

Year 8



**Newsome
Academy**
Everyone Exceptional Everyday

Knowledge Organisers

Name:

Team:



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.

- 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

1 cm = 10 mm

1 m = 100 cm

1 km = 1000 m

8 km ≈ 5 miles

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
<p>Calculate the time spent driving if a car travels a distance of 15 miles at a speed of 36 mph.</p> $Time = Distance \div Speed$ $= 15 \div 36$ $= 0.42 \text{ hours}$ $= 0.42 \times 60 = 25.2 \text{ minutes}$	<p>Calculate the time spent driving if a car travels a distance of 15 miles at a speed of 36 mph.</p> <p><i>Do not convert your times incorrectly. Minutes ÷ 60 = hours and hours x 60 = minutes.</i></p> $Time = Distance \div Speed$ $= 15 \div 36$ $= 0.42 \text{ hours}$ $= 42 \text{ minutes}$

Standard Examples	Non-Standard Examples
<p>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.</p> $45 \text{ minutes} \div 60 = 0.75 \text{ hours}$ $1 \text{ hours } 45 \text{ minutes} = 1.75 \text{ hours.}$ $Speed = distance \div time$ $63 \div 1.75 = 36 \text{ mph}$	<p>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?</p> $Distance = speed \times time$ $3 \times 50 = 150 \text{ miles}$ $2 \times 60 = 120 \text{ miles}$ <p>John travels 150 + 120 = 270 miles in total John took 3 + 2 = 5 hours in total</p> $Average \text{ speed} = total \text{ distance} \div total \text{ time}$ $270 \div 5 = 54 \text{ mph}$

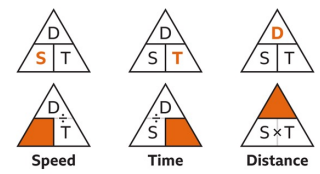
8.10 Speed, Distance, Time

- 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.

$$0.4 \times 60 = 24 \text{ min}$$

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

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

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.
..... 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.
..... 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]

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

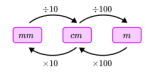
Links across school:

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

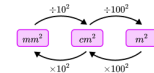
Key Concepts

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

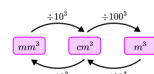
Converting metric units of length:



Converting metric units of area:



Converting metric units of volume:

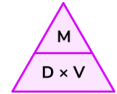


Mass, density and volume are physical properties of objects.

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:



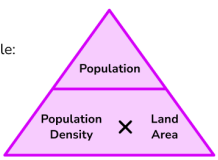
where *M* is the mass, *D* is the density, and *V* is the volume of an object.

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:

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

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 (m²).

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/m²

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

$500\ kg/m^3 = 0.5\ g/cm^3$

X 1000 to turn kg into g
÷ 100 ÷ 100 ÷ 100 to turn m³ into cm³

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 (cm³) = density (g/cm³)

Non-Concept – what it isn't

Do not just convert linear units. If the metres are cubed, then the scale factor needs to be done three times.
 $500\ kg/m^3 = 5\ g/cm^3$

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?
 $500\ kg/m^3 = 50000\ g/cm^3$

Standard Examples

A force of 800N acts on an area of 20 m².
Calculate the pressure.

$$Pressure = \frac{force}{area}$$

$$= \frac{800\ N}{20\ m^2}$$

$$= 40\ N/m^2$$

Non-Standard Examples

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 = 1000cm³

Volume of cuboid
= 150cm x 200cm x 40cm = 1200000 cm³

1200000cm³ = 1200 litres

1200 ÷ 5 = 240 minutes

240 ÷ 60 = 4 hours

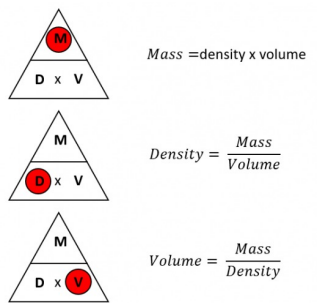
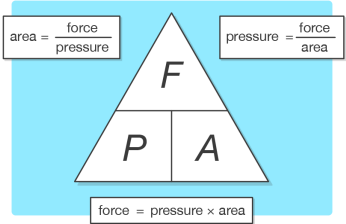
8.11 Compound Units

- The learning outcomes for this topic are:**
- Convert between units of area and volume
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- Find a missing force or area
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- Solve problems involving different units



Useful Formulae and Hints



It's important that **units match**. For example, when working out density in g/cm^3 make sure that your mass is in grams (not kg) and your volume is in cm^3 (not mm^3 or m^3).

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:

$$8 \text{ pens} = £2.16$$

$$\div 8 \qquad \div 8$$

$$1 \text{ pen} = £0.27$$

Multiplying both numbers by 7:

$$1 \text{ pen} = £0.27$$

$$\times 7 \qquad \times 7$$

$$7 \text{ pens} = £1.89$$

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	Non-Concept – what it isn't
<p>Ingredients for 12 small cakes</p> <p>180 g margarine 180 g sugar 200 g plain flour 1 teaspoon baking powder 2 eggs</p> <p><i>How many cakes can I make if I have 450g sugar, 1kg flour and plenty of the other ingredients?</i></p> <p>450 ÷ 180 = 2.5 1kg = 1000g 1000 ÷ 200 = 5</p> <p>Can do the recipe 2.5 times. 2.5 x 12 = 30 cakes.</p>	<p>Ingredients for 12 small cakes</p> <p>180 g margarine 180 g sugar 200 g plain flour 1 teaspoon baking powder 2 eggs</p> <p><i>We don't need to use the recipe a whole number of times.</i></p> <p>450 ÷ 180 = 2.5 1000 ÷ 200 = 5 Can do the recipe 2 full times. 2 x 12 = 24 cakes.</p> <p><i>We use the smaller value, else we run out of an ingredient.</i></p> <p>Can do the recipe 5 times. 5 x 12 = 60 cakes.</p>

Standard Examples	Non-Standard Examples															
<table border="1"> <thead> <tr> <th>Offer A</th> <th>Offer B</th> <th>Offer C</th> </tr> </thead> <tbody> <tr> <td>200ml cola</td> <td>500ml cola</td> <td>1L cola</td> </tr> <tr> <td>£0.80</td> <td>£1.80</td> <td>£3.50</td> </tr> </tbody> </table> <p><i>Which is the best value?</i></p> <p>Offer A £0.80 : 200ml (x5) £4.00 : 1000ml</p> <p>Offer B £1.80 : 500ml (x2) £3.60 : 1000ml</p> <p>Offer C £3.50 : 1000ml</p> <p>Offer C is better value</p>	Offer A	Offer B	Offer C	200ml cola	500ml cola	1L cola	£0.80	£1.80	£3.50	<table border="1"> <thead> <tr> <th>Offer A</th> <th>Offer B</th> </tr> </thead> <tbody> <tr> <td>10% off the price</td> <td>25% extra free</td> </tr> <tr> <td>360g bar costs £2</td> <td>200g bar costs £1.60 each</td> </tr> </tbody> </table> <p><i>Which is the best value?</i></p> <p>Offer A 10% off £2 = £1.80 £1.80 : 360g (÷360) £0.005 : 1g</p> <p>Offer B 25% extra onto 200g = 250g £1.60 : 250g (÷250) £0.0064 : 1g</p> <p>Offer A is better value</p>	Offer A	Offer B	10% off the price	25% extra free	360g bar costs £2	200g bar costs £1.60 each
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8.12 Unit Cost and Best Buys

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Useful Formulae and Hints

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

If you have calculated **amount ÷ 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.

MILES TRAVELLED 165

FUEL

(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 100g packet of tea costs £4.16. A 25g 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 380g of grapes.

£ [2]

8.13: Simple Interest and Repeated Percentage Change


The learning outcomes for this topic are:

- Calculate a percentage of an amount e.g. 10%, 60% etc
- Calculate a more complex percentage of an amount e.g. 23%, 78% etc
- Use multipliers to calculate an increase or decrease
- Calculate the final amount in a simple interest problem
- Calculate the final amount in a repeated percentage change
- Calculate the number of years given the initial amount, percentage and final amount

Key Word	Definition
Percentage	An amount expressed as a fraction of 100
Increase	To make something greater in size
Decrease	To make something lesser in size
Depreciate	To diminish in value over a period of time
Multiplier	A number used to multiply another number
Interest	An additional amount received on top when an investment is returned
Simple Interest	Interest calculated on the original amount
Compound Interest	Interest calculated on an increasing amount
Original Amount	The amount at the start of the calculation

Careers Focus – Where could this take you?

I work in **banking and finance** – being able to accurately calculate interest on accounts and on loan repayments is an important skill in the banking industry.



Additional Resources

MathsWatch: [R7](#), [N24a](#), [N24b](#), [R9a](#), [R9b](#)

CorbettMath: Videos [233](#), [234](#), [235](#), [236](#), [236a](#), [238](#), [239](#)
Worksheets [233](#), [234](#), [235](#), [236](#), [238](#), [239](#)

Curriculum Links - Coherence

Required Knowledge:
7:13 Fractions, Decimals and Percentages and Fractions of Amounts
7:14 Calculation Percentages and Percentage Increase and Decrease
7:15 Calculating Percentage Change

Applied to:
8:14 Reverse Percentages
9H:13 Percentage Increase and Decrease, Repeated Percentage Change, Reverse Percentages
10F:11 Compound Interest and Repeated Percentage Change, Reverse Percentages

Links across school: Used in science for calculating growth of bacteria or a virus under exponential growth or for radioactive decay.

Key Concepts

Simple Interest

£2100 is invested for 3 years at an annual interest rate of 2% per year simple interest. Find the interest earned on the investment in that time?

We required the interest so we will use the formula $I = Prt$ with:
 $P = 2100$
 $R = 0.02$
 $T = 3$

Substituting these values into the simple interest formula $I = Prt$, we get:
 $I = 2100 \times 0.02 \times 3$

Solve the equation.
 $I = £126$
 £126 was earned on the investment.

Compound Interest

£2100 is invested for 3 years at an annual interest rate of 2% per year compound interest. Find the total value of the investment at the end of the 3 years?

Compound Interest is a repeated percentage change, so we need to use the formula $T = A \times M^N$

$T = \text{Total}$
 $A = \text{Initial Amount} = 2100$
 $M = \text{Multiplier} = 100\% + 2\% = 102\% = 1.02$
 $N = \text{Number of Years} = 3$

Substitute these values into $T = A \times M^N$ gives
 $T = 2100 \times 1.02^3$

Solve the equation
 $T = £2228.54$

From the above examples, you can see that the total from the compound interest calculation will be just a little more than the simple interest calculation.

Concept – what it is

Compound Interest – Year By Year

£2100 is invested for 3 years at an annual interest rate of 2% per year compound interest. Find the total value of the investment at the end of the 3 years.

Year 1 $2100 \times 1.02 = 2142$

Year 2 $2142 \times 1.02 = 2184.84$

Year 3 $2184.84 \times 1.02 = 2228.54$

As you can see, the year 3 total is exactly the same as you get by using the formula, but when the number of years becomes larger, this method would begin to take much longer.

Standard Examples

Depreciation

A car is valued at £10,000 and depreciates at 25% per year. How much will it be worth after 4 years?
 Depreciation is a repeated percentage change so we need to use the formula $T = A \times M^N$

$T = \text{Total}$
 $A = \text{Initial Amount} = 10,000$
 $M = \text{Multiplier} = 100\% - 25\% = 75\% = 0.75$
 $N = \text{Number of Years} = 4$

Substitute these values into $T = A \times M^N$ gives
 $T = 10,000 \times 0.75^4$

Solve the equation
 $T = £3164.06$

Non-Concept – what it isn't

Common errors include:-

Calculating simple interest instead of compound interest.

Giving just the interest as the answer when asked for a total.

Giving a total as the answer when asked for the interest.

Using the percentage instead of the multiplier in the calculation.

Using an increase multiplier when calculating depreciation or a decrease multiplier when calculating interest.

Non-Standard Examples

Estimating a Time to Reach a Value

A house is currently worth £150000 and increasing in value by 5% per year. When will it have a value over £200000.

By using the formula $T = A \times M^N$, substituting in what we know and trying different values for N , we can estimate the answer.

$150000 \times 1.05^3 = 173643.75$

$150000 \times 1.05^5 = 191442.23$

$150000 \times 1.05^6 = 201014.35$

$N = 6$, so we would estimate that this would happen after **6 years**.

8.13: Simple Interest and Repeated Percentage Change

The learning outcomes for this topic:

- Calculate a percentage of an amount e.g. 10%, 60% etc
- Calculate a more complex percentage of an amount e.g. 23%, 78% etc
- Use multipliers to calculate an increase or decrease

- Calculate the final amount in a simple interest problem
- Calculate the final amount in a repeated percentage change
- Calculate the number of years given the initial amount, percentage and final amount



Useful Formulae and Hints

When finding percentages without a calculator, build up the percentage from easily calculated percentages like 50%, 25%, 10%, 1% etc.

To find an increase multiplier (for interest calculations), add your percentage to 100% before converting to a decimal.

To find a decrease multiplier (for depreciation calculations), subtract your percentage from 100% before converting to a decimal.

For a repeated percentage change use
A x M^N
 Where A = Original Amount
 M = Multiplier
 N = Number of years

When finding the number of years, input the original amount x multiplier then adjust the number of years power until you have the correct total.

GCSE Questions

James invests £200 for 1 year in a bank account. The account pays simple interest at a rate of 3% per year.

Work out the total amount of money in the account at the end of the year.

£.....
(2)

A car was bought for £18000. Its value depreciated by 15% each year for the first three years.

What was its value at the end of the three years?

£.....
(3)

Carolyn invested £700 for 3 years at 2% per annum simple interest.

Work out the total amount of interest Carolyn earned.

£.....
(3)

Sally bought a piano for £2200. In each year the value of the piano increases by 11% of its value at the start of that year.

(a) Find the value of the piano after one year.

£.....
(2)

(b) Calculate after how many complete years the value of the piano will be at least £3200.

.....years
(2)

8.14: Reverse Percentages

The learning outcomes for this topic are:

- Calculate missing value problems by using inverses
- Calculate an amount from a given percentage value. e.g. 20% of x is 5, what is x?
- Calculate the initial amount before a percentage increase
- Calculate the initial amount before a percentage decrease
- Solve a reverse percentage word problem
- Solve reverse percentage problems involving multiple percentage changes

Key Word	Definition
Percentage	An amount expressed as a fraction of 100
Original Amount	The amount at the start of the calculation
Reverse	Moving in the opposite way to normal
Amount	A quantity of something
Increase	To make something greater in size
Decrease	To make something lesser in size
Interest	An additional amount received on top when an investment is returned
Decay	A gradual decrease in value
Growth	A gradual increase in value

Careers Focus – Where could this take you?

I am a **Virologist** – I use knowledge of how to calculate reverse percentages to analyse how a disease was growing in it's exponential stage.



Additional Resources

MathsWatch: [N24a](#), [R9b](#), [110](#)

CorbettMaths: Videos [233](#), [238](#), [239](#), [240](#) Worksheets [233](#), [238](#), [239](#), [240](#)

Curriculum Links - Coherence

Required Knowledge:

8:13 Simple Interest and Repeated Percentage Change
7:14 Calculation Percentages and Percentage Increase and Decrease
7:15 Calculating Percentage Change

Applied to:

9H:13 Percentage Increase and Decrease, Repeated Percentage Change, Reverse Percentages
10F:11 Compound Interest and Repeated Percentage Change, Reverse Percentages

Links across school: This concept might be used in science for working backwards in exponential growth situations involving bacteria or in business lessons when looking at interest or loans.

Key Concepts

Reverse percentages

Reverse Percentages means working backwards to find an original amount, given a percentage of that amount.

We can do this using a calculator by taking the percentage we have been given, dividing to find 1% and then multiplying by 100 to find 100%.

We can also do this without a calculator by using factors of the percentage we have been given.

Sometimes we are given a percentage of an amount and we need to work out what the original value was.

We need to remember that the **original amount is 100%** of the value

Eg. 30% of a Number is 150. What was the original Number

$$30\% = 150$$

$$1\% = 5$$

$$100\% = 500$$

Multipliers

It is important that you are familiar with how to calculate multipliers to increase and decrease amounts.

To find a multiplier to increase an amount, add 100% to your percentage and convert to a decimal.

To find a multiplier to decrease an amount, subtract your percentage from 100% and convert to a decimal.

Eg. a car costs £15300 after a 2% increase, how much did it cost before the increase?

The multiplier for a 2% increase is **1.02**, so

$$\text{Original Amount} \times 1.02 = 15300$$

So dividing **15300** by **1.02** gives us the original amount **£15000**

Concept – what it is

Working Back From a Sale Price

A dress has 20% off and is on sale for £44. How much did it originally cost?

Method 1 – Working to 100%

$$100\% - 20\% = 80\%$$

$$80\% = £44$$

$$1\% = £0.55$$

$$100\% = £55$$

Method 2 – Divide by a Multiplier

$$100\% - 20\% = 80\% = 0.8$$

$$\text{Original amount} \times 0.8 = 44$$

$$\text{So } 44/0.8 = \text{original amount}$$

$$\text{Original amount} = £55$$

Standard Examples

Working Back From a Total Including Interest

If I have £1377 in the bank after receiving 2% interest, how much did I have before?

Method 1 - Working to 100%

$$100\% + 2\% = 102\%$$

$$102\% = £1377$$

$$1\% = £13.50$$

$$100\% = £1350$$

Method 2 Divide by a Multiplier

$$100\% + 2\% = 102\% = 1.02$$

$$\text{Original amount} \times 1.02 = 1377$$

$$\text{So } 1377/1.02 = \text{original amount}$$

$$\text{Original amount} = £1350$$

Non-Concept – what it isn't

Common Errors Include:-

Multiplying by the increase multiplier instead of dividing by the decrease multiplier.

Multiplying by the decrease multiplier instead of dividing by the increase multiplier.

Working forwards another year by multiplying by the multiplier instead of dividing.

Using the percentage instead of the multiplier in the calculation.

Assuming the answer must be wrong when dividing by an amount less than one gives an answer higher than the original amount.

Non-Standard Examples

Examples Involving Compound Interest

My car has been depreciating for 3 years at a rate of 25% and is currently worth £5062.50. How much did it cost?

The multiplier will be

$$100\% - 25\% = 75\% = 0.75$$

so

$$5062.50 = \text{original amount} \times 0.75^3$$

$$5062.50/0.75^3 = \text{original amount}$$

$$£12000 = \text{original amount}$$

8.14: Reverse Percentages

The learning outcomes for this topic are:

- Calculate missing value problems by using inverses
- Calculate an amount from a given percentage value. e.g. 20% of x is 5, what is x?
- Calculate the initial amount before a percentage increase
- Calculate the initial amount before a percentage decrease
- Solve a reverse percentage word problem
- Solve reverse percentage problems involving multiple percentage changes



Useful Formulae and Hints

To find an increase multiplier (for interest calculations), add your percentage to 100% before converting to a decimal.

To find a decrease multiplier (for depreciation calculations), subtract your percentage from 100% before converting to a decimal.

For questions where an amount or score is worth a certain percentage, find one percent and then multiply up to find 100% (the whole amount).

If there is a common factor between the percentage you know and 100%, you can use this as a 'stepping stone' to simplify your calculations.

If a percentage has been added on or taken off, check carefully so you know if you are supposed to give the original amount or the new one.

GCSE Questions

2. Jacob answered 80% of the questions in a test correctly. He answered 32 of the questions correctly.

Work out the total number of questions in the test.

.....
(Total 3 marks)

3. In a sale, normal prices are reduced by 15%. The sale price of a CD player is £102

Work out the normal price of the CD player.

£.....
(Total 3 marks)

7. The price of all rail season tickets to London increased by 4%.

- (a) The price of a rail season ticket from Cambridge to London increased by £121.60
Work out the price before this increase.

£
(2)

- (b) After the increase, the price of a rail season ticket from Brighton to London was £2828.80
Work out the price before this increase.

£
(3)
(Total 5 marks)

8.15: Solving linear equations and basic inequalities

The learning outcomes for this topic are:

- Solve single step equations
- Solve single step inequalities
- Solve two step equations
- Solve two step inequalities
- Solve equations involving negative unknowns
- Solve equations with unknowns on both sides

Key Word	Definition
Equation	A formula stating that two expressions are equal
Linear	A function where the graph would be a straight line
Inequality	A relationship between expressions which are not equal
Positive	A number with a value greater than zero
Negative	A number with a value less than zero
Coefficient	A number used to multiply a variable
Unknown	A number we do not yet know
Variable	A symbol for a number we do not yet know
Solution	A set of one or more values which make an equation true

Careers Focus – Where could this take you?

Managers in a variety of fields are required to use linear equations to calculate measurements, make purchases, evaluate raises and determine how many employees are required to complete specific jobs.



Additional Resources

MathsWatch: [A12](#), [A17](#), [A19b](#)

CorbettMaths: Videos [110](#), [113](#), [178](#), [179](#) Worksheets [110](#), [113](#), [178](#), [179](#)

Curriculum Links - Coherence

Required Knowledge:

- 7:10 Collecting Like Terms and expanding single Brackets
- 7:11 Simplifying after Expanding and Factorising Single Brackets
- 7:12 Substitution and Using and Writing Formulae

Applied to:

- 8:16 Setting up and Solving Equations with Variables on Both Sides
- 9F:16 Basic Algebra, Substitution, Expanding Brackets, Factorising
- 9H20 Basic Algebra, Factorisation, Quadratic Expansion, Expanding Squares

Links across school: solving equations in physics relating to motion or in chemistry relating to chemicals used in reactions.

Key Concepts

Inverse Operations

Ensure you are familiar with your inverse operations
Eg. Addition is the inverse of Subtraction and multiplication is the inverse of division

1 Step Equations

Eg. $x + 3 = 6$
Perform the inverse of +3 to both sides.

$$x + 3 - 3 = 6 - 3$$

So

$$x = 3$$

Eg. $x/3 = 4$
Perform the inverse of divide by 3 to both sides

$$x/3 \times 3 = 4 \times 3$$

$$x = 12$$

2 Step Equations

Eg $2y - 4 = 14$
Try to work out what has happened to the y to form the expression on the left and then work in reverse using your inverse operations.

The y has been multiplied by 2 and then had 4 subtracted from it, so the first step will be to add 4 to both sides before dividing both sides by 2.

$$2y - 4 + 4 = 14 + 4$$

$$2y = 18$$

$$2y/2 = 18/2$$

$$y = 9$$

Inequalities

Treat in the same way as an equation, but remember to leave the inequality sign in your answer.

Unknowns on both sides

Remove smallest value of 'x' from which ever side it is on and then proceed as with the 2 step equations above

Concept – what it is

Inequalities

Eg. $3m + 7 \leq 25$

Remove the + 7 from both sides

$$3m + 7 - 7 \leq 25 - 7$$

$$3m \leq 18$$

Remove the x 3 from both sides

$$3m/3 \leq 18/3$$

$$m \leq 6$$

Make sure you leave the inequality sign in the answer.

Standard Examples

Unknowns on Both Sides

Eg. $3w + 5 = 5w + 11$

Remove the smallest value of w from both sides

$$3w - 3w + 5 = 5w - 3w + 11$$

$$5 = 2w + 11$$

Subtract 11 from both sides

$$5 - 11 = 2w + 11 - 11$$

$$-6 = 2w$$

Divide both sides by 2

$$-6/2 = 2w/2$$

$$-3 = w$$

Non-Concept – what it isn't

Common errors include:-

Using the same operation instead of the inverse to remove part of the expression eg adding 3 to both sides to remove a '+3' term.

Making things harder for yourself by removing the larger value of 'x' when you have unknowns on both sides. This means you will have a negative x term to deal with later.

Finishing an inequality with an = sign on the last line.

Trying to remove the wrong part of a two-step equation first.

Non-Standard Examples

Forming Equations

Eg. A triangle has angles 3x, x + 40 and 2x - 10, what is the size of the biggest angle?

The total of the 3 angles is 180 degrees, so

$$3x + x + 40 + 2x - 10 = 180, \text{ so}$$

$$6x + 30 = 180$$

$$6x = 150$$

$$x = 25$$

Substitute 25 back into the expressions

$$3x = 75$$

$$x + 40 = 65$$

$$2x - 10 = 40$$

So the biggest angle is 75 degrees.

8.15: Solving linear equations and basic inequalities

The learning outcomes for this topic are:

- Solve single step equations
- Solve single step inequalities
- Solve two step equations

- Solve two step inequalities
- Solve equations involving negative unknowns
- Solve equations with unknowns on both sides



Useful Formulae and Hints

Know your inverse operations
Add : Subtract
Multiply : Divide

Where only one step is needed, use your inverse operations to reduce the coefficient of the unknown to 1 and solve the equation.

When two or more steps are required, try to talk through in your head what has happened to the unknown to form the expression and then work backwards using your inverse operations.

Use a new line for each step when solving equations.

When you have unknowns on both sides, choose the side with the highest coefficient of the unknown and subtract the other coefficient from both sides as a first step. This should leave you with an equation that you can solve.

GCSE Questions

1. (a) Solve $2y = 8$

$y = \dots\dots\dots$
(1)

(b) Solve $t - 4 = 7$

$t = \dots\dots\dots$
(1)

(c) Solve $\frac{x}{4} = 3$

$x = \dots\dots\dots$
(1)
(3 marks)

7. (a) Solve $4x + 1 = 9$

$x = \dots\dots\dots$
(2)

(b) Solve $2x - 5 = 4$

$x = \dots\dots\dots$
(2)

(c) Solve $2y - 1 = 12$

$y = \dots\dots\dots$
(2)
(6 marks)

8. (a) Solve $4x + 1 = 19$

$x = \dots\dots\dots$
(2)

(b) Solve $4x + 3 = 19$

$x = \dots\dots\dots$
(2)

(c) Solve $2q + 7 = 1$

$q = \dots\dots\dots$
(2)
(6 marks)

11. Solve $13x + 1 = 11x + 9$

$x = \dots\dots\dots$
(3 marks)

8.16: Setting up and solving equations with unknowns on both sides

The learning outcomes for this topic are:

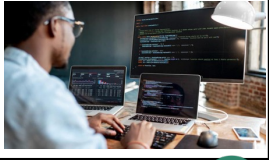
- Identify difference between algebraic terminology; expression, term, equation, formula, identity
- Set up and solve equations involving just addition or subtraction
- Set up and solve equations involving coefficients greater than one

- Set up equations from shape diagrams, e.g. perimeter, area
- Solve equations with fractional or decimal solutions
- Use angle facts to set up and solve equations

Key Word	Definition
Equation	A formula stating that two expressions are equal
Linear	A function where the graph would be a straight line
Positive	A number with a value greater than zero
Negative	A number with a value less than zero
Coefficient	A number used to multiply a variable
Unknown	A number we do not yet know
Variable	A symbol for a number we do not yet know
Solution	A set of one or more values which make an equation true
Constant	A value which never changes in an expression

Careers Focus – Where could this take you?

I am a **Computer Programmer** – Computer programmers must be able to solve linear equations. Linear equations are used within software applications, on websites and security settings, which must be programmed by a computer programmer.



Additional Resources

MathsWatch: [A12](#), [A17](#), [A19b](#)

CorbettMaths: Videos [16](#), [114](#), [115](#) Worksheets [16](#), [114](#), [115](#), [116b](#)

Curriculum Links - Coherence

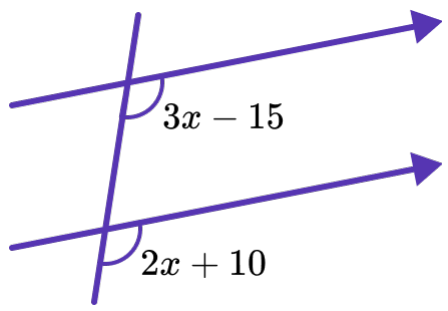
Required Knowledge:
 8:15 Solving Linear Equations and Basic Inequalities
 7:10 Collecting Like Terms and expanding single Brackets
 7:11 Simplifying after Expanding and Factorising Single Brackets
 7:12 Substitution and Using and Writing Formulae

Applied to:
 8:17 Linear Equations with Brackets and Fractions
 8:18 Rearranging Formulae
 9F:16 Basic Algebra, Substitution, Expanding Brackets, Factorising
 9H20 Basic Algebra, Factorisation, Quadratic Expansion, Expanding Squares

Links across school: solving equations in physics relating to motion or in chemistry relating to chemicals used in reactions.

Key Concepts

Sometimes we need to set up our own equations to solve. In the following example, we know the two angles are equal, so we can say that the two expressions must be equal.



So we can say:-

$$3x - 15 = 2x + 10$$

To make the steps as simple as possible later on, it is always easier to try to remove the smallest value of 'x'. This would be the '2x' on the right hand side. As we have to ensure we do the same to both sides to keep things in balance, we also have to subtract '2x' from the left hand side.

$$3x - 2x - 15 = 2x - 2x + 10$$

And simplifying gives

$$x - 15 = 10$$

Add 15 to both sides gives

$$x = 25$$

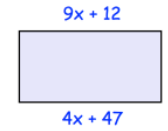
Don't forget to ensure that you have fully answered the question, which is likely to be to find the size of the two angles. Substituting the x-value of 25 into either expression will give the solution.

$$3 \times 25 - 15 = 60 \text{ or}$$

$$2 \times 25 + 10 = 60$$

Concept – what it is

This type of question involves using facts that we know to be true for numbers and transferring that knowledge to expressions. For example, we know that opposite sides of a rectangle are equal, so if we are given 2 expressions for the opposite sides, we know that they must also be equal.



$$9x + 12 = 4x + 47$$

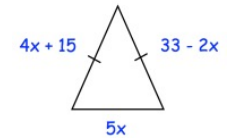
$$5x + 12 = 47$$

$$5x = 35$$

$$x = 7 \text{ (length of side} = 75)$$

Standard Examples

Find the perimeter of the triangle



As the triangle is isosceles, the left and right sides are equal.

$$4x + 15 = 33 - 2x$$

The smallest value of 'x' is the -2x, so adding 2x to both sides will remove it.

$$6x + 15 = 33$$

$$6x = 18$$

$$x = 3$$

The perimeter is the total of the sides

$$4x + 15 + 33 - 2x + 5x$$

$$= 7x + 48$$

So the perimeter is

$$7 \times 3 + 48 = 69$$

Non-Concept – what it isn't

Where a question asks you to find an angle or a side length, these should always be worked out algebraically, never measured with a protractor or ruler, as diagrams are unlikely to be drawn accurately.

Making things harder for yourself by removing the larger value of 'x' when you have unknowns on both sides. This means you will have a negative x term to deal with later on.

Leaving questions part finished by stopping when you have solved for x when they may have asked you to use the x to find a total angle or maybe a perimeter or area of a shape.

Non-Standard Examples

A typical non-standard example may have brackets on one or both sides, or like the following one, you may have to transform the expression into an expression with brackets on both sides.

Solve

$$\frac{3x + 7}{9} = \frac{-9x - 5}{5}$$

Multiplying both sides by 45 (9x5) gives:-
 $5(3x + 7) = 9(-9x - 5)$

As we have x's on both sides, the only method to use here would be to multiply out the brackets.

$$15x + 35 = -81x - 45$$

Add 81x to both sides

$$96x + 35 = -45$$

$$96x = -80$$

$$x = -80/96 \text{ or } -5/6$$

8.16: Setting up and solving equations with unknowns on both sides

The learning outcomes for this topic are:

- Identify difference between algebraic terminology; expression, term, equation, formula, identity
- Set up and solve equations involving just addition or subtraction
- Set up and solve equations involving coefficients greater than one

- Set up equations from shape diagrams, e.g. perimeter, area
- Solve equations with fractional or decimal solutions
- Use angle facts to set up and solve equations



Useful Formulae and Hints

Where a numerical perimeter is given, sum the sides algebraically and simplify. Form and solve the equation with this algebraic sum on one side and the numerical total on the other.

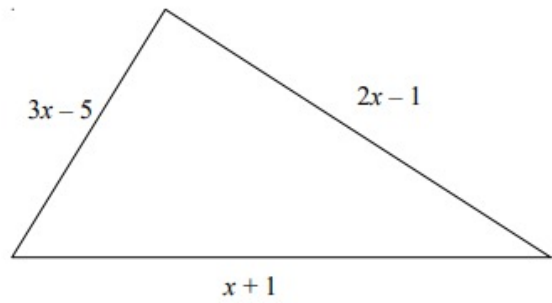
Look for clues on how to start questions. With rectangles, opposite sides are the same length, so the algebraic expressions for their lengths can be set as equal to each other, forming an equation which can be solved.

If a question involves angles, remember around a point, they sum to 360 degrees and on a straight line they sum to 180 degrees. Sum the algebraic expressions, simplify and set this equal to 180 or 360 depending on which type of diagram you have. This will give you an equation to solve.

Read the question carefully though, as finding 'x' might not be the end of the problem and you might need to substitute this back in to find a side length or angle.

GCSE Questions

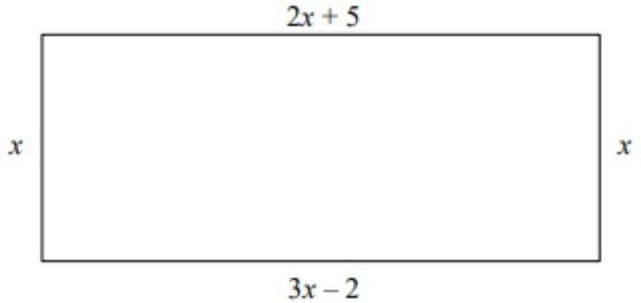
1 The lengths, in cm, of the sides of a triangle are $3x - 5$, $2x - 1$ and $x + 1$



(a) Write down an expression, in terms of x , for the perimeter of the triangle.
The perimeter of the triangle is 31 cm.

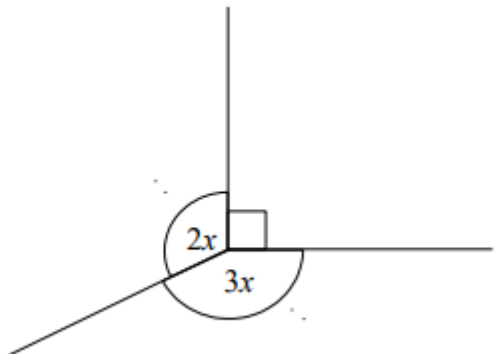
(b) Work out the value of x .

6 The diagram shows a rectangle. All measurements are in centimetres.



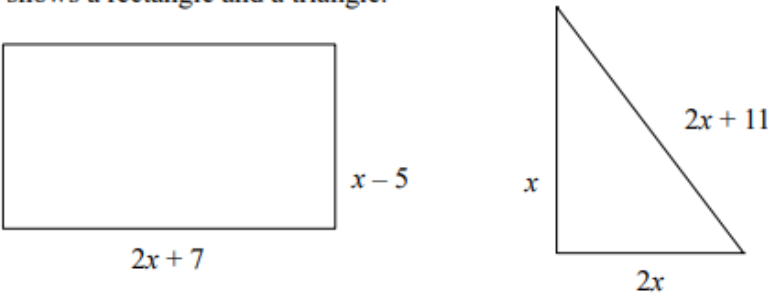
Find the perimeter of the rectangle.

3



Find the value of x .

7 The diagram shows a rectangle and a triangle.



The perimeter of the rectangle is equal to the perimeter of the triangle. Find the value of x .

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.

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

- To show understanding of a range of text and its context
- To analyse language and viewpoint and evaluate the effectiveness of texts
- To communicate clearly and effectively in a range of different non-fiction forms

Keyword	Definition
Identify	Verb - establish or indicate who or what (someone or something) is.
Device	Noun - a plan, method, or trick with a particular aim.
Analyse	Verb - examine (something) methodically and in detail, typically in order to explain and interpret it.
Evaluate	Verb - to judge or calculate the quality, importance, amount, or value of something
Justify	Verb - to give or to explain the reason for
Explain	Verb - to make something clear or easy to understand by describing or giving information about it:
Support	Verb - to help to show something to be true
Infer	Verb - to form an opinion or guess that something is true because of the information that you have
Statement	Noun - A statement is a sentence that expresses an idea or opinion.
Zoom	Verb - to focus on a specific detail.
Objectivity	Noun - the fact of being based on facts and not influenced by personal beliefs or feelings
Subjectivity	Noun - the influence of personal beliefs or feelings, rather than facts
Compare	Verb - to look for differences and similarities between two things
Decoding	To analyse or interpret language

Key Concepts

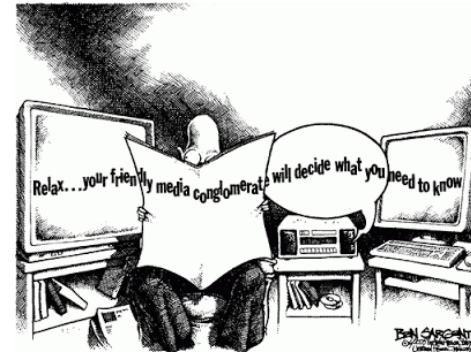
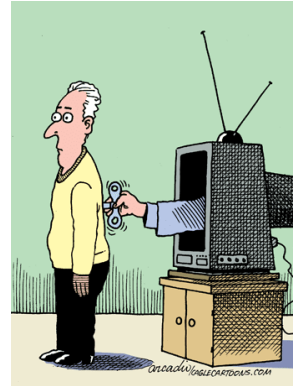
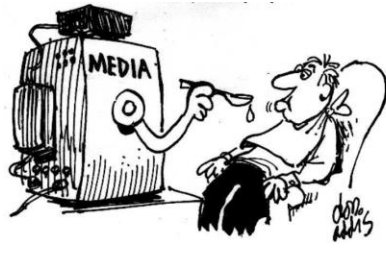
The Power of Images in the Media

Denotations – the literal or primary meaning of a word, image in contrast to the feelings or ideas that the word/image suggests.

Connotations – an idea or feeling a word/image invokes for a person in addition to its literal or primary meaning.


What can you denotate and connotate from the three images below?

In the image to the right, you can see all the different ways media is represented in the media in the current day; you can also see the hands of people working in different areas of the media. The image is colourful and therefore comes across as a positive sell of the media and that it is an ever-growing network.



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

- To show understanding of a range of text and its context
- To analyse language and viewpoint and evaluate the effectiveness of texts
- To communicate clearly and effectively in a range of different non-fiction forms

Retrieval Practice 	
Questions	Answers
What is truth?	A provable fact.
What is a summary?	A concise piece of writing that highlights the key points or views in a text.
How do you identify language features?	These are the words and phrases that cause a reaction in you. This can be emotional, thoughtful or simply making you notice something.
How does the writer use language?	They use it to create an effect on you, the story or a character.
How do the writers show their viewpoint?	Look for adjectives that show a bias or emotion such as: horrid, ugly, gorgeous, splendid. Also look for: exaggeration, emphasis, repetition, which help focus a reader on the point being made.
Compare how the writers express their viewpoints about ...?	In source A, Pleasant begins to talk about how this views of the supernatural are shaped by the ghost-hunter interviews. He begins by using adjectives such as 'ghostly' and 'terrifying' but then confirms his disbelief by putting the word 'music' in inverted commas, and describing the strange occurrences with the humorous word, 'performances' suggesting artificiality. This is different to the introduction of Source B where the writer includes a semantic field of honest, not only in the introduction, but throughout the extract. Words such as 'trustworthy...knowledge...truthfulness' are used to support that she really believes these strange experiences were caused by the supernatural.
Why does the writer focus on crime and punishment?	The writer is responding to events from their own life. In this case, Dickens was exposed to the cruelty of the legal system very early when his father was imprisoned for non-payment of debt. His experiences following this showed him the hypocrisy of Victorian society.
What non-fiction texts could you write?	You could write: a letter, an article, a speech, an editorial, an advice guide or an information leaflet.

Career Focus - Where could this take you?



I am an archivist. I preserve information and make it accessible to users, increasingly in digital format. Archives may include valuable historical books, papers, maps and plans, as well as photographs, prints, films, tapes, videos and computer-generated records. Users include researchers, academics, other professional staff and the general public.

Challenge Activities

Using two articles from a website or newspaper apply the following questions:

- 1) Find four true facts about either the situation, place or person.
 - 2) Summarise the viewpoint of the writer from two related articles.
 - 3) How does the writer use language to show a mood, opinion or effect of/on a situation?
 - 4) Compare how the writers express their viewpoints about their shared topic.
- 5a) Write an article about an event which has taken place at Newsome Academy.
5b) Write a letter to your local MP about an improvement to your local community.
5c) Draw an image which connotes a powerful educational message

Topic Links

This topic links to:

- Science: inventions and discoveries, scientific method
- Maths: percentages and interest calculations
- Geography: migration
- Languages: festivals and celebrations, media
- History: Industrial revolution
- RE: morals and community

Additional Resources

To further practise and develop your knowledge see:

- Century Tech
- Revision booklet click [here](#)
- [The Guardian newspaper online](#)



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.

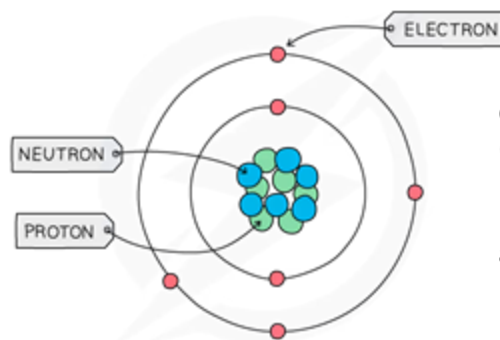
The learning outcomes for this topic are:

- 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.

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

Number of protons + neutrons

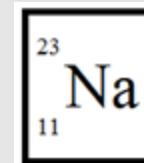
mass number → 4

atomic number → 2

Number of protons

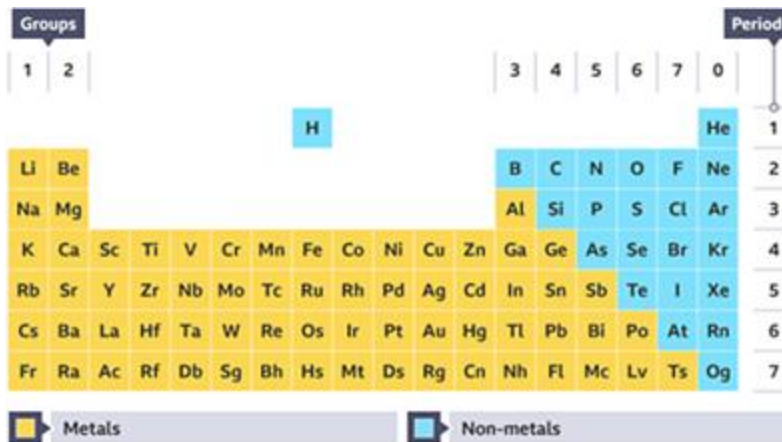


Worked example (sodium):

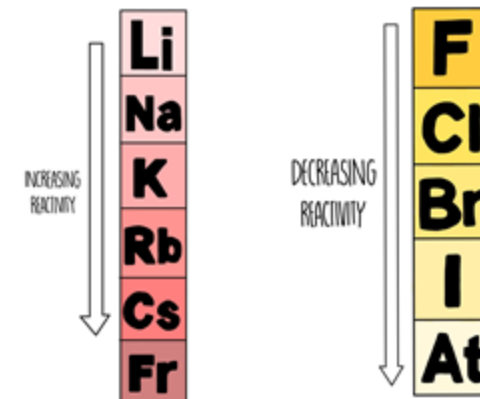


Protons = 11
Neutrons = 23 - 11 = 12
Electrons = 11

Periodic Table



Alkali Metals and Halogens



- 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

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 other science topics such as:

- Bonding
- States of matter
- Radiation
- Chemical reactions

Additional Resources



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>

The learning outcomes for this topic are

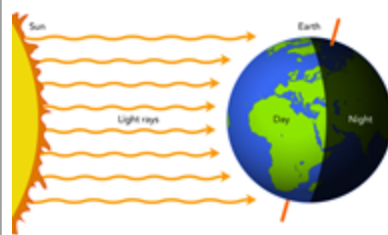
- describe how day, night and seasons occur
- describe the solar system and explain the origins of the universe

- 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

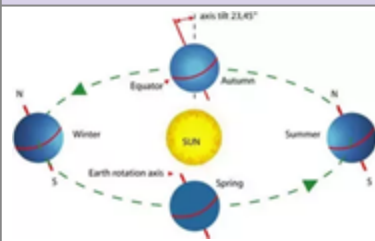
Key Concepts

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



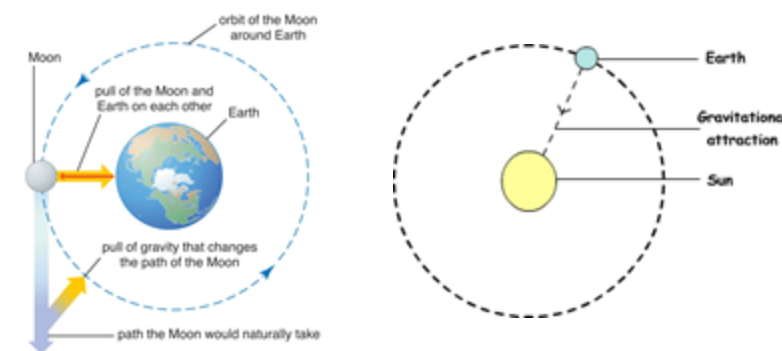
The Earth orbits the Sun once every 365 days. The Earth's axis is tipped over in space. In Britain we get different seasons because sometimes we are tilted towards the Sun and sometimes away.

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.

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.

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)

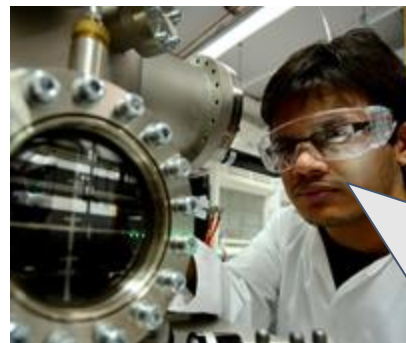
- describe how day, night and seasons occur
- describe the solar system and explain the origins of the universe
- explain the difference between weight and mass
- calculate weight using mass and gravity

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 Gravity

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 all scientific topics such as

- Energy
- Waves (sound and light)

We will also be practising how to

- Use equations
- Use descriptive words to compare planets

Additional Resources




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>

The learning outcomes for this topic are to:

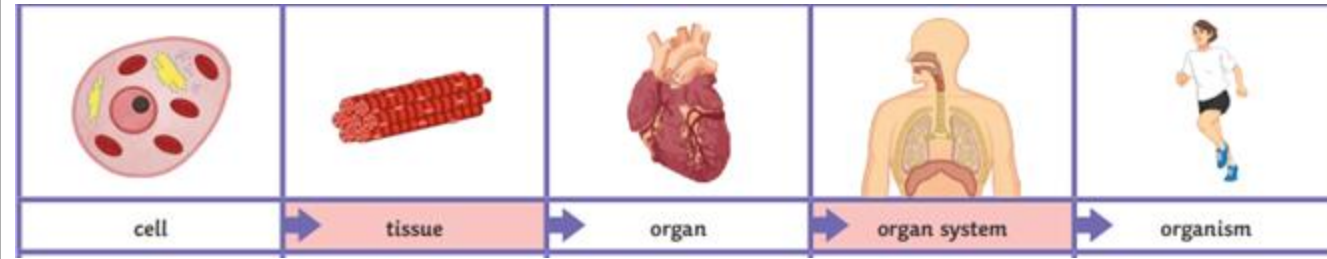
- Recall the principles of organisation
- Describe how the digestive system works

- Explain how enzymes work
- Describe how the breathing system works
- Describe how the circulatory system works

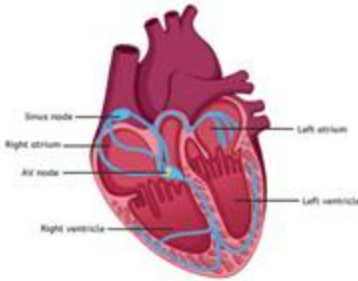
- Describe heart disease
- Explain how lifestyle choices can affect health

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.

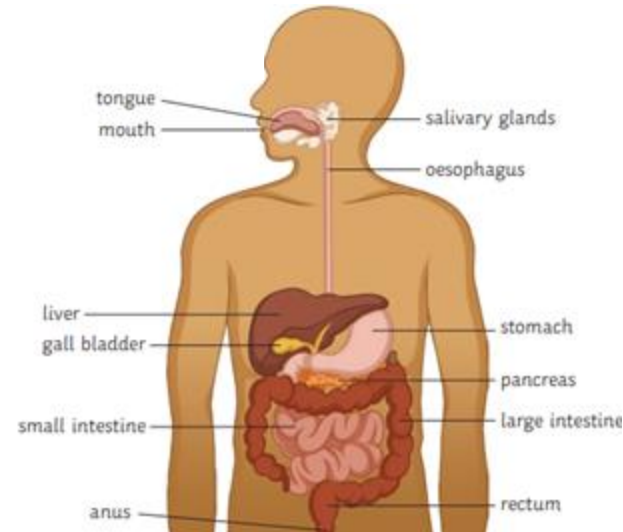
Principles of Organisation



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.

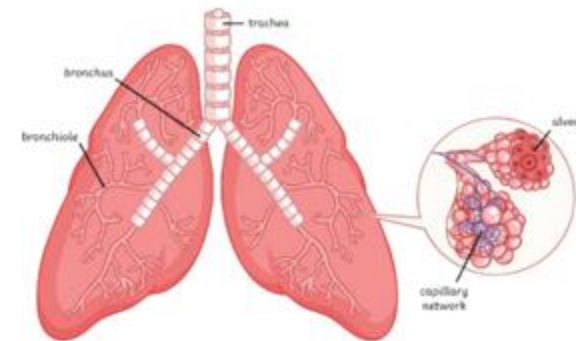
Enzymes



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.



The learning outcomes for this topic are to:

- 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

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 other science topics such as

- Cells
- Energy

We will also be practising how to

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

Additional Resources



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

YouTube Cognito -

- <https://www.youtube.com/watch?v=VO2QkpwAG9o>
- <https://www.youtube.com/watch?v=vMl46qGQMDw>
- <https://www.youtube.com/watch?v=6jz9WvfKDVc>
- <https://www.youtube.com/watch?v=UN5BIPfMUkg>

Keyword	Definition
Sound wave	A vibration that travels through a medium such as a gas, liquid or solid.
Longitudinal wave	When a wave moves in parallel to the direction that the wave travels.
Amplitude	Maximum distance a wave varies from its rest position.
Wavelength	The distance from two corresponding (or the same) parts of a wave.
Frequency	How many waves can pass a given point per second, measured in Hertz (Hz)
Compression	The part of a longitudinal wave where the particles of the medium are close together.
Rarefaction	The part of a longitudinal wave where the particles of the medium are farther apart.
Transparent	When all of the light can pass through.
Translucent	When only some of the light can pass through.
Opaque	When all the light cannot pass through because it is absorbed or reflected.
Reflection	When light bounces off a surface. The angle of reflection is always the same as the angle of incidence.
Refraction	When light passes through a material of different density and changes direction.
Electromagnetic spectrum	A continuous spectrum of waves with different wavelengths, frequencies and uses.

Key Concepts

Light

Light travels as waves. These are transverse waves, like ripples in water. The direction of vibration in the waves is at 90° to the direction that the light travels. Unlike sound waves, light waves can travel through a vacuum – they do not need a substance to travel through.

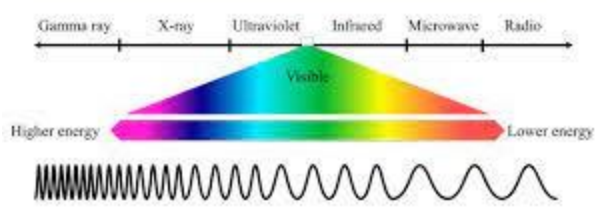
Light can pass straight through transparent materials like water and glass.

Translucent materials allow some light to pass through them. For example, ice and tracing paper.

Opaque materials are substances which light cannot pass through, like stone, metal or wood.

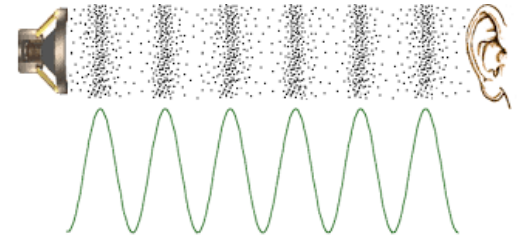
The Law of Reflection - The angle the ray is reflected is always the same as the angle the light hits the mirror, with both angles being measured from the normal.

Electromagnetic Spectrum



Sound

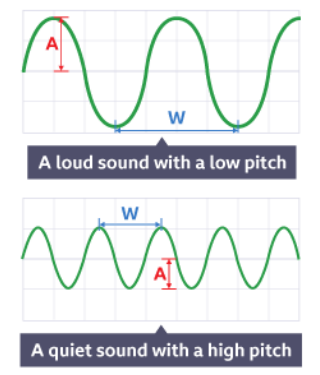
When something shakes, scientists call it a vibration. All sounds are made by something that is shaking or vibrating. When there is a sound wave, the air particles don't travel directly from the object making the sound to your ear. Sound waves are vibrations being passed on between particles.



The air particles start vibrating and push on the air particles next to them, so the vibrations are passed on. The particle moves one way and then moves back in the opposite direction, so ends up back where it started. The particles vibrate in the same direction as the wave travels. Sound is an example of a longitudinal wave.

Wave Traces

To record or analyse a sound, scientists and musicians use a microphone to turn the sound into an electrical signal. The electrical signal can then be displayed on a device called an oscilloscope and it produces a graph called a wave trace.



Wave traces appear on an oscilloscope graph as a transverse wave, but it is important to remember that because they are a sound, they are actually a longitudinal wave.



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

- Describe light and sound waves
- Draw wave diagrams

- Explain reflection and refraction
- Calculate the angle of reflection and refraction



Retrieval Practice	
Questions	Answers
What is a sound wave?	Energy that travels through matter.
How are sound waves made?	When an object vibrates.
What is a longitudinal wave?	A wave that oscillates (moves) parallel to the wave (in the same direction that it travels).
Sound waves have areas of compression. What does this mean?	Regions where particles are close together.
Sound waves have areas of rarefaction. What does this mean?	Regions where particles are spread out.
What does the amplitude of a sound wave show?	The loudness.
What does the frequency of a sound wave show?	The pitch of a sound.
What is frequency measured in?	Hertz.
How does light travel?	In straight lines (transverse wave) at right angles to the direction of travel
What is a transverse wave?	A wave that oscillates (moves) at right angles to the direction of travel.
What is the law of reflection?	The angle of incidence is the same as the angle of reflection.
Define refraction.	When light waves change direction when going through a material with a different density.
What happens when light passes through a more dense material?	It slows down and changes direction (angle of incidence decreases towards the normal).

Career Focus - Where could this take you?



I am a lighting technician. I setup and operate lighting for concerts, conferences, theatres as well as sometimes working on film and TV sets. My day-to-day tasks include interpreting designers plans, running wires, health and safety plans, taking cues from directors, checking equipment and putting it away. I need a variety of skills such as ability to stay calm under stress, attention to detail, understanding of machines and tools, leadership skills and ability to use computers. There are several routes into a career as a lighting technician such as university courses, volunteering, college courses and apprenticeships.

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. Describe and explain what happens when a light ray is shone at a mirror, a glass block and a prism.
4. Research the electromagnetic spectrum; name the waves and give a use for each.
5. Find out about a famous scientist that helped us understanding more about light or sound and list their findings.

Topic Links



This topic links to:

- Energy
- Space
- Organisation

We will also be practising how to

- Draw ray diagrams
- Measure angle using a protractor
- Construct an argument using evidence/data

Additional Resources



To further practise and develop your knowledge see:

Educa ke - <https://www.educake.co.uk/>
 BBC Bitesize - <https://www.bbc.co.uk/bitesize/topics/zw982hv>
 YouTube Cognito - <https://www.youtube.com/watch?v=aCu4VRKMstA>



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

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

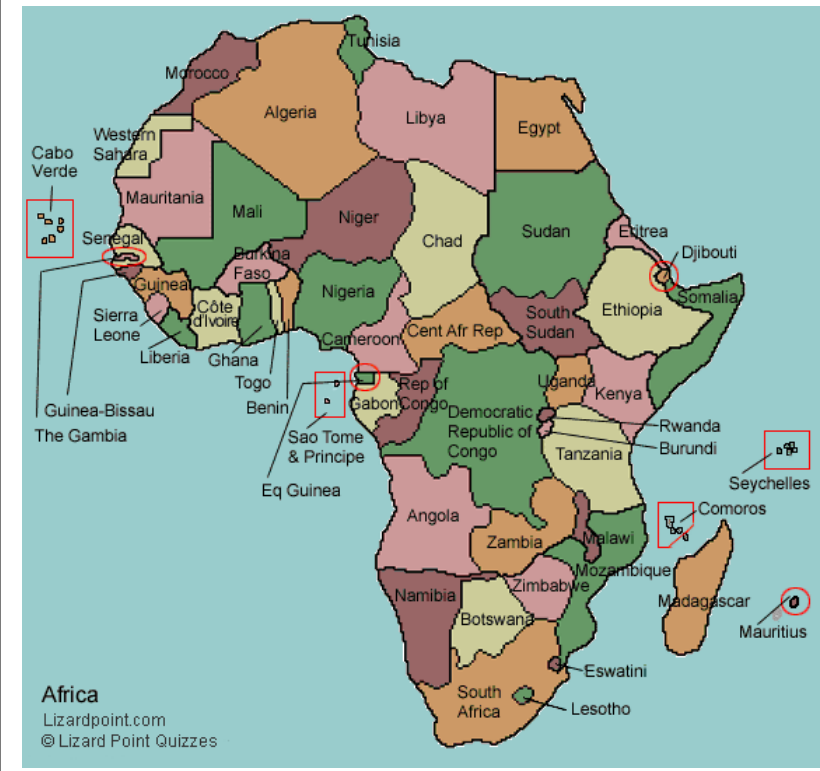
- Describe Africa as the world's second biggest continent (by area, countries and population)
- Describe Africa's history, from the time the Europeans first arrived
- Describe Africa's many varied physical features

- Explain how the population of Africa is distributed and recognise that nearly half of Africa's population live in poverty
- To explain what Africa is like today
- Identify and define Africa's 4 main biomes

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

Key Concepts

Africa is a continent and it has 54 countries



The continents by land area

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

Africa's natural wealth

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



History

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

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

- Describe Africa as the world's second biggest continent (by area, countries and population)
- Describe Africa's history, from the time the Europeans first arrived

- Explain how the population of Africa is distribute recognise that nearly half of Africa's population live in poverty
- To explain what Africa is like today
- Describe Africa's many varied physical features
- Identify and define Africa's 4 main biomes

Key Concepts



Africa's Population Distribution

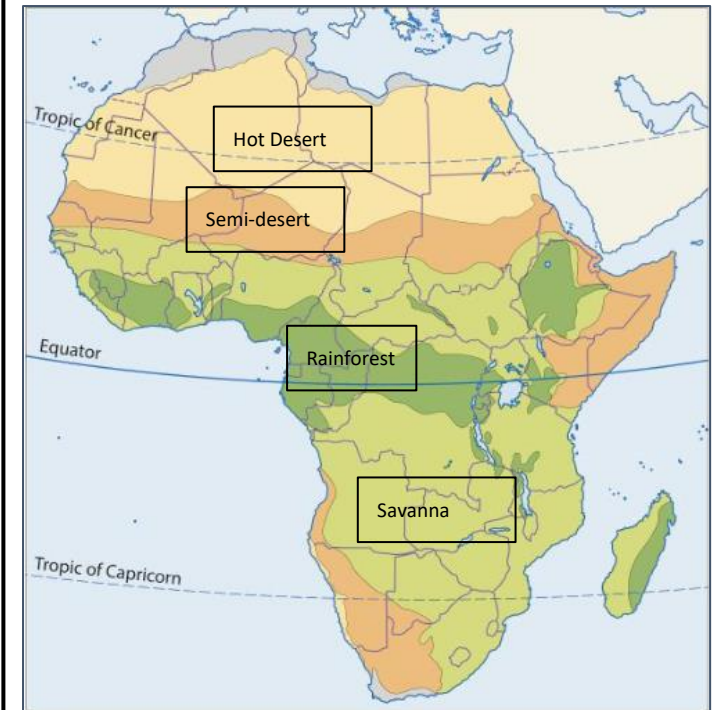


Key	
Population density people per square kilometre	Major cities population in millions
over 100	over 3
10-100	1-3
1-10	0.5-1
under 1	0.1-0.5

Africa's Physical Features



Africa's Biomes



Semi-desert

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

Hot desert

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

Biomes

Savanna

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

Rainforest

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

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

- Describe Africa as the world's second biggest continent (by area, countries and population)
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- To explain what Africa is like today
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- Identify and define Africa's 4 main biomes

Retrieval Practice



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

Career Focus - Ecologist



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



Challenge Activities

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

Topic Links



This topic links to themes in:

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

Additional Resources



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

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

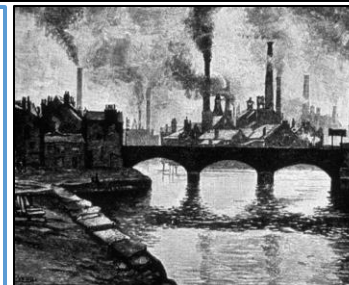


Keyword	Definition
Industrial Revolution	A time of great change in Britain between 1750 to 1900.
Population	Number of people living in a particular place.
Invention	Something new which is created - it can be an object or an idea.
Economy	System of how money is used within a particular country.
Agriculture	Process of producing food by farming of certain plants or raising animals.
Poverty	Lack of basic human needs such as clean water, nutrition, healthcare, education and shelter.
Industry	Process of making products by using machines and factories.
Factory	Place where machines are used to produce goods
Mass production	Production of many products in one go, e.g. textiles
Patent	Gives the inventor the right to exclude others from making, using or selling their invention for a certain time period.
Rural	Countryside living with not many houses or people.
Urban	Towns and cities where many people live and work.
Orphan	A child who has lost both parents.
Apprentice	A young person who works for someone in order to learn their skill.
Parliament	Lawmaking group, in the UK government.

Key Concepts

Industrial Changes Overview:

Britain was the leader of the Industrial Revolution and **1750 to 1900** saw major changes:
Transport moved from horse power to steam power.
Production moved from things being made in houses (domestic) to being made in **factories**. People moved from the **countryside** to the **city**. **Inventions** improved production in factories. Britain became the centre of the trading world.



Reasons for the Industrial Revolution:

Population increase = demand for more food and clothes.
 Clothes made quicker on machines = factories built.
 Use of coal for steam = power for machines.
 Transport gets quicker = easier to get goods to shops.
 Rise of key people = inventions and money invested in machines.
 All of this means more industrial change.



Changes in agriculture

1750 farms were still using medieval ways of planting crops and rearing animals. As population increased, new machines, crops and ways of farming were introduced, e.g. bigger animals and steam powered threshers for wheat. Small fields were replaced and hedges removed. This meant farm workers lost their jobs and many had to move to towns and cities.



Changes in population:

In 1750, the total population of the UK was about 11 million. This grew to about 42 million by 1900!
 Moving from rural to urban areas also saw a huge rise; in 1750, only 20% of the population lived in towns, but by 1900 it was 70%. This meant far more people were working in new industries but this also caused problems because they all needed food and homes. As a result, poverty increased, overcrowding was an issue and by 1900, London alone, had 4.5 million inhabitants.



The Steam Engine – 1717:

Thomas Newcomen invented the first steam engine. It would later be improved by James Watt which meant steam engines could replace water and horsepower in a wide variety of industries, which allowed more factories to be built.

Some inventions of the Industrial Revolution

The Water Frame - 1769:

Richard Arkwright invented a machine, powered by water, to spin cotton into yarn, quickly and easily. His machines did not need skilled operators so anybody could work on them.

The Locomotive – 1814:

Richard Trevithick was a pioneer in early steam engine technology. He developed a new high-pressure steam engine which could be used to reliably move goods and passengers. This invention made transport much easier and quicker.

Factory working conditions

Long working hours: Shifts were usually 12-14 hours a day, 6 days a week and sometimes half day on a Sunday.

Low wages: A typical wage for male workers was about 15 shillings (75p) a week, but women and children were paid much less, with children only receiving three shillings (15p). For this reason, employers preferred to employ women and children. An even better option was to take on an apprentice, as they didn't receive any wages, but were given lodgings, food and clothing instead.


Cruel discipline: People were beaten, whipped and hit with sticks or a leather strap. Other punishments included nailing children's ears to the table and dowsing them in water to keep them awake. Fines and not allowing toilet breaks were also common.

Accidents: Children crawling into dangerous, unguarded machinery led to many accidents including loss of limbs and death.

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

Retrieval Practice	
Questions	Answers
Explain how education changed between 1750 and 1900?	Education changed by the implementation of schools; schools were built near factories in order to encourage people to move to areas where there were factories.
Name one improvement in health and medicine in Britain by the 1900s:	The Industrial Revolution between 1750 and 1900 brought on major advances in medicine, especially in the fields of hygiene and vaccinations for previously deadly diseases.
Explain what is meant by the term 'raw materials'?	Raw materials are resources that are extracted from the earth in order to make products. They can also be taken from plants and animals.
Why was British industry so successful? Give two reasons.	The British Industry was successful because the bigger population meant more workers for the factories. Food became cheaper so people's diets improved so less people died. There were more people to buy the goods and to work, due to more raw materials, coal, iron clay, etc. industry could thrive. Improvements in transport, like, ships and the railway.
How did Richard Arkwright's waterframe help factories and production?	The water frame allowed for the mass production of cotton thread as it allowed production to be quicker and the thread stronger, which in turn led to the proliferation of factories and the rise of the industrial economy.
Tell me two ways you could become a child worker in the mills	You could become a child worker as if you were poor, you would be sold into it, or if your family lived in the housing on site of the factory you would work there after finishing school.
What job roles were children given in the mills? Give two examples	Children would be scavengers picking up material, thread and clearing dirt and dust, They could also work as piecers, who stood at the spinning machines and repaired broken thread
What were working conditions like in the mills and factories?	Long working hours, low wages, cruel discipline, fierce systems of fines, accidents, risks to health
How did the Factory Act of 1819 improve conditions in the mills?	No child under the age of nine to work. Children between the ages of nine and 13 years: 48-hour week; must go to school part-time. This Act applied to cotton factories. Once again there was no formal way to enforce this act as no inspectors were created to investigate factories
In your opinion, what was the most significant change during the Industrial Revolution in Britain and why?	I believe the most significant change was the invention of machines in factories to do the work of hand tools because it meant more items could be produced.

Career Focus - Where could this take you?



I am a Novelist: My job is to write books of fiction, and sometime non-fiction, creating characters and plots that may be imaginary or based on real events. I have to make sure I have researched the area I want to focus on and plan my ideas, plots and characters. I will then draft, write, edit and proof-read my work.

Challenge Activities

1. Research the History of local mills in Huddersfield or surrounding areas (within Kirklees, Calderdale and Bradford) and produce a PowerPoint to explain your findings. You must include key information about the mill then and now and include images.
2. Design a board game based around 'factory working conditions'. This should include clues, questions for players to ask, stumbling blocks along the way and then a puzzle to solve to find the winner.
3. Imagine it is the early 1800s; write a report to Parliament explaining why the working day and conditions for people in Britain are unfair. Especially highlight what needs to change for children working in the mills and factories.

Topic Links

This topic links to other humanities topics such as:

- The Slave Trade
- Jack the Ripper
- The making of the UK
- Twentieth Century World

We will also be practicing how to:

- Use statistical data as a source
- Write a piece of Historical Fiction

Additional Resources

To further practise and develop you knowledge see:

<https://www.calderdale.gov.uk/wtw/timeline/1810-1850/1810-1850-1.html>

<https://yorkshire.u08.eu/halifax/>

<https://yorkshire.u08.eu/huddersfield/>

https://huddersfield.exposed/wiki/Newsome_Mills_Hart_Road_Newsome



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

- List ways animals are used & justify the treatment of animals
- Use religions teachings & attitudes towards animals & speculate how they may respond to a group that protects animal rights

- Understand different attitudes to animal experimentation including religious & non-religious responses
- Explain & reflect on different viewpoints on the use & abuse of animals

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

Key Concepts

Animal rights

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

Islam

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

Christianity

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

Buddhism

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

Judaism

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

Hinduism

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

Sikhism

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





- List ways animals are used & justify the treatment of animals
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Key Concepts

The RSPCA

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



The Five Freedoms

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

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

Animal Welfare Labels UK



FREE RANGE

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

FACTORY FARMING

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

ANIMAL EXPERIMENTATION


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



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

Career Focus - Where could this take you?



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

Challenge Activities

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

Don't forget!
Point
Explain
Evidence (Quote)

Topic Links

This topic links to other RE topics such as:

- Islam
- Sikhism
- Buddhism

This topic links with other subjects such as:

- Science
- English

We will also be practising how to

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

Additional Resources

To further practise and develop your knowledge see:

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





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.

- Learn how to talk about their hobbies.
- Learn how to express simple preferences about TV and film
- Learn how to say what they did on a shopping trip.
- Recognise 3 tenses – past, present and future.
- Learn how to make arrangements to go to the cinema.



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

Key Concepts

Grammar - Present tense

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


Past tense

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

Normalement, hier et demain

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


Phonics and Vocabulary




quatre
4

qu

musique



équipe



les comédies (f)

les dessins (m) animés

les documentaires (m)

les feuilletons (m)

les infos (f)

les jeux (m) (télévisés)

les séries (f) (policières)

les émissions (f) de ...

cuisine

musique

science-fiction

sport

télé-réalité



c Code noir
un film d'action



d LA MAISON HANTÉE
un film d'horreur



a Quelle famille!
une comédie



b L'île magique
un film d'animation



e DYNAMO-X
un film de super-héros



- 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.

- Recognise 3 tenses – past, present and future.
- Learn how to make arrangements to go to the cinema

Retrieval Practice



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

Career Focus - Where could this take you?



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

Challenge Activities



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

Topic Links



- This topic links to:
- Sports and leisure.
 - Holidays (past tense).

Additional Resources



- To further practise and develop your knowledge see:
- Language nut
 - Active learn.



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

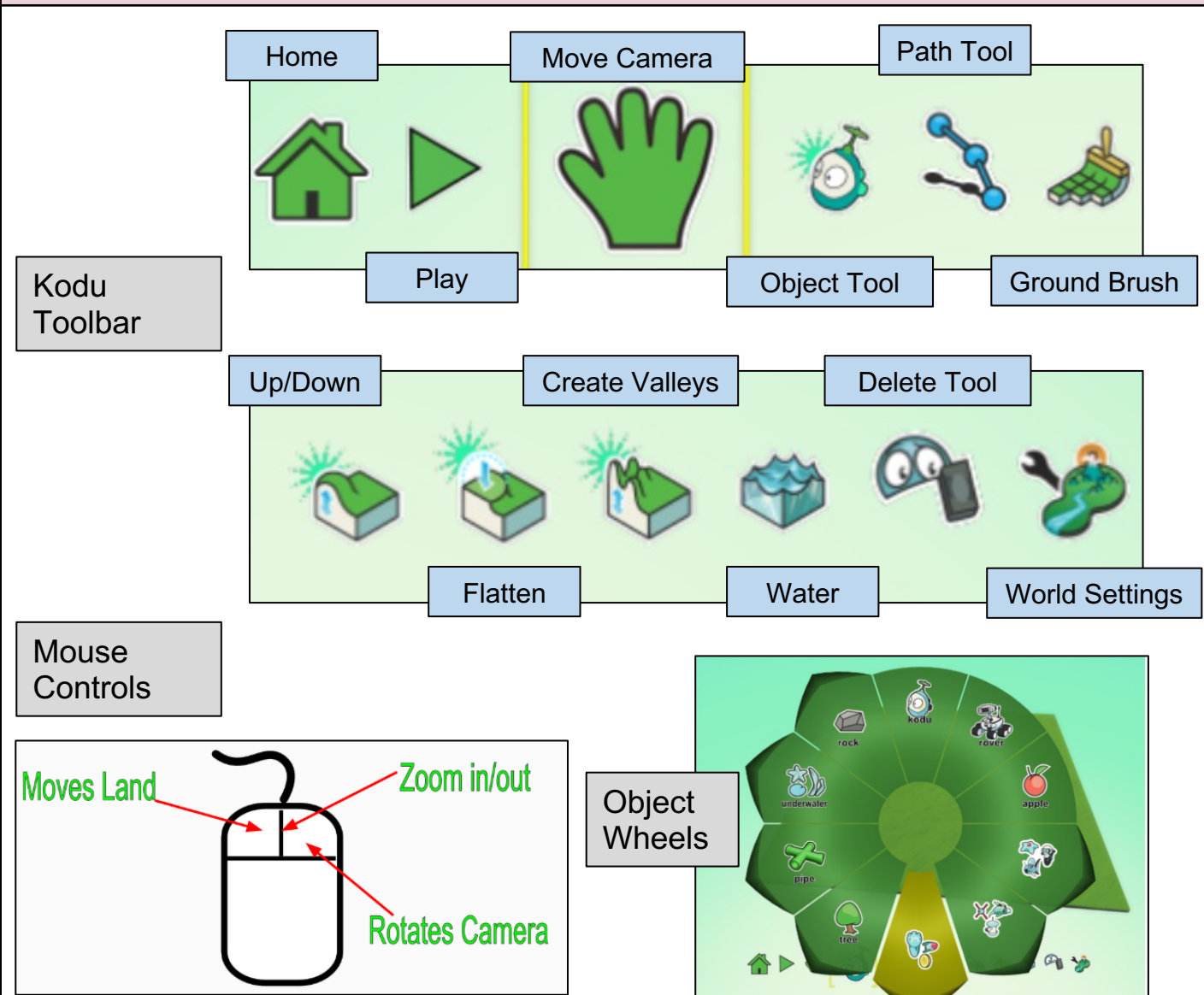


- Describe the Kodu tool bar
- Describe the meaning of a range of different tiles, rules and scripts in Kodu
- Describe the appropriate use of tiles, rules, scripts and settings in Kodu

- Evaluate the use of tiles, rules, scripts and settings used to create a range of games in Kodu
- Describe the definitions of some keywords in Kodu

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




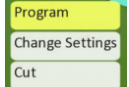


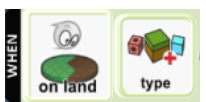
Key Concepts





- Describe the Kodu tool bar
- Describe the meaning of a range of different tiles, rules and scripts in Kodu
- Describe the appropriate use of tiles, rules, scripts and settings in Kodu

- Evaluate the use of tiles, rules, scripts and settings used to create a range of games in Kodu
- Describe the definitions of some keywords in Kodu

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

Career Focus - Where could this take you?



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

Challenge Activities

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

Topic Links

This topic links to:

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

Additional Resources

To further practise and develop your knowledge see:

- <https://scratch.mit.edu/>
- <https://www.youtube.com/c/ScratchTeam>



Our students will:

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


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



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

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





- 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 2 nd .
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.



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.



- 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

CREATING A DANCE MOTIF

A motif is the main, often recurring theme or element in a movement sequence.

When creating a dance motif always consider:

- ACTION**
- SPACE**
- DYNAMICS**
- RELATIONSHIPS**

Motifs can be created through the use of 5 basic actions:

- 1 TRAVELLING**
Includes stepping, transferring body weight and sliding.
- 2 JUMPING**
There are various ways of jumping: 2 feet to 2 feet, 2 feet to 1 foot etc.
- 3 TURNS**
1/4, 1/2, 1/3 or full turns. Turns can be performed as a jump.
- 4 GESTURES**
A body movement that portrays a concept or mood.
- 5 STILLNESS**
A motionless pose during the dance sequence.

All of the above actions can be repeated and varied using different levels, speeds, dynamics and body parts.
A dance phrase is made by developing and combining motifs.

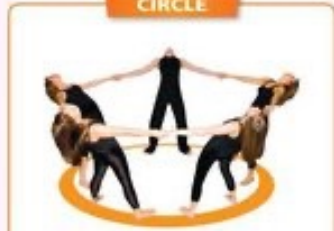
REMEMBER

To add to the effect of the finished dance, incorporate appropriate and complementary Accompaniment, Set, Props & Lighting and Costumes.

Formations in Dance


The way a group of dancers are positioned when they perform is called formation. It is the shape they form.

CIRCLE



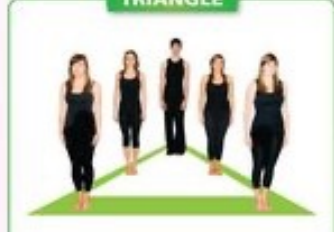
The circle is one of the oldest known dance formations. It is often used to express togetherness and protection.

SQUARE



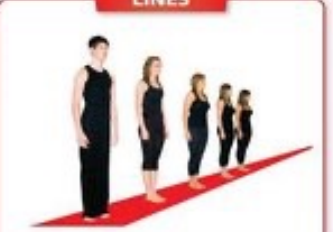
The square is a block formation. The sharp angles give this formation strength.

TRIANGLE



Often used as a travelling formation, a triangle can create a strong, forceful impression.

LINES




Lines are used in many different types of dance, for example, tap dancing, line dancing etc.

To add interest to a group dance, the formations must be varied throughout. Varying the facings can add to the effect.

- 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

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.aga.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>

Keyword	Definition
Six basic Actions	Travel , Turn, Jump, Gesture, Stillness, Transfer of weight.
Choreographic Intention	To make the audience think see and feel.
Gesture	A movement that doesn't transfer weight.
Dynamics	Quality of movement. How you move.
Unison	All together at the same time.
Cannon	One movement after the other.
Speed	How fast or slow a movement is.

Key Concepts	
<p>Performance Skills</p> <p>Performance Skills -: Performance skills are those used during a performance they set dancing apart from mechanical movement they draw the audience's attention and helps to show mood and meaning.</p> <p>Timing : Moving to the beat of the movement.</p> <p>Confidence : Showing you know what you are doing and where you should be.</p> <p>Energy: Performing all movements with as much effort as possible.</p> <p>Accuracy: Making sure movements are they way they were taught.</p> <p>Focus: Where the dancer looks. Into space, at the audience, Another dancer, A body part.</p> <p>Facial Expression : Showing the mood of the character.</p> <p>Dynamics : The quality of the movement.</p> <p>Speed : How fast or slow a movement is.</p>	<p>Physical skills</p> <p>Physical skill: A Physical skill is a skill that can be developed over time.</p> <p>Stamina: The ability to keep energy going over time.</p> <p>Flexibility : The range of movement around a joint.</p> <p>Strength :A combination of maximum speed and power.</p> <p>Coordination : The ability to move two or more body parts at the same time to create a movement.</p> <p>Balance: The ability to maintain a centre of mass over a base whilst stationary (Static) or during movement (dynamic)</p> <p>Power : Is a combination of using speed and strength</p> <p>Reaction time: The time it takes for you to respond to a stimulus.</p>

Retrieval Practice 	
Questions	Answers
What is musical Theatre?	A story told through Music dance and drama.
What is a theme ?	A reoccurring idea that runs through the dance.
What is a Stimulus ?	An initial idea or starting point.
What is choreography?	The art of making dancers.
What is a motif ?	A motif is a movement phrase (a short dance) that can be repeated and developed throughout the dance.

Career Focus - Where could this take you?



I am a **camera man**. I use my knowledge of performance and choreography to ensure I take the best shots and my angles highlight the best features of the performance.

Challenge Activities

[Stick it to the man](#)

[School of rock trailer.](#)

[School of rock worksheet](#)

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 your knowledge see:

- <https://www.onedanceuk.org/>

- develop knowledge of Pantomime elements
- develop Pantomime skills and techniques
- use appropriate skills in performance/presentation

Keyword	Definition 
Direct address	When an actor speaks directly to the audience, e.g. in pantomime.
Body Language	The way our bodies communicate a character's attitudes. Using your body to show emotions or hidden feelings.
Facial expression	Using the face to express that character's feelings and emotions.
Stock characters	Fictional characters that rely on stereotypes and appear in all pantomimes.
Slapstick	A style of physical comedy used in films, drama and pantomime.
Levels	How the actors sit, kneel or stand on stage, to show status.
Gesture	An expressive movement of the body, or something that is said or done to show a feeling, i.e. a wave.
Projection	Speaking loud enough for the audience to hear you.
Pause	Pausing lines to create dramatic effect such as tension
Pace	The speed in which an actor delivers their lines.

Key Concepts

STOCK CHARACTERS



HERO ANIMAL DAME VILLAIN


These characters appear in all pantomimes but have different names to suit the individual pantomime story they are in.

- ### CONVENTIONS OF PANTOMIME
- ❖ Main boy usually played by a woman
 - ❖ Main woman 'dame' usually played by a man
 - ❖ Fairy enters stage right
 - ❖ Villain enters stage left
 - ❖ Music/ singing/dance
 - ❖ Comedy/humour - 'slapstick'
 - ❖ Audience participation
 - ❖ Based on a fairytale
 - ❖ Good always beats evil
 - ❖ Costumes/set are OTT

- ### ACTING SKILLS
- Facial expression 
 - Voice 
 - Gesture 
 - Stance 
 - Reacting
 - Movement
 - Levels
 - Motivation

- develop knowledge of Pantomime elements
- develop Pantomime skills and techniques

- use appropriate skills in performance/presentation

Retrieval Practice 	
Questions	Answers
What are pantomimes based on?	Pantomimes are based on fairy stories and traditional folk tales.
When are pantomimes usually performed to audiences?	In England, pantomimes are usually performed around the Christmas period.
What is audience participation?	When a character on stage asks or invites the audience to make a response to a question or instruction. For example: 'Where is he?' - 'He's behind you!'
What is 'slapstick'?	A style of physical comedy used in films, drama and pantomime.
Who are the stock characters in an English pantomime?	The Hero. The Dame. The Animal. The Villian. The love interest (leading female character).
Which sides of the stage do the good characters and the evil characters enter from?	Good characters enter from stage right and Evil characters enter from stage left.
What is a monologue in a pantomime?	A speech delivered by one character. In pantomime it is used to introduce a character, explain a situation or develop the plotline (story)
What is Commedia del arte?	Commedia del arte is a traditional form of theatre that originates in Italy.

Career Focus - A Foley Artist - Where could this take you?



In the world of film, a foley artist reproduces everyday sounds that are added to films, videos and other media in post-production to enhance audio quality. These reproduced sounds, named after sound-effects artist Jack Foley, can be anything from the swishing of clothing and footsteps to squeaky doors and breaking glass. Foley sounds are used to enhance the auditory experience of the movie. Foley can also be used to cover up unwanted sounds captured on the set during filming.

Challenge Activities

- Using your knowledge of pantomimes and stock characters, write an opening monologue for a main character in a pantomime of your choice.
- Write a scene for a pantomime of your choice.
- Design a stage set for a scene from a pantomime, or a costume for a pantomime character.

Topic Links

- This topic links to:
- English language and Literature
 - History
 - Dance
 - Music
 - Art and Design
 - Geography

Additional Resources

- To further practise and develop your knowledge see:
- Watch the Drama Pantomime workshop on this youtube link
<https://youtu.be/jm0Zw5pLfx>

- 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


Do you think you have ...

A Food ALLERGY



A Food Allergy is a Cellular Immune-mediated reaction. It affects the Immune System. Food Allergies Can be Fatal.

OR



A Food INTOLERANCE is not an Immune-mediated reaction. It affects the Digestive System. Intolerances are Not Life-Threatening.











































The allergen could be identified in **bold**, highlighted, underlined or in *italics*.



- 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?	<table border="1"> <tbody> <tr> <td>Foods containing gluten, present in wheat, barley and rye </td> <td>Crustaceans </td> <td>Eggs </td> <td>Fish </td> <td>Lupin </td> </tr> <tr> <td>Peanuts </td> <td>Soybeans </td> <td>Milk </td> <td>Nuts </td> <td>Molluscs </td> </tr> <tr> <td>Celery </td> <td>Mustard </td> <td>Sesame seeds </td> <td>Sulphur dioxide </td> <td></td> </tr> </tbody> </table>	Foods containing gluten, present in wheat, barley and rye 	Crustaceans 	Eggs 	Fish 	Lupin 	Peanuts 	Soybeans 	Milk 	Nuts 	Molluscs 	Celery 	Mustard 	Sesame seeds 	Sulphur dioxide 	
Foods containing gluten, present in wheat, barley and rye 	Crustaceans 	Eggs 	Fish 	Lupin 												
Peanuts 	Soybeans 	Milk 	Nuts 	Molluscs 												
Celery 	Mustard 	Sesame seeds 	Sulphur dioxide 													

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:

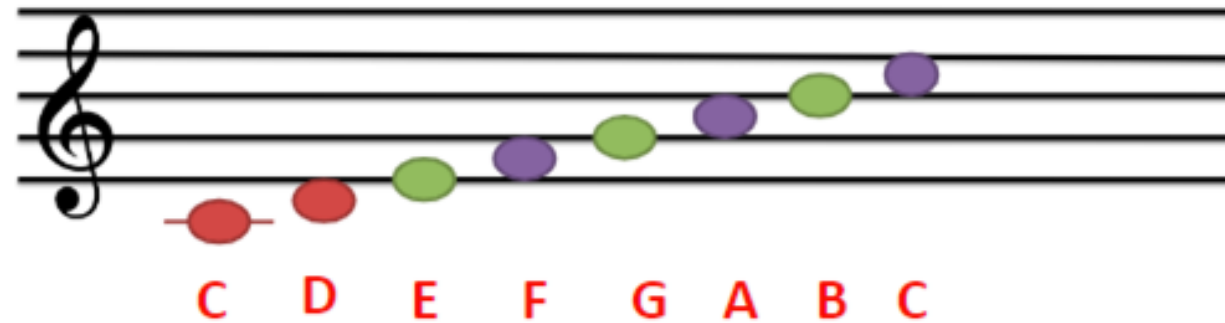
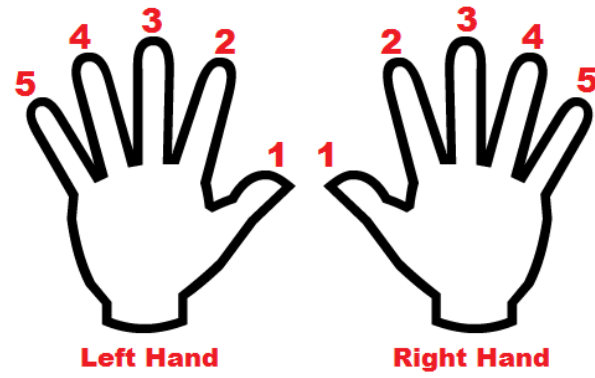
[Nutrition, digestion and excretion](#)

[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

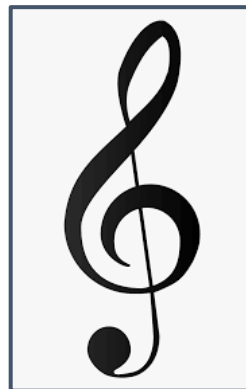
Learn and understand how Blues music developed, the typical instruments used and some of the musical features.

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

Drawing a Treble Clef

THE BLUES SCALE

Remember to use your right hand thumb and middle finger

C Eb F F# G Bb C

12 Bar Blues with a walking bass line

Play the chord with your right hand

Play the bass line with your left hand

C CEGA	C Bb AGE	C CEGA	C Bb AGE
F FACD	F Eb DCA	C CEGA	C Bb AGE
G GBDB	F FACA	C CEGE	G GBDB

C = C E G
F = F A C
G = G B D

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 staff
[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

- 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



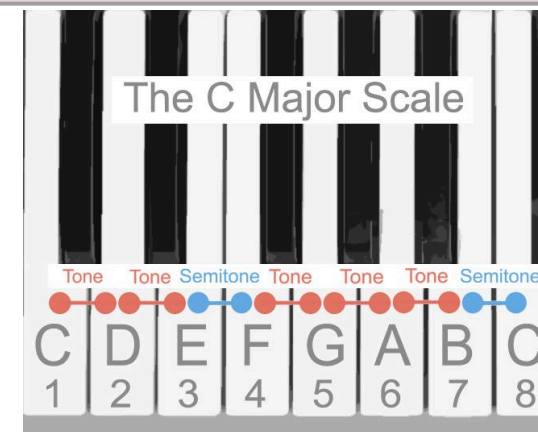
GONG



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.

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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



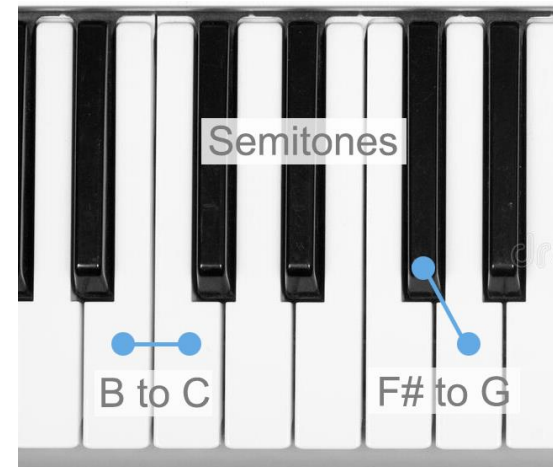
Night raga (Malakosh)

Mood-peaceful and relaxed.

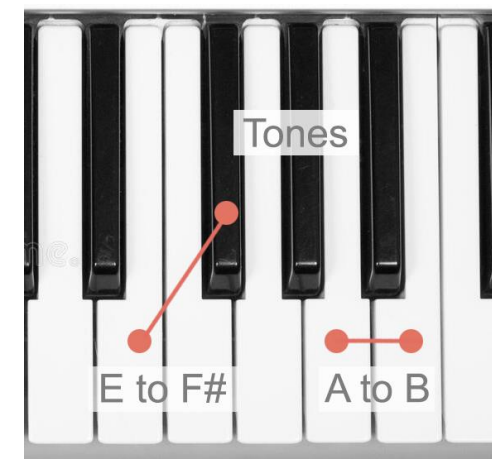
Drone notes B, E



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)

- Explore a wide range of music from different cultures.
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The Evolution of Reggae

Mento - 1950s	Ska – Early 1960s	Rocksteady – Late 1960s	Reggae – Late 1960s to 1980s
<ul style="list-style-type: none"> • Jamaican folk music • Banjo accompaniment • Fast tempo • Lighthearted lyrics • Bass lines played on double bass 	<ul style="list-style-type: none"> • Walking bass line • Electric and brass instruments • Fast tempo • Lyrics about social issues 	<ul style="list-style-type: none"> • Mainly electric instruments • Lots of electric bass riffs • Slow tempo • Drums often miss out the first beat of every bar 	<ul style="list-style-type: none"> • 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*



1 2 3 4 1 2 3 4

The musical notation shows a 4/4 time signature. The first four beats are marked 1, 2, 3, 4. The first two beats have a treble clef and a key signature of one flat. The first two beats have a C chord (represented by a C below the staff). The next two beats have a C chord (represented by a C below the staff). This pattern repeats for the second four beats.

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 its 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?

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>

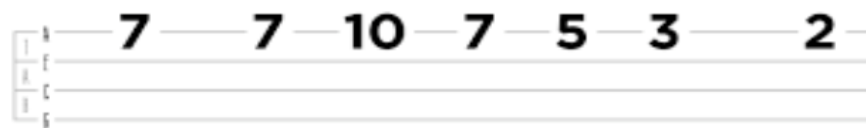
Billboard list of the 25 catchiest hooks ever:
<https://www.billboard.com/music/music-news/greatest-catchiest-pop-hooks-ever-6731053/>

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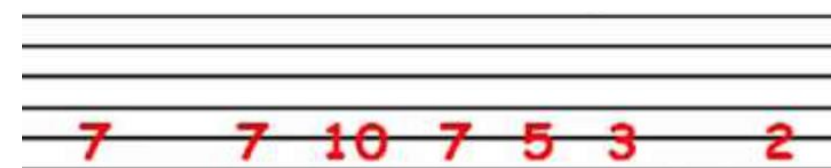
Key Concepts

'Seven Nation Army' by The White Stripes - Tabs

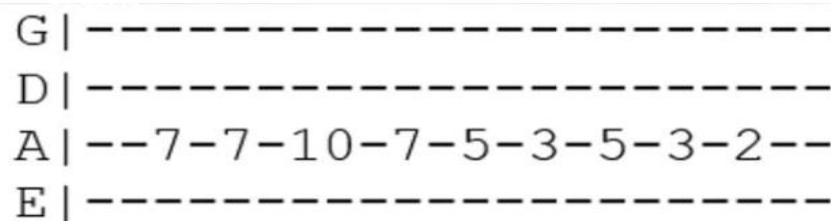
Ukulele



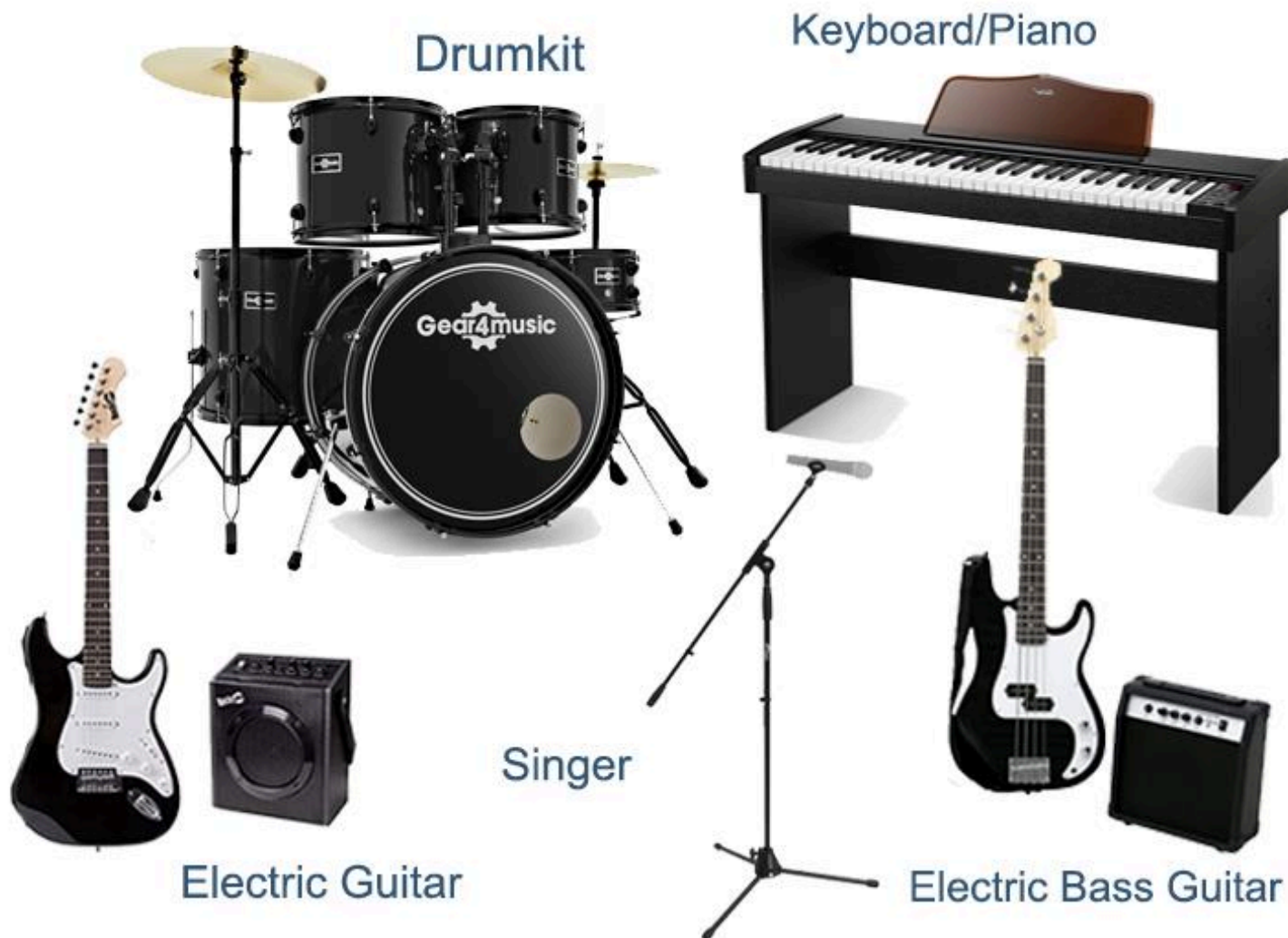
Guitar



Bass



Instruments in a Typical Popular Music Band



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

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

Key Concepts You should already know:- The aim of net and wall games

You will be assessed on:- Understanding - Technique in isolation - Technique in game - Leadership - Attitude to learning

Table Tennis Key Concepts

Ready Position

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

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



Forehand Drive

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

Backhand serve

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

Backhand push

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

Badminton Key Concepts



The Basics



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

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

Scoring

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

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

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

Retrieval Practice



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

Career Focus - Where could this take you?



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

Challenge Activities



Design a skill card:-

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

Create a rules of the game poster:-

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

Topic Links



This topic links to:

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

Additional Resources



To further practise and develop your knowledge see:

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

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

Username and Passwords
