you (sing) have
 il/elle/on a he/she has /we have
 nous avons we have
 vous avez you (plural/polite) have
 ils/elles ont they have (m/f)

être (to be)

je suis I am
 tu es you (sing) are
 il/elle/on est he/she is /we are
 nous sommes we are
 vous êtes you (plural/polite) are
 ils/elles sont they are (m/f)



Les quatre saisons

Le printemps spring
 l'été summer
 l'automne autumn
 L'hiver winter

janvier
 février
 mars
 avril
 mai
 juin
 juillet
 août
 septembre
 octobre
 novembre
 décembre

The perfect (past) tense

Use this tense to talk about what you did or have done

1. j'ai or je suis **c'était** = it was
2. Past participle

Hier, j'ai bavardé avec mon meilleur ami sur mon portable. Après, j'ai bu un thé. C'était relaxant.



Past participles

1. -er verbs → remove **er** + **é** = regarder → regard- → regardé
2. -ir verbs → remove **ir** + **i** = vomir → vom- → vomi
3. -re verbs → remove **re** + **u** = perdre → perd- → perdu

Negatives in the perfect tense

Put **ne...pas** around the part of **avoir** or **être**

Remember **ne** shortens to **n'** before a vowel.

Je **n'ai pas** regardé la télé

Je **ne suis pas** allé(e) en vacances

Saying "to" or "in" with countries

- Most countries are **feminine**: **en** Tunisie; **en** France; **en** Australie
- A few countries are **masculine**: **au** Canada; **au** Maroc
- A small number of countries are **plural**: **aux** États-Unis
- With **islands** use **à** Vanuatu

Key Verbs

avoir = to have
 être = to be



Key irregular verbs in the past tense

J'ai bu = I drank
 J'ai fait = I did
 J'ai vu = I saw
 J'ai pris = I took
 Je suis allé(e) = I went

The near future tense

Use this to talk about what you are going to do.

aller + infinitive

Je vais nous allons
 Tu vas vous allez
 Il/elle va ils/elles vont



Negative expressions

ne...pas = not
 ne...jamais = never
 ne...rien = nothing
 *ne shortens to n' in front of a vowel

Possessive adjectives

mon/ma/mes = my
 ton/ta/tes = your
 son/sa/ses = his/hers

The comparative

Use the comparative to compare two or more things

- plus + adjective + que = more ... than ...
- moins + adjective + que = less... than ...

Le ski est plus amusant que le cyclisme
 Skiing is more fun than cycling

• The adjective must agree with (match) the first noun
 La voile est plus fatigante que le tennis
 Sailing is more tiring than tennis

- With plural nouns use **sont** (are) and not **est** (is)

Present tense

d'habitude = usually
 normalement = normally

Present tense

d'habitude = usually
 normalement = normally

Narrative words

d'abord firstly
 puis then
 ensuite next
 après afterwards
 finalement finally

Perfect tense

hier yesterday
 le week-end
 dernier last weekend
 l'année dernière last year

Intensifiers

assez quite
 très very
 trop too
 un peu a little/bit
 complètement completely
 vraiment really

Connectives

et and
 aussi also
 ou or
 mais but
 avec with

Use the QR codes to revise key vocabulary



The year



-er past tense



Irregular past



Questions



Key verbs



Computing

Our students will:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology



The aims of the sequence of learning are to ensure that all students:

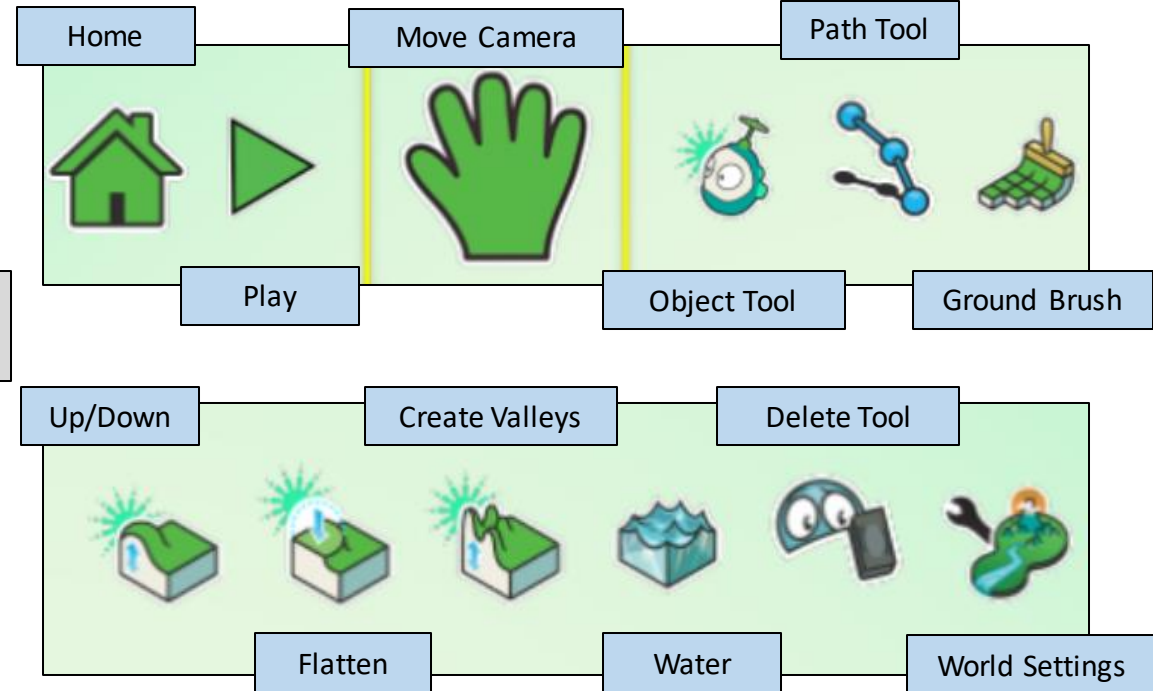
- Demonstrate knowledge of the Kodu tool bar by describing what each button does
- Demonstrate knowledge of using Kodu by describing how to accurately use a range of different features

- Apply knowledge of creating rules and using tools in Kodu to develop a range of games
- Apply knowledge from this unit to accurately describe some keywords

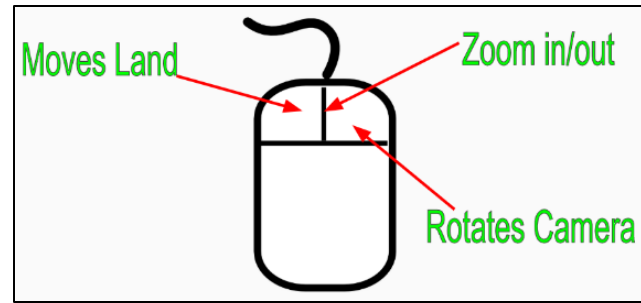
Keyword	Definition
Script	The set of instructions used to program in Kodu, usually presented as a collection of tiles that connect with one another using "rules".
Rule	Each line of a Kodu program is called a rule. Every rule has a WHEN part and a DO part.
Action	The first tile in the DO part of a rule is the action. Examples include "move" and "eat".
Object	A 3D graphic that can be programmed in the Kodu world.
Tile	Each rectangle that appears in a rule is called a tile. A tile contains a picture and an associated word or phrase.
Sequencing	The specific order in which instructions are performed in a program. If the sequence is incorrect, it may cause errors in a program.
Variable	A variable represents a location in memory. It is used to hold a value which you assign to it. This can change as you play your game e.g. 'Points' = 10
Creatable	Characters that do not exist when you start the game. Instead, they are programmed and spawned by other characters as needed.
Iteration (Loop)	The repetition of a sequence of instructions e.g. use of 'Always' tile in 'WHEN' part of a rule.
Condition	The first tile in the WHEN part of a rule is the condition. Examples include "see" and "bump". Conditions can either be true or false, depending on the state of the world.

Key Concepts

Kodu Toolbar



Mouse Controls



Object Wheel







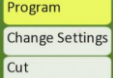



The aims of the sequence of learning are to ensure that all students:

- Demonstrate knowledge of the Kodu tool bar by describing what each button does
- Demonstrate knowledge of using Kodu by describing how to accurately use a range of different features

- Apply knowledge of creating rules and using tools in Kodu to develop a range of games
- Apply knowledge from this unit to accurately describe some keywords



Retrieval Practice

Questions	Answers
Describe how to add more land (terrain) on the Kodu world	 <p>Find the tool bar at the bottom of the screen and click on the 'Ground Brush' tool. Select the land type and then left-click to add land.</p>
Describe how to add objects on to your terrain	 <p>Find the tool bar at the bottom of the screen and click on the 'Object Tool'. Click on terrain where you would like to add the object before selecting the object.</p>
Describe how to program an object in Kodu	 <p>Make sure you have clicked on the 'Object Tool' before right-clicking on the object that you would like to program. Press the 'esc' key on the keyboard to return back to the Kodu world</p>
Describe how to play the game that has been created in Kodu	 <p>Find the tool bar at the bottom of the screen and click on the 'Play' tool.</p>
Describe what the 'Path tool' can be used for on Kodu	<p>The path tool can be used to create different types of paths on the Kodu terrain or alternatively an invisible path that moving objects can be programmed to follow</p>
Describe what is meant by the term 'iteration' and how to add iteration (loops) in a Rule.	 <p>When programming an object click on the '+' button on the 'WHEN' section of a Rule (programming line). Select the 'Always' tile to create a loop.</p>
Describe how to program what happens when objects touch a specific type of land on the Kodu world	 <p>When programming an object click on the '+' button on the 'WHEN' section of a Rule. Select the 'On Land' tile and land type before adding tiles to the 'DO' section of a Rule.</p>

Career Focus - Where could this take you?



I am a **Gameplay designer** and work in a team that is responsible for the central part of the game experience – how it plays. My job involves defining the game's structure, its rules, characters, and different modes of play, like story mode or multi-player.

Challenge Activities



1. Create a multiplayer game in Kodu that uses all of the tiles, scripts and techniques you have covered in this unit. Also, research the internet and include the use of new tiles and scripts that have not been covered in this unit.
2. Create a poster on MS PowerPoint that includes one or all of the following details: how to use variables, iteration, and conditional statements on Kodu to create games
3. Create a short vlog about the types of careers you could get into within the gaming industry. Explain what you would need to study at college and university to pursue these career paths

Topic Links



This topic links to:

- Computing Curriculum: Understand how instructions are stored and executed within a computer system
- Mathematics: use of logical inference, problem-solving skills and simple algebra

Additional Resources



To further practise and develop your knowledge see:

- <https://www.kodugamelab.com/>
- <https://www.youtube.com/@KoduTeam>



Our students will:

- produce creative work, exploring their ideas and recording their experiences
- become proficient in drawing, painting, sculpture and other art, craft and design techniques
- evaluate and analyse creative works using the language of art, craft and design
- know about great artists, craft makers and designers, and understand the historical and cultural development of their art forms.

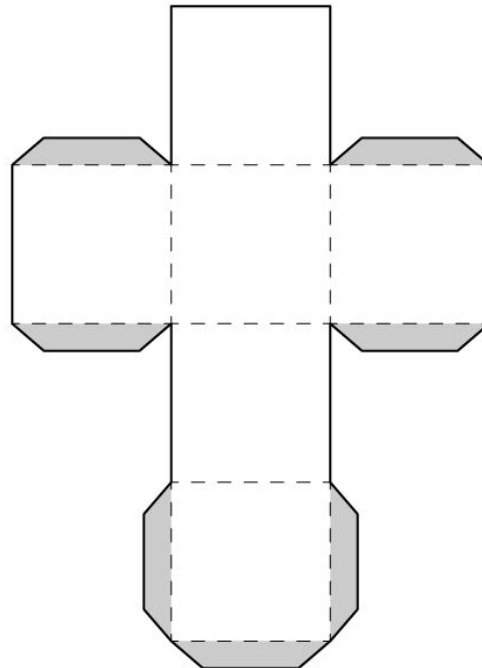
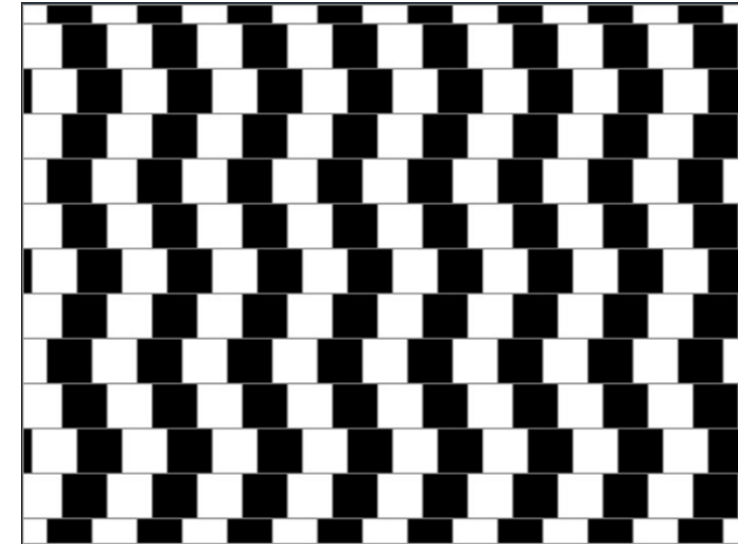
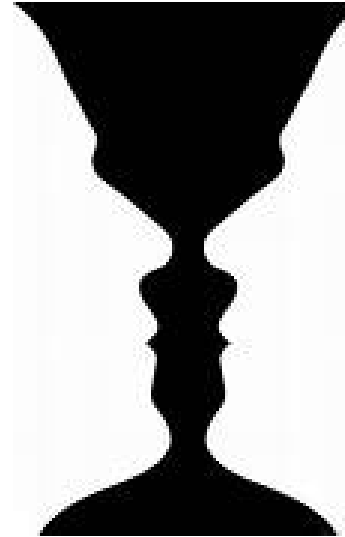
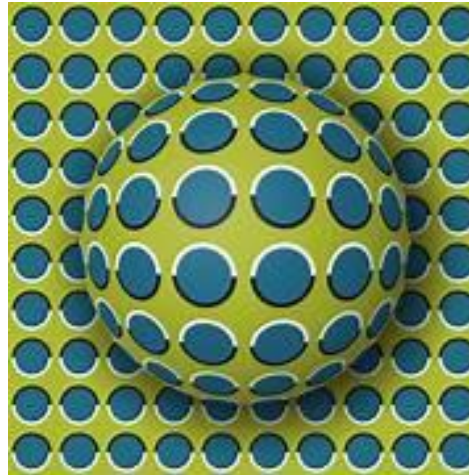
- develop competence to excel in a broad range of physical activities
- are physically active for sustained periods of time
- engage in competitive sports and activities
- lead healthy, active lives.

- The aims of the sequence of learning are to ensure that all students can:
- Understand how the brain perceives optical patterns.
 - recreate optical illusions using different media.
 - Give facts about the artist Bridget Riley.

- make a 3D shape from a 2D net.
- measure accurately when drawing optical patterns.
- create a 3D cube decorated with optical patterns.
- Produce a portrait filled with optical patterns.


Keyword	Definition
Optical	To do with the eye. Relating to sight.
Illusion	an image that has the power to trick our minds into thinking we're seeing something that is different than what is really there.
Movement	The act, process or result of moving
Precision	Being exact and accurate.
Monochromatic	Containing or using only one colour.
Net	The 'net' of a shape is a term used to describe what a 3D shape would look like if it was opened out and laid flat.
Bridget Riley	British painter known for her Op Art. Lives and works in London.


Key Concepts




- The aims of the sequence of learning are to ensure that all students can:
- Understand how the brain perceives optical patterns.
 - recreate optical illusions using different media.
 - Give facts about the artist Bridget Riley.


- make a 3D shape from a 2D net.
- measure accurately when drawing optical patterns.
- create a 3D cube decorated with optical patterns.
- Produce a portrait filled with optical patterns.

Retrieval Practice 	
Questions	Answers
What is Optical Art?	Op art, short for optical art, is a style of visual art that uses optical illusions. Op artworks are abstract, and they give the viewer the impression of movement, hidden images, flashing and vibrating patterns, or swelling or warping.
When did Op Art emerge?	In the 1960s. Victor Vasarely is known to be the father of Op Art.
What is perspective drawing?	A technique that gives the illusion of spatial depth, or perspective, to drawings and paintings
What is negative space?	In art and design, negative space is the empty space around and between the subject(s) of an image.


Career Focus - Where could this take you? 





My job is an **architect**. I transform building designs into reality, ensuring functionality, safety, and creative vision. I collaborate with engineers and develop concepts for structures that meet project goals and operational standards.

Challenge Activities 

- Learn to draw optical patterns;
[\(31\) 6 EASY Optical illusion drawings/patterns/tricks/abstract drawings | Part-3 – YouTube](#)
- Learn to draw a 3D hole:
[\(31\) Op-Art Hole to the Deep - How to Draw 3D Hole - Optical Illusion - YouTube](#)



Topic Links 

Additional Resources 

This topic links to:

- Mathematics – accurate measuring of lines and shapes.

To further practice and develop your knowledge see:

[Op art | Tate](#)

- Demonstrate safe use of tools and equipment.
- Explain a range of Regenerated fibre properties
- Rank fibres in order of environmental impact.

- Annotate a range of design ideas which include moral and cultural issues.
- Demonstrate an understanding of smart materials.

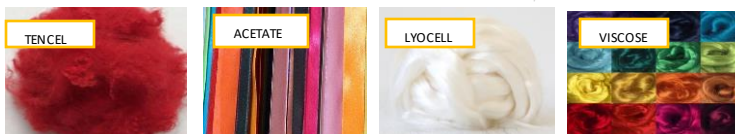
Keyword	Definition
Conductive	Having the property of conducting something (especially heat or electricity).
Fabric	Cloth or other material produced by weaving or knitting fibres.
Synthetic	Made by chemical synthesis, especially to imitate a natural product.
Fibres	A thread or filament from which a vegetable tissue, mineral substance, or textile.
Electric	Worked by, charged with or producing electricity
Textiles	A type of cloth or woven/ knitted fabric.
Aesthetics	A set of principles concerned with the nature and appreciation of beauty.
Solder	Solder is a fusible metal alloy used to create a permanent bond between metal.
Design	A plan or drawing produced to show the look and function or workings of a building, garment, or other object before it is built or made.
Diode	Electronic component that conducts current primarily in one direction.
Positive	Electric charge of a positive point charge
Negative	Electric field of a negative point charge
Laser	A laser is a device that emits <u>light</u> through a process of <u>optical amplification</u>
Equipment	Equipment most commonly refers to a set of <u>tools</u> or other objects
Battery	A device that provides electrical power

Key Concepts

Types of Fibres



Regenerated Fibres



ACCESS FM

A AESTHETICS WHERE DID THE DESIGNER GET THEIR INSPIRATION? COULD THE PRODUCT LOOK BETTER? DO YOU THINK IT LOOKS ATTRACTIVE OR UGLY, WHY? WHAT DOES THE PRODUCT LOOK LIKE? THINK SHAPE, FORM, MATERIALS, SIZE, BEAUTY, UGLINESS

C COST IS IT AFFORDABLE TO YOUR CUSTOMER? WILL IT MAKE A PROFIT? IS IT VALUE FOR MONEY? HOW MUCH DOES IT COST?

C CUSTOMER WHAT IMPACT WOULD IT HAVE ON A CUSTOMERS LIFE? WHY WOULD A CUSTOMER BUY IT? WHAT MAKES IT SUITABLE FOR THEM? WHO WOULD BUY IT? WHO WOULD USE IT?

E ENVIRONMENT WHAT IS THE PRODUCTS IMPACT ON THE ENVIRONMENT? THINK BATTERIES, RETHINK, REFUSE, REDUCE, REUSE, RECYCLE, LIFE-CYCLE HOW WOULD THE PRODUCT BE DISPOSED OF? IS THE PRODUCT NEEDED OR WANTED? HOW LONG WILL IT LAST?

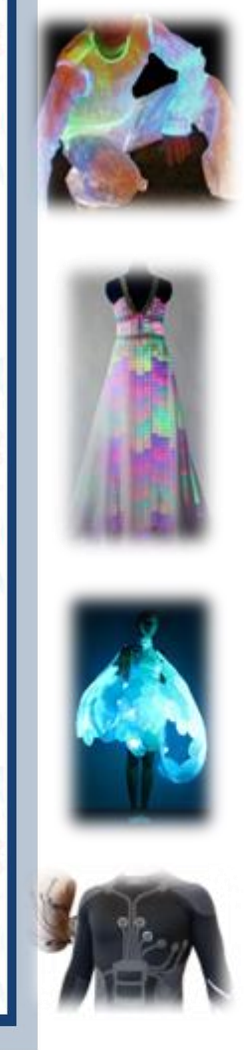
S SAFETY IS THE PRODUCT HIGH QUALITY? DOES IT MEET SAFETY STANDARDS? HOW HAS THE DESIGNER CONSIDERED SAFETY? COULD THE PRODUCT HURT ANYONE? ARE THERE ANY SHARP EDGES?

S SIZE IS IT AN APPROPRIATE SIZE? WOULD IT WORK BETTER IF IT WAS BIGGER OR SMALLER? DOES IT COME IN DIFFERENT SIZES? HOW BIG IS IT?

F FUNCTION DOES THE PRODUCT WORK? COULD THE PRODUCT WORK BETTER? HOW DOES THE PRODUCT WORK? WHY IS THE PRODUCT NEEDED? WHAT DOES THE PRODUCT DO? IS IT EASY TO USE?

M MATERIALS WHAT IMPACT COULD THE DESIGNERS CHOICE OF MATERIAL HAVE ON THE ENVIRONMENT? WOULD A DIFFERENT MATERIAL MAKE IT BETTER? WHAT MATERIAL HAS IT BEEN MADE FROM?

Smart Textiles



The aims of the sequence of learning are to ensure that all students:

- Demonstrate safe use of tools and equipment.
- Explain a range of regenerated fibre properties
- Rank fibres in order of environmental impact.
- Annotate a range of design ideas which include moral and cultural issues.
- Demonstrate an understanding of smart materials.

Retrieval Practice

Question	A1	A2	A3	A4	A5
A. What is a regenerated fibre?	Made from a plant	Made in a factory	Coal & oil	A fibre made from cellulose (wood pulp)	A fibre made from Animals
B. Which fibres are Regenerated? (select more than 1)	Wool	Lyocell	Acetate	Cotton	Polyester
C. What is a design Specification?	A list of design solutions	A list of costings	A list of design issues	A list of important points	A detailed list of what the product must be/
D. Which fibres are Synthetic? (select more than 1)	Polyester	Nylon	Cotton	Bamboo	Viscose
E. What is a light emitting Diode?	A type of disco ball	A Type of switch	A type of resistor	LED Light	A type of battery
F. What advantages are they in using a laser cutter? (select more than 1)	Fast	Accurate	Less material wastage	Cuts multi materials (except metal)	Cuts complex shapes and fine detail

Questions you got wrong	Quick Corrections (bridge learning gaps & misconceptions)

Career Focus - Where could this take you?



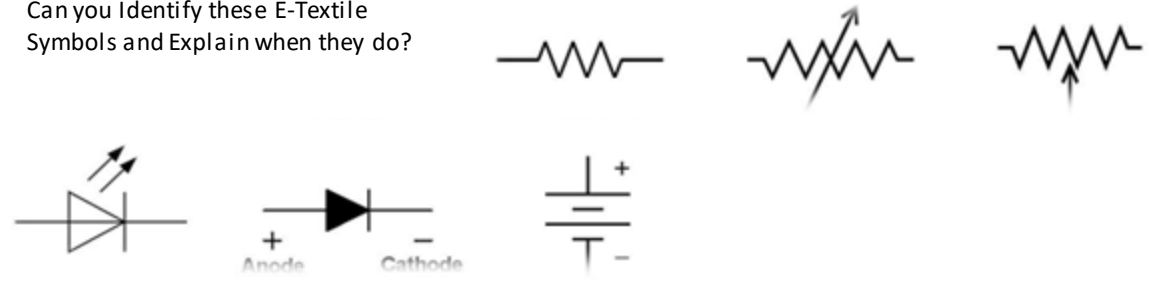
A Lab Technician performs tests and analyses in a laboratory. Lab technicians work in a variety of different fields such as medicine, textiles and Engineering.

Huddersfield University offer an MA degree in Textile Technology, and you will need an Honours degree (2:2 or above) in a relevant subject or an equivalent professional qualification.

Salaries usually range from £18,000 - £38,000

Challenge Activities

Can you Identify these E-Textile Symbols and Explain when they do?



Topic Links Additional Resources

This topic links to:

- Science- How electronics can be used within textiles and the development of Smart Fibres
- English- Subject specific Vocabulary knowledge, understanding and spelling.







To further practise and develop your knowledge see:




Keyword	Definition
Gears	One of a set of toothed wheels that work together to alter the relation between the speed of a driving mechanism
Compression	The action of compressing or being compressed.
Tension	The state of being stretched tight:
Pinewood	An evergreen coniferous tree that has clusters of long needle-shaped leaves
PVA	Polyvinyl acetate used to glue materials
Scroll saw	A scroll saw is a small electric or pedal-operated <u>saw</u> used to cut intricate curves in wood,
Shear	is a process that cuts stock without the formation of chips or the use of burning or melting
Laser	A laser is a device that emits <u>light</u> through a process of <u>optical amplification</u>
Safety Goggles	Protective eyewear to stop fragments entering the eye.
Timber	Timber is wood that has been processed into uniform and useful sizes
Specification	A design specification is a detailed document that sets out exactly what a product or a process should present
Analysis	is the process of breaking a <u>complex topic</u> or <u>substance</u> into smaller parts in order to gain a better <u>understanding</u> of it.
Iconic Design	someone or something that is seen as a <u>cultural icon</u>
Product Lifecycle	is the process of managing the entire lifecycle of a product from its inception through the <u>engineering</u> , <u>design</u> and <u>manufacture</u> ,
Corrugated Cardboard	is a type of packaging material consisting of a <u>fluted corrugated</u> sheet and one or two flat linerboards

Key Concepts

FORCES


Tension Being stretched 
Bending A motion or action that bends 
Compression Putting pressure on an object 
Torsion Twisting 
Shear Cutting 
Triangulation Forming rigid triangles together 

Tools

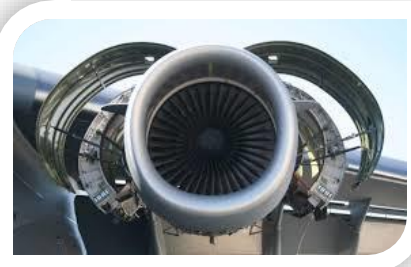


Materials & End Products


Stainless Steel Spoon








Aluminium Aircraft Fitting



Copper Tubing

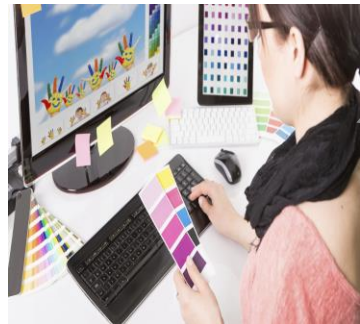


Retrieval Practice

Question	A1	A2	A3	A4	A5
A. What is an Acrylic?	Wood	Metal	Plastic	LED	Film
B. What is a product analysis?	A Detailed look at a specification	A quick look at a product	A Detailed look at a shoe	A Detailed look at a car	A Detailed look at a product
C. What is Shear referring to?	Sewing	Drawing	Jumping	Cutting	Dancing
D. Which are iconic designs? (select more than one)					
E. What is a scroll saw?	A bladed machine for cutting wood.	A drill part	A paper cutter	A saw for cutting Glass	A machine for drilling holes
F. What is Timber?	A type of wood	A type of plastic	A type of metal	A type of glass	A type of Fabric

Questions Which you got wrong Quick Corrections (bridge learning gaps & misconceptions)

Career Focus - Where could this take you?



Engineers, as practitioners of engineering, are professionals who invent, design, analyse, build and test machines and complex systems.

Kirklees College offer an Engineering and Manufacturing course level 2 and you will need A minimum of 4 GCSEs with the following grades: English at 3 or above and maths at 3 or above and 2 other GCSEs at 3 or above including a science or technology course.

Salaries usually range from £36,000-£48,000

Challenge Activities- Match the Product to the Designer.

Charles Rennie Macintosh





Tesla

Phillipe Starck





James Dyson

Topic Links Additional Resources

This topic links to:

- History- Iconic Design
- English- Subject specific Vocabulary knowledge, understanding and spelling.
- Maths- Measurements in cm.


To further practise and develop your knowledge see:

<https://youtu.be/9wHlJXnx0bM>

<https://youtu.be/b36Lt9bXFsk>

<https://youtu.be/qHzlWl7CS8E>

- Demonstrate knowledge of food provenance
- Be able to discuss confidently a range of manufacturing processes

Keyword	Definition 
Food origin	Where the food originated in the world
Food provenance	Whether the food was grown, caught or reared
Transportation	How food is transported from one place to another
Food processing	Changing food in some way e.g washing, chopping, pasteurising, freezing, fermenting, packaging
Food manufacturing	Food manufacturing refers to transforming raw ingredients into edible products such as using wheat, oat, and sugar to make cereals, desserts, and pet food.
Farming	Farming is the activity of growing crops or keeping animals on a farm.
Calcium	Calcium is a mineral your body needs to build and maintain strong bones and to carry out many important functions.
Carbohydrate	Carbohydrates provide energy for the body. The body breaks carbohydrates down into glucose, which is the primary energy source for the brain and muscles.
Protein	Protein is one of the three nutrients found in food that the body needs in large amounts. It is essential for the maintenance and building of body tissues and muscle.
Fibre	Fibre is a type of carbohydrate that the body cannot break down and so it passes through our gut into our large intestine (or colon). It is found naturally in plant foods like wholegrains, beans, nuts, fruit and vegetables and is sometimes added to foods or drinks. Fibre helps to keep our digestive system healthy and helps to prevent constipation.
Fat	The body uses fat as a fuel source, and fat is the major storage form of energy in the body. Fat also has many other important functions in the body, and a moderate amount is needed in the diet for good health. Too much fat or too much of the wrong type of fat can be unhealthy.
Cross-contamination	Cross-contamination is the physical movement or transfer of harmful bacteria from one person, object or place to another.
Nutrient	a substance that provides nourishment essential for the maintenance of life and for growth.
Healthy	In a good physical or mental condition; in good health.

Key Concepts

The **Food Standards Agency (FSA)** is responsible for food safety and food hygiene in England, Wales and Northern Ireland. It works with local authorities to enforce food safety regulations and its staff work in meat plants to check the standards are being met.

[Food Standards Act 1999](#)

The Act was introduced in the House of Commons in 1999.

It sets out our main goal to protect public health in relation to food. It gives us the power to act in the consumer's interest at any stage in the food production and supply chain.

[Food Safety Act 1990](#)

The main responsibilities for all food businesses covered by the Act are to ensure that:

- businesses do not include anything in food, remove anything from food or treat food in any way which means it would be damaging to the health of people eating it
- the food businesses serve or sell is of the nature, substance or quality which consumers would expect
- the food is labelled, advertised and presented in a way that is not false or misleading



The scheme gives businesses a rating from 5 to 0 which is displayed at their premises and online so you can make more informed choices about where to buy and eat food.

- 5 – hygiene standards are very good
- 4 – hygiene standards are good
- 3 – hygiene standards are generally satisfactory
- 2 – some improvement is necessary
- 1 – major improvement is necessary
- 0 – urgent improvement is required

- Use safe and hygienic practices in a working kitchen environment
- Demonstrate sound preparation skills of both equipment and ingredients

- Safely use a range of cooking techniques, appropriate to the task

Key Concepts

Breakfast Pizza



Ingredients:

- 1 round flour tortilla
- 3 large eggs (or 4-5 smaller eggs)
- 50g grated cheese
- 8 cherry tomatoes
- 2 slices ham or cooked bacon (or any cooked meat)

Optional:

- Chopped pepper or mushrooms

Method:

1. Preheat oven to 180 degrees
2. Lay the tortilla at the bottom of your tray
3. Whisk the eggs thoroughly and pour into your tortilla
4. Sprinkle over your fillings and make sure they are spread across the tortilla
5. Season with a small amount of salt and some pepper
6. Bake in the oven for 20 minutes, until the eggs have set.

Skills:	Meaning
1.	General Practical Skills: Weighing ingredients, measuring, preparing ingredients and equipment, correct cooking times, testing for readiness and sensory testing.
2.	Knife skills: Can use equipment safely. Slicing, dicing and chopping
3.	Preparing fruit and vegetables: I can prepare fruit and vegetables in many different ways: Slicing, peeling, grating, dicing and chopping.
4.	Use of the cooker (and Skills 6: Cooking Methods): Using the cooker including: the hob, grill and oven.
6.	Cooking Methods: Using the cooker including: the hob, grill and oven.
7.	Preparing, combine and shape: Techniques to prepare, cook and combine different ingredients.
11.	Raising Agents: Use of raising agents including: eggs, chemical, steam and biological.

HYGIENE & SAFETY TIPS

- Wash your hands with warm soapy water before you begin.
- Check gas ovens are lit correctly.
- Use oven gloves when you take tray out of the oven



- Use safe and hygienic practices in a working kitchen environment
- Demonstrate sound preparation skills of both equipment and ingredients

- Safely use a range of cooking techniques, appropriate to the task

Key Concepts

Scones



Ingredients:

85g diced butter
350g self-raising flour
¼ tsp salt
1 ½ tsp bicarbonate of soda
4 tbsp caster sugar
200ml milk, warmed to room temperature, plus a splash extra
Crushed sugar cubes, to decorate.

*** Container with a lid ***

Method:

1. Heat oven to 200C/180C fan/gas 6.
2. Whizz butter into flour.
3. Tip into a bowl and stir in salt with bicarbonate of soda and sugar.
4. Using a cutlery knife, quickly stir in milk – don't over-mix.
5. Tip out onto a lightly floured surface and turn over a couple of times to very gently bring together with your hands.
6. Gently pat to about 1in thick, then stamp out rounds with a floured cutter.
7. Pat together trimmings to stamp out more.
8. Brush the tops with a splash more milk, then scatter with crushed sugar cubes.
9. Bake on a baking sheet for 10-12 mins until risen and golden.

Equipment

- Baking tray
- Cutlery
- Mixing bowl
- Rounded knife
- Fork
- Measuring bowl
- Weighting scales

Adaptions:

- Choose 2 from:
- 10 glace cherries
- 50g raisins/sultanas/dates
- 50g coconut
- 1 eating apple
- 1tsp cinnamon

HYGIENE & SAFETY TIPS

- Wash your hands with warm soapy water before you begin.
- Check gas ovens are lit correctly.
- Use oven gloves when you take tray out of the oven

- The aims of the sequence of learning are to ensure that all students:
- Use the blues scale and chords to create a Blues style composition
 - Perform the 12-bar blues and blues scale using correct technique

- TBe able to improvise and sing, using the blues scale and blues melodies
- Demonstrate understanding of the stylistic features and context of Blues music through a range of listening activities

Keyword	Definition
12 bar blues	Traditional style of music using 3 chords over a 12-bar cycle
Walking bass	The bass part in the Blues 'walks' up and down the keyboard creating a bass line
Syncopation	Where music is played off beat (not played on the main beat of the bar)
Improvisation	Music that is made up on the spot by the performer, often based on specific set of notes
Swing rhythm	When playing quavers, the first note is held slightly longer and the second shorter, to give a swinging feel
Guitars	The original blues instrument. It plays chords and melodies, often improvised. the bass guitar (or double bass) plays the bass line
Horn section	This is often made up of saxophones, trumpets and trombones
Keyboards	The piano/organ is often used for both melodies and chords
Drum kit	Use to play the rhythm in Blues bands – often playing a swing rhythm

Key Concepts

BLUES SCALE – a scale used for improvising

Swing rhythm

Improvising – making up music on the spot

Blues Lyrics follow AAB structure

A	Mmmm, standin' at the crossroad, I tried to flag a ride
A	Standin' at the crossroad, I tried to flag a ride
B	Didn't nobody seem to know me, everybody pass me by

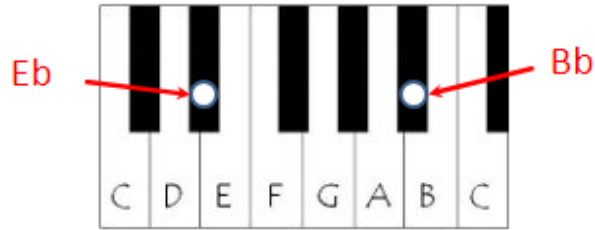
Walking Bass Line – uses the most important notes from the chords

- The aims of the sequence of learning are to ensure that all students:
- Use the blues scale and chords to create a Blues style composition
 - Perform the 12-bar blues and blues scale using correct technique

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12 Bar Blues with a walking bass line

Play the chord with your right hand



C = C E G

F = F A C

G = G B D

C C E G A	C Bb A G E	C C E G A	C Bb A G E
F F A C D	F Eb D C A	C C E G A	C Bb A G E
G G B D B	F F A C A	C C E G E	G G B D B

Play the bass line with your left hand

Career Focus - Where could this take you?



I am a composer for film and TV programmes. I write in a variety of different styles to suit the job that I am commissioned to do. I use a range of musical skills but mostly my keyboard and music technology skills are used. I have an excellent understanding of composing devices and how musical cliches work.

Challenge Activities



Practise playing the 12 bar blues at home. You can try the simple or the more difficult bass line.
Have a go at improvising over the blues scale – watch this video for some inspiration:
<https://www.youtube.com/watch?v=RJu-wptS6Ng>
Or if you would rather sing, this is a great lesson on using the Blues scale with vocals
<https://www.youtube.com/watch?v=S7Tc0HEiuVs>

Topic Links



- This topic links to:
- History – there is such a history to Blues music and we will be learning about this in class and how it links to the slave trade you learn about in history lessons
 - Geography – Blues is an important style that originated in various states in America - see if you can find New Orleans and Chicago on the map. Two important cities in the Blues movement. Also, what states are they in?

Additional Listening



- [BB KING - The Thrill is Gone](#)
- [Robert Johnson - Crossroads](#)
- [Memphis Minnie - Hoodoo Lady Blues](#)
- [Bessie Smith - St. Louis Blues](#)
- [Miles Davis - Kinda Blue \(full album\)](#)

- Can identify at least three core skills required for net and wall games
- Demonstrate core skills in a practice situation
- Demonstrate core skills in a game situation
- Lead a small group of peers in a skill practice session



Keyword	Definition
Racket	A piece of equipment with a handle, frame and head. This is used to hit the shuttle or ball over the net
Shuttle	A cone shaped object with a cork base. This is hit over the net with the racket.
Net	Rectangular net placed across the court. It divides the court in two.
Court	The playing surface area marked out with lines
Table	The playing surface used to play table tennis
Serve	A shot that is selected to start a game in net and wall activities
Forehand shot	Shot taken with the palm of your hand facing the direction of the stroke


Key Concepts You should already know:- The aim of net and wall games
You will be assessed on:- Understanding - Technique in isolation - Technique in game - Leadership - Attitude to learning

Table Tennis Key Concepts

Ready Position

Players should always be in the ready position before receiving the ball.

- Knees bent
- Feet shoulder width apart
- Feet shoulder width apart
- Racket should be level with the table and in front of body



Forehand Drive

- Ready position
- Controlled backswing, with striking arm opening up extending outwards
- Positive forward movement, arm moves forward and weight transfers from right to left foot
- Strike the ball on top of the bounce
- Follow through the shot, moving upwards and finishes in line with your nose



Backhand push

- Ready position
- Controlled backswing so your elbow bends inwards towards chest (making an L shape)
- Forward movement comes from the elbow making contact underneath the ball
- Finish by extending your arm in the follow through (changing from an L shape to a I shape)

Backhand serve

- Ready position
- The ball rests in the palm of the resting hand
- Arm moves back towards chest
- Toss the ball up (at least 15cm)
- Forward movement comes from the elbow making contact down on the ball so it bounces on your half of the table first
- Head should be over the ball when making contact
- Follow through by returning to the ready position

Badminton Key Concepts

 **The Basics** 


The aim of badminton is to hit the shuttle with your racket so that it passes over the net and lands inside your opponent's half of the court. Whenever you do this, you have won a rally; win enough rallies, and you win the match.

Your opponent has the same goal. He will try to reach the shuttle and send it back into your half of the court. You can also win rallies from your opponent's mistakes: if he hits the shuttle into or under the net, or out of court, then you win the rally.

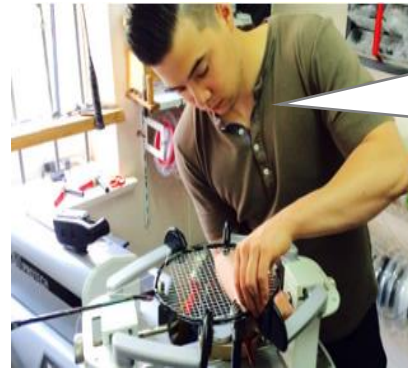
Scoring
A point is scored when you successfully hit the shuttlecock over the net and land it in your opponent's court before they hit it. A point can also be gained when your opponent hits the shuttlecock into either the net or outside the parameters

To win a game you must reach 21 points before your opponent. If you do so then you will have won that set. If the scores are tied at 20-20 then it comes down to whichever player manages to get two clear points ahead. If the points are still tied at 29-29 then the next point will decide the winner of the set. Winning the overall game will require you to win 2 out of the 3 sets played.

- Can identify at least three core skills required for net and wall games
- Demonstrate core skills in a practice situation
- Demonstrate core skills in a game situation
- Lead a small group of peers in a skill practice session

Retrieval Practice 	
Questions	Answers
What are some of the core skills needed for attacking in badminton.	<ol style="list-style-type: none"> 1. Smash shot is a core skill. The aim is to hit the shuttle as hard as possible to the oppositions side of the court 2. The long serve is a core skill for attacking in badminton. The aim is to send the opponent to the back of the court.
What are some of the core skills needed for defending in badminton.	<ol style="list-style-type: none"> 1. The overhead clear shot is used in a rally situation so that you force your opponent to move to the back of the court. 2. The drop shot is a gentle forehand or backhand shot that applies little force to the shuttle, so it drops just over the net.
What are some of the core skills needed for attacking in table tennis.	<ol style="list-style-type: none"> 1. Top spin forehand drive shot is a fast open palm shot facing the direction of the stroke. By placing top spin on the ball, the balls rotation means it travels faster. 2. Back spin forehand or backhand shot is a skill that is designed to slow down the speed of a rally in table tennis.
What are some of the core skills needed for defending in badminton.	<ol style="list-style-type: none"> 1. Backhand push shot and the forehand push shot are two skills designed to slow down the speed of a rally in a game. This gives the person more time to react to the next shot.

Career Focus - Where could this take you?



I am a professional badminton racket maker. My main job is to repair and re-string professional athlete's rackets. I have to ensure the quality and accuracy with the weight of the racket, balance point, string tension and hand grip.

Challenge Activities

Design a skill card:-

This can be used in a PE lesson to help a student to assess their current ability level. Make the skill card to teach the correct way to Serve in either badminton or table tennis.

Create a rules of the game poster:-

This can be used by all students in their PE lessons for badminton or table tennis when their role is umpiring a game so that all games can be played fairly, following RITA values. Your poster should have 3-5 basic rules.

Topic Links

This topic links to:

- Science –The role of the cardiovascular system; the physics of sports
- English –understanding and defining key terminology
- Mathematics –problem solving, recording figures and analysing performance and score keeping
- Voice 21 –coaching peers and explaining rules by officiating

Additional Resources

To further practise and develop your knowledge see:

<https://www.badmintonengland.co.uk/>

<https://www.tabletennisengland.co.uk/>











Keyword	Definition
Power	The maximum strength and maximum speed of your muscles in order to move an object or yourself forward. Power = strength x speed.
Co-ordination	The ability for muscles to work together in pairs to move different body parts in time.
Reaction Time	The time taken for a person to react to a stimulus.
Agility	The ability to change direction at speed without making a mistake in your performance.
Balance	The ability to maintain your centre of mass and control without falling over.
Speed	To moves as fast as possible over a distance in the shortest time. Speed=distance/time.
Cardiovascular endurance	The ability for the heart and blood vessels to transport oxygenated blood to the working muscles in sports performance so a person can work for a long time without getting tired.
Muscular strength	The maximum force that your muscles can make to move an object.
Muscular endurance	Your muscles can work continuously at moderate intensity for a long period of time without them getting tired.
Flexibility	This is the range of movement that can be performed around a joint by the muscles.
Body composition	This is the total amount of fat, bone and muscles of a persons body.


Key Concepts You should already know: - Some components of fitness and be able to apply them to a healthy and active lifestyle
You will be assessed on: - Understanding - Technique - Application - Leadership

Health and Fitness Key Concepts

TRAINING METHODS

Different sports require different training methods. As a result, sports performers must select training methods that are specific or can be adapted to their chosen activity.

 <p>CONTINUOUS</p> <ul style="list-style-type: none"> • Long periods of moderate work, without rest. • Improves cardiovascular fitness and muscle endurance. • Suitable for distance runners and tri-athletes. 	 <p>FLEXIBILITY/MOBILITY</p> <ul style="list-style-type: none"> • Stretching methods including static, dynamic and Proprioceptive Neuromuscular Facilitation (PNF). • Improves range of movement, reducing the chance of injury. • Beneficial for all sporting activities, in particular gymnastics and dance.
 <p>FARTLEK (SPEED PLAY)</p> <ul style="list-style-type: none"> • A continuous workout, involving changes in speed and/or terrain. • Improves recovery time and both aerobic and anaerobic fitness. • Suitable for cross country runners and team games involving changes in speed. 	 <p>WEIGHT TRAINING</p> <ul style="list-style-type: none"> • A workout using weights as a form of resistance. • Can be tailored to improve muscular endurance, power and strength. • Suitable for all activities and general fitness/toning.
 <p>CIRCUIT</p> <ul style="list-style-type: none"> • A series of exercises performed in a circuit. • Improves cardiovascular endurance and muscular endurance. • Excellent for general fitness and can be structured to suit most sports. 	 <p>PLYOMETRICS</p> <ul style="list-style-type: none"> • A series of explosive movements such as jumps, bounds, hops etc. • Improves power. • Excellent for activities that require explosive strength, e.g. long/high jump.
 <p>INTERVAL</p> <ul style="list-style-type: none"> • Involves alternating periods of work and rest. • Can be used to improve speed, recovery time, and aerobic and anaerobic fitness. • Suitable for team games involving short bursts of speed. 	 <p>SAQ (SPEED, AGILITY, QUICKNESS)</p> <ul style="list-style-type: none"> • Exercises aimed at activating neural pathways. • Improves speed, agility and quickness. • Suitable for team games involving changes in direction.



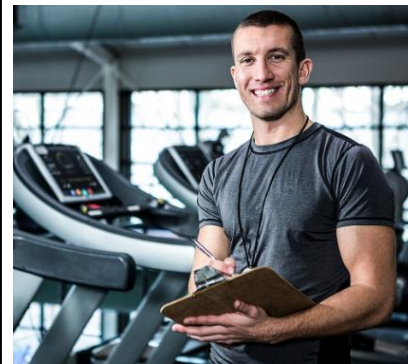


Retrieval Practice:
Unscramble the component of fitness keywords and match them to the correct definitions



COMPONENT OF FITNESS	DEFINITION
SHGTERNT	When one or muscles contract repeatedly when lifting or moving, for a certain length of time.
CAEIBRO EECNDANUR	The amount of body fat compared to muscle in the body.
WEPOR	When the body has to exert a force against resistance.
IBILEXILTYF	How fast the body can move from A to B or perform an action until it's complete.
LACEBAN	The amount/range of movement around a joint.
LIYAGIT	The time it takes for the body to respond to a stimulus.
NOCARDINTIO	When a sequence of movements are performed smoothly and accurately together.
CREATION MEIT	The rate at which work is performed often strength x speed = this
PESED	The ability to maintain your centre of gravity when standing still or moving.
BOYD MOPOSTINICO	Being able to change direction whilst keeping the body under control.
MULSCURA EECNDANUR	When the body is working at a level that demands the need for more oxygen.

Career Focus - Where could this take you?



I am a personal trainer. My job is to carry out various tasks, starting from assessing my clients' physical condition and creating unique workout routines for them. I explain the exercises in a clear and efficient way, while demonstrating how to use the training equipment safely and how to avoid injuries. I also help with giving advice on lifestyle choices linked to nutrition and healthy eating habits.

Challenge Activities



Design a training programme:-

Can you create a 4-week training programme that shows 5 different exercises that get progressively harder each week. Use the example provided on the previous page for guidance.

Create a match the keywords to definition poster:-

Select between four to six different keywords and match them to the correct definition answers. Make sure on the reverse of your skill card you have included the correct answers so students can test and assess themselves and others.

Topic Links



This topic links to:

- RSHE – Understanding how physical activity can reduce stress and anxiety and promote physical, mental and social wellbeing
- English – understanding and defining key terminology
- Mathematics – problem solving, recording figures and analysing performance.
- Voice 21 – testing others in the class on keywords.

Additional Resources



To further practise and develop your knowledge see:

<https://www.topendsports.com/testing/tests/>

<https://www.teachpe.com/training-fitness/fitness-testing>

Username and Passwords
