Year 8

Newsome Academy

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Knowledge Organisers

Name:

Team:

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Mathematics

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.

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8.06: Volume and Surface Area of a Prism

The learning outcomes for this topic are:

- Find the volume or surface area of a cuboid
- Find the volume of a prism given the area of the cross section
- Find the volume of a simple triangular prism
- Find the surface area of a triangular prism
- Work backwards to find missing lengths given the volume of a prism
- Solve simple packing problems

Key Word	Definition
Polygon	A 2D shape with straight edges
Polyhedron	A 3D shape with straight edges
Cube	A cuboid with all equal edges and faces
Cuboid	A prism with six rectangular faces at 90 degrees to each other
Prism	A 3D shape with a constant cross section
Cross-Section	Where a plane and solid meet
Plane	A flat surface extending indefinitely
Vertex	A corner
Edge	A line joining two vertices
Face	A 2D shape enclosed by edges
Volume	The capacity of a shape/how much it can hold
Surface	The faces that surround a 3D shape

Careers Focus – Where could this take you?

When calculating the amount of material to order, **landscape gardeners** would need to find the volume of the area they want to fill.

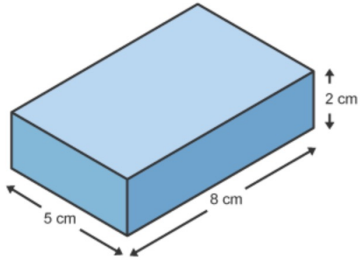
Curriculum Links - Coherence

Required Knowledge:
- 7.01 Adding and subtracting integers
- 7.02 Multiplying and dividing integers
- 7.07 Areas of rectangles
- 7.08 Area of 2D shapes

Applied to:
- 8.11 Compound units
- 9F.03 Scale drawings and nets
- 9H.12 Compound units

Links across school:
- **Pressure (Science)**

Key Concepts

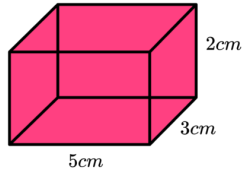


$Volume = length \times breadth \times height$

For this cuboid:

$Volume = 8 \times 5 \times 2$

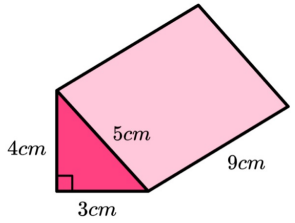
$= 80\,cm^3$



Face	Area
Bottom	5 x 3 = 15
Top	15
Front	5 x 2 = 10
Back	10
Right side	2 x 3 = 6
Left side	6

Total surface area = 15 + 15 + 10 +10 + 6 + 6

= 62cm²

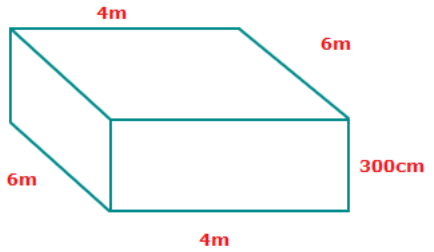


Face	Area
Front	½ x 3 x 4 = 6
Back	6
Bottom	3 x 9 = 27
Left side	4 x 9 = 36
Right side	5 x 9 = 45

Total surface area = 6 + 6 + 27 + 36 + 45

= 120cm²

Concept – what it is

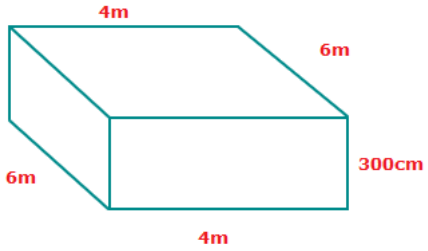


300 cm = 3m

Volume = w x l x h

= 3 x 4 x 6 = 72 m³

Non-Concept – what it isn't



Remember the units, so not

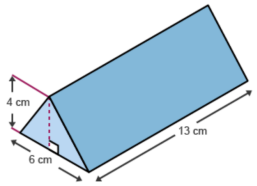
Volume = 4 x 6 x 300 = 7200

***Not** 'multiply all the numbers'*

Volume = 3 x 4 x 6 x 4 x 6 = 1728

Standard Examples

$Volume = Area\ of\ cross-section \times height\ of\ prism$



This shape is a triangular prism so the area of the cross-section is the area of a triangle.

Area of the triangle:

$= \frac{1}{2} \times 6 \times 4$

$= 12cm^2$

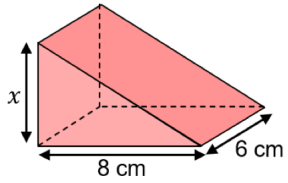
$Volume\ of\ prism = Area\ of\ cross-section \times height\ of\ prism$

$= 12 \times 13$

$= 156cm^3$

Non-Standard Examples

The volume of the prism is $264\ cm^3$. Find x.



$x \times 8 \div 2 \times 6 = 264$

$x = 264 \div 6 \div 8 \times 2$

$x = 11cm$

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8.06: Volume and Surface Area of a Prism

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- Find the volume of a prism given the area of the cross section
- Find the volume of a simple triangular prism
- Find the surface area of a triangular prism
- Work backwards to find missing lengths given the volume of a prism
- Solve simple packing problems

Useful Formulae and Hints

Lines of symmetry = mirror lines

Try folding the shape along the line (using tracing paper) to check the edges 'match up'.

All shapes have at least order of rotational symmetry 1.

Regular polygons have the same number of sides as lines of symmetry and rotational symmetry.

Use tracing paper to check how many times the shape looks the same in a 360 degree turn.

Trapeziums and parallelograms have no lines of symmetry. (Isosceles trapeziums have one line of symmetry).

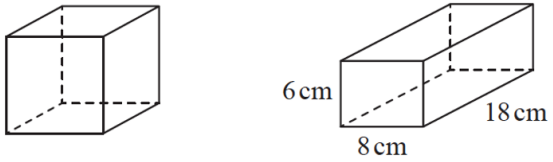
Additional Resources

MathsWatch: G25a , G25b , 114a , 114b , 115 , 119

Corbett Maths: Videos 310, 311, 312, 355, 356; Worksheets 310, 311, 355, 356

GCSE Questions

9 The diagram shows a cube and a cuboid.



The total surface area of the cube is equal to the total surface area of the cuboid.

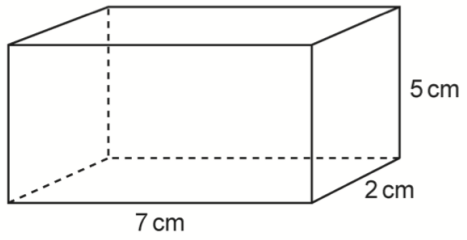
Janet says,

"The volume of the cube is equal to the volume of the cuboid."

Is Janet correct?
You must show how you get your answer.

(Total for Question 9 is 5 marks)

3 Work out the volume of this cuboid.



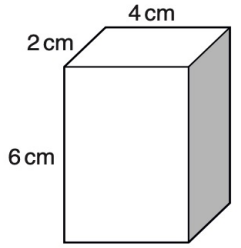
..... cm^3 **[2]**

12 The volume of a cube is $125\,cm^3$.

Calculate the total surface area of the cube.
Give the units of your answer.

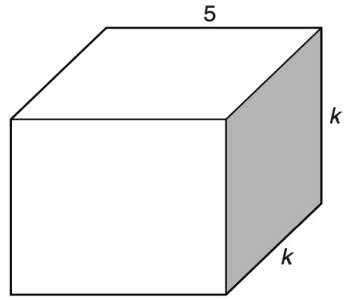
..... **[5]**

3 **(a)** Calculate the volume of this cuboid.



(a) ..... cm^3 **[2]**

(b) In this cuboid all lengths are in centimetres.



The cuboid has a volume of $320\,cm^3$.

Find the value of k.

(b) k = ... **[3]**

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8.07 Volume and Surface Area of a Cylinder

The learning outcomes for this topic are:

- Find the area and circumference of a circle
- Find the volume of a cylinder
- Find the surface area of a cylinder
- Find the height of a cylinder given its volume
- Find the radius of a cylinder given its volume
- Find the volume of compound shapes including cylinders

Key Word	Definition
Prism	A 3D shape with a constant cross section
Cross-Section	Where a plane and solid meet
Cylinder	A prism with a circular cross-section
Vertex	A corner
Edge	A line joining two vertices
Face	A 2D shape enclosed by edges
Volume	The capacity of a shape/how much it can hold
Surface	The faces that surround a 3D shape
Circumference	The distance around the edge of a circle
Area	The amount of space inside a 2D shape
Radius	The distance from the centre of a circle to its circumference
Diameter	The greatest distance across a circle, joining two points on the circumference through the centre

Careers Focus – Where could this take you?

Tankers are often built in the shape of a cylinder so **lorry drivers** and **technicians** filling vehicles for transport need to be able to accurate find the volume of the tank to fill.

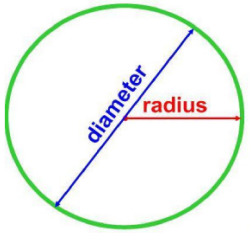
Curriculum Links - Coherence

Required Knowledge:
- 7.02 Multiplying integers and decimals
- 7.08 Areas of circles
- 8.06 Volume and surface area of a prism

Applied to:
- 8.11 Compound units
- 9F.03 Scale drawings and nets
- 9H.12 Compound units

Links across school:
- Pressure (Science)

Key Concepts



Area of a circle = π x **radius²**

Circumference of a circle = π x **diameter**

remember that the **diameter = 2 x radius**

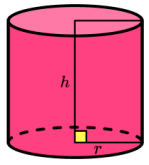
Volume of a cylinder

The **volume of a cylinder** is the amount of space there is inside a cylinder.

In order to find the volume of a cylinder we first need to find the circular area of the cross section. And **multiply** it by the height (or length).

Formula for the volume of a cylinder:

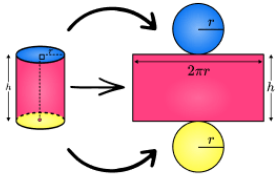
$$\text{Volume} = \pi r^2 h$$



Surface Area of a Cylinder

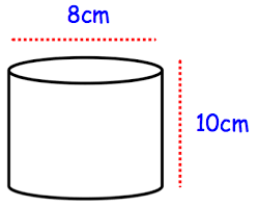
The **surface area** of a cylinder is the area which covers the outer surface of a cylinder.

In order to calculate the total surface area of a cylinder we need to find the area of the three parts of the surface of the cylinder and add them together. There is a **curved surface area** and **two circular bases**.



Formula for the **total surface area of a cylinder**: $\text{TOTAL surface area} = 2\pi rh + 2\pi r^2$

Concept – what it is



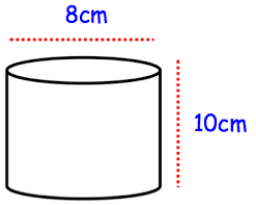
$$Volume = \pi r^2 h$$

$$= \pi \times 4^2 \times 10$$

$$= 160\pi$$

$$= 502.7\ cm^3$$

Non-Concept – what it isn't

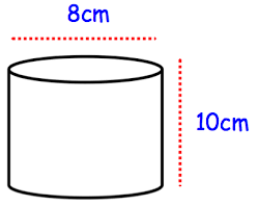


Don't use whatever number is given, make sure you're using the radius.

$$Volume = \pi r^2 h$$
$$= \pi \times 8^2 \times 10$$

$$= 640\pi$$
$$= 2010.6\ cm^3$$

Standard Examples



Find the surface area of the cylinder.

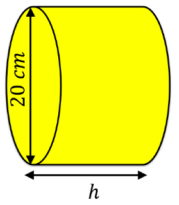
$$Surface\ area = 2\pi r^2 + 2\pi rh$$

$$= 2\times\pi\times 4^2 + 2\times\pi\times 4\times 10$$

$$= 32\pi + 80\pi = 110\pi$$

$$= 345.58\ cm^2$$

Non-Standard Examples



$Volume = 4084\ cm^2$

Find the height of the cylinder.

$$Volume = \pi r^2 h$$

$$4084 = \pi \times 10^2 \times h$$

$$4084 \div \pi \div 10^2 = h$$

$$13.0cm = h$$

8.07 Volume and Surface Area of a Cylinder

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The learning outcomes for this topic are:

- Find the area and circumference of a circle
- Find the volume of a cylinder
- Find the surface area of a cylinder
- Find the height of a cylinder given its volume
- Find the radius of a cylinder given its volume
- Find the volume of compound shapes including cylinders

Useful Formulae and Hints

Area of a circle =
$\pi \times radius^2$
(πr^2)

Circumference of a circle =
$2 \times \pi \times radius$
$(2\pi r^2)$

Volume of a prism =
area of the cross-section x length

Volume of a cylinder =
$\pi r^2 h$

Surface area of a cylinder =
$2\pi r^2 + 2\pi rh$

Or $2\pi r(r + h)$

Mass = density x volume

Additional Resources

MathsWatch: G22a , G22b , G25b , 117 , 118 , 119

Corbett Maths: Videos 59 , 60 , 315 , 357 ; Worksheets 59 , 60 , 315 , 357

GCSE Questions

13 Calculate the area of a circle with radius 14 cm.

..... cm^2 **[2]**

13 Calculate the circumference of a circle with diameter 10 cm.

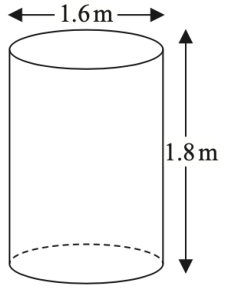
..... cm **[2]**

6 Jeremy has to cover 3 tanks completely with paint.

Each tank is in the shape of a cylinder with a top and a bottom.
The tank has a diameter of 1.6 m and a height of 1.8 m.

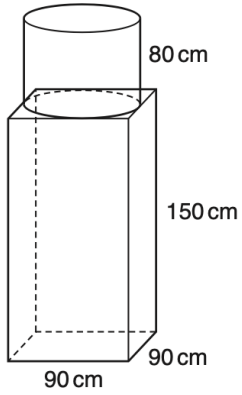
Jeremy has 7 tins of paint.
Each tin of paint covers 5 m^2

Has Jeremy got enough paint to cover completely the 3 tanks?
You must show how you get your answer.



(Total for Question 6 is 5 marks)

22



A sculpture is formed from a cylinder resting on top of a cuboid.
The cylinder has radius 45 cm and height 80 cm.
The cuboid measures 90 cm by 90 cm by 150 cm.

The sculpture is made of granite.
The granite has a density of 2.7 g/cm^3.

Calculate the total mass of the sculpture in tonnes.

.....tonnes **[5]**

4 A circle has radius 5 cm.

(a) Work out the circumference of the circle.

(a) ..... cm **[2]**

(b) Work out the area of the circle.

(b) ..... cm^2 **[2]**

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8.08 Powers of Ten and Standard Form

The learning outcomes for this topic are:

- Multiply and divide by powers of ten
- Write numbers in standard form as normal numbers
- Write normal numbers in standard form
- Write in standard form when in partial standard form
- Multiply numbers written in standard form
- Divide numbers written in standard form

Key Word	Definition
Index	The power a number is raised to
Power	The number of times a quantity was multiplied by itself i.e. 53 means 5 multiplied by itself three times, 5x5x5
Standard Form	A method of writing very large or very small numbers more succinctly, a number between 1 and 10 multiplied by a power of ten
Place Value	The relative size of a number, whether it has a value in the tenths, units, tens, hundreds etc
Normal Number	A number written as hundreds, tens, units etc
Convert	Change from one form to another

Additional Resources

MathsWatch: N45a , N45b , 83

Corbett Maths: Videos 300 , 301 , 302 , 303 ; Worksheets all

Careers Focus – Where could this take you?

Bacteria and other microscopic life forms are so small that their measurements are made using standard form. This means that **Microbiologists** use standard form regularly.

Curriculum Links - Coherence

Required Knowledge:
- 7.02 Multiplying and dividing integers
- 7.11 Using index notation

Applied to:
- 10H.09 Standard form
- 10F.24 Powers and standard form

Links across school:
- Gravity, mass and the solar system (Science)
- Stem project (Science)
- Cells (Science)
- Atomic structure (Science)

Key Concepts

Positive Powers of 10

$10^1 = 10$

$10^2 = 100$

$10^3 = 1{,}000$

$10^4 = 10{,}000$

etc.

Negative Powers of 10

$10^{-1} = \frac{1}{10} = 0.1$

$10^{-2} = \frac{1}{100} = 0.01$

$10^{-3} = \frac{1}{1{,}000} = 0.001$

$10^{-4} = \frac{1}{10{,}000} = 0.0001$

etc.

46200000 = 4.62 x 10^7

We place the decimal point between the 4 and 6 to give a number between 1 and 10.

The power of 10 is 7 because there are **seven digits after the new decimal point**, we need to move the decimal seven spaces to the right.

0.0000057 = 5.7 x 10^{-6}

We place the decimal point between the 5 and 7 to give a number between 1 and 10.

The power of 10 is -6 because there are **six digits before the new decimal point**, we need to move the decimal six spaces to the left.

Concept – what it is

3.76 x 10^5 = 376 000

3.76 x 10^{-3} = 0.00376

2.7 x 10^{-5} ÷ 9 x 10^{-4}

= 2.7 ÷ 9 x $10^{-5 - -4}$

= 0.3 x 10^{-1} = 3 x 10^{-2}

Non-Concept – what it isn't

Don't just 'add zeros'. The power is the number of spaces the decimal moves.

3.76 x 10^5 = 37 600 000

3.76 x 10^{-3} = 0.000376

Take care with negative powers, particularly when dividing. Don't forget to make sure answers are in true standard form.

2.7 x 10^{-5} ÷ 9 x 10^{-4}

= 2.7 ÷ 9 x $10^{-5\ -4}$

= 0.3 x 10^{-9}

Standard Examples

Calculate $(4.5 \times 10^4) + (6.45 \times 10^6)$.

$= 45{,}000 + 6{,}450{,}000$

$= 6{,}495{,}000$

$= 6.495 \times 10^6$

Work out $(3 \times 10^3) \times (3 \times 10^9)$.

Multiply the first numbers – which in this case is $3 \times 3 = 9$.

Apply the index law to the powers of 10:

- $10^3 \times 10^9 = 10^{3+9} = 10^{12}$
- $(3 \times 10^3) \times (3 \times 10^9) = 9 \times 10^{12}$

Non-Standard Examples

Work out $(4 \times 10^9) \times (7 \times 10^{-3})$.

Multiply the first numbers $4 \times 7 = 28$.

Apply the index law to the powers of 10

- $10^9 \times 10^{-3} = 10^{9+-3} = 10^6$
- $(4 \times 10^9) \times (7 \times 10^{-3}) = 28 \times 10^6$

28 is not between 1 and 10, so 28×10^6 is not in standard form. To convert this to standard form, divide 28 by 10 so that it is a number between 1 and 10. To balance out this out, multiply the second part by 10 which gives 10^7.

28×10^6 and 28×10^7 are equivalent but only 2.8×10^7 is written in standard form.

So: $(4 \times 10^9) \times (7 \times 10^{-3}) = 2.8 \times 10^7$

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8.08 Powers of Ten and Standard Form

The learning outcomes for this topic are:

- Multiply and divide by powers of ten
- Write numbers in standard form as normal numbers
- Write normal numbers in standard form
- Write in standard form when in partial standard form
- Multiply numbers written in standard form
- Divide numbers written in standard form

Useful Formulae and Hints

A number is only written in **standard form** when it is in the form

$a \times 10^n \quad where \quad 1 \leq a < 10$

Laws of indices

$$a^b \times a^c = a^{b+c}$$

$$\frac{a^b}{a^c} = a^b \div a^c = a^{b-c}$$

When **multiplying** or **dividing** in standard form **rearrange** so the number parts and powers of ten are matched.

e.g. $3 \times 10^5 \times 4 \times 10^6 = 3 \times 4 \times 10^5 \times 10^6$

$= 12 \times 10^{11}$

Positive powers of ten move the **decimal** to the **right**.
Negative powers of ten move the **decimal** to the **left**.

GCSE Questions

17 The table below shows the area, in square kilometres (km^2), of some countries.

Country	Area (km^2)
Australia	7.69×10^6
Latvia	6.46×10^4
Luxembourg	2.59×10^3
Russia	1.71×10^7
Singapore	7.24×10^2
Sweden	4.50×10^5

(a) Write the area of Sweden as an ordinary number.

(a) ..... km^2 **[1]**

(b) Which of the above countries has the smallest area?

(b) ..... **[1]**

(c) Alexis says

The area of Australia is approximately three times larger than the area of Luxembourg.

Is she correct?
Show how you decide.

Alexis is ..... because .....

..... **[2]**

(d) Work out the total area of Russia and Australia.
Give your answer in standard form, correct to 2 significant figures.

(d) ..... km^2 **[4]**

(b) Work out.

$5 \times 10^4 - 1.6 \times 10^3$

Give your answer in standard form.

..... **[3]**

13 **(a)** Write 0.003 16 in standard form.

..... **[1]**

(b) Work out.

$2 \times 10^2 \times 4 \times 10^5$

Give your answer in standard form.

..... **[2]**

14 **(a)** Write 543 000 in standard form.

(a) ..... **[1]**

(b) Write 6.3×10^{-2} as an ordinary number.

(b) ..... **[1]**

(c) Pierre is given this question.

> Work out.
> 61000 × 4000
> Give your answer in standard form.

Pierre's answer is 24.4×10^7.

Is Pierre correct?
Explain your answer.

.....

..... **[1]**

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8.09 Rounding and Approximation

The learning outcomes for this topic are:

- Round numbers to a given power of ten
- Round numbers to a given amount of decimal places
- Round numbers to a given amount of significant figures
- Approximate single-step calculations
- Approximate multi-step calculations
- Find upper and lower bounds of a rounded figure

Key Word	Definition
Round	To change a number to one that is less exact and easier to calculate with
Bound	The largest and smallest values that can round to a given number
Approximate	To find a rough answer to a question by rounding all values to one significant figure before calculating
Estimate	A synonym for approximate
Decimal	Digits after the decimal place, smaller than 1
Significant Figure	Any digit in a number after the first non-zero digit
Integer	A whole number, it has no decimal part

Additional Resources

MathsWatch: N27a , N27b , N38 , N43a , N43b , 31 , 32, 90 , 91 , 132 , 206

Corbett Maths: Videos 215 , 276 , 277a , 277b , 278 , 279a , 280 ; Worksheets 215 , 276 , 277 , 278 , 279a , 280

Careers Focus – Where could this take you?

Budget analysts estimate a company's future financial needs.

Curriculum Links - Coherence

Required Knowledge:
- KS2 The place value system
- 7.06 Ordering decimals and estimates

Applied to:
Almost all topics as a checking tool, but most often:
- 8.26 Pythagoras' Theorem
- 9F.19 Direct proportion and best buys
- 9H.11 Direct proportion and best buys
- 9H.23 Circumference and area

Links across school:
- Gravity, mass and the solar system (Science)
- Stem project (Science)

Key Concepts

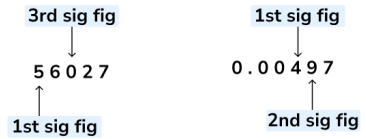
In order to round a number:

1. **Identify the number to the right of the place value column you are rounding to**
2. **If it is a 4 or less we round down, if it is a 5 or more we round up**
3. **Write the answer.**

Significant figures

"Significant" means "important". The first significant figure (or significant digit) of a number is the most important digit which expresses the size of the number; it is the first non-zero digit.

E.g.



Estimation

Estimation is when we **use approximate values** in a calculation **to find an approximate answer.**

When we estimate the numbers in a calculation, we usually round to 1 significant figure.

E.g. Estimate 5.7 x 2.3

5.7 rounded to 1.s.f is **6**

2.3 rounded to 1.s.f is **2**

→ So 5.7 x 2.3 ≈ 6 x 2 = 12

Concept – what it is	Non-Concept – what it isn't
Round 2760 to the nearest 100 ***2800***	*Make sure you add zeros back in that affect the size of the number.* *Round 2760 to the nearest 100* ***28***
Round 4.998 to 2 decimal places ***5.00***	*You need to keep the correct number of decimal places, keeping or removing zeros where needed.* *Round 4.998 to 2 decimal places* ***5***
Round 3056 to two significant figures ***3100***	*Zeros count as significant figures if they come anywhere after the first non-zero digit.* *Round 3056 to two significant figures* ***3060***

Standard Examples	Non-Standard Examples
Rounding to the nearest ones place, 10, 100 and 1000 1478.47 is 1478 rounded to the nearest ones place 1478.47 is 1480 rounded to the nearest 10 1478.47 is 1500 rounded to the nearest 100 1478.47 is 1000 rounded to the nearest 1000	Truncating a number is cutting a number off at a certain value, with no need to round up or down.
Rounding to decimal places 1478.2735 is 1478.3 rounded to 1 decimal place 1478.2735 is 1478.27 rounded to 2 decimal places 1478.2735 is 1478.274 rounded to 3 decimal places	*Round 3.77468 to 1 decimal place.* *3.8*
Rounding to significant figures 1478.47 is 1000 rounded to 1 significant figure 1478.47 is 1500 rounded to 2 significant figures 1478.47 is 1480 rounded to 3 significant figures	*Truncate 3.77468 to 1 decimal place.* *3.7*

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8.09 Rounding and Approximation

The learning outcomes for this topic are:

- Round numbers to a given power of ten
- Round numbers to a given amount of decimal places
- Round numbers to a given amount of significant figures
- Approximate single-step calculations
- Approximate multi-step calculations
- Find upper and lower bounds of a rounded figure

Useful Formulae and Hints

Always add back in zeros that affect the size of a number.
E.g. 4320 to the nearest hundred is 4300, not 43.

Don't add zeros back in after the decimal point.
E.g. 8.354 to 1 decimal place is 8.4 not 8.400.

Do add zeros back to give the correct amount of decimal places or significant figures.
E.g. 8.997 to two decimal places is 9.00 not 9.

When **estimating**, first round all numbers to **one significant figure** before working out the calculation.

The largest possible number before rounding (the **upper bound**) **ends in a 5**, not a 4.9...
E.g. The upper bound for 7.1 correct to one decimal place would be 7.15, not 7.1499999...

GCSE Questions

(c) Estimate the value of

$$\frac{23.1 \times 3.9}{8.12}.$$

..... **[3]**

3 **(a)** Round 7874 to

(i) the nearest hundred,

..... **[1]**

(ii) 1 significant figure.

..... **[1]**

19 Asha worked out $\frac{326.8 \times (6.94 - 3.4)}{59.4}$.

She got an answer of 19.5, correct to 3 significant figures.

Write each number correct to 1 significant figure to decide if Asha's answer is reasonable.

.....

..... **[3]**

2 By rounding each value to one significant figure, estimate the cost of 3.9 kg of apples at 87p per kg.

£ ..... **[2]**

15 Angie is planning a presentation evening.
She writes down her costs and income.

Costs	Income
10 staff each working 6 hours at £8 per hour	60 guests each paying £5
Food: 60 meals at £8.95 each	Sponsorship £1000
Prizes: 12 prizes at £19.99 each	

Angie thinks she will make a small profit.

Use estimation to decide if Angie is correct.
Show all of your working.

..... **[6]**

9 **(a)** Round 7.3065 to 2 decimal places.

..... **[1]**

(b) Round each number to 3 significant figures.

(i) 408 231

..... **[1]**

(ii) 0.006 137 02

..... **[1]**

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8.10 Speed, Distance, Time

The learning outcomes for this topic are:

- Convert between minutes and hours
- Convert between different units of speed
- Calculate speed from distance and time
- Calculate a missing distance or time
- Calculate when time is given as hours and minutes
- Calculate the average speed over a multi-stage journey

Key Word	Definition
Speed	A measure of how fast something travels
Distance	A measure of how far something has moved
Time	A measure of how long an event occurs for
Minute	A unit of time equal to 60 seconds
Hour	A unit of time equal to 60 minutes
Second	A small unit of time
Mile	An imperial unit of distance used in some countries
Kilometre	A metric unit of distance equal to 1000 metres
Metre	A metric unit of distance roughly equal to a stride
Unit	What something is measured in

Additional Resources

MathsWatch: R11a , 142

Corbett Maths: Videos 299 ; Worksheets 299

Careers Focus – Where could this take you?

The speed and journey of a plane is monitored by a **Pilot** who needs to communicate this information with **air traffic control,** his **copilot.** Just like a ship's **captain** would do for the nautical equivalent.

Curriculum Links - Coherence

Required Knowledge:

- 7.02 Multiplying and dividing integers and decimals
- 7.14 Substitution, using and writing formulae
- 8.05 Multiplying and dividing fractions

Applied to:

- 9F.20 Compound measures
- 9H.12 Compound measures
- 11F.03 Distance time graphs
- 11H.05 Distance time graphs
- 11H.06 Rates of change

Links across school:

- Movement (Science)
- Health and fitness (PE)

Key Concepts

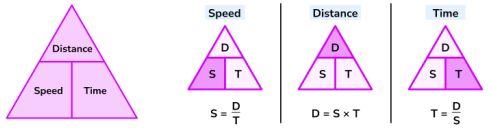
Speed distance time

Speed, distance, time is a topic about the relationship between these three measures as shown by the formula below.

$$Speed = Distance \div Time$$

"Speed equals distance divided by time"

This formula can also be rearranged to calculate distance or calculate time given the other two measures. An easy way to remember the formula and the different rearrangements is to use this speed distance time triangle.



Units of time

1 minute = 60 seconds

1 hour = 60 minutes

1 day = 24 hours

Units of length

$1cm = 10mm$

$1m = 100cm$

$1km = 1000m$

$8km \approx 5miles$

Speed distance time

In order to calculate **speed, distance or time**:

1. Write down the values of the measures you know with the units.
2. Write down the formula you need to use from the speed, distance, time triangle.
3. Check that the units are compatible with each other, converting them if necessary.

4. Substitute the values into the selected formula and carry out the resulting calculation.
5. Write your final answer with the required units.

Concept – what it is	Non-Concept – what it isn't
Calculate the time spent driving if a car travels a distance of 15 miles at a speed of 36 mph. $Time = Distance \div Speed$ $= 15 \div 36$ $= 0.42\ hours$ $= 0.42 \times 60 = 25.2\ minutes$	Calculate the time spent driving if a car travels a distance of 15 miles at a speed of 36 mph. *Do not convert your times incorrectly. Minutes ÷ 60 = hours and hours x 60 = minutes.* $Time = Distance \div Speed$ $= 15 \div 36$ $= 0.42\ hours$ $= 42\ minutes$
Standard Examples	**Non-Standard Examples**
A car travels for 1 hours and 45 minutes, covering a distance of 63 miles. Calculate the average speed of the car giving your answer in miles per hour. *45 minutes ÷ 60 = 0.75 hours* *1 hours 45 minutes = 1.75 hours.* *Speed = distance ÷ time* *63 ÷ 1.75 =* ***36 mph***	John drove for 3 hours at a rate of 50 miles per hour and for 2 hours at 60 miles per hour. What was his average speed for the whole journey? *Distance = speed x time* *3 x 50 = 150 miles* *2 x 60 = 120 miles* *John travels 150 + 120 = 270 miles in total* *John took 3 + 2 = 5 hours in total* *Average speed = total distance ÷ total time* *270 ÷ 5 = 54 mph*

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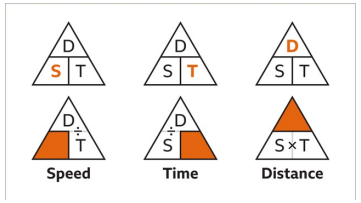
8.10 Speed, Distance, Time

The learning outcomes for this topic are:

- Convert between minutes and hours
- Convert between different units of speed
- Calculate speed from distance and time
- Calculate a missing distance or time
- Calculate when time is given as hours and minutes
- Calculate the average speed over a multi-stage journey

Useful Formulae and Hints



1 hour and 15 minutes is **not 1.15** hours.
15 minutes out of 60 minutes in an hour.

$$15 \div 60 = \frac{15}{60} = \frac{1}{4} = 0.25\ h$$

So 1 hour 15 mins = **1.25 hours.**

2.4 hours is not **2 hours 40 minutes**.
0.4 hours at 60 minutes per hour.

$$0.4 \times 60 = 24\ min$$

2.4 hours = **2 hours 24 minutes**.

$$Average\ speed = \frac{total\ distance}{total\ time}$$

Average speed is NOT the mean speed

GCSE Questions

22 Hector can run 400 metres in 66 seconds.

(a) Use this information to show that he could run 5 kilometres in less than 14 minutes. **[4]**

(b) Hector tries to run 5 kilometres in less than 14 minutes.

Give one reason why he might not achieve this.

.....

..... **[1]**

10 A man running at a constant speed of 5 metres per second takes 66 seconds to complete a particular distance.
A horse completes the same distance running at a constant speed of 15 metres per second.

Find the difference, in seconds, in the times taken by the man and by the horse to run this distance.

..... seconds **[3]**

20 A bee flies from its hive to a flower at a constant speed of 7.5 metres per second for 10 seconds.
The bee then takes 15 seconds to fly back to the hive.
Assume the bee always flies in a straight line.

(a) Ignoring the time spent at the flower, work out the **overall** average speed of the bee in its flight from the hive to the flower and back.

(a) ..... metres per second **[4]**

(b) If the bee is not assumed to fly in a straight line, how might your answer be affected?

.....

..... **[1]**

15 Anna and Paddy take part in the same fun run.

Anna completed the fun run in 2 hours.
Her average speed was 6 kilometres per hour.
Paddy completed the fun run in 90 minutes.

(a) Work out Paddy's average speed in kilometres per hour.

(a) ..... km/h **[4]**

(b) Anna says

Because I stopped for drinks, my average running speed was faster than 6 kilometres per hour.

Give one reason to support Anna's statement.

.....

..... **[1]**

12 Trish and Marc both cycled the same distance.
Trish completed the distance in 2 hours.
Her average speed was 16 miles per hour.
Marc completed the distance in 4 hours.

Find Marc's average speed for the journey.

..... mph **[2]**

14 Dean drives a distance of 760 km in 9 hours.
Robert drives a distance of 559 km in 6 hours 30 minutes.

Who has the highest average speed?
Show how you decide.

..... because .....

..... **[4]**

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8.11 Compound Units

The learning outcomes for this topic are:

- Convert between units of area and volume
- Calculate pressure from force and area
- Calculate density from mass and volume
- Find a missing force or area
- Find a missing mass or volume
- Solve problems involving different units

Key Word	Definition
Area	A measure of the space inside a 2D shape
Pressure	A measure of the amount of force applied to an area
Force	A measure of strength or energy, a push or pull motion
Mass	A measure of the amount of matter in an object, greater mass = greater weight
Density	A measure of how compact matter is; more dense = more solid e.g. a brick; less dense = softer e.g. marshmallow
Volume	A measure of the space inside a 3D shape
Unit	What something is measured in
Formula	A relationship between two or more unknowns

Additional Resources

MathsWatch: R11b , 142

Corbett Maths: Videos 384 , 384a , 385 ; Worksheets 384 , 385

Careers Focus – Where could this take you?

Population density is an important thing to consider for **Urban planners** who develop long and short term plans for cities and their infrastructures.

Curriculum Links - Coherence

Required Knowledge:

- 7.02 Multiplying and dividing integers and decimals
- 7.08 Areas of 2D shapes
- 7.14 Substitution, using and writing formulae
- 8.05 Multiplying and dividing fractions
- 8.06 Volume of a prism
- 8.07 Volume of a cylinder
- 8.10 Speed, distance, time

Applied to:

- 9F.20 Compound measures
- 9H.12 Compound measures
- 11H.06 Rates of change

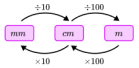
Links across school:

- Health and fitness (PE)
- Population density (Geography)

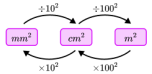
Key Concepts

Converting units of area and volume allows us to convert between different metric units involving area and volume.

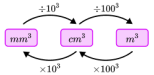
Converting metric units of length:



Converting metric units of area:



Converting metric units of volume:

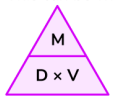


Mass, density and volume are physical properties of objects.

To calculate the mass, density or volume of an object, we use the formula:

$$Density = \frac{Mass}{Volume}$$

This can be written as a formula triangle:



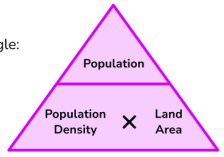
where M is the mass, D is the density, and V is the volume of an object.

Population density is a compound measure that tells us how many people live in an area of a specified size.

To work out population density we need to know the relationship between population density, population (the number of people) and land area:

$$\text{Population Density} = \frac{\text{Population}}{\text{Land Area}}$$

We can turn this into a formula triangle:



Pressure, force and area are physical properties.

Area is a measure of the size of space a flat shape takes up. The derived SI unit for area is the square metre (m^2).

Pressure is a compound measure, defined as the force per unit area. The standard unit of pressure is Pascals (Pa) where $1\ Pa = 1\ N/m^2$

Force is the energy attributed to a movement or physical action. Force is measured in the standard unit Newtons (N).

To calculate either the pressure, force or area of an object, we use the pressure formula:

$$Pressure = \frac{Force}{Area}$$

Concept – what it is	Non-Concept – what it isn't
$500\ kg/m^3 = 0.5\ g/cm^3$ **X 1000 to turn kg into g** **÷ 100 ÷ 100 ÷ 100 to turn m^3 into cm^3** *Pressure, density, population density and rates are compound units because they use two other units. It's a good way to check if you have the units correct, does each unit appear twice.* *Mass (g)* **÷ volume (cm^3) = density (g/cm^3)**	*Do not just convert linear units. If the metres are cubed, then the scale factor needs to be done three times.* $500\ kg/m^3 = 5\ kg/cm^3$ *Think carefully about whether the number becomes larger. If we're moving from a metre cubed to just a centimetre cubed, should the weight go up or down?* $500\ kg/m^3 = 50000\ kg/cm^3$
Standard Examples	**Non-Standard Examples**
A force of 800N acts on an area of 20 m^2. *Calculate the pressure.* $Pressure = \frac{force}{area}$ $= \frac{800\ N}{20\ m^2}$ $= 40\ N/m^2$	*A tap is used to fill a container in the shape of a cuboid measuring 1.5m by 2m by 0.4m. The tap releases water at a rate of 5 litres per minute.* *How long does it take to fill the tank?* **1 litre = 1000ml = 1000cm^3** **Volume of cuboid** **= 150cm x 200cm x 40cm = 1200000 cm^3** **1200000cm^3 = 1200 litres** **1200 ÷ 5 = 240 minutes** **240 ÷ 60 = 4 hours**

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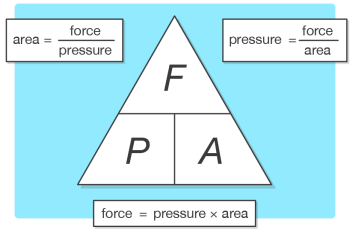
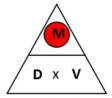
8.11 Compound Units

The learning outcomes for this topic are:

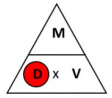
- Convert between units of area and volume
- Calculate pressure from force and area
- Calculate density from mass and volume
- Find a missing force or area
- Find a missing mass or volume
- Solve problems involving different units

Useful Formulae and Hints

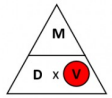




$Mass$ =density x volume



$Density = \frac{Mass}{Volume}$



$Volume = \frac{Mass}{Density}$

It's important that **units match**. For example, when working out density in g/cm³ make sure that your mass is in grams (not kg) and your volume is in cm³ (not mm³ or m³).

GCSE Questions

(c) Water flows at a steady rate from a tap.
It takes 50 seconds to fill a 5 litre watering can from this tap.

The rate at which water flows from the tap is halved.

(i) Complete.

5 litres = ... cm^3 **[1]**

(ii) Find the rate at which the water is **now** flowing from the tap.
Give your answer in cubic centimetres per second (cm^3/s).

(ii) ..... cm^3/s **[2]**

16 The volume of a piece of wood is 620 cm^3.
Its density is 0.85 g/cm^3.

Work out its mass.

..... g **[2]**

18 A village has a population of 4200 and a population density of 700 people per km^2.
An estate is built next to the village.
The estate has an area of 2 km^2 and a population density of 800 people per km^2.

Work out the population density for the village and the estate together.

..... people per km^2 **[4]**

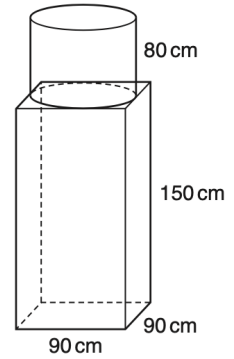
20 A truck is used to transport some wood panels.
Each wood panel is a cuboid measuring 2.4 m by 1.2 m by 1.8 **cm**.
The density of each wood panel is 750 kg/m^3.

The truck can carry 15 tonnes of these wood panels.

Calculate the maximum number of wood panels that the truck can carry.
Show how you decide.

..... **[6]**

22



A sculpture is formed from a cylinder resting on top of a cuboid.
The cylinder has radius 45 cm and height 80 cm.
The cuboid measures 90 cm by 90 cm by 150 cm.

The sculpture is made of granite.
The granite has a density of 2.7 g/cm^3.

Calculate the total mass of the sculpture in tonnes.

.....tonnes **[5]**

8.12 Unit Cost and Best Buys

The learning outcomes for this topic are:

- Find the cost of one item given the cost of many
- Find the cost of an item when not a multiple of the original
- Identify the 'best buy' for simple problems
- Identify the 'best buy' when figures are not multiples
- Calculate recipe amounts from given quantities
- Identify the 'best buy' involving deals

Key Word	Definition
Unit/Unitary	Relating to 1, i.e. the price of 1 apple
Dividend	A number to be divided
Divisor	What a number is being divided by
Quotient	The answer to a division; dividend ÷ divisor = quotient
Cost	The money amount assigned to an object
Quantity	The number of a product held
Proportion	The share of something compared to the whole
Direct Proportion	Two quantities in a constant ratio, both multiply or divide by the same amount
Value	The worth assigned to something, best value = most product for least amount of money

Additional Resources

MathsWatch: R4 , R8 , 39 , 41 , 42

Corbett Maths: Videos 210 , 255a , 256 ; Worksheets 210 , 255a , 256

Careers Focus – Where could this take you?

Atmospheric scientists use the unitary method to find the proportion of particles in the atmosphere.

Curriculum Links - Coherence

Required Knowledge:

- 7.02 Multiplying and dividing
- 7.15 Fractions, decimals and percentages
- 7.16 Calculating percentages
- 7.18 Simplifying ratios

Applied to:

- 8.27 Direct proportion
- 9F.18 Ratio
- 9H.11 Ratio and direct proportion
- 10F.12 Direct and inverse proportion
- 11H.02 Direct and inverse proportion

Links across school:

- STEM project (Science)

Key Concepts

8 pens cost £2.16. Calculate how much 7 pens cost.

To find out the cost of one item use the **unitary method** - divide the cost by how many items have been bought. Any amount can be calculated when the value of 1 is known.

8 pens cost £2.16.

Dividing both numbers by 8:

$$\begin{array}{rcl} 8 \text{ pens} & = & £2.16 \\ \div 8 & & \div 8 \\ 1 \text{ pen} & = & £0.27 \end{array}$$

Multiplying both numbers by 7:

$$\begin{array}{rcl} 1 \text{ pen} & = & £0.27 \\ \times 7 & & \times 7 \\ 7 \text{ pens} & = & £1.89 \end{array}$$

So 7 pens cost £1.89.

Best buy maths

In order to compare deals:

1. Note the cost of the items and the number of items for each deal.
2. Calculate the price for an equivalent number of items for each deal. For the unitary method, this is the price of a single item. For the common multiples method, this is the price of a common number of items.
3. Compare the prices of the equivalent quantities.

Concept – what it is

Ingredients for 12 small cakes
180 g margarine
180 g sugar
200 g plain flour
1 teaspoon baking powder
2 eggs

How many cakes can I make if I have 450g sugar, 1kg flour and plenty of the other ingredients?

450 ÷ 180 = 2.5
1kg = 1000g
1000 ÷ 200 = 5

Can do the recipe 2.5 times.
2.5 x 12 = 30 cakes.

Non-Concept – what it isn't

Ingredients for 12 small cakes
180 g margarine
180 g sugar
200 g plain flour
1 teaspoon baking powder
2 eggs

We don't need to use the recipe a whole number of times.
450 ÷ 180 = 2.5
1000 ÷ 200 = 5
Can do the recipe 2 full times.
2 x 12 = 24 cakes.

We use the smaller value, else we run out of an ingredient.
Can do the recipe 5 times.
5 x 12 = 60 cakes.

Standard Examples

Offer A	Offer B	Offer C
200ml cola	500ml cola	1L cola
£0.80	£1.80	£3.50

Which is the best value?
Offer A
£0.80 : 200ml (x5)
£4.00 : 1000ml

Offer B
£1.80 : 500ml (x2)
£3.60 : 1000ml

Offer C
£3.50 : 1000ml

Offer C is better value

Non-Standard Examples

Offer A	*Offer B*
10% *off the price*	25% *extra free*
360g *bar costs* £2	200g *bar costs* £1.60 *each*

Which is the best value?
Offer A
10% off £2 = £1.80
£1.80 : 360g (÷360)
£0.005 : 1g

Offer B
25% extra onto 200g = 250g
£1.60 : 250g (÷250)
£0.0064 : 1g

Offer A is better value

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8.12 Unit Cost and Best Buys

The learning outcomes for this topic are:

- Find the cost of one item given the cost of many
- Find the cost of an item when not a multiple of the original
- Identify the 'best buy' for simple problems
- Identify the 'best buy' when figures are not multiples
- Calculate recipe amounts from given quantities
- Identify the 'best buy' involving deals

Useful Formulae and Hints

If you have calculated $price \div amount$ then you want the **smallest value**. This is the smallest price per amount of product.

If you have calculated $amount \div price$ then you want the **largest value.** This is the amount of product you get per £ spent.

It is often easiest to find the value for 1 unit (the **unitary method**) rather than find the scale factor between two numbers. The only time it is less efficient is when the **two values share a common factor** or are multiples of one another.

Always finish your work with a **brief statement**, don't just leave the question at your working out.. For example, "the medium packet is the best value".

GCSE Questions

15 Tea bags of similar quality are sold in three different sized packs:

Small Pack	Medium pack	Large pack
80 tea bags for £2.10	150 tea bags for £3.55	220 tea bags for £5.25

(a) Which pack is the best value for money?
Show how you decide.

..... because .....

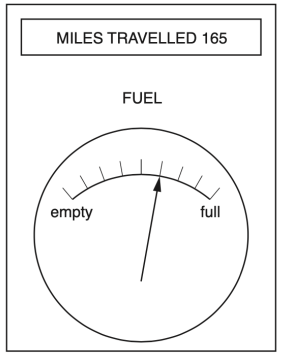
..... **[4]**

(b) Explain why someone may buy a pack which is not the best value for money.

.....

..... **[1]**

19 Ifsaw noticed this information on her car's dashboard at the end of her journey.
She started her journey with a full tank of fuel and her miles travelled set to zero.



(a) Work out how far Ifsaw's car can travel on a full tank of fuel.

(a) ..... miles **[3]**

5 *Tea Biscuits* can be bought in packets of 20 or packets of 24.
All biscuits are identical in size and quality.

20 *Tea Biscuits* for £1.50	24 *Tea Biscuits* for £1.80

Nada says

The packet of 24 biscuits is better value.

Is Nada correct?
Show how you decide.

Nada is ..... because.....

..... **[3]**

3 A 100 g packet of tea costs £4.16.
A 25 g packet of the same tea costs £1.05.

Which packet is better value for money?
Show how you decide.

..... **[3]**

11 **(a)** Grapes cost £2 per kilogram.

Calculate the cost of 380 g of grapes.

£ ..... **[2]**

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English

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.

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Year 8 - The Novel

The aims of the sequence of learning are to ensure that all students:
A01: Infer key meanings from texts and synthesise. A02: Explore language and structure within texts. A03: Compare writers' viewpoints and perspectives. A05 and 6: Write texts clearly and with accurate spelling, punctuation and grammar.

Keyword	Definition

Language
These are methods which allow you to analyse a text at word level:

A - Alliteration (two words which start the same), assonance (repetition of soft sounds), adjectives (describing words).
F - Facts (something which is true and can be proven so).
O - Onomatopoeia (words which sound like the sound they are describing).
R - Rhetorical question (a question which does not need an answer), repetition (repeating a word or a phrase).
E - Ellipsis (three dots in punctuation but they create a cliff-hanger/pause).
S - Simile (comparing something using like/as), symbolism (a word which represents an idea- for example, a heart symbolises love).
T- Tone (how a person feels), triple (a list of three)
I - Imperative (a command) and imagery (a picture created by a word).

Words to help with feelings (tone words):
Useful for language or comparison questions:

Key Concepts

LIST OF THEMES IN LITERATURE

- Love
- War
- Revenge
- Betrayal
- Good vs. Evil
- Redemption
- Friendship
- Family
- Death
- Prejudice
- Coming of Age
- Forgiveness
- Race
- Youth
- Law and Injustice
- Inequality
- Power
- Individual vs. Society
- Class and Community
- Fate
- Courage
- Rebellion
- Humility
- Fear
- Hate
- Violence
- Warfare
- Tragedy
- Money
- Greed
- Madness
- Free will
- Immortality
- Crime
- Imperialism
- Ambitions
- Suffering
- Education
- Time
- Isolation
- Moral Corruption
- Loneliness
- Gender
- Beauty
- Freedom
- Gothic elements
- Storytelling
- Corruption
- Growing up
- Communication
- Hope
- Relationship

NARRATIVE STRUCTURE

ORIENTATION (BEGINNING) Set the scene by introducing your characters, setting and time of the story. Establish your who, when and where in this part of your narrative

COMPLICATION AND EVENTS (MIDDLE) In this section activities and events involving your main characters are expanded upon. These events are written in a cohesive and fluent sequence.

RESOLUTION (ENDING) Your complication is resolved in this section. It does not have to be a happy outcome, however.

EXTRAS: Whilst orientation, complication and resolution are the agreed norms for a narrative there are numerous examples of popular texts that did not explicitly follow this path exactly.

NARRATIVE FEATURES

LANGUAGE Use descriptive and figurative language that will paint images inside your audience's minds as they read.

PERSPECTIVE Narratives can be written from any perspective but are most commonly written in first or third person.

DIALOGUE Narratives frequently switch from narrator to first-person dialogue. Always use speech marks when writing dialogue.

TENSE If you change tense make it perfectly clear to your audience what is happening. Flashbacks might work well in your mind but make sure they translate to your audience.

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Year 8 The Novel

The aims of the sequence of learning are to ensure that all students: will complete an in depth author study depending on the text chosen by the class teacher. The pupils will be guided on how to read a more challenging texts and how to approach a Literature style exam question using the novel as a source initially and then as a whole to study character / themes / ideas.

Retrieval Practice

Questions	Answers
What is a language method?	This is a technique that just focuses upon words on a word level.
What is a structural method?	This is a technique which focuses upon how a text is organised.
What is a summary of a text?	This is where you take the information given in a text and condense it or reshape it in your own words to focus on the question given.
What is a comparison?	This is where you comment on similarities/differences in a text.
What different comparison connectives can I use?	Similarities: • Similarly • In addition • Likewise • Equally • Just like • In a similar way • By the same token Differences: • However • On the other hand • Conversely • Although • Whereas • Alternatively

Career Focus - Where could this take you?

The skills learned from reading a novel mean that you gain better abilities to read a wide range of texts- making you suited to careers in copywriting and journalism. In addition, you also gain a wider range of vocabulary meaning you would be more able to express yourself- extremely useful in careers such as marketing and advertising.

Challenge Activities

1. **Create a True or False set of questions for your novel- pick eight different scenarios labelled A-H and ask a partner to answer them.**
2. **Take two small parts of your novel (ideally two parts covering the same character but at different points of the novel) and answer this question: 'Summarise the differences in the character's perspective in the two different parts of the novel you have chosen.'**
3. **Explore how language is presented by the writer to present the character in an extract of your choice.**
4. **Compare how two characters are presented in different parts of the novel with reference to language and structure.**

Topic Links

This topic links to:
- RE: Christian expressions.
- History: Links to Queen Elizabeth I unit due to many texts having a link with beliefs of that time.

Additional Resources

To further practise and develop your knowledge see:
- Century Tech

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Science

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.

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Year 8 - Pure Substances

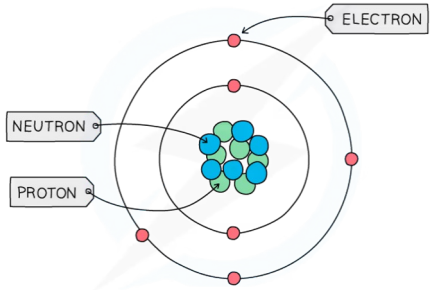
The aims of the sequence of learning are to ensure that all students:

- Describe the difference between compounds and mixtures
- Describe the structure of an atom
- Describe the arrangement of the periodic table
- Describe the group 1 and group 7 elements
- Compare metals and non-metals

Keyword	Definition
Atom	The smallest unit of matter.
Element	A substance made up of only one type of atom.
Compound	Contains two or more different elements that are chemically bonded together.
Mixture	Contains two or more different substances that are not chemically joined together.
Proton	Positively charged particle in the atom.
Neutron	Neutral particle in the atom.
Electron	Negatively charged particle in the atom.
Subatomic particle	Particles that make up the atom.
Nucleus	The centre of the atom, containing protons and neutrons.
Periodic table	A table of elements which are organised into groups and periods.
Group	A column on periodic table (all elements in the same group have similar properties).
Period	A row on the periodic table.
Properties	Characteristics or features of something.

Key Concepts

Atomic Structure



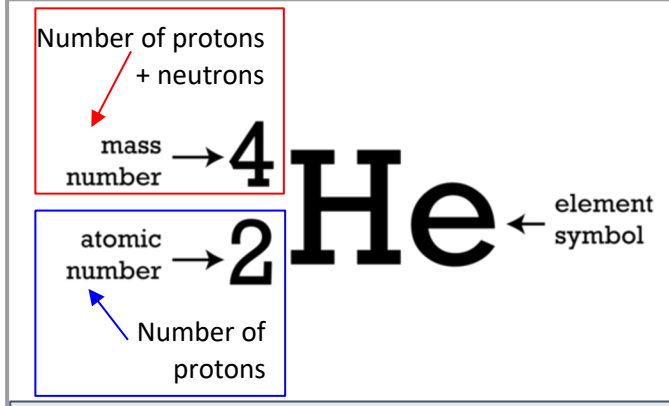
Overall, atoms have no charge (they are neutral). This is because they have the same number of protons (+1 charge) and electrons (-1 charge).

Particle	Relative Mass	Charge
proton	1	+1
neutron	1	0
electron	Very small	-1

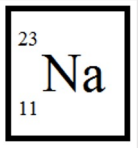
Located in the nucleus

Located in the electron shells

Number of Subatomic Particles

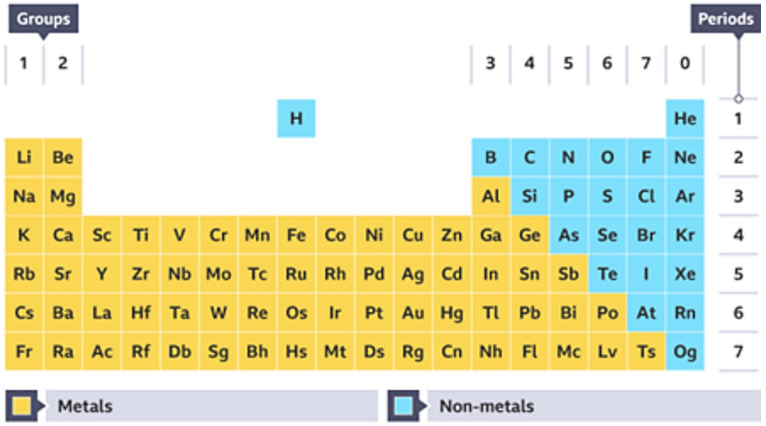


Worked example (sodium):

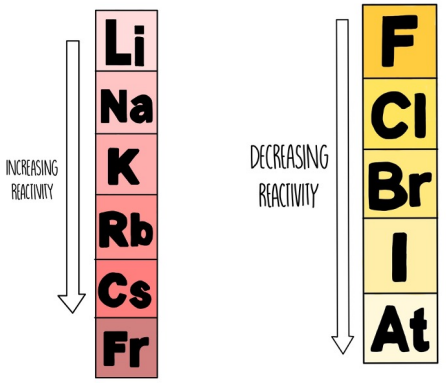


Protons = 11
Neutrons = 23 - 11 = 12
Electrons = 11

Periodic Table



Alkali Metals and Halogens



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Year 8 - Pure Substances

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

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- Describe the structure of an atom
- Describe the arrangement of the periodic table
- Describe the group 1 and group 7 elements
- Compare metals and non-metals

Retrieval Practice

Questions	Answers
What is an atom?	The smallest unit of matter.
What is an element?	A substance made up of only one type of atom.
What is a compound?	Contains two or more different elements that are chemically bonded together.
What is a mixture?	Contains two or more different substances that are not chemically joined together.
What is the structure of an atom?	Protons and neutrons located in the nucleus, with electrons in electron shells.
What is a subatomic particle?	A particle that makes up the atom.
What is the charge, mass and location of a proton?	Charge = +1, Mass = 1, Location = nucleus.
What is the charge, mass and location of a neutron?	Charge = 0, Mass = 1, Location = nucleus.
What is the charge, mass and location of an electron?	Charge = -1, Mass = very small, Location = shell..
How is the periodic table arranged?	In groups and periods (elements in the same group all have similar properties).
What is the overall charge of an atom?	An atom has no charge because it has an equal number of protons (+1) and electrons (-1).
Where are the alkali metals found and what are their properties?	They are found in group 1. They are highly reactive soft metals with low density and melting points.
Where are the halogens found and what are their properties?	They are found in group 7. Non-metals that form salts when they react with metals.

Career Focus - Where could this take you?

I am a chemical engineer. My job is to changing the chemical, biochemical and physical state of a substance to turn it into something else, such as making plastic from oil. I need to understand how to alter raw materials into required products, while taking into consideration health and safety and cost issues. My main workplace is in a lab, office or processing plant develop raw materials into a range of useful products. A career in the field will see you creating petrochemicals, medicine and plastics.

Challenge Activities

1. Make flashcards for the definitions and retrieval practice questions.
2. Make a mind map for this topic. Remember to include keywords and the links between information.
3. Research how the periodic table was created? What scientists were involved?
4. Make a 3D model of an atom (showing the subatomic particles)
5. Find out more about chemical engineers and what they do. What qualifications would you need for this career? What is the average salary?
6. Research the history of the atomic model? What were the previous models? How do we know the atom looks the way we think it does?

Topic Links

This topic links to:

- Bonding
- States of matter
- Radiation
- Chemical reactions

Additional Resources

To further practise and develop you knowledge see:

Educake - https://www.educake.co.uk/
BBC Bitesize - https://www.bbc.co.uk/bitesize/topics/zcckk2p
YouTube Cognito - https://www.youtube.com/watch?v=fN8kH9Vvqo0
https://www.youtube.com/watch?v=jBDr0mHyc5M

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Year 8 Solar System

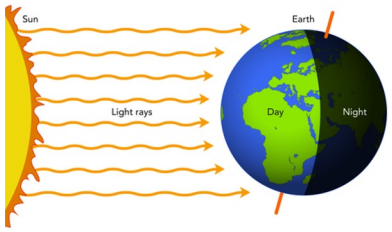
The aims of the sequence of learning are to ensure that all students:

- describe how day, night and seasons occur
- describe the solar system and explain the origins of the universe
- explain the difference between weight and mass
- calculate weight using mass and gravity

Keyword	Definition
Earth	The planet on which we live.
Season	A part of the year marked by particular weather patterns (summer, spring, autumn and winter)
Attraction	When 2 or more things come together,
Rotation	AN object spinning on its axis.
Orbit	To move in a regular curved path around another object.
Axis	The imaginary line that the Earth spins on..
Star	A luminous body of gas.
Universe	All space and time and their contents.
Solar System	The sun, planets, and smaller objects such as comets that orbit around it,
Planet	A large rounded body that orbits a sun.
Satellite	A moon, planet or machine that orbits a planet or star.
Gravity	The force of attraction between all objects. The more mass and less distance an object has the greater its gravity.
Mass	The amount of matter there is. Kg
Weight	The force of gravity on an object. N

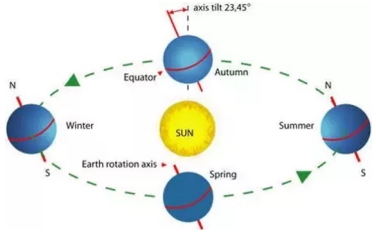
Key Concepts

Day and Night



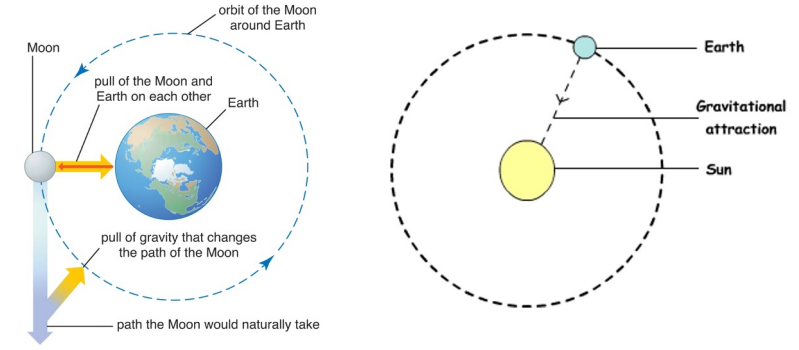
Earth rotates (spins) on its axis. It does a full rotation once every 24 hours. We spin into the light – day - and then back out again – night

Seasons



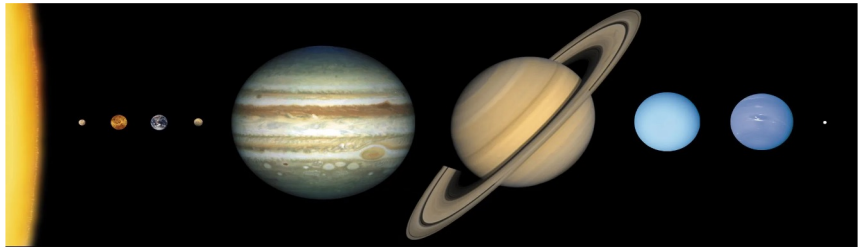
The Earth orbits the Sun once every 365 days. The Earth's axis is tipped over in space. In Britain we get different seasons because sometimes we are tilted towards the Sun and sometimes away.

Gravity



The planets are held in their orbits by the force of the Sun's gravity. The Moon is held in its orbit around the Earth by the Earth's gravity. The Sun's gravity also holds dwarf planets and asteroids in their orbits. Comets orbit the Sun too. The Sun's gravity pulls them in from beyond the orbit of Pluto. The closer they get to the Sun the stronger the force of gravity gets and the faster they go. Gravity always pulls things towards the centre of the mass. So on Earth it pulls us down to the centre of the Earth.

The Solar System



Our solar system consists of our star, the Sun, and everything bound to it by gravity – the planets Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune; dwarf planets such as Pluto; dozens of moons; and millions of asteroids, comets, and meteoroids.

Weight and Mass

Mass is the amount of matter there is in something. It is measured in kilograms, kg. An object's mass the same everywhere in the universe.

Weight is the force of gravity on an object. All forces including weight are measured in Newtons, N. Gravity is not the same everywhere.

So, an object's weight depends on where in the universe it is. To work out the weight of an object we do some Maths. Weight (N) = mass (kg) x gravitational field strength (N/kg)

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Year 8 Solar System

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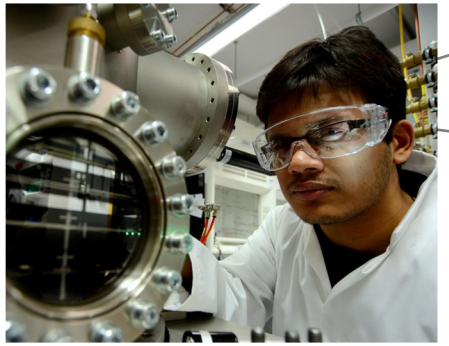
- describe how day, night and seasons occur
- describe the solar system and explain the origins of the universe
- explain the difference between weight and mass
- calculate weight using mass and gravity

Retrieval Practice

Questions	Answers
Name the planets of the solar system.	Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune
Why do we get day and night?	The Earth spins on its axis over 24 hours.
Why do we get seasons?	The Earth's spin axis is tilted so at different points of the year it is either tilted toward or away from the sun.
How long does it take for the moon to orbit the Earth?	27 days
How long does it take for the Earth to orbit the sun?	365 days
What is the difference between an orbit and a rotation?	A rotation is the time it takes for an object to spin on its axis whereas an orbit is the time it takes for an object to circle or revolve around another object.
What is at the center of our solar system?	The sun
What is the big bang?	A physical theory that describes how the universe first came to exist.
What is gravity?	A force that pulls you to the center of the Earth.
What is mass?	The measure of how much matter there is in an object.
What is weight?	The measure of the size of the pull on the object. This is a force.
What is weight measured in?	Newtons (N)
How can you calculate weight?	Mass x Graity

Career Focus - Where could this take you?



I am an aerospace engineer. My job is mainly to design, build and maintain planes spacecraft and satellites. My workplace can be a factory, an office or even an aircraft hangar. My day to day tasks can be very varied as I can be testing prototypes, collecting data, designing navigation systems, writing reports, or even researching ways to make aircraft more fuel efficient.
To do a good job as an aerospace engineer you need to have good maths and science knowledge as well as be good at using computer systems.

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 planets in more detail. Produce a presentation or poster about your favourite planet.
4. Carry out some research into the origins of the Universe and the different theories that exist.
5. Find out more about aerospace engineers 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 planets and the universe.

Topic Links

This topic links to:

- Energy
- Waves (sound and light)

We will also be practising how to

- Use equations
- Use descriptive words to compare planets

Additional Resources

To further practise and develop you knowledge see:

Educake - https://www.educake.co.uk/
BBC Bitesize - https://www.bbc.co.uk/bitesize/guides/z8wx6sg/revision/1
https://www.bbc.co.uk/bitesize/topics/z4brd2p/articles/z6xjdp3
Cognito - https://www.youtube.com/watch?v=AgwSdQzN4H4

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Year 8 Tissues & Organs

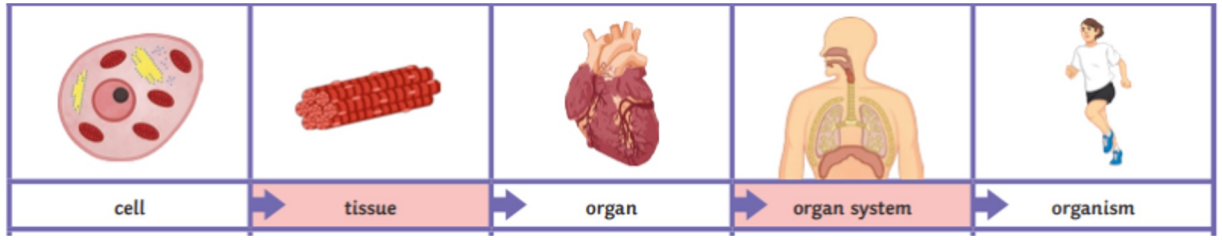
The aims of the sequence of learning are to ensure that all students:

- Recall the principles of organisation
- Describe how the digestive system works
- Explain how enzymes work
- Describe how the breathing system works
- Describe how the circulatory system works
- Describe heart disease
- Explain how lifestyle choices can affect health

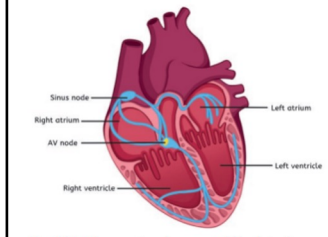
Keyword	Definition
Cell	Basic unit of life.
Tissue	A group of cells with a similar structure and function.
Organ	A group of tissues carrying out a particular function.
Organ System	Organs working together as a system.
Organism	Organ systems all working together to form a living organism.
Digestive system	A system that breaks down large molecules into smaller molecules and absorbs them into the bloodstream.
Enzyme	A biological catalyst that speeds up reactions in the body.
Circulatory system	A system that transports substances around the body in the blood.
Heart	The organ that pumps blood around the body.
CHD	A condition where the arteries supplying the heart become narrowed or blocked.
Breathing system	Network of organs and tissues that help you breathe including airways, lungs and blood vessels.
Gas exchange	The exchange of gases (oxygen and carbon dioxide) in the lungs. Occurs in the alveoli.

Key Concepts

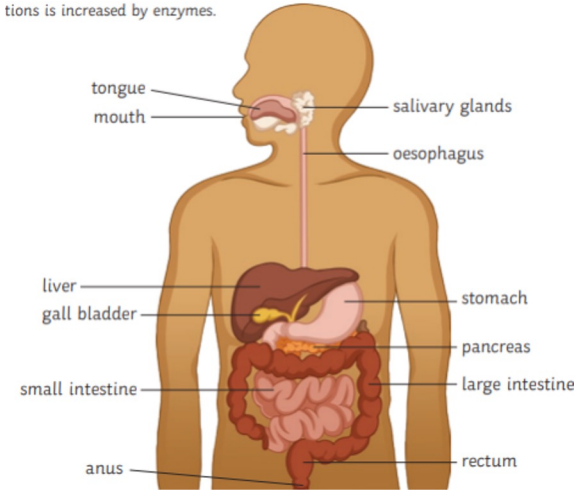
Principles of Organisation



The Heart



The Digestive System

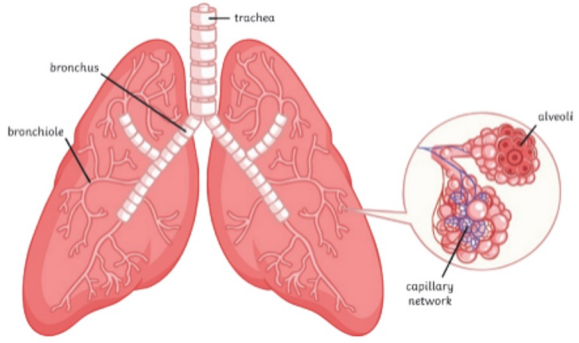


The purpose of the digestive system is to break down large molecules into smaller soluble molecules that can then be absorbed into the bloodstream. The rate of these reactions is increased by enzymes.

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.

The Breathing System



The gas exchange system is responsible for getting oxygen into the blood and removing carbon dioxide as a person breathes.
Breathing is also called 'ventilation' and is the movement of gases into and out from the lungs.
Exercise, smoking and asthma are all factors that can affect the gas exchange system.

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Year 8 Tissues & Organs

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- Explain how enzymes work
- Describe how the breathing system works
- Describe how the circulatory system works
- Describe heart disease
- Explain how lifestyle choices can affect health

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 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
Enzymes are biological catalysts. What does this mean?	Speeds up specific chemical reactions inside the body.
Name the parts of the circulatory system.	The heart, Blood and Blood Vessels (arteries, veins and capillaries)
What is the function of the heart?	The muscular organ that pumps blood around the body.
What is the function of the blood?	To transport oxygen and nutrients to the lungs and to the tissues.
Name the parts of the breathing system.	Airways, Trachea, Bronchi, Bronchioles, Alveoli, Ribs and Diaphragm.
What is the function of the alveoli?	Where the lungs and blood exchange oxygen and carbon dioxide
What is CHD Cardiovascular Disease?	When the blood vessels that supply the heart (coronary arteries) become narrowed or blocked with fatty deposits.
What lifestyle factors can affect health?	Diet, Smoking, Alcohol and Exercise.
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:

- Cells
- Energy

We will also be practising how to

- Calculate heart rate
- Construct a leaflet using imperative language to warn about CHD

Additional Resources

To further practise and develop you knowledge see:
Educake - https://www.educake.co.uk/

YouTube Cognito -
https://www.youtube.com/watch?v=VO2QkpwAG9o
https://www.youtube.com/watch?v=vMI46qGQMDw
https://www.youtube.com/watch?v=6jz9WvfKDVc
https://www.youtube.com/watch?v=UN5BlPfMUkg

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MFL

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.

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Year 8 Les fêtes.

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

- Learn how to talk about festivals in France and England.
- Learn how to express simple references about festivals.
- Learn how to use the present tense of er, ir and re verbs.
- Learn how to use aller + infinitive to make the simple future..
- Learn how to use high numbers and understand prices.

Keyword	Definition
C'est quelle fête?	Which celebration is it?
C'est **Pâques**	It's **Easter.**
Quelle est ta fête préférée?	What is your favourite celebration?
Pourquoi?	Why?
Parce que j'aime le chocolat.	Because I like chocolate
Qu'est-ce que tu fais pour feter **le Nouvel An**?	What do you do to celebrate **New Year?**
Le soir on **danse** et on **mange** avec **la famille.**	**In the evening**, we **danse** and **eat** with **family**.
Qu'est que tu manges?	What do you eat?
C'est à quelle date?	What date is it on?
Qu'est-ce que tu vas faire?	What are you going to do?
Vous desirez?	What would you like?
Ça fait combien?	How much is it?

Key Concepts

Pâques

la fête nationale

Noël

la fête des Mères

la Toussaint

la fête du travail

l'Aïd

le Nouvel An

Phonics focus
Qu
"K" in French

Qu'est-ce que = *Kes - ker*

	–er verbs *danser*	–ir verbs *finir*	–re verbs *attendre*
je / j'	dans**e**	fin**is**	attend**s**
tu	dans**es**	fin**is**	attend**s**
il/elle / on	dans**e**	fin**it**	attend
nous	dans**ons**	fin**issons**	attend**ons**
vous	dans**ez**	fin**issez**	attend**ez**
ils/elles	dans**ent**	fin**issent**	attend**ent**

Question words

qu'est-ce que?	*what?*
comment?	*how?*
avec qui?	*with whom?*
pourquoi?	*why?*
où?	*where?*
quand?	*when?*

20	vingt	85	quatre-vingt-cinq
30	trente	90	quatre-vingt-dix
40	quarante	95	quatre-vingt-quinze
50	cinquante	100	cent
60	soixante	200	deux-cents
70	soixante-dix	350	trois-cent-cinquante
75	soixante-quinze	1 000	mille
80	quatre-vingts	2 000	deux-mille

To talk about what is going to happen in the future, use part of the verb ***aller*** followed by the **infinitive**.

aller (to go) + **infinitive**
je ***vais écouter***
tu ***vas écouter***
il/elle/on ***va écouter***
nous ***allons écouter***
vous ***allez écouter***
ils/elles ***vont écouter***

je ***vais choisir*** **I am going to choose**

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Year 8 Les fêtes.

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

- Learn how to talk about festivals in France and England.
- Learn how to express simple references about festivals.
- Learn how to use the present tense of er, ir and re verbs.
- Learn how to use aller + infinitive to make the simple future.
- Learn how to use high numbers and understand prices.

Retrieval Practice

Questions	Answers
C'est quelle date aujourd'hui?	C'est le trois novembre deux mille vingt.
C'est quelle fête?	C'est l'Aïd
Quelle est ta fête préférée?	J'adore mon anniversaire parce que j'adore choisir des cadeaux et faire une soirée pyjama.
Qu'est-ce que tu fais pour fêter **le Nouvel An**?	Le matin j'ai des cadeaux et l'après-midi je mange avec ma famille. J'adore ça.
Qu'est que tu manges à Noel?	D'habitude on mange de la dinde avec des légumes. Comme dessert on mange du gâteau.
Qu'est-ce que tu vas faire?	Je vais aller à Paris avec mes amis. On va visiter les monuments. Ce sera chouette!
Est-ce que tu vas visiter la Tour Eiffel?	Non je vais rendre visite à mes grands-parents et on va visiter la Notre Dame.
Quels sont tes résolutions pour l'année prochaine?	En ce moment je **mange du chocolat** mais l'année prochaine je vais **manger des fruits.**

Career Focus - Where could this take you?

I am a market trader. I work all over Europe at Christmas to sell traditional gifts. It helps me that I can speak another language, because I can communicate with my customers.

Challenge Activities

1) Research a festival of your choice. How is it celebrated in France? How is it different? How is it similar?
2) Prepare some crêpes for your family like French people do for La Chandeleur. If you can't make them, why not design a menu made of pancakes. A savoury and a sweet course.
3) How is La fête des Rois celebrated in France? Make a presentation to send to your teacher. They may even show it tio the class.
4) Complete the activities on Languagenut,
5) Find out about the Alsace region in France. What languages are spoken? What country is it next to?

Topic Links

This topic links to:

- Food and drink.
- Birthdays and special occasions.
- Future plans

Additional Resources

To further practise and develop you knowledge see:

- Language nut.
- Active learn.
- Watch this short video. https://www.youtube.com/watch?v=ZYzSeCcWAtU

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Humanities

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

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Year 8 Population

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

- Evaluate the issues a country face if its population keeps rising or keeps falling
- Explain the reasons why people migrate
- Explain the positive and negative impacts of migration on people and areas
- Evaluate different of strategies to manage population growth

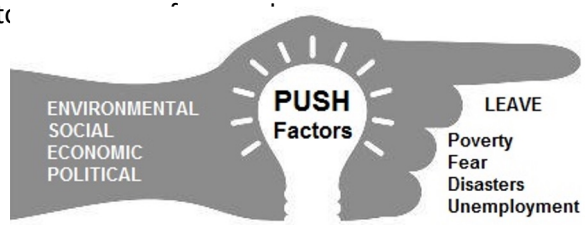
Keyword	Definition
Population	Word used to describe a group of people. Populations can exist at many scales,
Population Density:	How crowded or empty a place is (measured in people per square km)
Population Distribution:	The pattern of where people live.
Densely Populated	: A crowded area
Sparsely Populated	An empty area
Birth Rate	Is a measure of the number of healthy babies born each year per 1000 people in the population
Death Rate	The number of deaths per year per 1000 people in the population.
Migrant	The permanent movement of people from one place to another.
Push Factor	Negative things that force people to move from one place to another. A push factor may be an earthquake.
Pull Factor	Positive things that attract people to from one place to another place. An example of a pull factor is a place having better job opportunities
Immigrants	People who move into a country from another country
Emigrants	People who move out of a country to live in another country

Key Concepts

Push factors

These are the reasons for why someone would want t

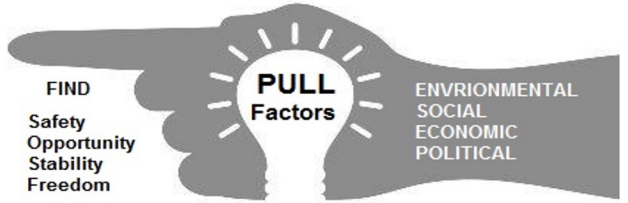
- Lack of services
- War
- Famine (starvation/food shortages)
- Few Jobs
- Natural Disasters



Pull factors

These are the reasons for why someone would want to move to a place:

- Higher quality of life (better homes, etc.)
- Access to education
- “Bright Lights” of the city
- Better healthcare
- Better job opportunities



Case Study: Migration to the U.S.A *(Mexico or Puerto Rico)*

Many people have migrated to America to seek a better life, such as people from Mexico and Puerto Rico. Reasons for this include:

- Less access to education.
- Higher crime rates and less protection.
- Hot and arid climates
- Easier access to a doctor when needed.
- Higher quality homes and living standards.

However, migrants often face challenges when coming to America. This includes racism, and less desirable jobs.

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- Evaluate different of strategies to manage population growth

Key Concepts

Migration – *When people move from one place to another.*

Refugees and Asylum Seekers

Refugees: *people who have been forced to move away from their home country and have been granted asylum in another country.*
Economic migrants: *a person who has left his or her own country and seeks to find employment in another country.*
Asylum seekers: *means a person who has applied for asylum in another country*

Rural-urban migration

- Rural to urban migration is the movement of people from the countryside to the city.
- People move from the countryside due to various push factors. People believe that by moving to the city they will have access to more opportunities. However, in many cases moving to the city does not mean a better quality of life.
- Many poor people end up living in areas on the edge of a city, in small, very cheaply built houses. These areas are known as shanty towns or slums.

Case Study: China's One Child Policy

In order to manage its own growing population, China introduced the One Child Policy in 1979. The new policy meant that any couple having a second child would get a heavy fine, around £3,000.

Impacts of the Policy

- The fertility rate has dropped from 5.7 in 1960 to 1.7 in 2016.
- Large numbers of female babies have ended up homeless or in orphanages, and in some cases killed.
- Many people claim that some women, who became pregnant after they had already had a child, were forced to have an abortion and many women were forcibly sterilised.
- There have been reports of female infanticide (killing of infants).

Long-term implications of the policy are that China now has a gender imbalance in their population. Its ageing population also has a high **dependency ratio**.

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Year 8 Population

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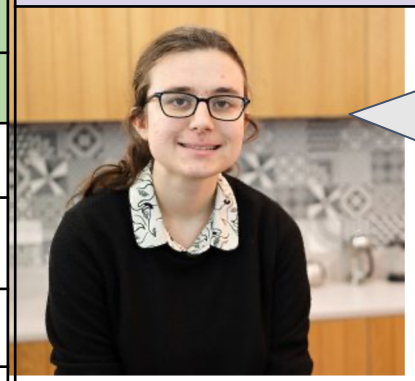
- Explain the reasons why people migrate
- Explain the positive and negative impacts of migration on people and areas
- Evaluate different of strategies to manage population growth

Retrieval Practice

Questions	Answers
What is a 'migrant'?	Someone who moves from one place to another
Name 2 push factors	War and natural hazards
Name 2 pull factors	Improved standards of living and better healthcare
Name the positive effects on a country due to migration	Larger workforce
Name the negative effects on a country due to migration	Pressure on the health service with more people to treat
What was Enrique trying to do? And why?	Migrate to the USA to work as he would receive a bigger wage
Describe the problems caused by China's population policy	A gender imbalance as boys were preferred to girls
Explain why there are concerns about the effects of China's family planning policy	Takes away people's rights to have children
Explain why there is a gender imbalance in China	People wanted a boy as they would look after the parents when they were older
Give a benefit of the one child policy	The fertility rate has dropped from 5.7 in 1960 to 1.7 in 2016
Give two negative impacts of the policy and explain one	Many women had to have an abortiion and some were forced to be sterilised meaning they could not have any more children

Career Focus - Where could this take you? Executive Officer - Health Analysis and Pandemic Insight



As an apprentice at the Office for National Statistics, I have had the opportunity to develop a range of different skills in data science, an area which I had limited experience in before joining the scheme. The combination of learning theory and in job application has been really valuable.

Challenge Activities

- What are the main reasons for internal migration?
- What are the main reasons for international migration?
- What impact will the migration of people to the USA have on Mexico?
- Suggest why the birth rate in many poor countries is falling.
- Describe the features of China's family planning policy since the 1990s

Topic Links

This topic links to other Humanities topics such as: Weather Hazards, Coastal landscapes, River landscapes, Tectonic landscapes, Resource Management, Economic development UK Africa, China, India, Middle East

Additional Resources

http://www.worldometers.info/
https://www.bbc.co.uk/bitesize/topics/zg7nvcw
https://www.adageogjoe.com/ks3-y7--seven-billion.html

Year 8: Queen Elizabeth I

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

- Explore the religious problems Elizabeth faced during her Reign.
- Identify how Elizabeth dealt with the problem of Gender and Marriage.
- Investigate the threat of Mary Queen of Scots.
- Explain why England defeated the Spanish Armada?

Keyword	Definition
Monarch	A King or Queen – had the right to rule by the 'grace of God'.
Privy Council	Leading courtiers and advisors, who advised the monarch.
Court	The inner social circle of the Queen, based in her palaces.
Parliament	Senior political figures whose duty was to advise the Queen.
Courtiers	Members of the nobility who attended Court (see above).
Revolt	An uprising or rebellion against the monarch.
Plot	A planned rebellion or attack – normally one which is not carried out.
Spymaster	Francis Walsingham, Elizabeth's chief spy responsible for her security.
Jesuits	Extreme Catholics carrying out the wishes of the Pope.
Privateers	Pirates whose activities are legal and in service of the Crown.
Armada	A fleet of warships.
Galleon	Large but slow fighting ships used by the Spanish.
Fleet	A group of ships.
Fire Ships	Unmanned ships loaded with explosives and sent into the Spanish fleet.
Tactics	Carefully planned actions and strategies to achieve a specific goal.

Key Concepts

Elizabeth's problems in 1558

Legitimacy:
In the view of the Catholics, Elizabeth was illegitimate as Henry VIII's divorce from Catherine of Aragon was never agreed by the Pope.

Financial Weakness:
The Crown was £300,000 in debt due to the expensive war with France that Mary I had fought. This was a huge sum in 1558.

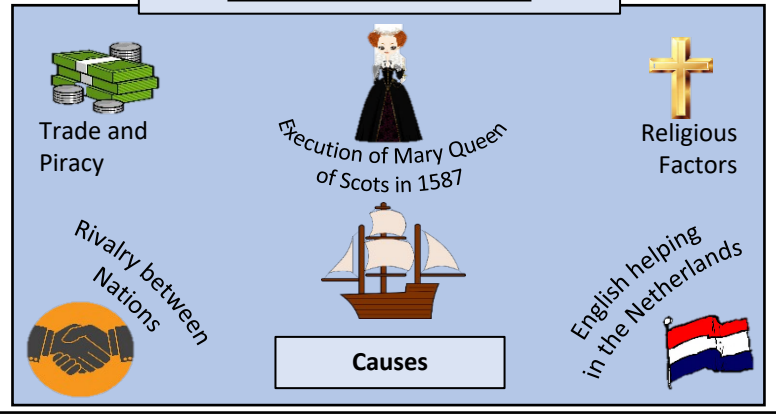
Gender & Marriage:
Most people thought women were not capable of ruling alone. Women were seen as the weaker sex. Elizabeth was being pushed to get married.

Foreign threat:
England had Catholic enemies in both France (who they had been at war with) and Spain (who Elizabeth had refused a marriage proposal from).

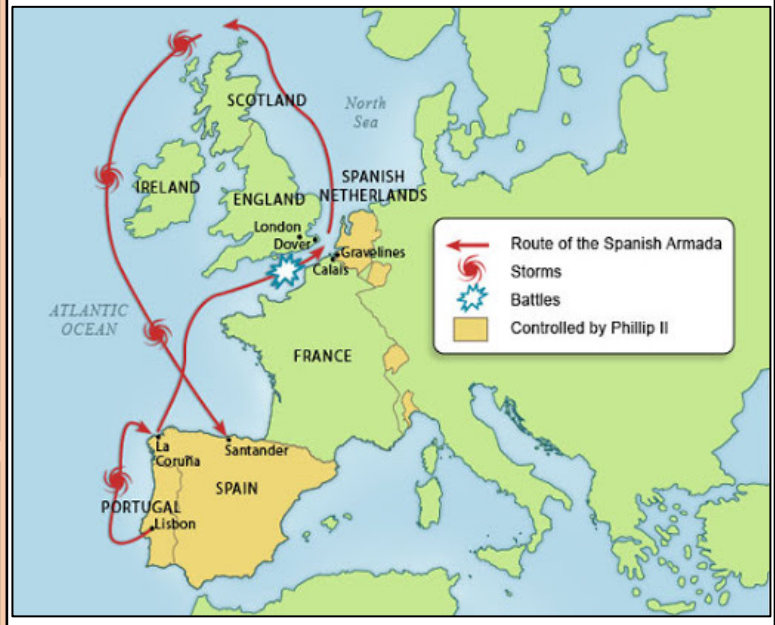
Religion
England was in a period of religious instability since Henry VIII's break with Rome. Mary I, Elizabeth's sister, had heavily persecuted Protestants.

Mary Queen of Scots:
Claimed that she was the legitimate Catholic heir to the throne and was married to the Catholic king of France.

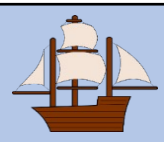
The Spanish Armada invades…



The Spanish Armada 1588



The Defeat of the Spanish Armada



English:

- Excellent leadership
- Drake's actions in Cadiz causing disruption and delay
- Innovative English tactics such as fire ships
- Home advantage – knowledge of the local area
- More effective weapons

Spanish:

- Poor leadership – lack of experience fighting at sea & lack of flexibility
- Complicated plan
- Lack of communication
- Impractical tactics and weapons

Neither / Luck:

- The wind and stormy seas

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Year 8: Queen Elizabeth I

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- Investigate the threat of Mary Queen of Scots.
- Explain why England defeated the Spanish Armada?

Retrieval Practice

Questions	Answers
What were the names of Queen Elizabeth I's Mother and Father?	
What religion was Elizabeth I?	
What solution did Elizabeth want for all the religious problems in England?	
Why were Elizabeth's advisors pushing her to get married? (Tell me 2 reasons).	
Give two pieces of evidence that suggest Mary Queen of Scots was guilty of treason against Elizabeth:	
What caused the Spanish Armada to attack England in 1588? (Be specific)	
Why did the Spanish Armada fail to defeat England? (Give three ways)	
In your opinion, what was the most important reason for the defeat? Explain why.	
What happened in England after the defeat of the Armada?	
Why did the Tudor Dynasty end when Elizabeth died in 1603?	

Career Focus - Where could this take you?

I am a Journalist: My job is to write news articles and stories for newspapers, magazines and websites. I sometimes prepare news to be broadcasted on TV too. To carry out my work, I need to do a lot of research about an event, interview people and gather evidence to include in my stories and articles. When re-telling a story, I must include true facts and try to remain unbiased to give a balanced overview of events.

Challenge Activities

1. Produce a FULL fact file about Queen Elizabeth I. You should include information about her life and reign, historical facts and images.
2. Mary Queen of Scots on trial: Create a piece of work which looks at the evidence for and against Mary committing treason. You could do this by producing a poster showing both sides or by writing a script for a court room role play.
3. Write a newspaper article re-telling the story of the Spanish Armada. You must include what caused the Armada to attack England, the events of what happened and the outcome. Remember a journalist must include true facts and remain unbiased.

Topic Links

This topic links to other humanities topics such as:

- The Tudors
- Christianity
- Maps of Europe

We will also be practicing how to:

- Write in PEEL paragraphs, which will help your extended writing skills in English too.

Additional Resources

To further practise and develop your knowledge see:

https://www.natgeokids.com/uk/discover/history/monarchy/elizabeth-i-facts/

https://www.bbc.co.uk/bitesize/topics/zkrkscw/articles/zkh7bdm

https://www.bbc.co.uk/bitesize/topics/zwcsp4j/articles/zsysn9q

Year 8 Christian Expressions 2

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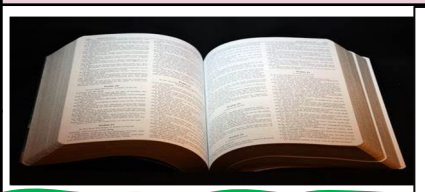
The aims of the sequence of learning are to ensure that all students:

- Explore reasons for belief & non-belief in God
- Engage in critical discussions around the arguments for the existence of God
- Consider the concept of the Trinity
- Examine the belief in God and the Trinity
- Critical analyse the creation accounts in Genesis 1 & 2
- Understand & explain the concepts in Fall & Original Sin
- Understand the key events in the life of Jesus

Keyword/s	Definition
Genesis	The book of Genesis is the first book of the Hebrew Bible and the Christian Old Testament.
Body of Christ	To indicate oneness, identify and unity in Christ. The community of believers of which Christ is the head.
Atheism	A person who disbelieves or lacks belief in the existence of God or Gods.
Trinity	This is expressed as a statement that God exists in three equally divine forms; The Father, The Son and The Holy Spirit.
Creation	The act of creating. It is the act of bringing the world into existence.
The Fall	The fall of man, the fall of Adam is used within Christianity to describe the transition of the first man and woman from a state of innocent obedience to God, to a state of guilty disobedience.
Original Sin	The condition or state of sin into which each human being is born with.
Salvation	Saving of human beings from sin and its consequences, which includes death and separation from God.
Doctrine	Set of principles or a system of knowledge and beliefs.

Key Concepts

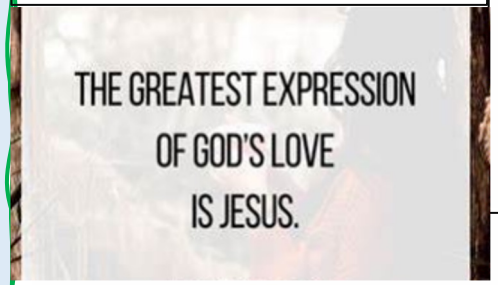


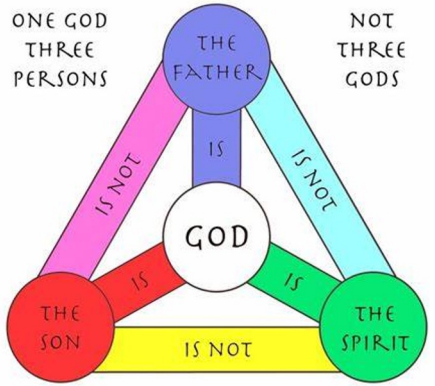
Key events in the life of Jesus.

1. Birth of Jesus and the events surrounding it.
2. Baptism
3. Miracles
4. Teachings
5. Suffering
6. Death
7. Resurrection
8. Ascension
9. Promised return
10. Return – Truth about Jesus Christ.

The three persons of the Trinity are: God the Father (the creator of the universe), God the Son (Jesus – God in human form), and God the Holy Spirit (describes how God affects the lives of Christian believers).

Salvation through spirit - the Holy Spirit helps Christians to follow the teachings of God. God recognises that everyone will sin but they will turn to God in repentance (Acts 20:21). This means that, despite sinning, humans will try to make amends and ask for forgiveness by agreeing that God exists.





William Paley (1743-1805)

William Paley argued that nature must have a designer. He used an **analogy** to explain his view.

If you found a watch you would see that it is very complex and conclude that an intelligent being, a watchmaker, had designed it for the purpose of telling the time.

Paley noted that many things in nature were just as complex as a watch.

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Year 8 Christian Expressions 2

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- Examine the belief in God and the Trinity
- Critical analyse the creation accounts in Genesis 1 & 2
- Understand & explain the concepts in Fall & Original Sin
- Understand the key events in the life of Jesus

Retrieval Practice

Questions	Answers
What is the creation story in Christianity?	There are 3 parts to the creation story in Christianity. Genesis 1 describes the creation of Heaven and Earth. Genesis 2 focuses on the creation of the first humans, Adam and Eve. In Genesis 3, Christians learn how Adam and Eve disobeyed God and brought sin into the world.
What does the story of creation mean to Christians?	This means that God existed before he created the world. The world was well planned and is sustained by God. God blessed creation, which means all creation is holy.
Who is Adam and Eve?	The first humans created by God.
Why are human beings born with original sin?	The origin has been ascribed to the sin of the first man, Adam. Adam disobeyed God by eating from the forbidden tree. Adam ate the apple form the tree and in consequence, transmitted his sin and guilt by heredity to his descendants.
How do Christians follow the teachings of Jesus today?	Christians follow Jesus's teachings by loving God as well as their neighbours. By giving to charity, going to church, helping those in need, forgiving others, teaching the bible to others and living a goof moral life.
Why is baptism important?	Jesus was Baptised by John the Baptist. After Jesus's resurrection he told his disciples that they too should be baptised. Jesus also commanded his disciples to use the act of baptism to welcome new disciples into the church. Baptism marks the personal identity with Christ. Representing forgiveness and cleansing from sin.
What does the Trinity involve?	The Father, The Son and the Holy Spirit.
Who created the design argument?	William Paley

Career Focus - Where could this take you?

As an equality, diversity and inclusion officer I promote good relations with different ethnic minorities. I design and review policies to help companies and organisations to engage with legislation.

Challenge Activities

Don't forget!
Point
Explain
Evidence (Quote)

- Explain why Christians believe in life after death and why Jesus had to die.
- Create a storyboard for the creation story in Genesis 1.
- Research the design argument and compare it with another argument for the existence of God.
- Why is the trinity important? Explain how this influences Christians today.

- Design a poster on the design argument. Include images and labels. Include designs that are complex acknowledging that there is a creator behind it. Explain within your poster the teleological argument and why some Christians accept this theory as well as why some Christians do not.

Topic Links

This topic links to other RE topics such as

- Ethics – Animal Rights
- Ethics – Care for the Environment

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.learnreligions.com/basic-christian-beliefs-700357

Newsome Academy
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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

Newsome Academy — Year 8 : 8.1 : Top Trumps

Everyone Exceptional Everyday

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

- Describe the difference between a 'theme' and 'audience' and complete the top trumps game planning
- Describe how to find appropriate and reliable data from trustworthy online sources
- Analyse a custom template design made using a range of features in MS Publisher
- Evaluate the use of the Mail Merge feature in MS Publisher to create multiple customised Top Trump cards
- Describe how to add and format different types of images on the Top Trump cards

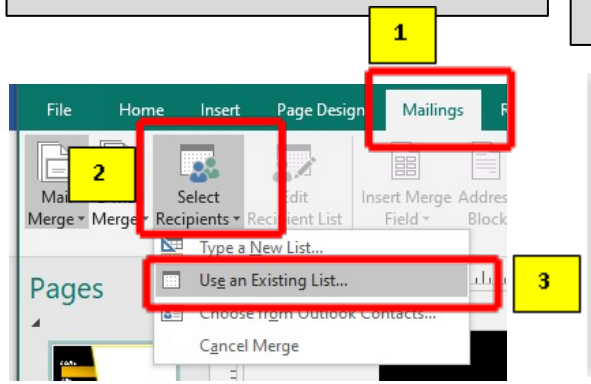
Keyword	Definition
Audience	The primary group of people that something is aimed at appealing to
Theme	The particular subject or idea on which the style of something is based on
Statistics	The collection, organisation, analysis, interpretation, and presentation of data
Reliable Source	Sources have links to verifiable and current evidence, usually written by an expert in the subject
Professional Design	A design that aims to replicate the design of something that has been created by a professional
Template	Pre-made designs and documents that have the editing flexibility to be customised
Mail Merge	A feature which lets you combine a document with a data file to create a new personalised document for each record on the data file
Transparent Image	An image that has no background colour

Key Concepts

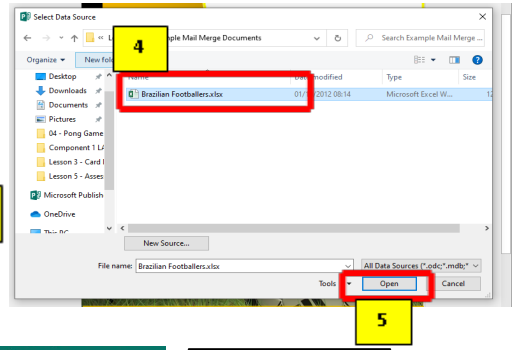
Students will be expected to create a customised set of Top Trumps cards by following design processes inspired by industry experts.

The tasks include collating data from several reliable sources, designing the card layout and using the Mail Merge feature to create each individual card

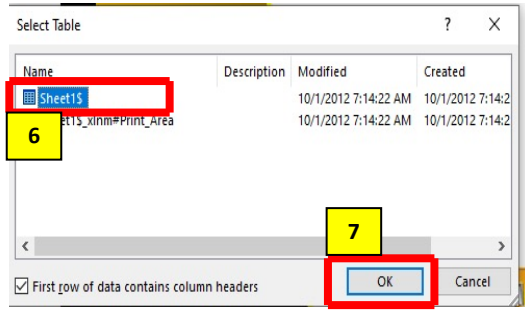
1. Click the 'Mailings' Tab menu > Select Recipients > Use an Existing List



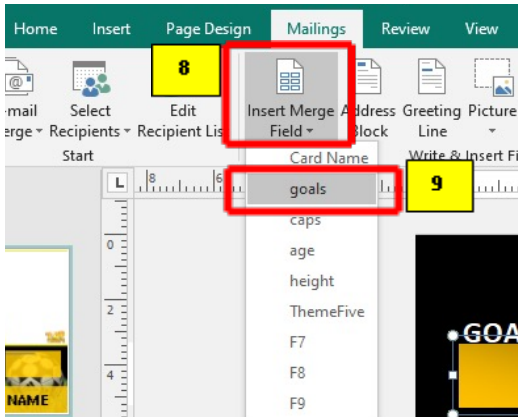
2. Find your Stats Spreadsheet document and then press the 'Open' button



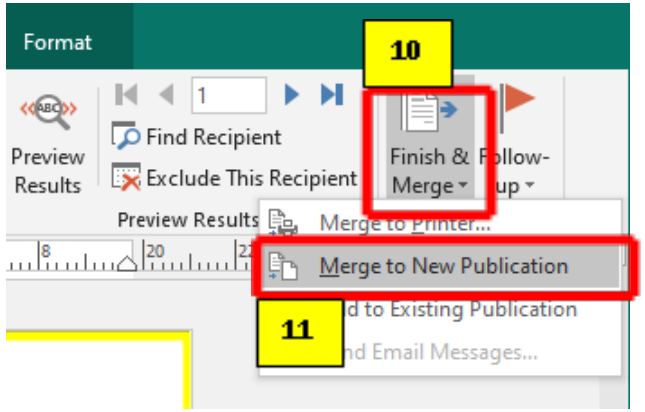
3. Click on the first table option and then press the 'OK' button



4.Click on the 'Insert Merged Field' button and select the stat name which you want to put inside the Stat 1 box (e.g. Goals stat box)



5. Now click on the 'Finish & Merge' button (on the 'Mailings' tab) and then select 'Merge to New Publication' option



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Year 8 : 8.1 : Top Trumps

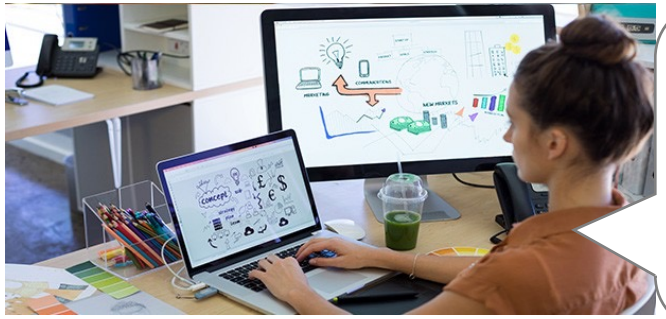
The aims of the sequence of learning are to ensure that all students:

- Describe the difference between a 'theme' and 'audience' and complete the top trumps game planning
- Describe how to find appropriate and reliable data from trustworthy online sources
- Analyse a custom template design made using a range of features in MS Publisher
- Evaluate the use of the Mail Merge feature in MS Publisher to create multiple customised Top Trump cards
- Describe how to add and format different types of images on the Top Trump cards

Retrieval Practice

Questions	Answers
What is the difference between the terms 'Audience' and 'Theme'?	Audience is the primary group of people that something is aimed at appealing to e.g. teenagers, 18 to 39 year olds, fans of Manchester United etc… Theme is the particular subject or idea on which the style of something is based on e.g. Sports, Movies, Netflix etc…
Is Wikipedia a reliable source of information on the internet? Explain why.	No, it can not be classed as a reliable source of information. The creators admit that not every entry is accurate and that it might not be the best source of material for research tasks. However, if used correctly, it can be used as a starting point for any research based tasks.
Why is it important to collate and use number-based stats on the Top Trump cards?	It is important that the statistics that you use is suitable for Top Trumps cards. The stats must be number-based otherwise you would not be able to play the game of Top Trumps. These numbers will be needed to compare a stat from your card with the stat from another card. Words can not be compared to determine a winner.
Why is it important to create professional looking Top Trump card template designs?	The first impression counts for a lot. It is easier than ever to compare products with each other. If your design does not look eye catching and professional then people may choose not to purchase the product. The time and money spent on developing and promoting the product would have been a complete waste of time, resources and money. It will have a negative impact on the reputation of the company going forward.
What is a 'Mail Merge'? Give an example of how a mail merge can be used in a school.	A Mail Merge is a feature which lets you combine a document with a data file. A new personalised document is created for each record on the data file e.g. school can use the students data file to send personalised letters addressed to each parent / carer / guardian.

Career Focus - Where could this take you?



I am a **graphics designer** and I combine my artistic skills with my computing ability to create high quality art work and designs digitally for companies to use as logos or branding to create their image.

Challenge Activities

1. Describe the steps that you would take to check that the information found on Wikipedia is reliable.
2. Create two more completely different Top Trump card template designs. You need to analyse each template design and then decide which template you would like to use to as the final design. Explain the reasons for the choice of template design.
3. Create a tutorial document to explain all of steps involved in creating a Mail Merge in MS Publisher. This must be suitable for a novice user to easily follow.

Topic Links

This topic links to:

Computing Curriculum:

- Undertake creative projects that involve combining multiple applications to achieve challenging goals
- Create and re-purpose digital artefacts for a given audience, with attention to trustworthiness and usability
- Art and Design (using artist skills to create eye-catching visuals)

Additional Resources

To further practise and develop your knowledge see:

- Top Trumps game rules and examples www.toptrumps.com/kids
- YouTube MS Excel Tutorial: youtu.be/k1VUZEVuDJ8
- YouTube MS Publisher Tutorial: youtu.be/StzyBxnhHmE

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CAPE

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.

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Year 8 Art Day of the Dead

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

- Describe the day of the dead festival
- Produce and refine new ideas
- Apply techniques to develop drawing skills
- Synthesise a personal response to art work

Keyword	Definition
Muertos	Spanish for ‘dead’
Dia	Spanish for ‘day’
Festival	a day or period of celebration, typically for religious reasons
Symbol	a thing that represents or stands for something else, especially a material object representing something abstract.
Printmaking	the activity or occupation of making pictures or designs by printing them from specially prepared plates or blocks.
Tone	the relative lightness or darkness of a colour
Colour	an element consisting of hues, of which there are three properties: hue, chroma or intensity, and value
Composition	Arrangement of elements within a work of art
Personal Response	Creating your own piece of artwork in response to a theme/artists/style

Key Concepts

The Day of the Dead (Spanish: Día de Muertos) is a Mexican holiday celebrated throughout Mexico, and by people of Mexican heritage elsewhere. The multi-day holiday involves family and friends gathering to pray for and remember friends and family members who have died, and helping support their spiritual journey. In Mexican culture, death is viewed as a natural part of the human cycle. Mexicans view it not as a day of sadness but as a day of celebration because their loved ones awaken and celebrate with them

It is colourful, bright and cheery but with a theme of skulls and skeletons. The shapes, colours, forms and patterns of the Day of Dead provide us with lots of inspiration to make our textile art.

SCAN ME

Scan the QR Code to take you to the National Geographic websites Top 10 things to know about the Day of the Dead.

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Year 8 Art Day of the Dead

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

- **Describe the day of the dead festival**
- **Produce and refine new ideas**

Retrieval Practice

Questions	Answers
When is the day of the dead?	A Mexican holiday traditionally celebrated on November 1st and 2nd.
What are calaca and calavera?	These are representations of a human skeleton and skull
What is tone?	Tone refers to how light or dark something is. Tones could refer to black, white and the grey tones between. It could refer to how light or dark a colour appears.
What is block colour?	A colour in a single tone, with no variation
What is block print?	This is the process of carving patterns, shapes and designs into a 'block'. The 'block' could be made of wood, lino, metal or polystyrene
What is composition?	This is the arrangement of elements within a work of art

Career Focus - Where could this take you?

I am a **graphic novelist** so I get to spend my day creating new ideas and stories before bringing them to life with my illustrations and storyboards.

Challenge Activities

Scan the QR Code and watch the video about how the film Coco has honoured the day of the dead celebration. Once you have watched the video make a list of the main aspects of the day of the dead celebration and put into your own words how Coco has portrayed the celebration.

SCAN ME

Topic Links

This topic links to:

- MFL – cultural holidays and celebrations
- RE – cultural holidays and celebrations

Additional Resources

To further practise and develop you knowledge see:

the QR Code to take you to a video from The British Museum about the Day of the Dead celebration.

SCAN ME

Year 8 Working with a theme and Stimulus

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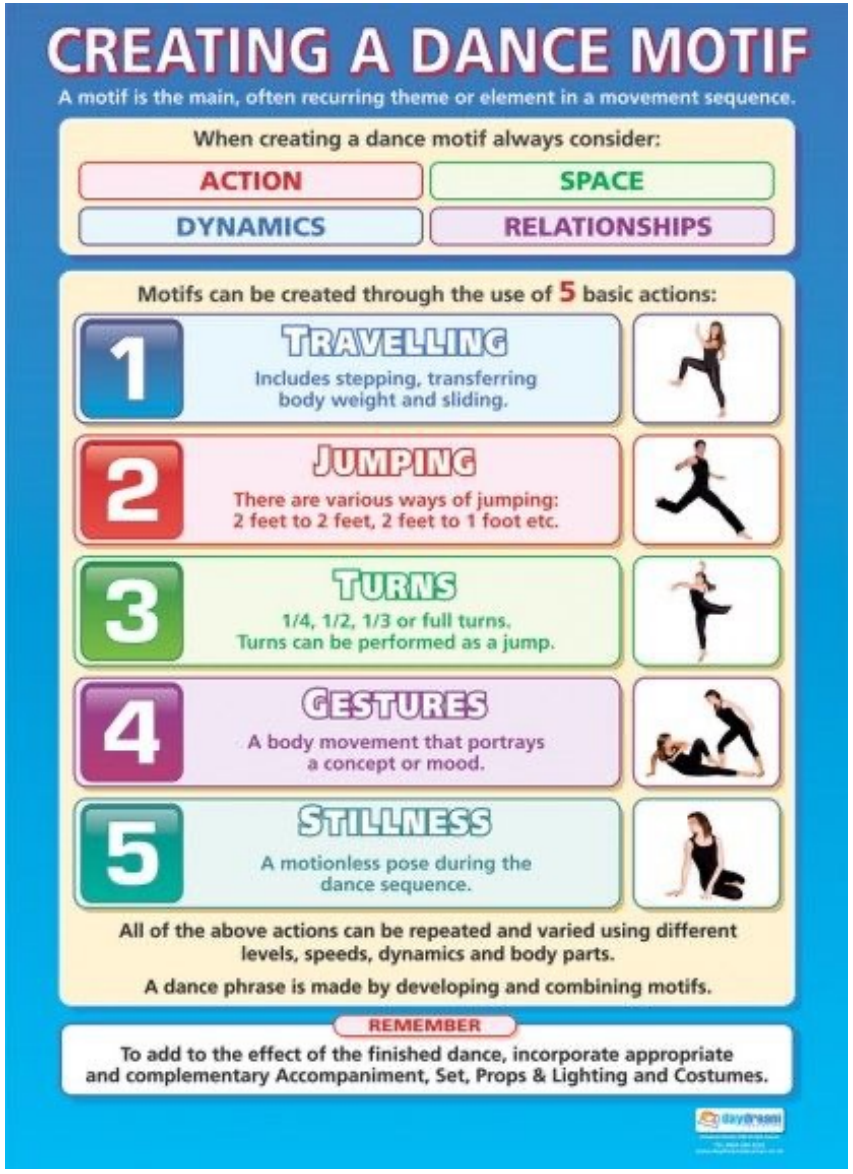
The aims of the sequence of learning are to ensure that all students:

- Replicate a set phrase of movement
- Select and apply a formation to my performance
- Recognise key dance elements in a performance.
- Recognise elements in a performance and describe them.
- Apply choreographic devices to enhance my choreographed routines

Keyword	Definition
Choreographic Intention	What it makes the audience think, see and feel
Projection	The energy the dancer uses to connect with and draw the audience in
Dynamics	The quality of the movement
Focus	Where the audience looks
Cannon	One after the other
Facial Expression	Shows the mood of the character
Physical Skill	Is a skill that can be developed over time
Retrograde	Perform the movements backward, like a film on rewind
Repetition	To repeat part of the motif. Either straight after it is performed or later on in the dance.
Accumulation	Dancers gradually joining in with a phrase of movement
Levels	Dancers change the level a movement is performed on
Direction	Performing or travelling the movement facing a different way
Size	To change the size of a motif or movement(small becomes large, large becomes small)
Juxtaposition	Half the group performs one part of the motif while the others perform something different
Canon	Dancers performing the same movements or phrase of movement with a time delay
Mirroring	Like a mirror image. Movement is performed on the left by some and the right by others

Key Concepts



Year 8 Working with a theme and Stimulus

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

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- Select and apply a formation to my performance
- Recognise key dance elements in a performance.
- Recognise elements in a performance and describe them.
- Apply choreographic devices to enhance my choreographed routines

Retrieval Practice

Questions	Answers
What is a motif?	A motif is a movement phrase (A small dance) with an idea that is repeated and developed through the piece.
What is motif development?	Motif development is where you use one of the below to change the original movement. This will allow it to become more interesting
What are the three action developments?	Retrograde, repetition and accumulation
What are the three space developments?	Levels, direction and size
What are the three relationship developments?	Juxtaposition, canon and mirroring

Career Focus - Where could this take you?

My job is **fight choreographer**. I use movement and motifs to choreograph different scenes to ensure they look believable and are engaging whether on screen or in the theatre.

Challenge Activities

Dance Quiz

Choreography - Jay Revell

Choreography - Kyle Hanagami

Topic Links

This topic links to:

- Drama Performance skills
- PE - Physical skills
- English - Understanding terminology and verbs.
- Maths - Problem solving

Additional Resources

To further practise and develop you knowledge see:

- https://www.aqa.org.uk/resources/dance/gcse/dance/teach/subject-specific-vocabulary
- https://www.onedanceuk.org/wp-content/uploads/2016/03/Motif-and-development-for-NDTA.pdf

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Year 8 Physical Theatre

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

- **develop knowledge of what Drama Elements mean.**
- **develop drama technique and skills.**
- **Identify and perform drama**

Keyword

Storytelling	Mime
Body Language	Projection
Facial expression	Performance
Characterisation	Volume
Devising	Timing
Gesture	Pause
Space	Pace
Levels	Posture
Improvisation	Hot-Seating
Soundscape	Unison

Key Concepts

Thinking Questions

- How am I showing my character?
- What is my body language?
- How is it different to my normal?
- What is my character feeling?
- Do my facial expressions match this?
- What is my posture like?
- How do I walk? What is my gait like?
- How do I react to the other characters?
- How close do I stand next to others?
- Where is the scene set?
- What sounds are needed in the scene?
- How can I make the sounds?
- How loud, or quiet should they be?

Techniques:

Body as a prop (Using your body to create physical objects, settings and characters)
Characterisation (Making and being in character that is different to yourself)
Posture (How you stand and how that is different to you normally)
Soundscape (Used to add effect and meaning to scenes and on-stage action)

PHYSICAL THEATRE

You will be developing your knowledge and understanding of DRAMA, PHYSICAL THEATRE, STORYTELLING, DEVISING and CHARACTERISATION. These are key drama skills that you will need. We will be creating PHYSICAL PERFORMANCES and characters for improvised performances.

A good physical theatre performance

Will have a range of different believable characters. It will use a set scenario or one you have made up. The audience will be able to understand what is happening and will be engaged by the action and the storyline

Assessment

You will take part in several peer and self assessment tasks over the project, as well as your teacher assessment. receiving feedback from your teacher.
Your assessment for this Topic will be based on creating physical and vocal representations of objects and settings, for the devising of performances, before evaluating them.

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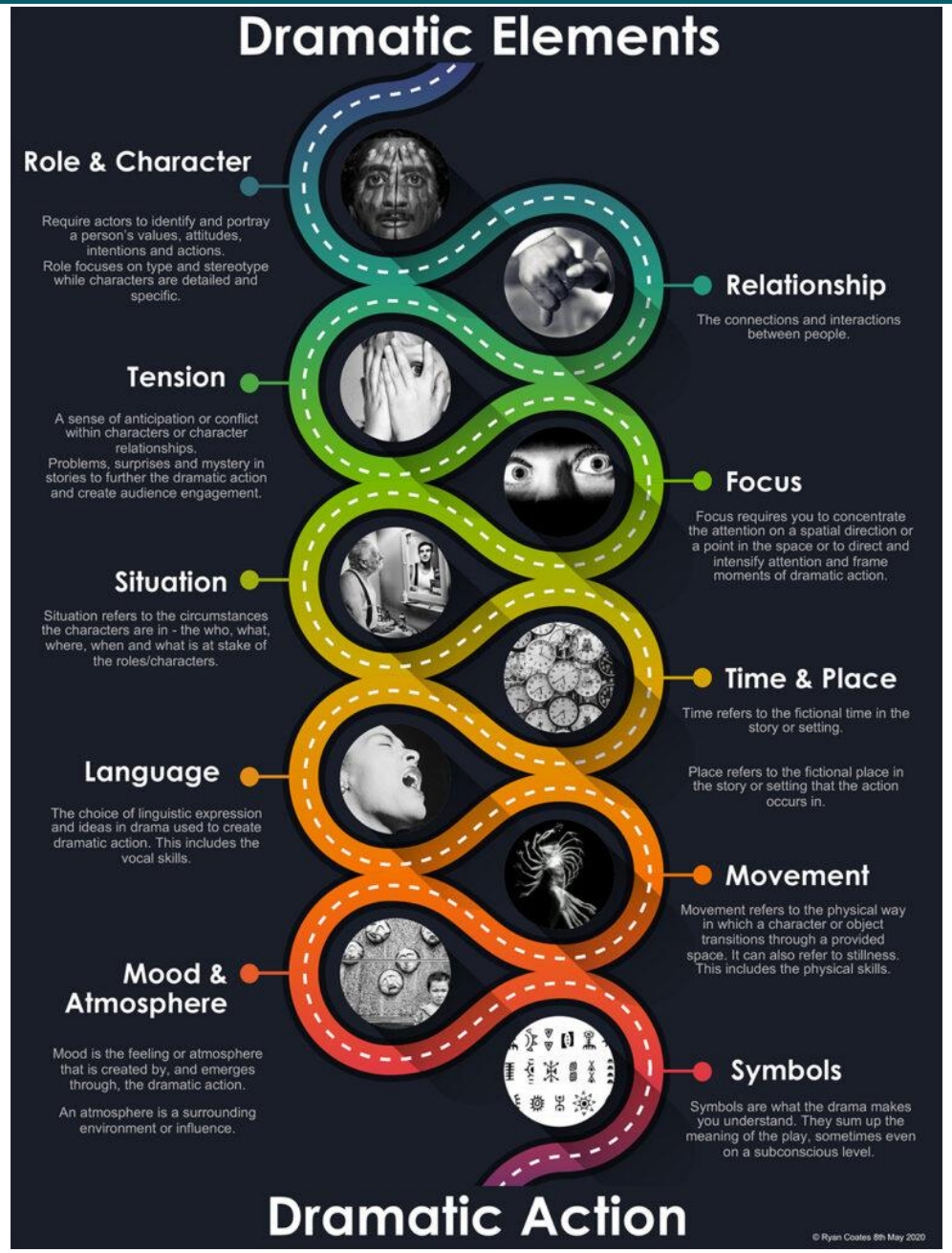
Year 8 Physical Theatre

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

- **develop knowledge of what Drama Elements mean.**
- **develop drama technique and skills.**
- **Identify and perform drama**



Career Focus - Where could this take you?

I am a Physical theatre performer. Knowledge of different movement traditions, such as mime and clowning is very important. Being able to utilize your facial expressions, body language, posture, spatial awareness, and physicality to tell a story is key to engaging the audience.

Challenge Activities

Brainstorm your ideas for a piece of physical theatre you would like to create, based on an activity you have undertaken in a lesson.
Focus on themes and stories you would like to communicate in this practical work.

Structure your ideas by creating a flow chart of the story and highlight key scenes.
Or write a step-by-step list of what should happen in each scene.

Music:
Find a piece of music that represents the theme of your physical theatre piece.
Explain why you chose the piece of music and which part of your work it will be used in.

Topic Links

Dance
Physical Education
Music
English
Maths
Science
Art

Additional Resources

If you want to do more and extend yourself in Drama…Explore the Arts as a participant

Watch to learn more about physical theatre

https://youtu.be/9JzdIPSdAmE?t=1

Newsome Academy
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Year 8 Food Tech

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

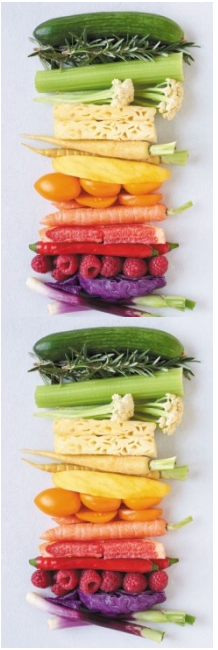
- Define the terms nutrient, macronutrient and micronutrient
- Describe the function of nutrients in the body
- Describe the consequences of an unbalanced diet

Keyword	Definition
Nutrition	The study of what people eat and how nutrients in foods work together in the body
Nutrients	Natural chemical substances in food that are essential for body growth, function and health
Macronutrient	Nutrients that are required in large quantities by the body
Micronutrient	Nutrients that are required in small quantities by the body
Malnutrition	Malnutrition refers to deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients
Mineral	a solid, naturally occurring inorganic substance.
Vitamin	any of a group of organic compounds which are essential for normal growth and nutrition and are required in small quantities in the diet because they cannot be synthesized by the body.

Key Concepts

Micronutrients

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



Nutrients

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

The allergen could be identified in **bold**, highlighted, <u>underlined</u> or in *italics.*

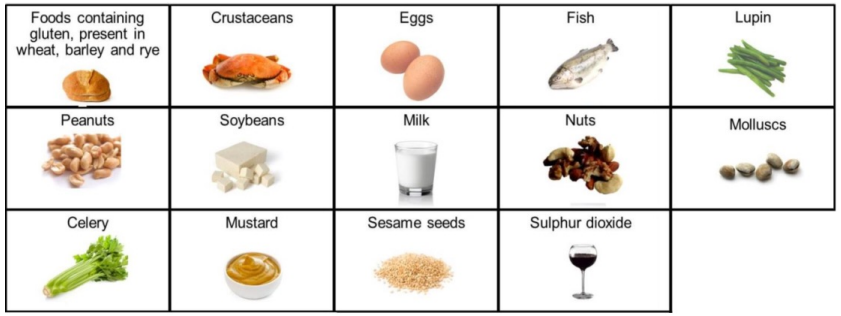
Newsome Academy
Everyone Exceptional Everyday

Year 8 Food Tech

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

- Define the terms nutrient, macronutrient and micronutrient
- Describe the function of nutrients in the body
- Describe the consequences of an unbalanced diet

Retrieval Practice

Questions	Answers
What are nutrients?	Nutrients are the building blocks that make up food and have specific and important roles to play in the body. Some nutrients provide energy while others are essential for growth and maintenance of the body.
What do vitamins do?	They help to keep our immune system up and help our body to stay healthy – they are important for body maintenance
What do minerals do?	Help to keep our immune system up and help our body to stay healthy. Vitamins and minerals are Micronutrients.
What is a food allergy?	Food Allergy is an immune reaction by the body against a particular food. Symptoms of a person having an allergic reaction can include: Rash Itchiness Vomiting Swelling of ; lips/face/throat Difficulty breathing If untreated, a person can go into anaphylactic shock and can die from an allergic reaction.
What should you do if someone has an allergic reaction?	If you suspect someone is having an allergic reaction you must seek help. They will either need to take antihistamine if the reaction is mild (e.g. just a skin rash) OR they will need to have adrenaline administered by injection (e.g. by EpiPen) if their reaction is severe - in which case an ambulance must be called.
What are the most common foods that cause allergies?	

Career Focus - Where could this take you?

In my role as a **nutritionist** I use nutrition to promote health and manage disease. I help people to plan their diet and nutritional programmes to help them lead healthy lives.

Challenge Activities

Produce an information leaflet to encourage teenagers to eat a wide range of nutrients, include information on malnutrition.

Topic Links

This topic links to:
Science - to be curious about how to maintain a healthy, balanced diet, in both a theoretical and practical context.

PE - to promote lifelong participation in physical activity alongside leading creative and healthy active lifestyles. Understanding how your body works, working with others and being physically active are a crucial part of leading a healthy happy life

Additional Resources

To further practise and develop you knowledge see:

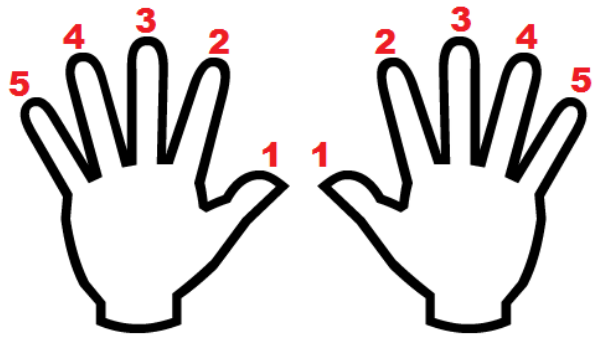
Nutrition, digestion and excretion

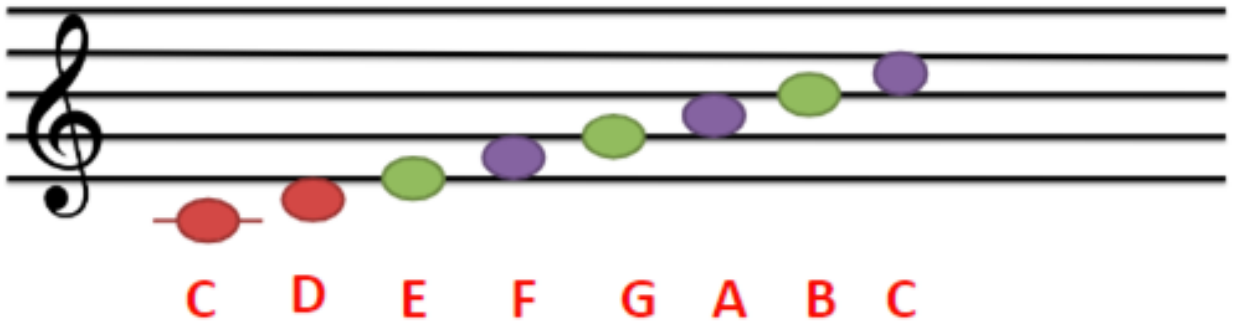
Healthy diet

Balanced Diet

Year 8 Keyboard Skills and Blues Music

Keyword	Definition
Stave	Five lines and four spaces on which we write musical notes
Treble Clef	A musical symbol that indicates the pitches of notes above middle C
Barline	A vertical line that separates bars in music
Pitch	How high or low a sound is
Rest	When we do not play on a beat
Technique	The way in which we play the musical instrument
Fluent	To perform without hesitation
Accuracy	To perform with accurate pitches, rhythms and technique
Walking bassline	A bass pattern used in Blues music where the notes walk up and down the instrument
Improvisation	To make something up as you go along
Work song	A song that is sung whilst people work
Guitar	A string instrument with six strings, used in Blues music
Chord	Two or more pitches at the same time
Minor	A sad sounding chord
Triad	A chord with three notes
Major	A happy and bright sounding chord





Learning Objectives

Keyboard Skills

What a stave is and how to read basic notation

Keyboard technique including 5 finger position, scales and fingerings

What a chord is a how they are built – the three main Primary chords C, F and G as well as A minor

To perform either the bass line, chords or melody of Stand By me using keyboard technique

The Blues

Learn and understand how Blues music developed, the typical instruments used and some of the musical features.

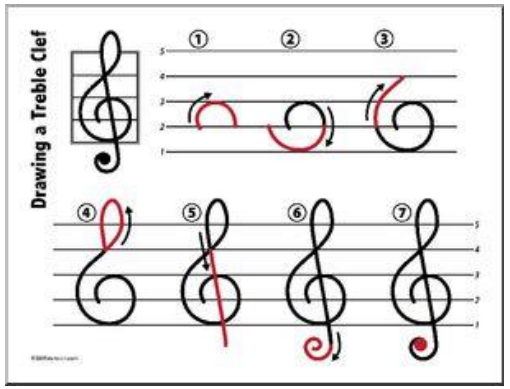
Identify musical features within Blues music and explain the musical features that make it Blues music

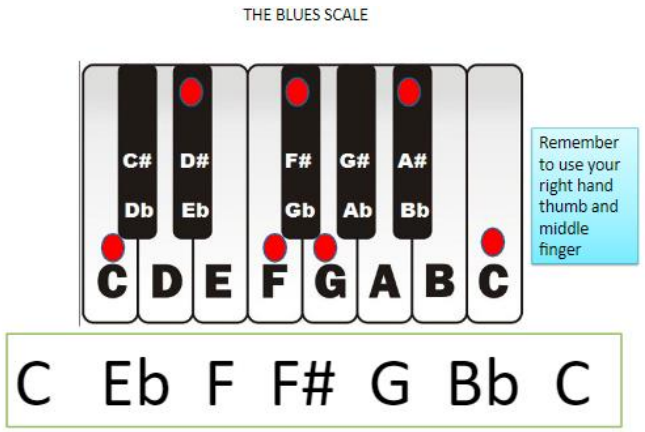
Perform the 12 bar blues chord sequence accurately, fluently and confidently. I can repeat the 12 bar blues.

Learn how to perform a blues style bass line

Learn what improvisation is and how to do this using the blues scale

Year 8 Keyboard Skills and Blues Music





12 Bar Blues with a walking bass line

C = C E G

F = F A C

G = G B D

Play the chord with your right hand

Play the bass line with your left hand

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

Career Focus - Where could this take you?

I am a professional musician, being proficient on a musical instrument is essential. This comes through lots of practice, and making sure technique is excellent. The ability to read music makes it easier to play different pieces of music more quickly. Otherwise you have to copy what you hear. Some musicians do play by ear, however and many Blues Musicians will have never read music.

Challenge Activities

Work through this worksheet to help you learn the notes on a stave
KEYBOARDSKILLSTHEORY1.docx

And now have a go at this quiz!
Keyboard Topic Quiz

Read this information on a piece of music and listen to it using the following link:
Debussy - La cathédrale engloutie
Think about how Debussy has used the piano to create the *impression* of a sunken cathedral. You can write up your thoughts as a mind map.

Topic Links

Band Skills
Rhythm & Pulse
Geography - understanding the movement of people from Africa to America and other parts of the world
History - learning about the Slave Trade
Literacy - keywords and spellings
Numeracy - Counting, rhythm, understanding patterns

Additional Resources

Listen to these songs:
Stormy Monday - BB King
Crossroad Blues – Robert Johnson
Bessie Smith - Nobody Knows You When You're Down and Out
Billie Holiday - Lady Sings The Blues

Year 8 Exploring World Music Theory

The learning outcomes for this topic are:
- **Explore a wide range of music from different cultures.**
- **Understand scales and be able to use them when composing music**

Keyword	Definition
Scale	A pattern of notes increasing or decreasing in pitch. **T = Whole Tone S = Semitone**
Major Scale	The pattern for the major scale is: T, T, S, T, T, T, S
Minor Scale	The pattern of the minor scale is: T – S – T – T – T – T – S
Pentatonic scale	A scale that uses only five notes. The pentatonic scale uses the root, second, third, fifth, and sixth of a scale
Enharmonic	relating to or denoting notes which are the same in pitch (in modern tuning) though bearing different names (e.g. F sharp and G flat or B and C flat).
Off Beat	When beats 2 and 4 are accented/emphasised.
Drone	A note that is sustained for a long time. Usually quite low in pitch.
Melody	The main tune of a piece of music
Raga	A type of Indian scale
Reggae	A popular style of music from Jamaica

Every culture developed an understanding of music independently. Because of this, some cultures make music differently to the way we do in It's similar to translating a foreign language into one we can understand.

Further Listening

'Norwegian Wood' The Beatles – A western, pop interpretation of a raga.

'Work' (Freemasons Remix) Kelly Rowland – Includes elements of Indian Raga and traditional Indian instruments

'Buffalo Soldier' by Bob Marley and the Wailers

Career Focus - Where could this take you?

At Newsome, British values are the school values. Respect and tolerance are one of those core British values. We can only scratch the surface of some of the unique and vibrant music from different cultures around the world in one unit of work. It is still important that we learn as much as we can. Different people around the world have many different ideas for how to make music. This unit will open you up to a wide variety of different musical styles and challenges and will improve your ability to adapt and improvise.

Topic Links

This topic links to other topics such as:
- Geography
- RSHE – Learning about the cultural, historical and religious background of India, Jamaica and China.
- Drama
- Maths – sequences and patterns in scales

Additional Resources

BBC Bitesize – https://www.bbc.co.uk/bitesize/guides/z6ch8xs/revision/4

Free online djembe lessons and information: https://afrodrumming.com/

Year 8 World Music Theory - Chinese

The learning outcomes for this topic are:
- Explore a wide range of music from different cultures.
- Understand scales and be able to use them when composing music

Popular Chinese Instruments:

YANGQIN

SHENG

TEMPLE BLOCKS

DIZI

ERHU

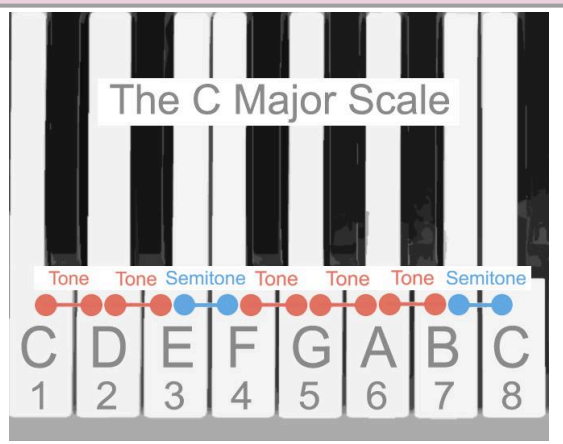
SUONA

GONG

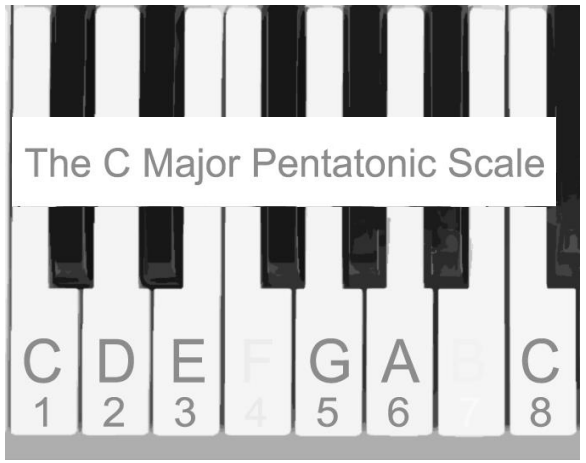
PIPA

The Eb and Gb pentatonic scales are the most common scales in traditional Chinese music.

Key Concepts - Scales



A scale is a sequence of notes that go up in pitch. Every scale follows a pattern of steps. The pattern for a major scale is: T, T, S, T, T, T, S



Each step in a scale is called a scale degree. A pentatonic scale is a scale that misses out the 4th and 7th scale degree

Challenge Activity

Above are some traditional Chinese instruments. Do your own research and see how many more you can discover.

Challenge Activity

Choose a random letter between A and G. Using the major scale pattern (T,T,S,T,T,T,S) try and figure out the major scale for that note.

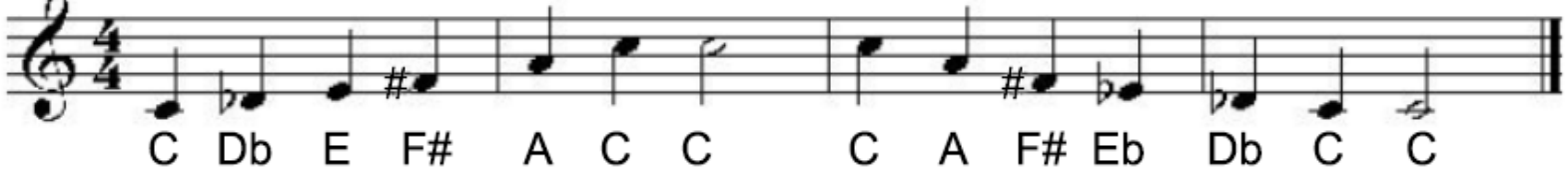
Year 8 World Music Theory - Indian

The learning outcomes for this topic are:
- Explore a wide range of music from different cultures.
- Understand scales and be able to use them when composing music

Indian Ragas

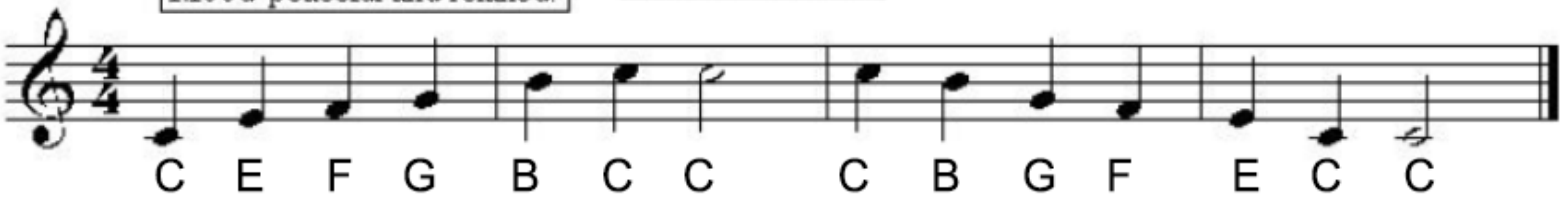
Morning raga (Vibhas)
Mood-Lovliness, sound of the early dawn.

Drone notes C, A



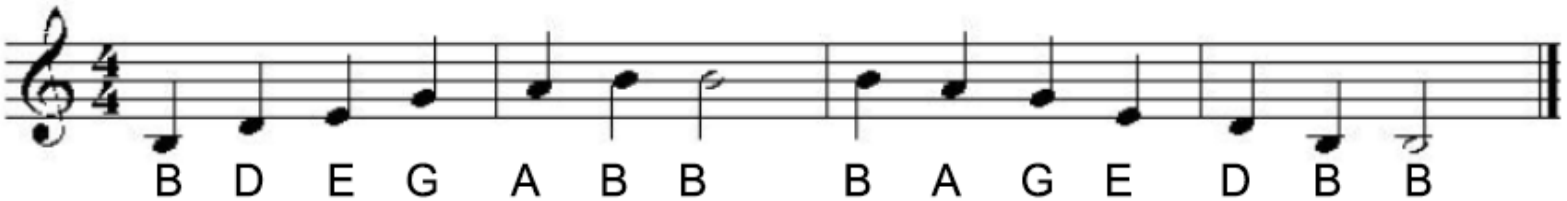
Evening raga (Behag)
Mood-peaceful and relaxed.

Drone notes C, G

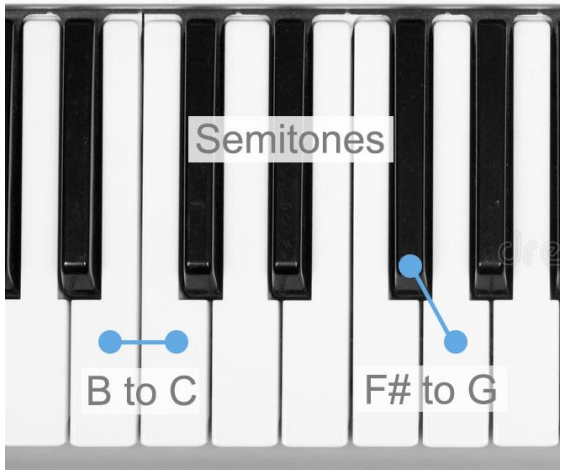


Night raga (Malakosh)
Mood-peaceful and relaxed.

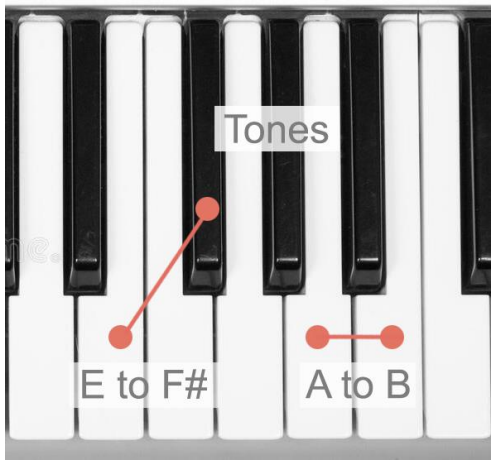
Drone notes B, E



Key Concepts – Tones and Semitones



If we move from one key to the very next key on a piano, we call this a semitone (S)



If we move up two keys on a piano we call this a Tone (T)

Year 8 World Music Theory - Jamaican

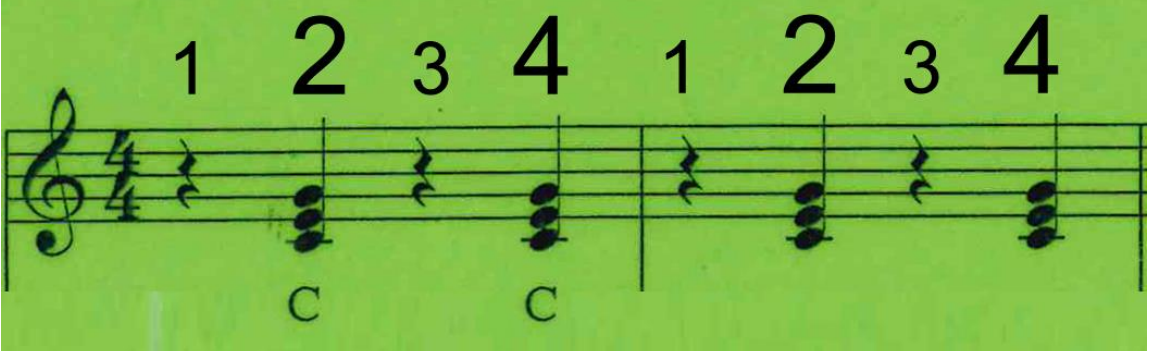
The learning outcomes for this topic are:
- Explore a wide range of music from different cultures.
- Understand scales and be able to use them when composing music

The Evolution of Reggae

Mento - 1950s	Ska – Early 1960s	Rocksteady – Late 1960s	Reggae – Late 1960s to 1980s
• Jamaican folk music • Banjo accompaniment • Fast tempo • Lighthearted lyrics • Bass lines played on double bass	• Walking bass line • Electric and brass instruments • Fast tempo • Lyrics about social issues	• Mainly electric instruments • Lots of electric bass riffs • Slow tempo • Drums often miss out the first beat of every bar	• Jamaican folk music • Lots of bass riffs • Slow tempo • Lyrics about social issues, love, peace, religion, war.

‘Three Little Birds’ by Bob Marley and the Wailers

Chorus



The Offbeat

In most western music beats 1 and 3 are usually given emphasis. Beats 2 and 4 are called the offbeat. In most Jamaican music (especially reggae) the emphasis is given to beats 2 and 4. In ‘Three Little Birds’ (left) the chords are placed on beats 2 and 4 to give this song it’s typical reggae rhythm.

Further Listening

‘You Can Get It If You Really Want It’ by Desmond Decker

‘Baby I Love Your Way’ by Big Mountain. *A reggae cover of a non-reggae song*

‘Superman’ by Goldfinger. *A more modern genre called ska punk that fuses ska with pop and punk.*

Challenge Activities

Listen to ‘I Can’t Help Falling in Love With You’ by Elvis Presley and compare it to the reggae cover version by UB40. What reggae features does the UB40 version include?

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Year 8 - Band Skills: Hooks and Riffs

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

- **are able to compose a pop riffs and hooks through understanding of common writing techniques**
- **Increase confidence by performing to others**

Keyword	Definition
Riff	A short, repeated, 'catchy' phrase in popular music, typically used as an introduction or refrain in a song. Often played on a guitar
Hook	A short riff, passage, or phrase, that is used in popular music to make a song appealing, memorable and "catchy".
Key	The main group of notes/pitches that are used throughout a piece of music.
Composition	a song or piece of music
Ensemble	A group of musicians
Band	A group of musicians. (Most often used in pop music)
Rehearsal	A set time a band get together to practise and learn their songs.
Performance	When a musician or group of musicians play music, usually to an audience.

Career Focus - Where could this take you?

Being in a band will really strengthen your time management. Getting to rehearsals, gigs and studio sessions on time is vital in our band. While we don't always get along, we have to overcome these difficulties and learn to work well with others.
Through the years we have developed our creative thinking skills by coming up with ideas and writing over 150 songs! In the early days we had to organise gigs, rehearsal spaces and recording studio time as well as spreading the word about our gigs and albums. Now we employ people who do this for us. There are many music careers aside from being in a band, such as: Promotion, marketing, roadies, live/studio engineers, tour bus drivers, band management, song writers, stylists and many more.

Challenge Activities

1. Create your own guitar or piano riff using a scale (eg. Pentatonic, Minor).
2. Here is a compilation of riffs played using the pentatonic scale. See how many you can play on an instrument: https://www.youtube.com/watch?v=9teYiPih-X8&ab_channel=MartyMusic

Further listening:
Famous Guitar Riffs: The White Stripes - 'Seven Nation Army',
Deep Purple – 'Smoke on the water'
Famous Bass Riffs: Queen – 'Another One Bites The Dust'
Pink Floyd – 'Money'
Famous Keyboard Riffs: Van Halen – 'Jump' Prince – '1999'

Topic Links

This topic links to other topics such as:

- Drama – General skills (voice projection, stage presence, costumes)
- Music – Voice 21 Oracy skills (through performance)

Additional Resources

BBC Bitesize:
https://www.bbc.co.uk/bitesize/guides/z6ch8xs/revision/4

Billboard list of the 25 catchiest hooks ever:
https://www.billboard.com/music/music-news/greatest-catchiest-pop-hooks-ever-6731053/

Year 8 - Band Skills: Hooks and Riffs

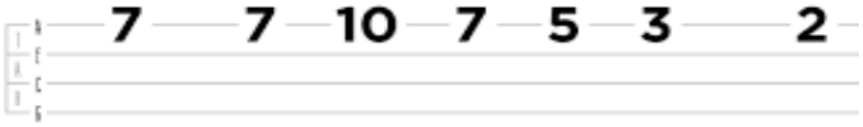
The aims of the sequence of learning are to ensure that all students:

- are able to compose a pop riffs and hooks through understanding of common writing techniques
- Increase confidence by performing to others

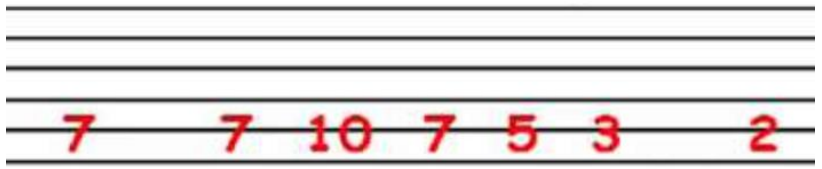
Key Concepts

‘Seven Nation Army’ by The White Stripes - Tabs

Ukulele



Guitar



Bass

```
G|----------------------
D|----------------------
A|--7-7-10-7-5-3-5-3-2--
E|----------------------
```

Instruments in a Typical Popular Music Band

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Year 8 Invasion Games

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

- Can identify at least five core skills required for invasion games
- Demonstrate basic core skills such as a shoulder pass in isolation
- Demonstrate core skills in a game situation
- Lead a group of peers in a basic drill (practicing one skill)

Keyword	Definition
Pass	keep possession of the ball by maneuvering it between different players with the objective of advancing it up the playing field
Catch	to receive the ball from another player and keep possession
Defend	to resist the attack of the opposing team
Attack	the action of attacking or engaging an opposing team with the objective of scoring points or goals
Tackle	trying to take the ball from an opponent
Intercept	Obstruct someone/something from getting to their desired position/destination
Tactics	A strategy planned and implemented to achieve a set goal

Key Concepts

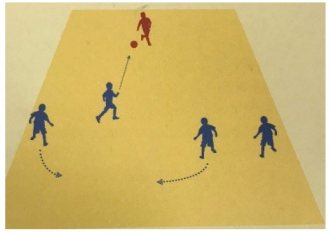
Defending

Pressure

Closest defender moves towards the attacker with the ball - aim to slow the attacker down or guide them into a certain direction

Cover

When a defender puts pressure on the attacker — the other defenders cover the space the defender left.



Attacking

Width

To create space in front of the goal send the ball wide to move the defenders out of position— giving an easy chance to shoot at goal.

Penetration (forward move)

A quick pass or dribble through the defensive line in order for the attacking team to get closer to their opponents goal

You should already know:

- The aim of invasion games
- The name of at least 3 invasion games
- The basic principles of invasion games
- The core skills required to be successful in invasion games

You will be assessed on:

- Understanding
- Technique in isolation
- Technique in game
- Leadership
- Attitude to learning

Athletes to research further:

Raheem Sterling

Eleanor Cardwell

Courtney Lawes

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Year 8 Invasion Games

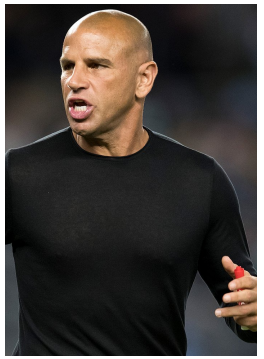
The aims of the sequence of learning are to ensure that all students:

- Can identify at least five core skills required for invasion games
- Demonstrate basic core skills such as a shoulder pass in isolation
- Demonstrate core skills in a game situation
- Lead a group of peers in a basic drill (practicing one skill)

Retrieval Practice

Questions	Answers
What are the core Netball skills?	Chest pass, Bounce pass, Shoulder pass, Overhead pass, Two-footed landing, **One-footed landing**, Shooting, Pivot, **Man Marking** and **Dodging**
What are the Netball positions?	Goal keeper, Goal defence, Wind defence, Centre, Wing attack, Goal attack and Goal shooter
What are the core football skills?	Dribbling close to feet, Dribbling changing direction **with speed**, Passing side foot (**close distance**), Passing **on laces** (**long distance**), Defending (**man to man**) and Attacking (**two versus one**)
What are the core Rugby skills?	Target with hands out, Push pass, **Pop pass**, Catch and **pass and move**, Protecting, **Holding**, **Contact**, Side-stepping, Attacking (**line speed**), Attacking (**creating an overlap**), Defending (**line and movement**)

Career Focus - Where could this take you?



I am a **team psychologist.** As part of my job, I develop and employ strategies to help athletes to overcome pre-match nerves and anxiety.

Challenge Activities

1. Answer the following question: Why is it important that we understand the playing area for an invasion game?

2. Create a mind map of the differences between netball, football and rugby.

Topic Links

This topic links to:

- Science – movement of the body and muscles; the physics of sports
- English – understanding and defining key terminology
- Mathematics – problem solving, recording figures and analysing performance
- Voice 21 – coaching peers

Additional Resources

To further practise and develop you knowledge see:

- https://seeliger.carsoncityschools.com/common/pages/DisplayFile.aspx?itemId=8364188
- https://www.youtube.com/watch?v=ABC5iPye7JY
- https://www.youtube.com/watch?v=yW7JH6xkV7w

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Usernames and Passwords