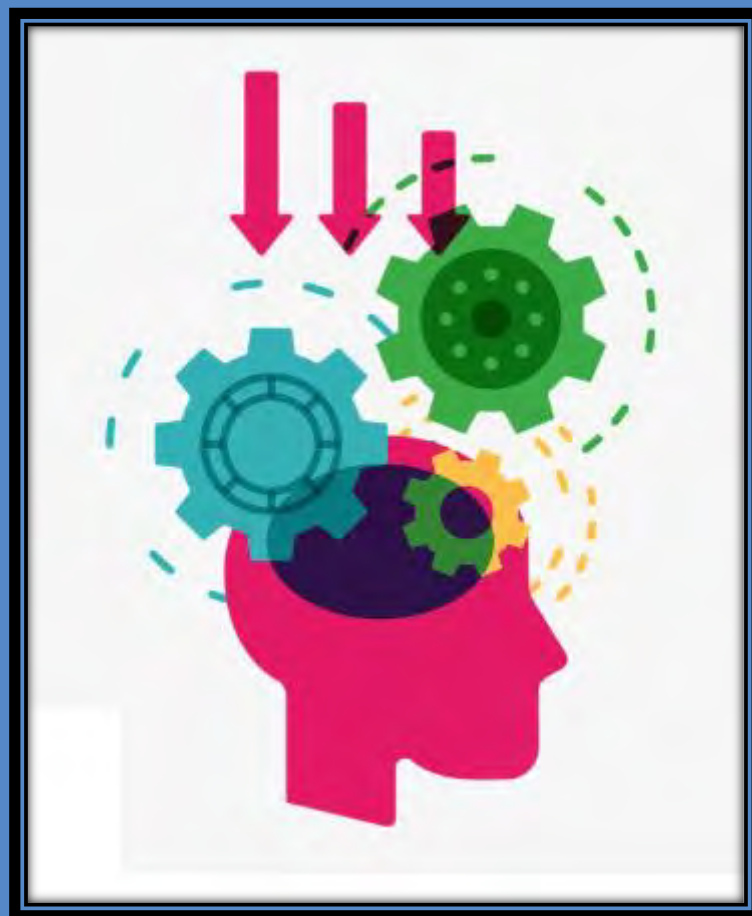


Knowledge organisers

Year 7



Community • Creativity • Achievement



Contents:

Maths	page 3
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Computing	page 29
Humanities- History	page 34
Humanities- Geography	page 37
French	page 41
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Social Science- Citizenship ..	page 49
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YEAR 7 — ALGEBRAIC THINKING... Sequences

@whisto_maths

What do I need to be able to do?

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

- Describe and continue both linear and non-linear sequences
- Explain term to term rules for linear sequence
- Find missing terms in a linear sequence

Keywords

Sequence: items or numbers put in a pre-decided order

Term: a single number or variable

Position: the place something is located

Rule: instructions that relate two variables

Linear: the difference between terms increases or decreases by the same value each time

Non-linear: the difference between terms increases or decreases in different amounts

Difference: the gap between two terms

Arithmetic: a sequence where the difference between the terms is constant

Geometric: a sequence where each term is found by multiplying the previous one by a fixed non zero number

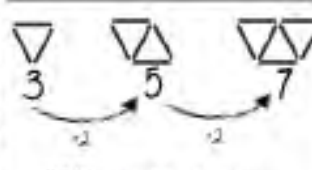


Describe and continue a sequence diagrammatically

Count the number of circles or lines in each image



Predict and check terms



Predictions:

Look at your pattern and consider how it will increase

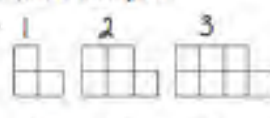
e.g. How many lines in pattern 6?

Prediction - 13

If it is increasing by 2 each time - in 3 more patterns there will be 6 more lines

Sequence in a table and graphically

Position the place in the sequence



Term: the number or variable (the number of squares in each image)

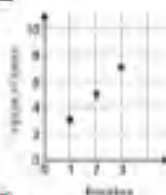
In a table

Position	1	2	3
Term	3	5	7

Because the terms increase by the same addition each time this is linear - as seen in the graph

"The term in position 3 has 7 squares"

Graphically



Linear and Non Linear Sequences

Linear Sequences - increase by addition or subtraction and the same amount each time

Non-linear Sequences - do not increase by a constant amount - quadratic, geometric and Fibonacci

- Do not plot as straight lines when modelled graphically
- The differences between terms can be found by addition, subtraction, multiplication or division

Fibonacci Sequence - look out for this type of sequence

0 1 1 2 3 5 8 ...

Each term is the sum of the previous two terms

Continue Linear Sequences

7, 11, 15, 19...

How do I know this is a linear sequence?

It increases by adding 4 to each term

How many terms do I need to make this conclusion?

At least 4 terms - two terms only shows one difference not if this difference is constant (a common difference)

How do I continue the sequence?

You continue to repeat the same difference through the next positions in the sequence



Continue non-linear Sequences

1, 2, 4, 8, 16 ...

How do I know this is a non-linear sequence?

It increases by multiplying the previous term by 2 - this is a geometric sequence because the constant is multiply by 2

How many terms do I need to make this conclusion?

At least 4 terms - two terms only shows one difference not if this difference is constant (a common difference)

How do I continue the sequence?

You continue to repeat the same difference through the next positions in the sequence



Explain term-to-term rule

Try to explain this in full sentences not just with mathematical notation

Use key maths language - doubles, halves, multiply by two, add four to the previous term etc

To explain a whole sequence you need to include a term to begin at...

The next term is found by tripling the previous term. The sequence begins at 4

4, 12, 36, 108...

First term

YEAR 7 — ALGEBRAIC THINKING...

Algebraic notation

@whisto_maths

What do I need to be able to do?

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

- Be able to use inverse operations and 'operation families'
- Be able to substitute into single and two step function machines
- Find functions from expressions
- Form sequences from expressions
- Represent functions graphically

Keywords

Function: a relationship that instructs how to get from an input to an output

Input: the number/ symbol put into a function

Output: the number/ expression that comes out of a function

Operation: a mathematical process

Inverse: the operation that undoes what was done by the previous operation (The opposite operation)

Commutative: the order of the operations do not matter

Substitute: replace one variable with a number or new variable

Expression: a maths sentence with a minimum of two numbers and at least one math operation (no equals sign)

Evaluate: work out

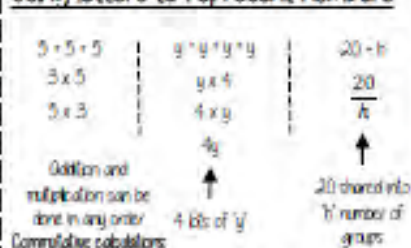
Linear: the difference between terms increases or decreases by the same value each time

Sequence: items or numbers put in a pre-decided order

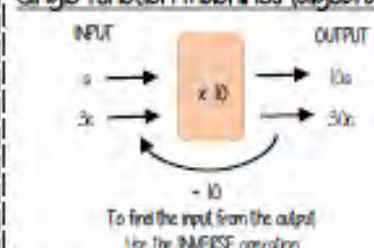
Single function machines



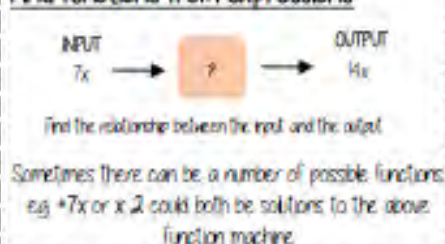
Using letters to represent numbers



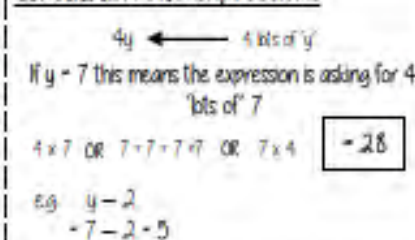
Single function machines (algebra)



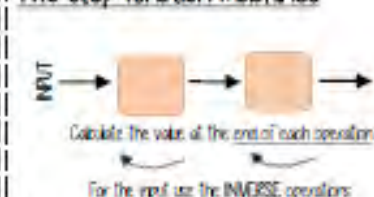
Find functions from expressions



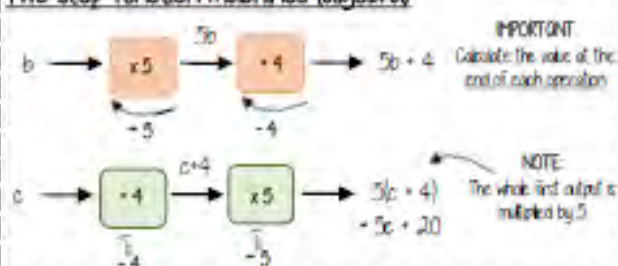
Substitution into expressions



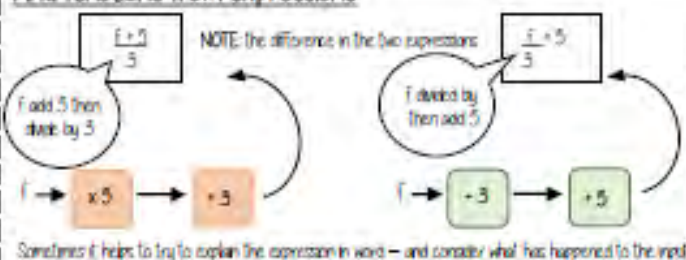
Two step function machines



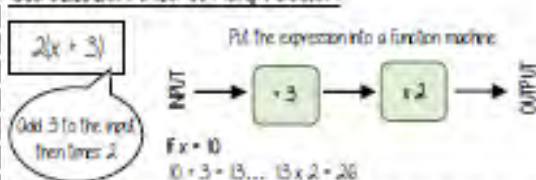
Two step function machines (algebra)



Find functions from expressions



Substitution into an expression



Forming a sequence

INPUT	1	2	3
OUTPUT	5	10	12

The substitution is the 'input' value. The OUTPUT becomes the sequence.

Representing functions graphically

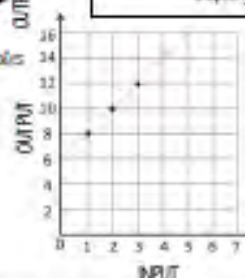
Take the function and generate a sequence: $2(x + 3)$

To represent graphically the input becomes a co-ordinates and the output becomes y co-ordinates

INPUT (x)	1	2	3
OUTPUT (y)	8	10	12

This becomes a co-ordinate pair (2, 10) to plot on a graph

Not all graphs will be linear only those with an integer value for x. Powers and fractions generate differently shaped graphs.



NOTE: Because this is a linear graph you can predict other values

YEAR 7 — ALGEBRAIC THINKING

Equality and Equivalence

@whisto_maths

What do I need to be able to do?

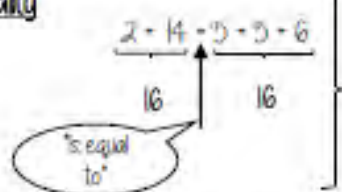
By the end of this unit you should be able to:

- Form and solve linear equations
- Understand like and unlike terms
- Simplify algebraic expressions

Keywords

Equality two expressions that have the same value
Equation a mathematical statement that two things are equal
Equals represented by '=' symbol — means the same
Solution the set or value that satisfies the equation
Solve to find the solution
Inverse the operation that undoes what was done by the previous operation (The opposite operation)
Term a single number or variable
Like variables that are the same are 'like'
Coefficient a multiplicative factor in front of a variable eg $5x$ (5 is the coefficient, x is the variable)
Index the power
Expression a maths sentence with a minimum of two numbers and at least one math operation (no equals sign)

Equality

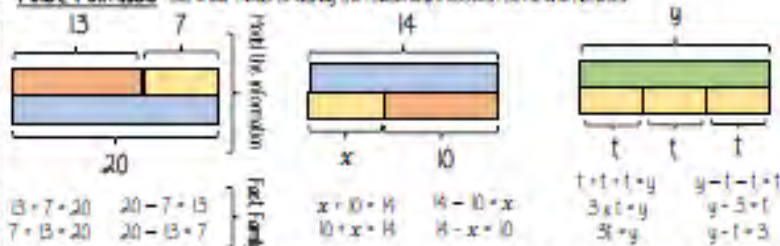


Saying it out loud sometimes helps you to understand equality

The sum on the left has the same total as the sum on the right

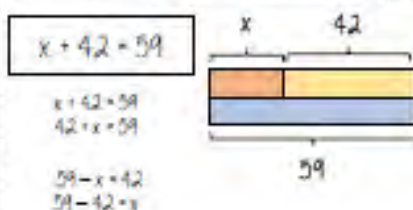
Fact Families

Use a bar model to display the relationships between terms and numbers



Solve one step equations (+/-)

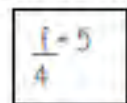
There is more to this than just spotting the answer



Don't forget you know how to use function machines



Solve one step equations (x/÷)



$f \div 4 = 5$
 $f \div 5 = 4$
 $5 \times 4 = f$
 $4 \times 5 = f$

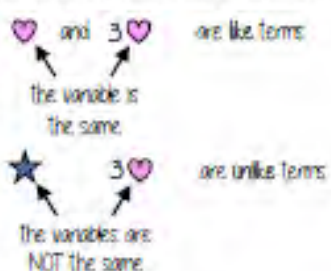


Don't forget you know how to use function machines

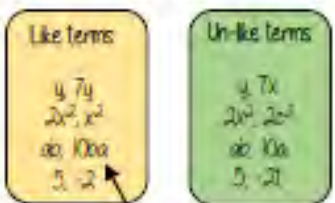


Like and unlike terms

Like terms are those whose variables are the same



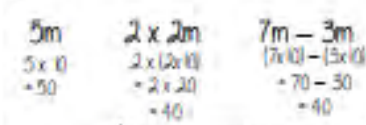
Examples and non-examples



Note: both ab and ba are commutative operations, so are still like terms

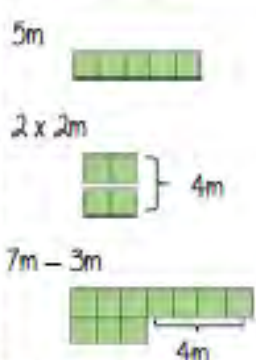
Equivalence

Check equivalence by substitution eg $m = 10$



Equivalent expressions

Repeat this with various values for m to check

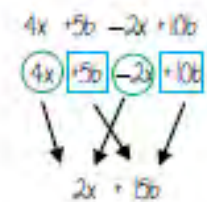


Collecting like terms $\equiv$ symbol

The $\equiv$ symbol means equivalent to
 It is used to identify equivalent expressions

Collecting like terms

Only like terms can be combined



Common misconceptions

$$2x + 3x^2 + 4x \equiv 6x + 3x^2$$

Although they both have the x variable, x^2 and x terms are unlike terms so can not be collected

YEAR 7 — PLACE VALUE AND PROPORTION...

FDP equivalence

@whisto_maths

What do I need to be able to do?

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

- Convert fluently between fractions, decimals & percentages

Keywords

Fraction: how many parts of a whole we have

Decimal: a number with a decimal point used to separate ones, tenths, hundredths etc

Percentage: a proportion of a whole represented as a number between 0 and 100

Place value: the numerical value that a digit has decided by its position in the number

Placeholder: a number that occupies a position to give value

Interval: a range between two numbers

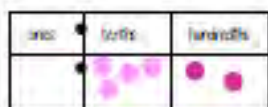
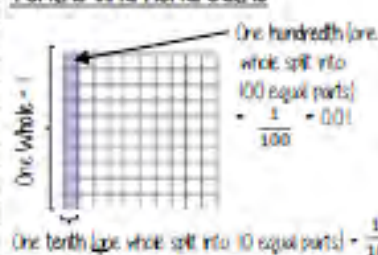
Tenth: one whole split into 10 equal parts

Hundredth: one whole split into 100 equal parts

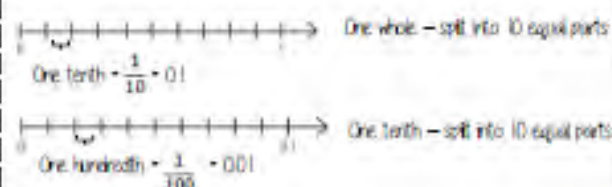
Sector: a part of a circle between two radius (often referred to as baking like a piece of pie)

Recurring: a decimal that repeats in a given pattern

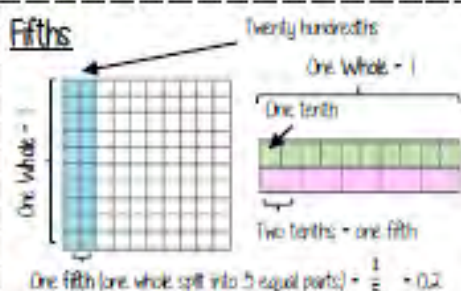
Tenths and hundredths



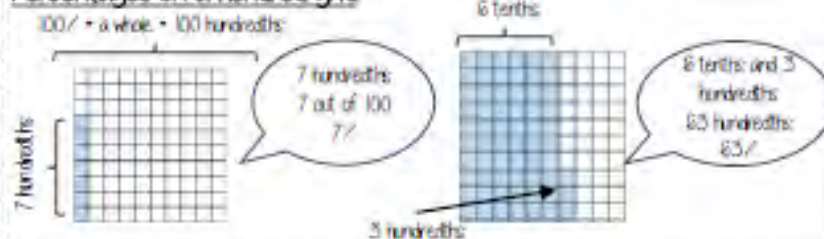
On a number line



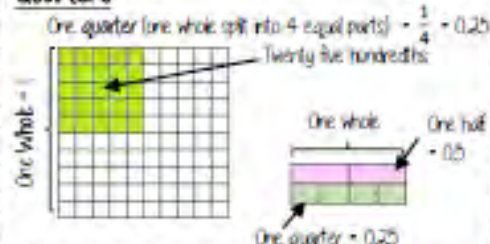
Fifths



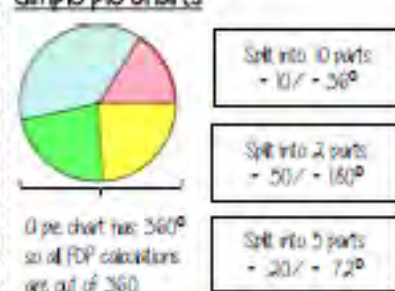
Percentages on a hundred grid



Quarters



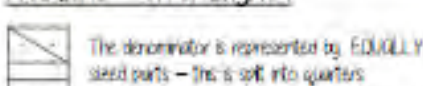
Simple pie charts



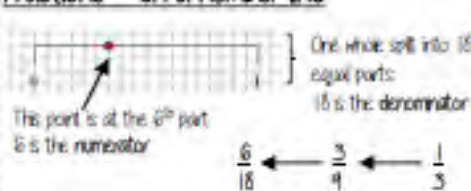
Equivalent fractions



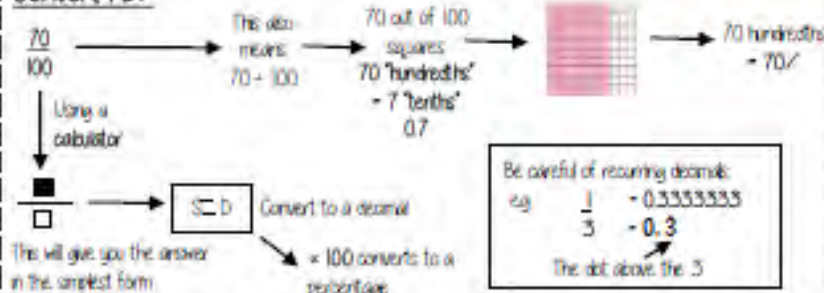
Fractions — on a diagram



Fractions — on a number line



Convert FDP



YEAR 7 — APPLICATION OF NUMBER

Solving problems with addition and subtraction

@whisto_maths

What do I need to be able to do?

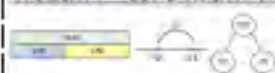
By the end of this unit you should be able to:

- Understand properties of addition/ subtraction
- Use mental strategies for addition/subtraction
- Use formal methods of addition/subtraction for integers
- Use formal methods of addition/subtraction for decimals
- Solve problems in context of perimeter
- Solve problems with finance, tables and timetables
- Solve problems with frequency trees
- Solve problems with bar charts and line charts

Keywords

Commutative: changing the order of the operations does not change the result
Associative: when you add or multiply you can do so regardless of how the numbers are grouped
Inverse: the operation that undoes what was done by the previous operation (The opposite operation)
Placeholder: a number that occupies a position to give value
Perimeter: the distance/ length around a 2D object
Polygon: a 2D shape made with straight lines
Balance: in financial questions — the amount of money in a bank account
Credit: money that goes into a bank account
Debit: money that leaves a bank account

Addition/ Subtraction with integers



Modeling methods for addition/ subtraction

- Bar models
- Number lines
- Part/ whole diagrams

Addition is commutative



The order of addition does not change the result

Subtraction the order has to stay the same

$$360 - 142 = 360 - 100 - 40 = 218$$

- Number lines help for addition and subtraction
- Working in 10's first aids mental addition/ subtraction
- Show your relationships by writing fact families

Formal written methods

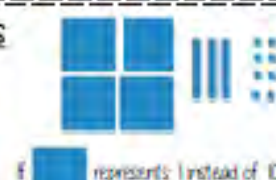
	H	T	O
+	1	8	7
+	3	4	2

	H	T	O
-	4	5	7
-	3	1	9

Remember the place value of each column
 You may need to move 10 ones to the ones column to be able to subtract

Addition/ Subtraction with decimals

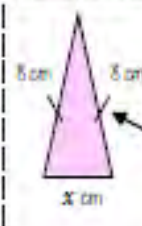
0 can be used to fill empty places with value
 The decimal place acts as the placeholder and aligns the other values



£ represents 1 instead of 100
 Revised Fraction — Decimal equivalence
 $543 + 0.8$

Solve problems with perimeter

Perimeter is the length around the outside of a polygon



Isosceles Triangle notation

The triangle has a perimeter of 25cm
 Find the length of x

$$8\text{cm} + 8\text{cm} + x\text{cm} = 25\text{cm}$$

$$16\text{cm} + x\text{cm} = 25\text{cm}$$

$$x\text{cm} = 9\text{cm}$$

Solve problems with finance

Profit = Income - Costs

Credit — Money coming into an account

Debit — Money leaving an account

Money uses a two decimal place system.
 14.2 on a calculator represents £14.20

Check the units of currency — work in the same unit

Tables and timetables

Distance tables

London	Cardiff	Glasgow	Belfast
271	49.5		
518	392	177	

This shows the distance between Glasgow and London.
 It is where their row and column intersects

Bus/ Train timetables

Station	10:05	10:45	11:30
Marion	10:05	10:45	11:30
Bridge	10:34	11:06	11:47
Archie	10:51	11:33	12:05
Ware	11:17	12:02	12:35

Each column represents a journey, each row represents the time the 'bus' arrives at that location

TIME CALCULATIONS — use a number line

Two-way tables

	H	T
H	HH	HT
T	TH	TT

Where rows and columns intersect is the outcome of that action

Frequency trees

60 people visited the zoo one Saturday morning
 26 of them were adults. 13 of the adults favourite animal was an elephant. 24 of the children's favourite animal was an elephant

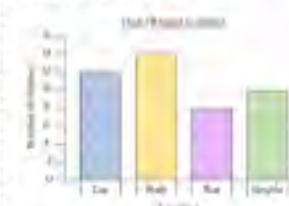
The overall total "60 people"

A frequency tree is made up from part-whole models.
 One piece of information leads to another



Probabilities or statements can be taken from the completed trees
 e.g. 34 children visited the zoo

Bar and line charts



Use addition/ subtraction methods to extract information from bar charts

e.g. Difference between the number of students who walked and took the bus
 Walk frequency — bus frequency

When describing changes or making predictions:

- Extract information from your data source
- Make comparisons of difference or sum of values
- Put into the context of the scenario

YEAR 7 — APPLICATION OF NUMBER

Solving problems with multiplication and division

@whisto_maths

What do I need to be able to do?

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

- Understand and use factors
- Understand and use multiples
- Multiply/Divide integers and decimals by powers of 10
- Use formal methods to multiply
- Use formal methods to divide
- Understand and use order of operations
- Solve area problems
- Solve problems using the mean

Keywords

Array: an arrangement of items to represent concepts in rows or columns
Multiples: found by multiplying any number by positive integers
Factor: integers that multiply together to get another number
Mk: prefix meaning one thousandth
Centi: prefix meaning one hundredth
Kilo: prefix meaning multiply by 1000
Quotient: the result of a division
Dividend: the number being divided
Divisor: the number we divide by

Factors

Arrays can help represent factors
 Factors of 10: 1, 2, 5, 10
 10 x 1 or 1 x 10
 5 x 2 or 2 x 5

The number itself is always a factor

Square numbers have an ODD number of factors

Factors of 4: 1, 2, 4
 Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36

Be strategic:
 - Lay factors out in pairs can help you not to miss any

Multiples

Bar models can represent by something is a multiple. Eg 20 is a multiple of 4

Lowest Common Multiple

LCM of 4 and 12
 4: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60
 12: 12, 24, 36, 48, 60

The first time two multiples match
 LCM = 36

Multiply/Divide by powers of 10

3 x 100 = 300
 0.03 x 100 = 3
 Repeated multiplication and division by powers of 10 is commutative
 + 10 then + 10 → + 100

Metric conversions

Useful Conversions:

mm → cm → m → km
 g → kg
 ml → L

Multiplication methods

Long multiplication (column)

Grid method

Repeated addition

Least effective method especially for bigger multiplication

Multiplication with decimals

Perform multiplications as integers
 eg 0.2 x 0.3 → 2 x 3

Make adjustments to your answer to match the question: 0.2 x 10 = 2
 0.3 x 10 = 3
 Therefore 6 ÷ 100 = 0.06

Division methods

Short division: 3584 ÷ 7 = 512

Complex division: 512 ÷ 24 = 21.33

Break up the divisor using factors

Division with decimals

The placeholder in division methods is essential — the decimal lines up on the dividend and the quotient

24 ÷ 0.02 → 24 ÷ 0.2 → 240 ÷ 2

All give the same solution as represent the same proportion
 Multiply the values in proportion until the divisor becomes an integer

Order of operations

Brackets
 Indices or roots
 Multiplication or division
 Addition or subtraction

If you have multiple operations from the same tier work from left to right

eg 10 - 3 + 5 → 10 - 3 → 7 + 5

6 x 4 + 8 x 2
 24 + 16 = 40

Area problems

Rectangle
 Base x Perpendicular height



Parallelogram/ Rhombus
 Base x Perpendicular height



Triangle
 1/2 x Base x Perpendicular height



A triangle is half the size of the rectangle it would fit in

Mean problems

Mean — a measure of average
 It gives an idea of the central value

Lilly, Annie and Ezra have the following cubes

Lilly: 24 cubes
 Annie: 24 cubes
 Ezra: 24 cubes
 24 in total

Finding the mean amount is the average amount each person would have if shared out equally

Lilly: 8 cubes
 Annie: 8 cubes
 Ezra: 8 cubes

The mean number of blocks would be 8 each

YEAR 7 — APPLICATION OF NUMBER

Fractions and percentages of amounts

@whisto_maths

What do I need to be able to do?

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

- Find a fraction of a given amount
- Use a given fraction to find the whole or other fractions
- Find the percentage of an amount using mental methods
- Find the percentage of a given amount using a calculator

Keywords

Fraction: how many parts of a whole we have

Equivalent: of equal value

Whole: a number with no fractional or decimal part

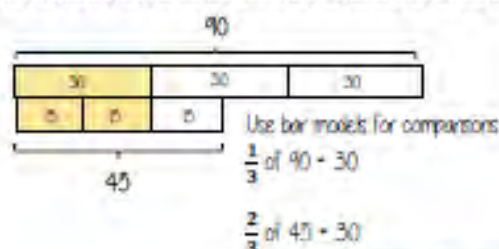
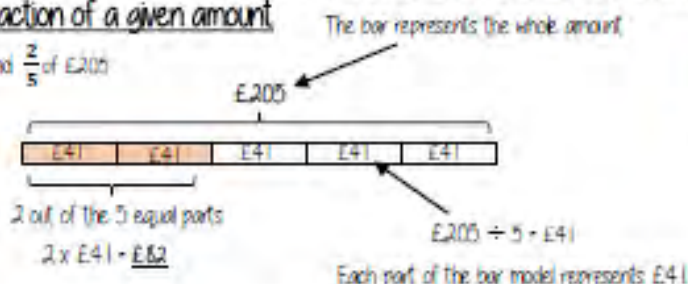
Percentage: parts per 100 (uses the % symbol)

Place Value: the value of a digit depending on its place in a number. In our decimal number system, each place is 10 times bigger than the place to its right

Convert: change into an equivalent representation, often fraction to decimal to a percentage, cycle

Fraction of a given amount

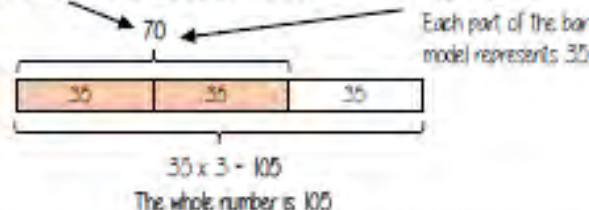
Find $\frac{2}{5}$ of £205



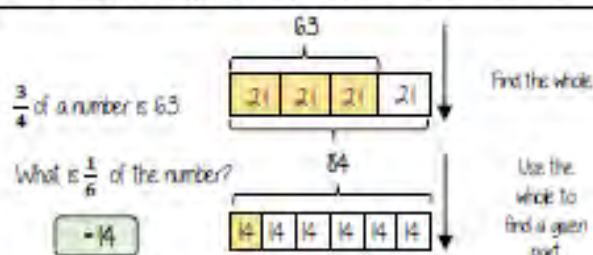
$$\therefore \frac{1}{3} \text{ of } 90 = \frac{2}{3} \text{ of } 45$$

Use a fraction of amount

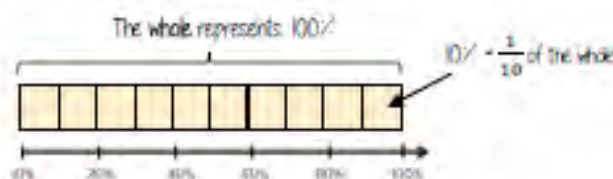
$\frac{2}{3}$ of a value is 70. What is the whole number?



The wording of the question is important to setting up the bar model



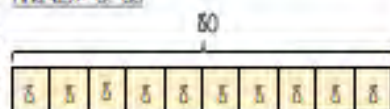
Find the percentage of an amount (Mental methods)



$$10\% = \frac{1}{10} \text{ of the whole} \quad 50\% = \frac{5}{10} = \frac{1}{2} \text{ of the whole}$$

$$20\% = \frac{2}{10} = \frac{1}{5} \text{ of the whole} \quad 5\% = \frac{1}{20} \text{ of the whole}$$

Find 65% of 80



For bigger percentages it is sometimes easier to take away from 100%

Method 1

$$65\% = 10\% \times 6 + 5\% \\ = (8 \times 6) + 4 \\ = 52$$

Method 2

$$65\% = 50\% + 10\% + 5\% \\ = 40 + 8 + 4 \\ = 52$$

Find the percentage of an amount (Calculator methods)



Using a multiplier

Find 65% of 80

Fraction decimal percentage conversion

$$65\% = \frac{65}{100} = 0.65 \quad \leftarrow \text{The multiplier}$$

$$0.65 \times 80 = 52$$

Using the percent button

Find 65% of 80

This brings up the % button on screen
You will see 65%

Type 65

Press $\frac{\square}{\square}$ (%)

Press $\times$ 80 and then press =

You can also use the calculator to support non calculator methods and find 1% or 10% then add percentages together

"of" can represent 'x' in calculator methods

YEAR 7 — DIRECTED NUMBER

Operations with equations and directed numbers

@whisto_maths

What do I need to be able to do?

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

- Perform calculations that cross zero
- Add/ Subtract directed numbers
- Multiply/ Divide directed numbers
- Evaluate algebraic expressions
- Solve two-step equations
- Use order of operations with directed number

Keywords

Subtract: taking away one number from another

Negative: a value less than zero

Commutative: changing the order of the operations does not change the result

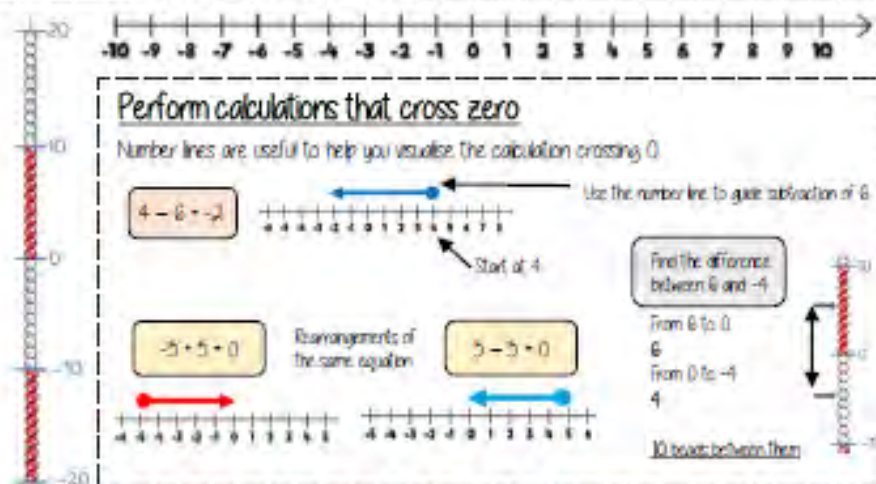
Product: multiply terms

Inverse: the opposite function

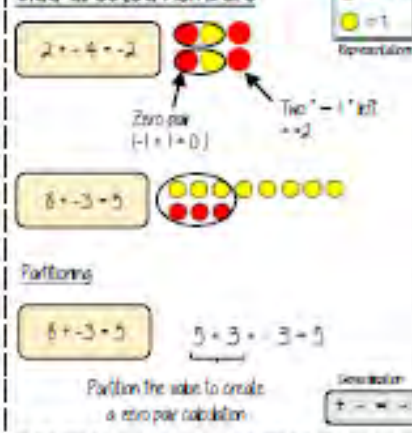
Square root: a square root of a number is a number when multiplied by itself gives the value (symbol $\sqrt{\quad}$)

Square: a term multiplied by itself

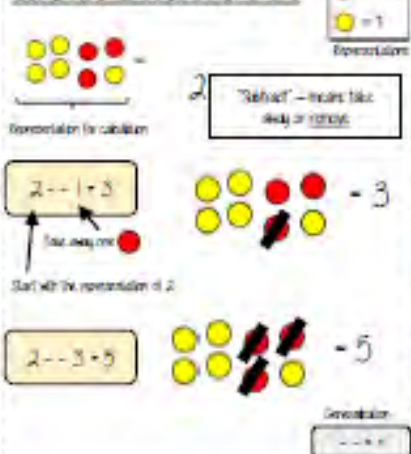
Expression: a maths sentence with a minimum of two numbers and at least one math operation (no equals sign)



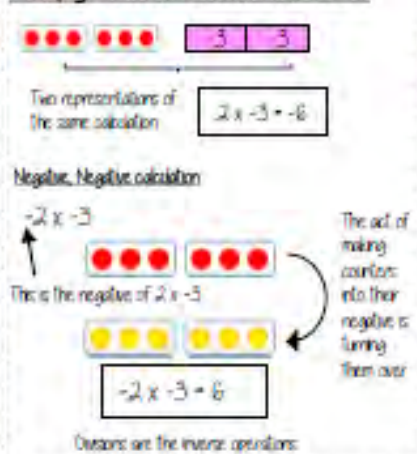
Add directed numbers



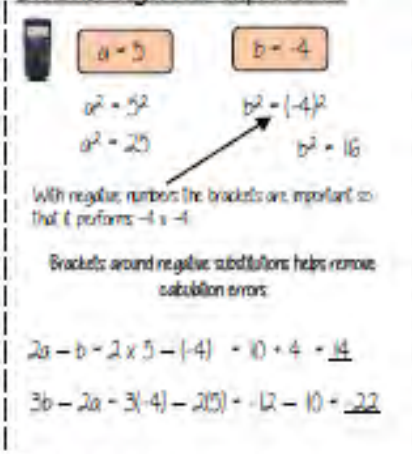
Subtract directed numbers



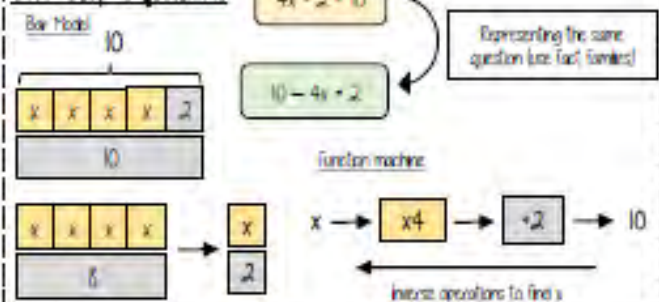
Multiply/ Divide directed numbers



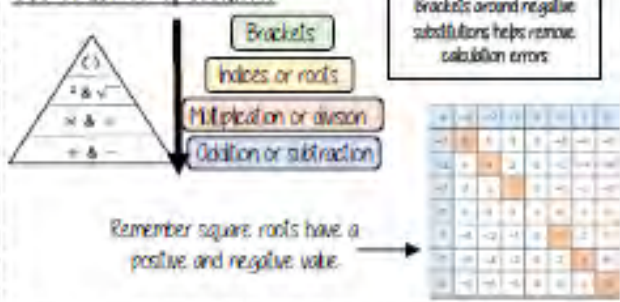
Evaluate algebraic expressions



Two-step equations



Use order of operations



YEAR 7 — FRACTIONAL THINKING

Addition and subtraction of fractions

@whisto_maths

What do I need to be able to do?

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

- Convert between mixed numbers and fractions
- Add/Subtract unit fractions (same denominator)
- Add/Subtract fractions (same denominator)
- Add/Subtract fractions from integers
- Use equivalent fractions
- Add/Subtract any fractions
- Add/Subtract improper fractions and mixed numbers
- Use fractions in algebraic contexts

Keywords

Numerator: the number above the line on a fraction. The top number. Represents how many parts are taken.

Denominator: the number below the line on a fraction. The number represents the total number of parts.

Equivalent: of equal value.

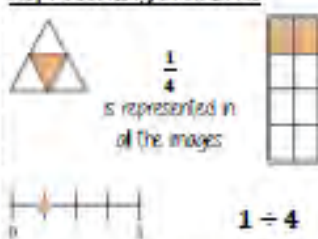
Mixed numbers: a number with an integer and a proper fraction.

Improper fractions: a fraction with a bigger numerator than denominator.

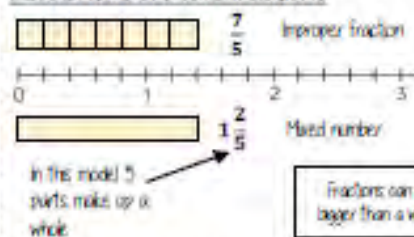
Substitute: replace a variable with a numerical value.

Place value: the value of a digit depending on its place in a number. In our decimal number system, each place is 10 times bigger than the place to its right.

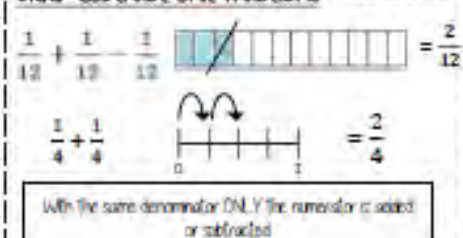
Representing Fractions



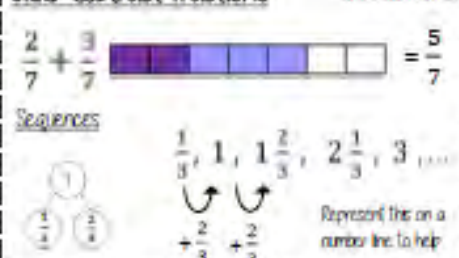
Mixed numbers and fractions



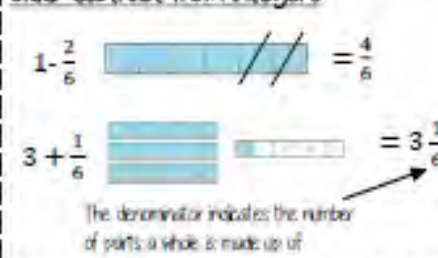
Add/Subtract unit fractions



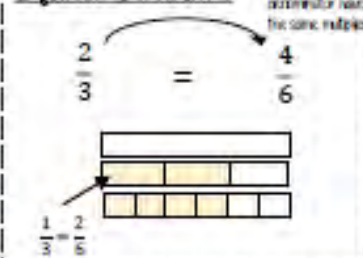
Add/Subtract fractions



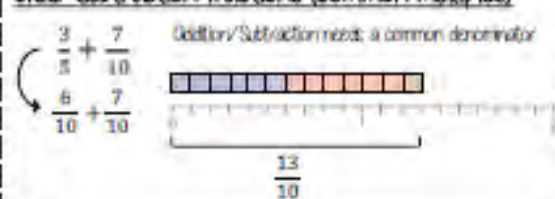
Add/Subtract from integers



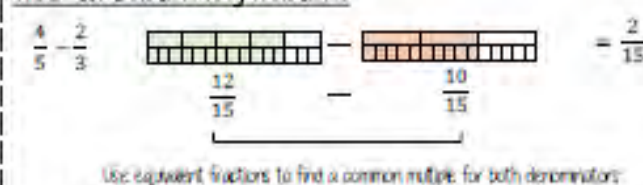
Equivalent fractions



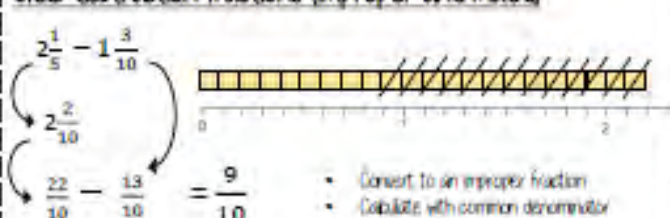
Add/Subtraction fractions (common multiples)



Add/Subtraction any fractions



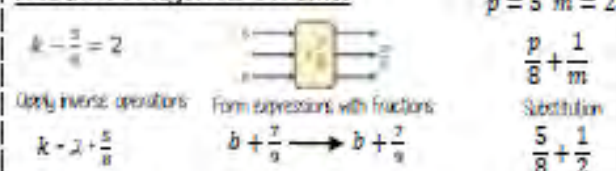
Add/Subtraction fractions (improper and mixed)



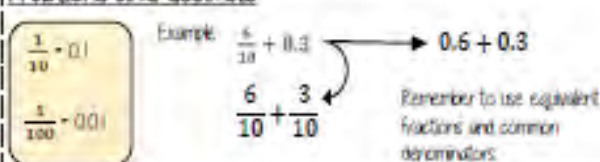
Partitioning method

$$2 \frac{1}{5} - 1 \frac{3}{10} = 2 \frac{2}{10} - 1 \frac{3}{10} = 2 \frac{2}{10} - 1 - \frac{3}{10} = 1 \frac{2}{10} - \frac{3}{10} = \frac{9}{10}$$

Fractions in algebraic contexts



Fractions and decimals



YEAR 7 — LINES AND ANGLES

Constructing, measuring and using geometric notation

@whisto_maths

What do I need to be able to do?

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

- Use letter and labeling conventions
- Draw and measure line segments and angles
- Identify parallel and perpendicular lines
- Recognise types of triangle
- Recognise types of quadrilateral
- Identify polygons
- Construct triangles (SSS, SAS, ASA)
- Draw Pie charts

Keywords

- Polygon** — A 2D shape made with straight lines
Scalene triangle — a triangle with all different sides and angles
Isosceles triangle — a triangle with two angles the same size and two angles the same size
Right-angled triangle — a triangle with a right angle
Frequency — the number of times a data value occurs
Sector — part of a circle made by two radii touching the centre
Rotation — turn in a given direction
Protractor — equipment used to measure angles
Compass — equipment used to draw arcs and circles

Letter and labelling convention

The letter in the middle is the angle.
 The arc represents the angle.

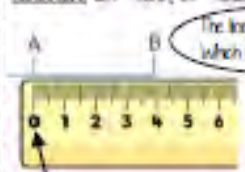


Angle Notation three letters ABC
 This is the angle at B = 115°

Line Notation two letters EC
 The line that joins E to C

Draw and measure line segments

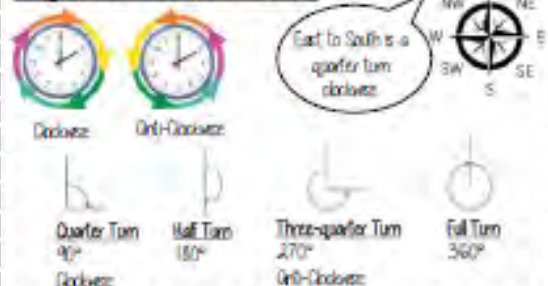
Conversions: $1\text{m} = 100\text{cm}$, $1\text{m} = 1000\text{mm}$



The line segment is 3.4cm which is 34mm.
 AB is a **line segment** (part of the line)

Make sure the start of the line is at 0.

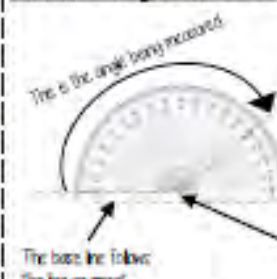
Angles as measures of turn



Classify angles

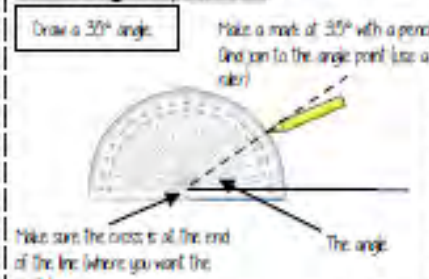


Measure angles to 180°



Read from 0° on the base line. Remember to use estimation. This is an obtuse angle so between 90° and 180° .

Draw angles up to 180°



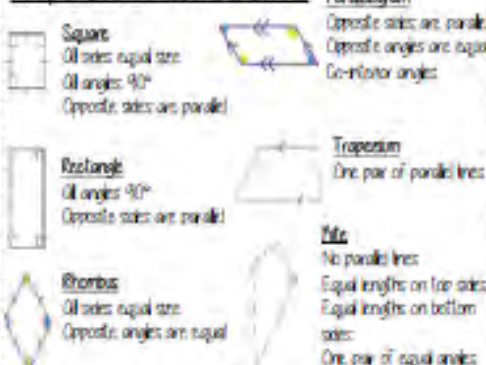
Parallel and Perpendicular lines



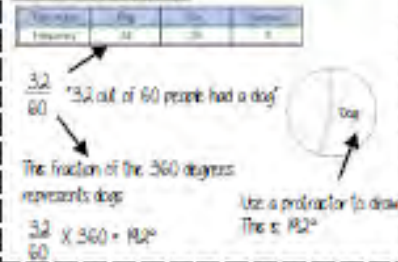
Angles over 180°



Properties of Quadrilaterals



Draw Pie Charts



SAS, SSS, ASA constructions



Polygons

3	- Triangle	5	- Pentagon	8	- Octagon
4	- Quadrilateral	6	- Hexagon	9	- Nonagon
		7	- Heptagon	10	- Decagon

If all the sides and angles are the same, it is a regular polygon

YEAR 7 — LINES AND ANGLES

@whisto_maths

Geometric reasoning

What do I need to be able to do?

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

- Understand/use the sum of angles at a point
- Understand/use the sum of angles on a straight line
- Understand/use equality of vertically opposite angles
- Know and apply the sum of angles in a triangle
- Know and apply the sum of angles in a quadrilateral

Keywords

Vertically Opposite: angles formed when two or more straight lines cross at a point

Interior Angles: angles inside the shape

Sum total: add all the interior angles together

Convex Quadrilateral: a four-sided polygon where every interior angle is less than 180°

Concave Quadrilateral: a four-sided polygon where one interior angle exceeds 180°

Polygon: a 2D shape made with straight lines

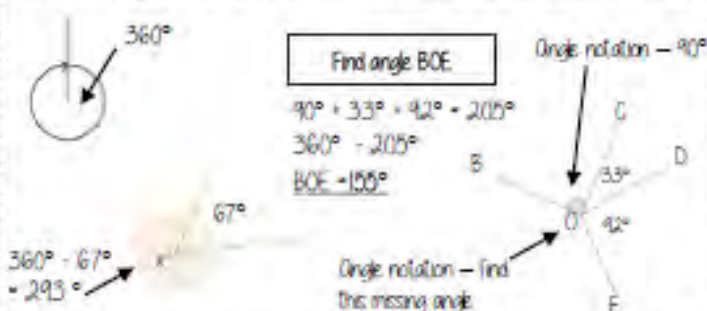
Scalene triangle: a triangle with all different sides and angles

Isosceles triangle: a triangle with two angles the same size and two angles the same size

Right-angled triangle: a triangle with a right angle

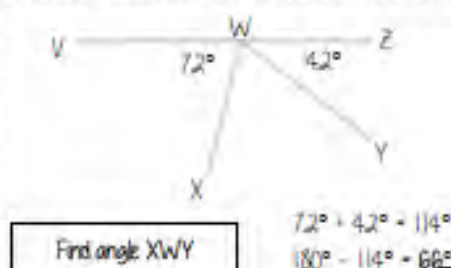
Sum of angles at a point

The sum of angles around a point is 360°

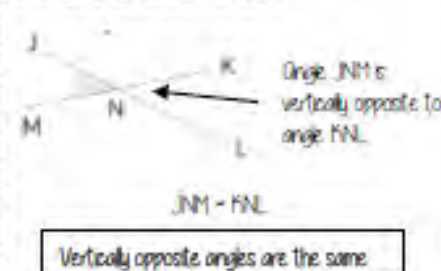


Sum of angles on a straight line

Adjacent angles that share a common point on a line add up to 180°

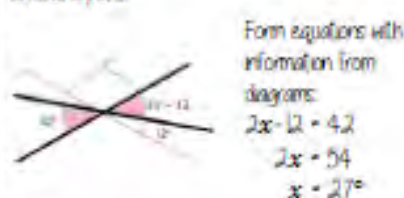


Vertically opposite angles



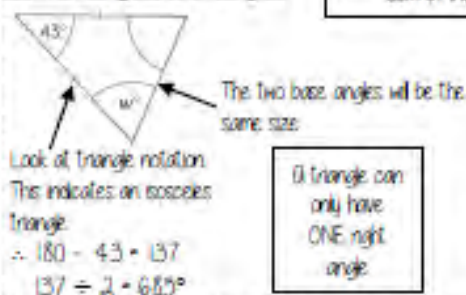
Other angle rules still apply

Look for straight line sums and angles around a point



Sum of angles in triangles

Sum of interior angles in a triangle = 180°



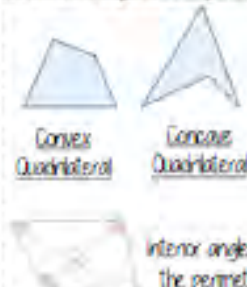
A triangle can only have ONE right angle



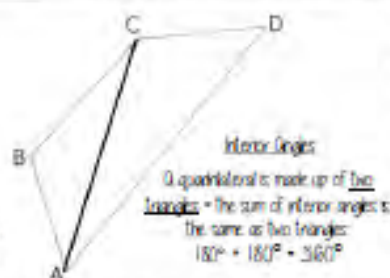
Have a go! Tearing the corners from triangles forms a straight line which is therefore 180°

Sum of angles in quadrilaterals

Sum of interior angles in a quadrilateral = 360°

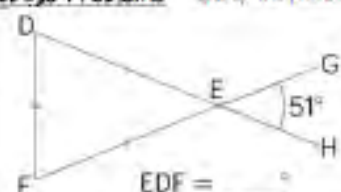


Interior angles are those that make up the perimeter (outline) of the shape



Angle Problems

Split up the problem into chunks and explain your reasoning at each point using angle notation



- Angle DEF = 51° because it is a vertically opposite angle DEF = GEH
- Triangle DEF is isosceles (triangle notation) $\therefore \angle EDF = \angle EFD$ and the sum of interior angles is 180°
 $180^\circ - 51^\circ = 129^\circ$
 $129^\circ \div 2 = 64.5^\circ$
- Angle EDF = 64.5°

Keep working out clear and notes together

YEAR 7 — REASONING WITH NUMBER

@whisto_maths

Developing number sense

What do I need to be able to do?

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

- know and use mental addition/ subtraction
- know and use mental multiplication/ division
- know and use mental arithmetic for decimals
- know and use mental arithmetic for fractions
- use factors to simplify calculations
- use estimation to check mental calculations
- use number facts
- use algebraic facts

Keywords

Commutative: changing the order of the operations does not change the result

Associative: when you add or multiply you can do so regardless of how the numbers are grouped

Dividend: the number being divided

Divisor: the number we divide by

Expression: a maths sentence with a minimum of two numbers and at least one math operation (no equals sign)

Equation: a mathematical statement that two things are equal

Quotient: the result of a division

Mental methods for addition/ subtraction

Addition is commutative



$$6 + 3 = 3 + 6$$

The order of addition does not change the result

Subtraction the order has to stay the same

$$360 - 147 = 360 - 100 - 40 - 7$$

- Number lines help for addition and subtraction
- Working in 10's first aids mental addition/ subtraction

Mental methods for multiplication/ division

Multiplication is commutative



$$2 \times 4 = 4 \times 2$$

The order of multiplication does not change the result

Partitioning can help multiplication

$$24 \times 6 = 20 \times 6 + 4 \times 6 \\ = 120 + 24 \\ = 144$$

Division is not associative

Chunking the division can help $4000 \div 25$
How many 25's in 100? then how many chunks of that in 4000.

Mental methods for decimals

Multiplying by a decimal < 1 will make the original value smaller e.g. $0.1 \div 10$

Methods for multiplication 12×0.03

$$\begin{array}{l} 12 \times 3 = 36 \\ 12 \times 0.3 = 3.6 \\ 12 \times 0.03 = 0.36 \end{array}$$

Methods for addition $2.3 + 2.4$

$$\begin{array}{l} 2.3 + 2.4 = 4.7 \\ 0.3 + 0.4 = 0.7 \\ 4 + 0.7 = 4.7 \end{array}$$

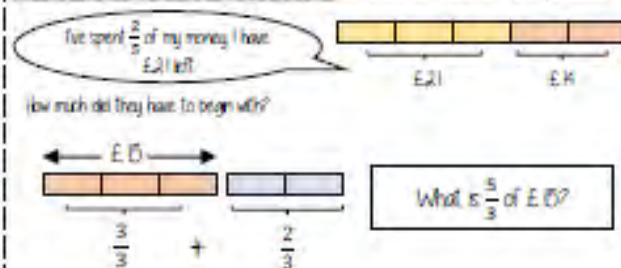
Methods for division $15 \div 0.05$

Multiply by powers of 10 until the divisor becomes an integer

$$\begin{array}{l} 15 \div 0.05 \\ \times 100 \quad \times 100 \\ 1500 \div 5 = 300 \end{array}$$

Mental methods for fractions

Use bar models where possible



Using factors to simplify calculations

$$30 \times 16$$

$$10 \times 3 \times 4 \times 4$$

$$10 \times 3 \times 2 \times 8$$

$$2 \times 5 \times 3 \times 2 \times 2 \times 2 \times 2$$

$$16 \times 10 \times 3$$

Multiplication is commutative
Factors can be multiplied in any order

Estimation

Estimations are useful — especially when using fractions and decimals to check if your solution is possible

Most estimations round to 1 significant figure

Estimations are useful — especially when using fractions and decimals to check if your solution is possible

$$210 \times 499 \approx 1200$$

This is true because even if both numbers were rounded up, they would reach 300×400

The correct estimation would be $200 \times 400 = 1000$

Number facts

$$124 \times 5 = 620$$

For multiplication, each value that is multiplied or divided by powers of 10 needs to happen to the result

$$620 \div 124 = 50$$

For division you must consider the impact of the divisor becoming smaller or bigger
Smaller — the answer will be bigger (it is being shared into less parts)
Bigger — the answer will be smaller (it is being shared into more parts)

Algebraic facts

$$2a + 2b = 10 \quad \text{Everything} \times 2$$

$$0.1a + 0.1b = 0.5 \quad \text{Everything} \times 10$$

$$a + b = 5$$

$$a + b + 2 = 7 \quad \text{Add 2 to the total}$$

The unknown quantity isn't changing but the variables change what is done to give the result

YEAR 7 — REASONING WITH NUMBER

@whisto_maths

Sets and probability

What do I need to be able to do?

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

- Identify and represent sets
- Interpret and create Venn diagrams
- Understand and use the intersection of sets
- Understand and use the union of sets
- Generate sample spaces for single events
- Calculate the probability of a single event
- Understand and use the probability scale

Keywords

Set: collection of things

Element: each item in a set is called an element

Intersection: the overlapping part of a Venn diagram (AND $\cap$)

Union: two ellipses that join (OR $\cup$)

Mutually Exclusive: events that do not occur at the same time

Probability: likelihood of an event happening

Bias: a built in error that makes all values wrong (unequal) by a certain amount, e.g. a weighted die

Fair: there is zero bias, and all outcomes have an equal likelihood

Random: something happens by chance, and is unable to be predicted

Identify and represent sets

The universal set has the symbol ξ — this means EVERYTHING in the Venn diagram is in this set

A set is a collection of things — you write sets inside curly brackets { }

ξ = {the numbers between 1 and 50 inclusive}

My sets can include every number between 1 and 50 including those numbers

A = {Square numbers}

A = {1, 4, 9, 16, 25, 36, 49}

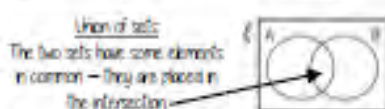
All the numbers in set A are square number and between 1 and 50

Interpret and create Venn diagrams



Mutually exclusive sets

The two sets have nothing in common
No overlap



Union of sets

The two sets have some elements in common — they are placed in the intersection



Subset

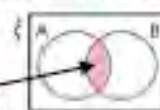
All of set B is also in Set A so the ellipse fits inside the set

The box

Around the outside of every Venn diagram will be a box. If an element is not part of any set it is placed outside, an element but inside the box

Intersection of sets

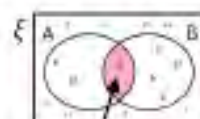
Elements in the intersection are in set A AND set B



The notation for this is $A \cap B$

ξ = {the numbers between 1 and 50 inclusive}

A = {Multiples of 5} B = {Multiples of 3}

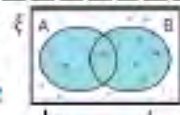


The element in $A \cap B$ is 15

In this example there is only one number that is both a multiple of 3 and a multiple of 5 between 1 and 50

Union of sets

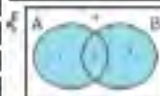
Elements in the union could be in set A OR set B



ξ = {the numbers between 1 and 50 inclusive}
A = {Multiples of 5} B = {Multiples of 3}

The elements in $A \cup B$ are: 3, 5, 6, 9, 10, 12, 15, 18, 20, 24, 25, 30, 36, 40, 45, 48, 50

There are 7 elements that are either a multiple of 5 OR a multiple of 3 between 1 and 50



The Venn shows the number of elements in each set

Sample space — for single events



A sample space for rolling a six-sided die is $S = \{1, 2, 3, 4, 5, 6\}$



A sample space for this spinner is $S = \{\text{Pink, Blue, Yellow}\}$

You only need to write each element once in a sample space diagram

- A Sample space represents a possible outcome from an event
- They can be interpreted in a variety of ways because they do not tell you the probability

Probability of a single event



Probability = $\frac{\text{number of times event happens}}{\text{total number of possible outcomes}}$

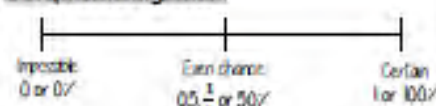
$P(\text{Blue}) = \frac{4}{10}$ — There are 4 blue sections
There are 10 sections overall
 $= \frac{2}{5}$

Probability can be a fraction, decimal or percentage value

$\frac{4}{10} = \frac{40}{100} = 0.40 = 40\%$

Probability is always a value between 0 and 1

The probability scale



The more likely an event, the further up the probability it will be in comparison to another event



There are 2 pink and 3 yellow balls, so they have the same probability

There are 5 possible outcomes
So 5 intervals on this scale, each interval value is $\frac{1}{5}$

Sum of probabilities

Probability is always a value between 0 and 1



The probability of getting a blue ball is $\frac{1}{5}$
The probability of NOT getting a blue ball is $\frac{4}{5}$
The sum of the probabilities is 1

The table shows the probability of selecting a type of chocolate

Milk	Dark	White
0.35	0.45	0.20

$P(\text{White chocolate}) = 1 - 0.35 - 0.35 = 0.30$



YEAR 7 — REASONING WITH NUMBER

Prime numbers and Proof

@whisto_maths

What do I need to be able to do?

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

- Find and use multiples
- Identify factors of numbers and expressions
- Recognise and identify prime numbers
- Recognise square and triangular numbers
- Find common factors including HCF
- Find common multiples including LCM

Keywords

Multiples: found by multiplying any number by positive integers

Factor: integers that multiply together to get another number

Prime: an integer with only 2 factors

Conjecture: a statement that might be true (based on reasoning) but is not proven

Counterexample: a special type of example that disproves a statement

Expression: a maths sentence with a minimum of two numbers and at least one math operation (no equals sign)

HCF: highest common factor (biggest factor two or more numbers share)

LCM: lowest common multiple (the first time the times table of two or more numbers match)

Multiples

The "times table" of a given number

All the numbers in this list below are multiples of 3

3, 6, 9, 12, 15, ...

The list continues and doesn't end

3x, 6x, 9x, ...

x can take any value and as the variable is a multiple of 3 the answer will also be a multiple of 3

Non-example of a multiple

45 is not a multiple of 3 because it is 3 x 15

Not an integer

Factors

Groups can help represent factors

Factors of 10

1, 2, 5, 10

10 x 1 or 1 x 10

Factors and expressions

Factors of 6x

6x, x, 1, 6x, 2x, 3, 3x, 2

6x x 1 or 1 x 6x

6x x 2 or 2 x 6x

6x x 3 or 3 x 6x

6x x 6 or 6 x 6x

6x x 10 or 10 x 6x

6x x 15 or 15 x 6x

6x x 20 or 20 x 6x

6x x 30 or 30 x 6x

6x x 40 or 40 x 6x

6x x 50 or 50 x 6x

6x x 60 or 60 x 6x

6x x 70 or 70 x 6x

6x x 80 or 80 x 6x

6x x 90 or 90 x 6x

6x x 100 or 100 x 6x

6x x 110 or 110 x 6x

6x x 120 or 120 x 6x

6x x 130 or 130 x 6x

6x x 140 or 140 x 6x

6x x 150 or 150 x 6x

6x x 160 or 160 x 6x

6x x 170 or 170 x 6x

6x x 180 or 180 x 6x

6x x 190 or 190 x 6x

6x x 200 or 200 x 6x

6x x 210 or 210 x 6x

6x x 220 or 220 x 6x

6x x 230 or 230 x 6x

6x x 240 or 240 x 6x

6x x 250 or 250 x 6x

6x x 260 or 260 x 6x

6x x 270 or 270 x 6x

6x x 280 or 280 x 6x

6x x 290 or 290 x 6x

6x x 300 or 300 x 6x

6x x 310 or 310 x 6x

6x x 320 or 320 x 6x

6x x 330 or 330 x 6x

6x x 340 or 340 x 6x

6x x 350 or 350 x 6x

6x x 360 or 360 x 6x

6x x 370 or 370 x 6x

6x x 380 or 380 x 6x

6x x 390 or 390 x 6x

6x x 400 or 400 x 6x

6x x 410 or 410 x 6x

6x x 420 or 420 x 6x

Prime numbers

- Integer
- Only has 2 factors
- and itself

The first prime number

The only even prime number

Learn or how-to quick recall...

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, ...

Square and triangular numbers

Square numbers

odd even odd

Representations are useful to understand a square number n^2

1, 4, 9, 16, 25, 36, 49, 64, ...

Triangular numbers

Representations are useful — an extra counter is added to each new row

Add two consecutive triangular numbers and get a square number

1, 3, 6, 10, 15, 21, 28, 36, 45, ...

Common factors and HCF

Common factors are factors two or more numbers share

HCF — Highest common factor

HCF of 18 and 30

18: 1, 2, 3, 6, 9, 18

30: 1, 2, 3, 5, 6, 10, 15, 30

Common factors (factors of both numbers)

1, 2, 3, 6

HCF = 6

6 is the biggest factor they share

Common multiples and LCM

Common multiples are multiples two or more numbers share

LCM — Lowest common multiple

LCM of 9 and 12

9: 9, 18, 27, 36, 45, 54

12: 12, 24, 36, 48, 60

LCM = 36

The first time their multiples match

Comparing fractions

$\frac{3}{5}$ and $\frac{2}{3}$

Compare fractions using a LCM denominator

$\frac{6}{10}$ and $\frac{7}{15}$

Conjectures and counterexamples

Conjecture

The numbers in this sequence are doubling each time

A pattern that is noticed for many cases

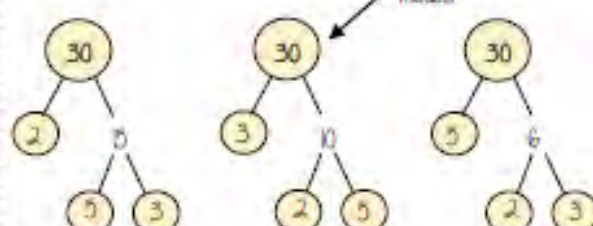
Counterexamples

This sequence isn't doubling it is adding 2 each time

Only one counterexample is needed to disprove a conjecture

Product of prime factors

Multiplication part-whole models



All three prime factor trees represent the same decomposition

Multiplication is commutative

$30 = 2 \times 3 \times 5$

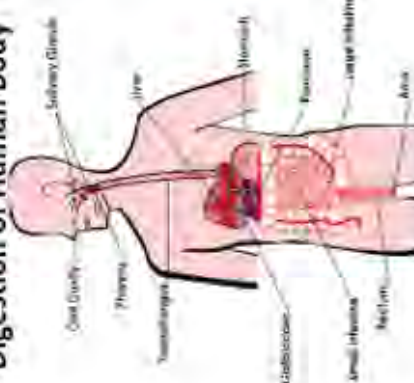
Multiplication of prime factors

Using prime factors for predictions

e.g. 60: 30×2 , $2 \times 3 \times 5 \times 2$

150: 30×5 , $2 \times 3 \times 5 \times 5$

KS3 7A Cells

Definitions			
1	Nucleus	Contains the genetic material (DNA)	16 Excretion
2	Cell membrane	Controls substances that can enter the cell because it is selectively permeable.	17 Transplant
3	Cytoplasm	Where the chemical reactions happen.	18 Donor
4	Cell wall	Provides structure and support.	
5	Vacuole	Contains cell sap.	19 Ethics
6	Chloroplasts	Contain chlorophyll. Where photosynthesis occurs.	20 Specialised cells
7	Ribosomes	Where proteins are made (protein synthesis).	21 Electron microscope
8	Mitochondria	Where respiration occurs.	22 Resolution
9	Eukaryotic	Cell that has a "true" nucleus.	List of Organs that helps in Digestion of Human Body 
10	Prokaryotic	Cells that have no "true" nucleus.	
11	Tissue	A collection of cells.	
12	Organ	A collection of tissues.	
13	Organ system	A collection of organs that work together for a particular function e.g. reproductive system, respiratory system.	
14	Life processes	MRS GREN: movement, respiration, sensitivity, growth, reproduction, excretion, and nutrition.	
15	Respiration	An exothermic reaction that releases energy from food.	
		Diagram 1: Organs of the human body	Diagram 2: Plant and animal cells (Eukaryotic).

KS3 7B Reproduction

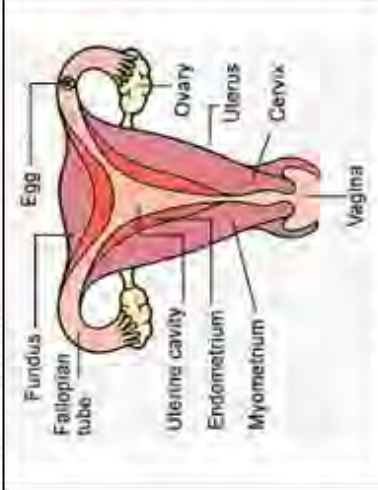
Definitions					
1	Cervix	Opening to the uterus at the top of the vagina.	16	Fertilisation	The fusing of a sperm and egg cell.
2	Uterus	The organ where a foetus develops. Also called a womb.	17	Ovulation	The release of an egg (ovum) from the ovary. This happens at day 14 of the menstrual cycle.
3	Vagina	The opening to the female reproductive system.	18	Gestation	The period of time it takes for an embryo to develop. In humans, this is 9 months.
4	Oviduct	The tubes that egg cells travel down. Also called a fallopian tube.			
5	Ovary	The place where egg cells are stored.			
6	Urethra	The tube that urine travels from the bladder to the outside.	19	Placenta	Joins to the foetus by the umbilical cord. The mother's blood does not mix with the blood of the foetus, but the placenta lets oxygen and nutrients pass between the two blood supplies.
7	Penis	The male reproductive and excretory organ.	20	Contractions	Muscles tighten and relax to push the baby out of the uterus and vagina during labour.
8	Scrotum	The sac that contains the testicles.	21	Contraception	Chemical or physical barriers to prevent pregnancy. E.g. condoms, contraceptive pill.
9	Testes	Where sperm cells are made.	22	IVF	In- vitro fertilisation. Egg is fertilised outside the uterus when couples cannot conceive naturally.
10	Sperm duct	Where the sperm cells are added to the semen.			
11	Menstrual cycle	The monthly cycle of changes in the ovaries and the lining of the uterus starting with ovulation.			
12	Puberty	The lifecycle stage where fertility and sexual characteristics develop.			
13	Semen	The liquid in which sperm cells are added to.			
14	Sperm	The male sex cell. Also called a male gamete.			
15	Egg	The female sex cell. Also called a female gamete.	Diagram 1: Male reproductive system		
					
			Diagram 2: Female reproductive system		

Diagram 2: Female reproductive system

Diagram 1: Male reproductive system

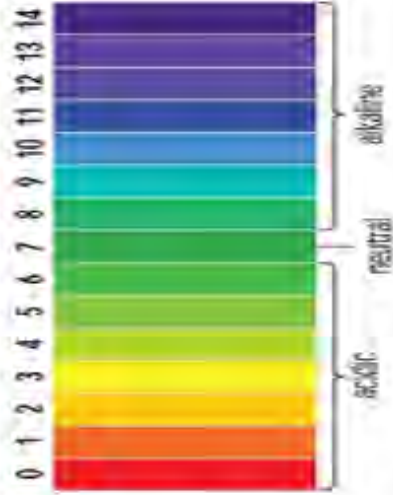
KS3 7D Ecosystems

Definitions					
1	Variation	The differences amongst or between species.	16	Competition	Organisms compete with each other for food, mates, territory, water, light.
2	Inherited	Caused by the DNA passed on from our parents. E.g. Eye colour	17	Interdependence	The number of one species will depend on one or more other species. Numbers will rise and fall in relation to each other in a cyclic pattern.
3	Environmental	Caused by the interaction with the world around us e.g. scars, hair length	18	Predator	An organism that hunts and kills other animals.
4	Continuous	A constant range of data e.g. length	Investigation skills		
5	Discontinuous	Data that can be put into a category e.g. shoe size, hair colour	19	Bias	An equal chance is not given to something and can be influenced by other factors.
6	Ecosystem	The interaction between the living and non- living parts of an environment.	20	Estimate	Give an approximate answer.
7	Biotic	The living factors in an ecosystem e.g. the organisms that live there.	21	Repeatability	Investigation is repeated with different equipment or a different version of the method and produces the same results.
8	Abiotic	The non- living factors in an ecosystem e.g. temperature, pH.	22	Reproducibility	Somebody else repeats your investigation and gets the same results.
9	Producer	The organism that starts the food chain. They make their own food by photosynthesis.			
10	Consumer	An organism that eats another organism to survive.			
11	Carnivore	An organism that only eats other animals.			
12	Herbivore	An organism that only eats plants.			
13	Omnivore	An organism that eats plants and animals.			
14	Sampling	A smaller subgroup is investigated, that is representative of its larger group.			
15	Quadrat	A piece of equipment used to sample immobile organisms.			
			Diagram 2: Sampling equipment		

KS3 7E Mixtures

Definitions					
1	Element	Contains the same type of atoms.	16	Condense	The process of a gas turning to a liquid.
2	Compound	Two or more elements, chemically bonded together.	17	Solvent	The solvent is the substance that dissolves the other substance
3	Mixture	Two or more elements that are not chemically bonded together.	18	Suspension	An insoluble solid in a liquid.
4	Evaporation	The process of a liquid turning into a gas.	Investigation skills		
5	Distillation	A separation technique used to separate a solution because they will have different boiling points.	19	Explain	Give the reasons for something happening. Use the format "... because.... therefore...."
6	Melting point	The temperature at which a solid changes to a liquid.	20	Evaluate	Give the evidence/ opinions for and against.
7	Boiling point	The temperature at which a liquid changes to a gas.	21	Justify	Give evidence from the information provided to support an answer.
8	Chromatography	A method for separating dissolved substances from one another.	22	Define	Give the meaning of the word.
9	Soluble	If something will dissolve it is soluble.	$R_f = \frac{\text{Distance moved by ink}}{\text{Distance moved by solvent}}$		
10	Insoluble	If something will not dissolve it is insoluble.			
11	Rf Value	The ratio of the distance moved by the solute (i.e. the dye or pigment under test) and the distance moved by the solvent			
12	Solute	The solute is the substance that is being dissolved by another substance			
13	Solution	A solute dissolves in a solvent to make a solution.			
14	Saturated	When no more solute will dissolve, we say that the solution is a saturated solution.			
15	Dissolved	The solute breaks up from a larger crystal of molecules into much smaller groups or individual molecules.			
			Diagram 1: How to calculate an Rf Value		Diagram 2: Chromatogram

KS3 7F Acids and Alkalis

Definitions			Neutralisation reactions- naming salts		
1	Acid	All acids contain Hydrogen. An acid is the opposite to a base. E.g. Hydrochloric acid	16	Hydrochloric acid	Make a chloride salt
2	Alkali	A base that can dissolve in water is also called an alkali.	17	Sulphuric acid	Make a sulphate salt
3	Base	A base is the opposite to an acid.	18	Nitric acid	Make a nitrate salt.
4	Indicator	A substance used to detect whether something is an acid, base, or neutral.	Investigation skills- safety		
5	pH	The pH of a substance tells us if something is an acid or alkali.	19	Goggles	Need to be worn to protect the eyes from chemicals and anything that might injure the eyes.
6	pH scale	The pH runs from 0 (strongly acidic) through 7 (neutral) to 14 (strongly alkaline). See diagram 1.	20	Heat proof mat	Used when anything flammable is used.
7	Neutral	A substance that is neither acid or base. It has a pH of 7.	21	Slips, trips and spills	All objects must be stored safely. Spillages and breakages must be reported immediately.
8	Neutralisation	Neutralisation involves an acid reacting with a base or an alkali, forming a salt and water.	22	Fire hazards	Fire blankets, extinguishers, sand buckets are used to control any accidents.
9	Hazard	Something that could potentially cause harm.			
10	Irritant	Something that could cause an irritation e.g. itching, difficulty breathing.			
11	Corrosive	A substance that has the power to cause irreversible damage or destroy another substance by contact.			
12	Flammable	Something that could set on fire easily and burn quickly.			
13	Oxidising	This substance gives a large amount of heat when in contact with another substance.			
14	Litmus paper	Blue litmus paper turns red under acidic conditions and red litmus paper turns blue under basic or alkaline conditions.			
15	Universal indicator	A mixture of dyes that changes colour gradually over a range of pH.			
			Diagram 1: pH scale		Diagram 2: Hazard symbols

KS3 Particle model

Definitions		Equations	
1	Solid	16	Pressure
2	Liquid	17	Density
3	Gas	18	Thermal energy
4	Evaporation	Investigation skills- variables	
5	Condensation	19	Independent
6	Melting	20	Dependant variable
7	Freezing	21	Control variables
8	Sublimation	22	Valid
9	Change of state		
10	States of matter		
11	Physical change		
12	Chemical change		
13	Diffusion		
14	Pressure		
15	Density		

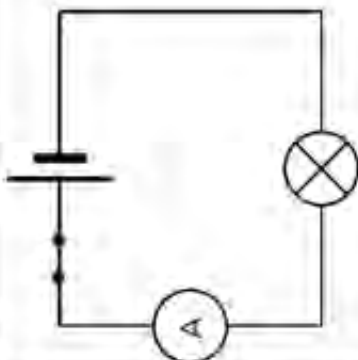
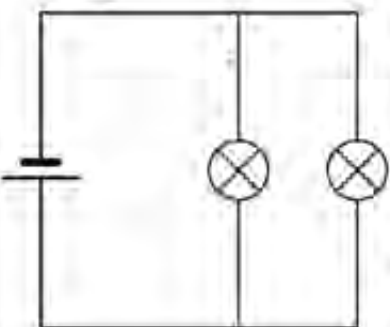
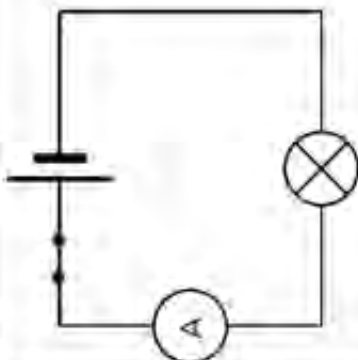
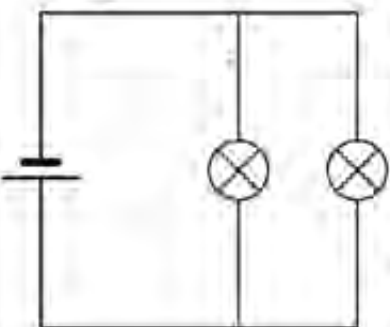
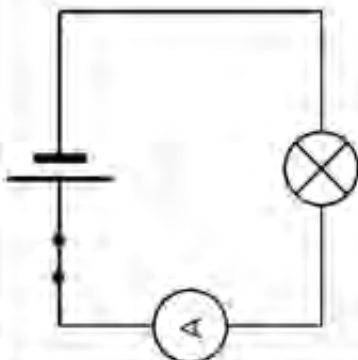
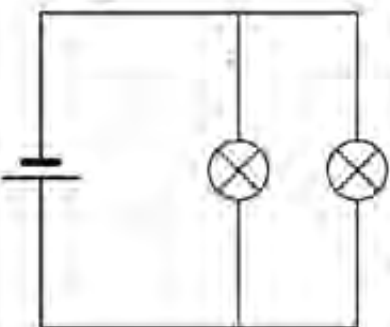
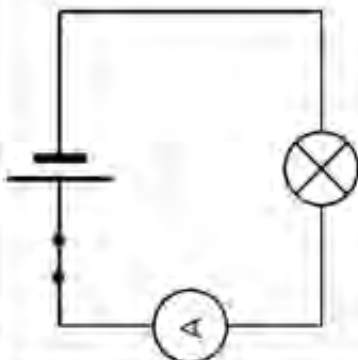
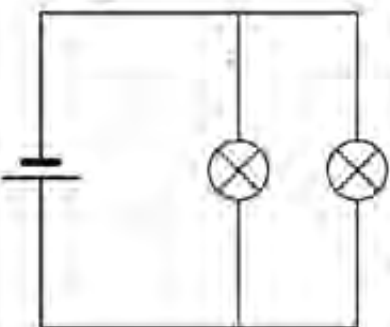
KS3 Atoms

Definitions				
1	Atom	Everything in the universe is made up of atoms.	16	Endothermic A reaction that takes in energy
2	Element	Every element is made up of its own type of atom	17	Reversible The products can change back into the reactants easily. See Diagram 2.
3	Compound	Two or more elements that are chemically bonded together.	18	Products The new substances that are made as a result of the reaction
4	Mixture	Two or more elements that are not chemically bonded together.		
5	Molecule	Two atoms chemically joined together. These can either be the same or a different element.	19	Reactants The things that are needed in the chemical reaction- the "ingredients".
6	Metals	A material with metallic properties (see 8-12)	20	Electrons The negatively charged particles in an atom.
7	Non- metals	A material without metallic properties.	21	Metallic bonding The bonds that are formed in metals.
8	Malleable	Can be shaped easily.	22	Ions An atom or molecule with a net electric charge due to the loss or gain of one or more electrons
9	Sonorous	Makes a ringing sound when struck.		
10	Magnetic	Affected by a magnetic field (only 3 metals are magnetic, iron, cobalt and nickel).		
11	Ductile	Can be shaped into wires easily.		
12	Thermal conductor	Allow heat to pass through easily.		
13	Electrical conductor	Allows electrical current to pass through easily.		
14	Thermal decomposition	The breakdown of a substance using heat energy.		
15	Exothermic	A reaction that gives out energy.	Diagram 1: Example of a carbon atom	Diagram 2: Reversible reaction symbol

KS3 71 Energy

Definitions					
1	Thermal	Another word for heat energy	16	Renewable	Resources that can be replaced or replenished quicker than they are used e.g. Wind, Solar, Biofuels
2	Light	Light energy travels in transverse waves (see sound topic)	17	Non-renewable	Resources that run out faster than they can be made. These are oil, coal, natural gas and nuclear
3	Gravitational	Gravitational potential energy (GPE) – the energy an object has due to gravity	18	Sustainable	Meeting the needs of today without compromising the needs of future generations.
4	Kinetic	A moving object has kinetic energy.			
5	Sound	Sound energy travels in longitudinal waves (see sound topic)	19	Biofuel	Made from plants that have been harvested.
6	Nuclear	Energy stored inside an atom by the forces that hold together the nucleus of the atom	20	Photosynthesis	An endothermic reaction used by plants to make their own food.
7	Chemical	A stored energy. For example, food has a store of chemical energy that can be transferred into other types of energy.	21	Conservation of energy	Energy cannot be lost or created. It can only be transferred into something else.
8	Electrical	Some objects carry electrical charges and create electric fields. These charged objects can exert forces on each other. You get an electric current when charged particles move through a wire.	22	Dissipated	Energy that is transferred to the environment.
9	Elastic	Energy stored in an elastic object which will restore the object to its original shape e.g. elastic band	 $\text{Efficiency} = \frac{\text{Useful output energy}}{\text{Total input energy}}$		
10	Joules	The unit for measuring energy. KJ is 1000 J			
11	Transfer	Changing one form of energy into another.			
12	Efficient	A measure of how much input energy is transferred into useful energy. See fig 1			
13	Input	The energy that goes into a system			
14	Output	The energy that comes out of a system	Fig 1 Efficiency equation		
15	Fossil fuels	Fuels made from the remains of dead organisms over millions of years.			

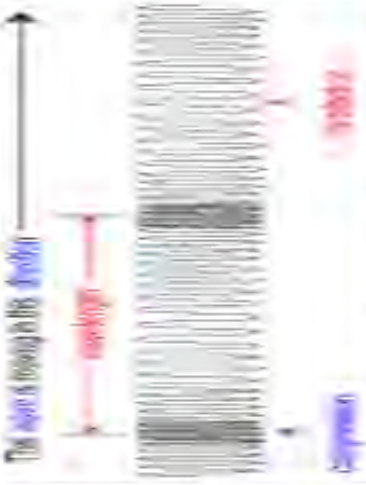
KS3 Electricity

Definitions		Units		
1	Series	Components are in a continuous loop. See diagram 1	16 Voltage	Volts (V)
2	Parallel	Components are in parallel to each other. See diagram 2.	17 Current	Amps (A)
3	Current	The flow of electrons	18 Resistance	Ohms (Ω)
4	Voltage	How much energy each electron has.	Equations	
5	Charge	Electrons are negatively charged	19 Voltage	Current x resistance
6	Electrons	The negatively charged part of an atom.	20 Power	Voltage x current
7	Resistance	Measures how well a material or object conducts electricity. Low resistance means the object conducts electricity well.	21 Power	(Current)² x resistance
8	Ammeter	The piece of equipment used to measure the current.	22 Charge	Current x time
9	Voltmeter	The piece of equipment used to measure the voltage.	 	
10	Cell	Gives the electrons energy. 2 cells make a battery.		
11	Diode	A component that makes the current flow in one direction only.	 	
12	Fuse	The fuse breaks the circuit if a fault in an appliance causes too much current to flow.		
13	Component	Parts of a circuit. E.g. bulb, switch, ammeter.	 	
14	Bulb	Gives out light energy		
15	Wires	Current flows through the wire because they contain electrons, that move to make a current.	 	

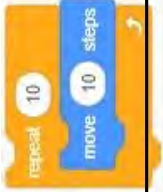
KS3 Forces

Definitions					
1	Force	A force can change the speed, direction or shape of an object.	16	Terminal velocity	Terminal velocity happens at the moment in time that the force, because of gravity, called weight, is the same as the opposite force of air resistance or friction.
2	Contact Force	A force that acts by direct contact e.g. friction, air resistance.	17	Compression	Being squashed.
3	Non-contact force	A force that does not need direct contact to act e.g. gravity, magnetism	18	Deformation	Changing shape as a result of forces being applied.
4	Gravity	A force that attracts objects towards each other.	Investigation skills		
5	Air resistance	A force that is caused by the frictional forces of the air hitting an object.	19	Directly proportional	As one amount increase, so does the other, at equal rates. On a graph, this will pass through the origin.
6	Magnetism	A force is exerted on a magnetic material brought into a magnetic field.	20	Gradient	The steepness of a line. The gradient of a line of best fit can be calculated.
7	Up thrust	An upward force exerted by a liquid or gas on an object floating in it.	21	Tangent	A straight line that touches a curve at a point.
8	Mass	The mass of an object is the amount of matter or 'stuff' it contains. Measure in grams (g) or kilograms (kg).	22	Hook's law	The extension of an elastic object, such as a spring, is described by Hooke's law; the force applied to the spring is directly proportional to the extension of the spring.
9	Weight	The weight of an object is how hard gravity pulls down on an object.			
10	Newton's	The unit of force (N).			
11	Newton-meter	The equipment used to measure the force acting on an object.			
12	Friction	Objects, which rub against each other, have friction. Friction works against motion.			
13	Elastic	An object that will return to its original shape when the force is removed.			
14	Plastic	A material that does not return to its original shape when the force is removed.	 $\text{Gradient} = \frac{\text{change in } y}{\text{change in } x}$		
15	Pressure	Pressure is the force per unit area.			
			Diagram 1: Hook's Law		
			Diagram 2: How to calculate a gradient		

KS3 7L Sound

Definitions					
1	Amplitude	The height of a wave (see fig 2)	16	Ultrasound	Sounds made with a frequency above 20,000Hz
2	Frequency	The number of waves per second	17	Infrasound	Sounds made with a frequency below 20 Hz
3	Wavelength	The length of a wave – one complete cycle	18	Dissipated	Energy that is lost to the environment
4	Pitch	The higher the frequency, the higher the pitch			
5	Longitudinal	The vibrations are parallel to the direction of wave travel.	19	Compression	Regions of high pressure due to particles being close together, in a longitudinal wave (see fig 2)
6	Transverse	The vibrations are at right angles to the direction of wave travel.	20	Rarefaction	Regions of low pressure due to the particles being spread further apart (see fig 2)
7	Wave	Waves transfer energy without transferring matter	21	Speed equation	Speed = distance / time
8	Vacuum	An area without any particles e.g. Space	22	Oscilloscope	A used to display and analyse the waveform of electronic signals.
9	Cochlea	Filled with fluid, receives sound in the form of vibrations			
10	Ear drum	Thin layer of skin that vibrates			
11	Auditory nerve	Converts the vibrations in the ear into electrical impulses to send to the brain.			
12	Seismic	Waves generated by an earthquake			
13	Hertz	The unit of frequency. 5 waves per second will have a frequency of 5Hz			
14	Decibels	The unit for measuring the volume of a sound.			
15	Superposition	When waves meet, they add or cancel out.	Fig 1: Longitudinal wave		Fig 2: Transverse wave

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SAFETY FIRST



Computing

Ctrl + X	Cut
Ctrl + C	Copy
Ctrl + V	Paste
Ctrl + Z	Undo
Ctrl + Y	Redo
Ctrl + B	Bold
Ctrl + I	Italics
Ctrl + S	Save
F12	Save As

Humanities: History

Year 7 History – The Roman Empire Knowledge Organiser

What was the Roman Empire		Key words/ terms	
The Roman Empire was the name given to the period of time when the majority of western Europe, the Mediterranean, North Africa and middle east were controlled by the rulers of Rome.		Romulus and Remus	The twin brothers who allegedly built settlements in 753BC. Romulus killed Remus and founded (created) the city of Rome.
753BC	Key dates	Legion	Name given to a Roman army- approximately 6,000 soldiers.
509BC	Romulus founds the city of Rome	Legionary	The standard Roman infantry soldier.
27BC	Rome becomes a republic	Testudo	Roman battle formation creating a 'shell' with shields.
43AD	Augustus becomes the first Roman Emperor	Colosseum	The huge amphitheatre in Rome where gladiator fights took place- its real name was the Flavian Amphitheatre.
43AD	Britain is conquered by Rome	Palatine Hill	The hill where Rome was originally founded, later home of the Emperor.
285AD	Roman Empire is split into East and West	Pantheon	Huge temple to the 12 gods built in Rome by the Emperor Hadrian.
476AD	Collapse of the Roman Empire in Western Europe	Aqueduct	Roman structure that carried water to the cities.
Key concepts		Hypocaust	Roman underfloor heating found in wealthy houses.
Monarch	System of government where a country is ruled by an individual or family- a Monarch.	Jupiter	King of the Roman gods
Republic	System of government used by the Romans where there is no king/ queen. A Senate rule instead.	Pompeii	Roman city near modern day Naples that was destroyed by Mt Vesuvius in 79AD
Senate	The Roman government- like a Parliament.	Hadrian's Wall	Wall marking the very northern border of the Empire- Scotland
Emperor	A Sole rule over an Empire, not just a country.	Boudicca	British Celt queen who tried to rebel against Rome
Empire	Where a number of countries or provinces are ruled by another.		
Province	A country (e.g. Spain, Britain) that is ruled by another such as Rome.		
Reliability	Judging to what extent or how far a source is trustworthy or factual- does it have any exaggeration or bias in it?		
Bias/ Biased	Covering events from one point of view/ favouring one side e.g. biased against Emperors such as Nero.		
Utility/ Useful	What the source is/ is not useful to an historian for, particularly looking at where and when it came from and why it was produced.		

Year 7 History Knowledge Organiser – Anglo-Saxon England

Key vocabulary		
1	Used to record historical dates as a number of years after Christ's birth: Anno Domini	AD
2	Two Germanic tribes who invade England from Germany	Anglo-Saxons
3	The most senior bishop and leader of the English church.	Archbishop of Canterbury
4	The dominant population in Britain until the arrival of the Anglo-Saxons.	Celts
5	A period of 100 years, often used to describe different historical periods.	Century
6	English territory given over to Viking rule after the Battle of Edington.	Danelaw
7	The site of an Anglo-Saxon ship burial from the 7 th century.	Sutton Hoo
8	Seafaring people from Scandinavia who raided and raided across Europe and Russia.	Vikings
Key dates		
9	Roman army leaves Britain and the Angles and Saxons begin to arrive.	410 AD
10	The Vikings attack the monastery at Lindisfarne	793
11	The invasion of the 'Great Heathen Army'.	865
12	Alfred the Great defeats the Vikings in the Battle of Edington	878
13	Athelstan's victory at the Battle of Brunanburh confirms him as the first king of all England.	937
14	The Viking ruler Canute becomes king of England.	1016
15	Viking king who was defeated by Alfred and given the Danelaw to rule.	Guthrum
16	Grandson of Alfred the Great who unified England as one country.	Athelstan

Humanities: History



Knowledge Organiser : What was life like in Medieval England?

Summary

1. **The Middle Ages** – or Medieval period are the years between the Norman Conquest in 1066 and the Tudor period which began in 1485.

Key Events

2.	14 October 1066 – William defeated Harold Godwinson at the Battle of Hastings
3.	1095 – The Crusades began Known as the Wars of the Cross A series of wars between Christians and Muslims for control of the Holy Land. The Crusaders returned to Europe with new items: foods such as lemons, apricots, nutmeg and cinnamon; Arabic numbers 1,2, etc.; technology such as mirrors, magnifying glasses, maps and compasses; words such as sofa, mattress, algebra, admiral, arsenal; medical knowledge and a new style of castle: concentric castles..
4.	1170: Thomas Becket the Archbishop of Canterbury was murdered in his cathedral during arguments between King Henry I and the church over who was the more powerful. Four knights heard the king complain about Thomas and murdered him.
5.	1215: The Magna Carta was signed by King John . The king accepted that there were limits on his power he must obey the law.
6.	1283: Wales was conquered by the English King Edward I . He built a series of castles such as Conway to keep Wales under control.
7.	1348: The Black Death arrived in England from the Far East. About a third of the population died within 3 years. 50 million across Europe are thought to have died. Many people believed it was a punishment from God. Usually, it was carried by black rats and passed on to humans by fleas. Outbreaks continued roughly every 20 years until 1665.
8.	1381 The Peasant's Revolt Thousands of people rebelled against high taxes and limits on their freedom. No one was allowed to ask for higher wages, villeins had to work for their lord for free, they couldn't leave their village without permission. Although King Richard I defeated them, within 50 years peasants no longer had to work for free, became more independent from their Lord's control & had higher wages.
9.	1455: The Wars of the Roses began as two rival families fought for the crown in England.: The Yorkists (symbolized by a white rose) and the Lancastrians (symbolized by a red rose) This was civil war because Englishmen were fighting each other.
10.	22nd August 1485 : Henry Tudor, (Henry VII) a Lancastrian, became King of England when he ended the Wars of the Roses and defeated Richard III at the Battle of Bosworth .



Key Words

11	Bubonic	One of the two types of plague. Named after the boils or buboes that were symptoms of the disease. Pneumonic plague attacked the lungs, a symptom was coughing
12	Christian	A person who follows the teachings of Jesus Christ. Most people in England in the Middle Ages were Christian. Jews were forced to leave England by King Edward in 1290.
13	Doom Paintings	A painting in a church to show people images of heaven and hell. They were needed because most people could not read
14	Magna Carta	A document or Great Charter that set out English peoples' rights. King John was forced to sign it in 1215 agreeing that kings had to obey the law
15	Monarchy	A country ruled by a king or queen. A monarch with total power is an autocrat . Today the UK is a democracy - people elect a Parliament which governs the country.
16	Monks & Nuns	A religious community living in a monastery or nunnery . They provided some education, medical care, help for the poor and a bed for pilgrims
15	Parliament	The first Parliament was called in 1265 during the reign of Henry III . It included not only the Kings council but also two ordinary people from each large town and two knights from each county in England. These meetings or Parliaments could collect money for the king (taxes), agree to new laws and give advice to the king. Today the British Parliament controls the country. It is made up of the House of Lords and House of Commons
16	Peasant	A farmer. Most English people were farmers who lived in small villages in the Middle Ages. Villein was a peasant who worked for his lord in return for land.
17	Pilgrim	A person who travels to a holy place on pilgrimage for religious reasons
18	Plague	A very infectious disease that spread quickly and kills large numbers of people across the world. Also called an epidemic
19	Pope	Head of the Catholic Church. Lived in the Vatican in Rome, Italy. All Christians were Catholic in the Middle Ages. The Pope was helped by Archbishops, Bishops & priests. Everyone believed in God, heaven & hell.
20	Pottage	A thick vegetable soup eaten by peasants, only the rich ate meat.
21	Revolt	A rebellion or uprising because people are angry about something
22	Tithe	A tenth of the food that peasants grew had to be given to the Church.
23	Wattle and daub	A medieval building material made of interwoven sticks covered with mud or clay

Humanities: Geography

The British Isles Knowledge Organiser

1. Country	A place with its own government.	14. Urban areas	Built- up areas eg towns and cities. These areas have a high density of people living in them.
2. Continent	Large, continuous expanse of land, usually containing countries eg. Europe, Africa, Australasia	15. Rural areas	Countryside areas. These areas have a low density of people living in them.
3. Ocean	Very large expanse of sea, in particular each of the main areas into which the sea is divided geographically. Eg. Atlantic Ocean, Pacific Ocean	16. Choropleth mapping	Using colour to show information on maps eg relief, population distribution
4. Sea	Expanse of salt water that covers most of the earth's surface and surrounds its landmasses. A sea is smaller than an ocean. Eg. North Sea, Irish Sea	17. Weather	The state of the atmosphere at a given time and place eg wind, rain, temperature
5. The British Isles	England, Wales, Scotland, Republic of Ireland, Northern Ireland and 5,000 small islands.	18. Climate	The average weather conditions of a place or an area over a period of 30 years or more
6. The United Kingdom	England, Wales, Scotland and Northern Ireland.	19. Latitude	Determines the geographic north-south position of a point on the earth. 0 degrees is at the Equator and 90 degrees are at the poles.
7. Great Britain	England, Scotland and Wales.	20. Altitude	Height above sea level (metres). Temperatures decrease with altitude. There is a 1°C drop in temperature for every increase of 100 m in height
8. Relief	The height and shape of the land	21. Prevailing winds	The dominant (main) wind direction in an area. The prevailing wind in the UK comes from the South west.
9. Human features	A man-made feature built by humans eg a town, city, motorway, airport, bridge etc	22. Continentality	Distance from the sea. The sea takes longer to heat up and cool down than land keeping coastal areas warm in winter and cooler in summer.
10. Physical features	A naturally created feature of the Earth. Eg a mountain, a desert, a jungle, a river, a sea, a forest etc	23. Ocean currents	These can warm or cool our temperature. The UK is affected by the Gulf Stream which brings warm water from the Gulf of Mexico to our western coastline.
11. Mountain Range	A group or chain of mountains located close together. Neighbouring mountains often share the same geological origins, mountain ranges have similar form, size and age. Eg. Pennines, Cambrian	24. Land use model	A model is used to simplify complex, real world situations, and make them easier to explain and understand eg Burgess, Hoyt.

Humanities: Geography

Exploring the World Knowledge Organiser

1. Cartographer	A person who draws or produces maps	14. Northern Hemisphere	The half of Earth that is north of the Equator
2. Explorer	A person who explores a new or unfamiliar area	15. Southern Hemisphere	The half of Earth that is south of the Equator
3. Continent	Large, continuous expanse of land, usually containing countries eg. Europe	16. Tropic of Cancer	The most northerly circle of latitude on Earth at which the Sun can be directly overhead
4. Country	A nation with its own government, occupying a particular territory eg. England	17. Tropic of Capricorn	The most southerly circle of latitude on Earth at which the Sun can be directly overhead
5. Mega-City	Very large city, typically one with a population of over 10 million people. Eg Tokyo	18. Longitude	Determines the geographic east-west position of a point on the earth.
6. Geographical Feature	A man-made or naturally created feature of the Earth. Eg a mountain, a desert, a jungle, a river, a sea, a forest etc	19. Latitude	Determines the geographic north-south position of a point on the earth. 0 degrees is at the Equator and 90 degrees are at the poles
7. Mountain Range	A group or chain of mountains located close together. Neighbouring mountains often share the same geological origins, mountain ranges have similar form, size and age. Eg. Himalayas	20. Relief	The height and shape of the land
8. Mountain	High natural elevation of the earth's surface rising abruptly from the surrounding level eg. Mt Everest	21. Biosphere	Reference to the totality of the earth surface and atmosphere that is inhabited by living organisms.
9. Ocean	Very large expanse of sea, in particular each of the main areas into which the sea is divided geographically. Eg. Atlantic	22. Contour line	A line on a map joining points of equal height above or below sea level.
10. Sea	Expanse of salt water that covers most of the earth's surface and surrounds its landmasses. A sea is smaller than an ocean. Eg. Mediterranean	23. Human Feature	Things that are built by humans such as bridges, buildings and roads
11. River	Large natural stream of water flowing in a channel to the sea, a lake, or another river.	24. Physical Feature	Natural features and objects such as mountains, grass plains and rivers.
12. Ecosystem	Includes <u>all</u> of the living things (plants, animals and organisms) in a given area, interacting with each other, and also with their non-living environments (weather, earth, sun, soil, climate, atmosphere)	25. Weather	The state of the atmosphere at a given time and place
13. Biome	Large naturally occurring community of flora and fauna occupying a major habitat, e.g. forest, desert or tundra.	26. Climate	The average weather conditions of a place or an area over a period of 30 years or more

Humanities: Geography

Energy Knowledge Organiser

1. Energy	Power from the use of physical or chemical resources	14. Environmental	relating to the natural world and the impact of human activity on its condition
2. Consume	To use up e.g. a resource, food, drink	15. Solar power	Power obtained by harnessing the energy of the sun's rays.
3. Global distribution	The spread of something around the world – it's pattern.	16. Wind power	Turbines use energy from the wind to generate electricity, either on land or out at sea (wind farms).
4. Energy poverty	A lack of access to energy infrastructure and resources.	17. Oil	a viscous liquid derived from petroleum, especially for use as a fuel or lubricant
5. Energy security	To be relatively self-sufficient in energy supply.	18. Coal	A black or dark brown rock consisting chiefly of carbonized plant matter, found mainly in underground seams and used as fuel.
6. Economic well being	Having present and future financial security eg being able to work, having a good education	19. Natural Gas	Flammable gas, consisting largely of methane and other hydrocarbons, occurring naturally underground (often in association with petroleum) and used as fuel.
7. Social well being	Being comfortable, happy and healthy eg having access to warmth, light, housing, refrigeration.	20. Nuclear energy	The energy released during nuclear fission or fusion, especially when used to generate electricity.
8. Energy mix	Made up of fossil fuels, nuclear energy and renewable energy.	21. Geothermal energy	Underground reservoirs of steam and hot water can be trapped to generate electricity or to heat buildings directly.
9. Non-renewable energy	Energy, which is finite, is not sustainable and takes a long time to replenish. E.g. fossil fuels such as gas, oil and coal.	22. Hydroelectric energy	Water is trapped by a dam and allowed to fall through tunnels, where the pressure from the falling water turns turbines, generating electricity
10. Renewable energy	Energy, which is infinite, sustainable and is easily replenished. E.g. wind, solar and hydro energy.	23. Biomass/fuels	Wood, plants or animal waste are burnt for power, or used to produce biofuels.
11. Finite	Limited in size or extent. Only so much. Will be used up and will run out.	24. Fracking	Gas trapped in shale rock is released by pumping water and sand into the ground, which widens cracks in the ground, allowing the gas to escape.
12. Fossil fuels	A finite, natural fuel such as coal or gas, formed in the geological past from the remains of living organisms	25. Shale	A type of sedimentary rock which is formed of layers. Shale gas, a type of natural gas, is sometimes found in the layers or shale.
13. Extract	Remove or take out. obtain (a substance or resource) from something by a special method	26. Protest	a statement or action expressing disapproval of or objection to something eg anti-fracking protest groups

Humanities: Geography

Year 7 Geography – Global Ecosystems Knowledge Organiser

Key concepts - Biomes			Key concepts – Ecosystems	
1	Community of plants and animals which interact with each other and with their non-living environment.	Ecosystem	16	Plants which make their own food.
2	A very large ecosystem that has similar characteristics such as the same plants and animals, like the desert, rainforest.	Biome	17	Bacteria and fungus that break down material, making it rot.
3	An imaginary line that divides Earth into northern and southern hemispheres.	Equator	18	Animals that only eat plants.
4	An area where there is little precipitation.	Desert	19	Animals that eat other animals.
5	Treeless regions found in very cold places.	Tundra	20	Animals that eat both plants and other animals.
6	Areas dominated by trees that lose their leaves each year.	Deciduous forest	21	Something that does not relate to living organisms e.g. water.
7	An area with a mixture of grasslands and widely spaced trees.	Savanna	22	Something that relates to living organisms e.g. bacteria
8	An area with hot, dry summers and mild, rainy winters.	Chaparral	Key concepts – climate	
9	Areas on the equator where there is no dry season.	Tropical rainforest	23	The weather conditions in an area over a long period of time.
10	Areas where the main vegetation are grasses.	Grasslands	24	Heavy Rain formed by the cooling of moist air which has risen from the heated ground or sea.
11	Mountain areas that see huge changes in temperature.	Alpine	25	Water that falls from the sky.
Users of the rainforest			26	Water when it is gas.
12	Clearing of forest areas so the land can be used for other purposes.	Deforestation	27	When water turns from gas to liquid.
13	Burning a small area of land to improve soil fertility.	Slash and burn	28	Evaporation from the soil and other surfaces and water released from plants.
14	When farmers grow only enough food to feed themselves and their families.	Subsistence farming	29	Downward movement of water through soil.
15	A person who wants to protect the environment	Conservationist	30	Process by which molecules in a liquid state (e.g. water) spontaneously become gaseous.
				Climate
				Convectional rainfall
				Precipitation
				Water vapour
				Condensation
				Evapotranspiration
				Infiltration
				Evaporation

Very Useful Vocab Mat

I want your opinion!

je préfère
j'adore
j'aime beaucoup
j'aime vraiment
j'aime assez
j'aime bien
je suis fan de
c'est génial
je n'aime pas trop
je n'aime pas vraiment
je n'aime pas
je n'aime vraiment pas
je n'aime pas du tout
c'est nul
je déteste

Questions

qui – who
que/qu'est-ce que/quoi – what
quel/quelle/quels/quelles – which
où – where
quand – when
comment – how, what (is it) like
combien – how much/many
pourquoi – why
est-ce que – just indicates it's a question

Mois

janvier
février
mars
avril
mai
juin
juillet
août
septembre
octobre
décembre

Saisons

au printemps
en été
en automne
en hiver

Numbers

1 un
2 deux
3 trois
4 quatre
5 cinq
6 six
7 sept
8 huit
9 neuf
10 dix
11 onze
12 douze
13 treize
14 quatorze
15 quinze
16 seize
17 dix-sept
18 dix-huit
19 dix-neuf
20 vingt
21 vingt et un
22 vingt-deux
23 vingt-trois
24 vingt-quatre
25 vingt-cinq
26 vingt-six
27 vingt-sept
28 vingt-huit
29 vingt-neuf
30 trente
40 quarante
50 cinquante
60 soixante
70 soixante-dix
80 quatre-vingt
90 quatre-vingt-dix
100 cent
1000 mille
1 000 000 un million

Days

lundi mardi
mercredi jeudi
vendredi
samedi
dimanche

Couleurs

noir, noire, noirs, noires
rouge, rouges
bleu, bleue, bleus, bleues
vert, verte, verts, vertes
blanc, blanche, blancs, blanches
jaune, jaunes
rose, roses
marron
orange

in my opinion

à mon avis
I think that
je pense que
I find that
je trouve que

Watch out for common mistakes!

je m'appelle, tu t'appelles, il/elle s'appelle
j'ai quatorze ans - je suis de taille moyenne
j'ai les cheveux blonds - j'ai les yeux bleus
c'est/ça va être + **masculine adjective**
ennuyeux intéressant
mon copain, ma copine, mes copains/copines
de temps en temps
au collège - à Reading - dans ma maison

masculin	féminin	pluriel
un frère	une sœur	des grands-parents
mon père	ma mère	mes parents
le stylo	la trousse	les cahiers
du poulet	de la glace	des légumes

Avoid repetitions!

boring: ennuyeux, barbant
exciting: intéressant, passionnant
fun: amusant, drôle, marrant
great: génial, super, chouette, fantastique
rubbish: nul, pénible, affreux

Comment tu t'appelles?
Quel âge tu as?
Où est-ce que tu habites?
Tu es comment? Décris-toi.
Il y a combien de personnes dans ta famille?
Quelle est la date de ton anniversaire?
Qu'est-ce que tu aimes?

J'habite à Reading, dans une grande maison.
J'ai douze ans.
Je suis petit, j'ai les cheveux noirs et courts.
Il y a mon père, ma mère, et mon petit frère.
C'est le 2 janvier.
J'aime le basket.
Je m'appelle Marie.

Tenses

Past tense

Auxiliary "avoir" in present + past participle.	
J'ai tu as il/elle/on a nous avons vous avez ils/elles ont	ER – mangé IR – fini RE – vendu
Most common irregular endings :	
J'ai dit (dire)	J'ai eu (avoir)
J'ai lu (lire)	J'ai été (être)
J'ai écrit (écrire)	J'ai fait (faire)
J'ai pu (pouvoir)	J'ai bu (boire)
J'ai vu (voir)	J'ai pris (prendre)
Auxiliary « être » (+ E in feminine, S in plural):	
je suis monté je suis resté je suis sorti je suis venu je suis allé je suis né je suis descendu je suis entré je suis rentré je suis tombé je suis retourné je suis arrivé je suis mort je suis parti	
+ reflexive verbs: je me suis disputé Negative : je ne suis pas allé, je n'ai pas vu	

Present tense

Regular verbs			
ER	IR	RE	
je <u>chante</u> tu <u>chantes</u> il <u>chante</u> nous <u>chantons</u> vous <u>chantez</u> ils <u>chantent</u>	je <u>finis</u> tu <u>finis</u> il <u>finit</u> nous <u>finissons</u> vous <u>finissez</u> ils <u>finissent</u>	je <u>vends</u> tu <u>vends</u> il <u>vend</u> nous <u>vendons</u> vous <u>vendez</u> ils <u>vendent</u>	
Some irregular verbs			
ETRE (to be)		AVOIR (to have)	
je <u>suis</u> tu <u>es</u> il <u>est</u> nous <u>sommes</u> vous <u>êtes</u> ils <u>sont</u>		j' <u>ai</u> tu <u>as</u> il <u>a</u> elle <u>a</u> nous <u>avons</u> vous <u>avez</u> ils <u>ont</u>	
ALLER (to go)		FAIRE (to do)	
je <u>vais</u> tu <u>vas</u> il <u>va</u> nous <u>allons</u> vous <u>allez</u> ils <u>vont</u>		je <u>fais</u> tu <u>fais</u> il <u>fait</u> nous <u>faisons</u> vous <u>faites</u> ils <u>font</u>	
VOULOIR (to want)		POUVOIR (can)	
je <u>veux</u> tu <u>veux</u> il <u>veut</u> nous <u>voulons</u> vous <u>voulez</u> ils <u>veulent</u>		je <u>peux</u> tu <u>peux</u> il <u>peut</u> nous <u>pouvons</u> vous <u>pouvez</u> ils <u>peuvent</u>	
Reflexives: je me lave, tu te laves, on se lave, nous nous lavons, vous vous lavez, ils se lavent			

Future tense

Verb "aller" in present + infinitive.

je vais tu vas il va nous allons vous allez ils vont	aller
	manger
	finir
	vendre
	aller
	faire
	avoir
	être

Negative: Je ne vais pas manger

Past	Present	Future
hier	aujourd'hui tous les jours	demain
le week-end dernier	souvent rarement	le week-end prochain
la semaine dernière	quelquefois normalement	la semaine prochaine
l'année dernière	de temps en temps	l'année prochaine
avant-hier	ne ... jamais toujours	ce week-end
il y a dix ans	en général maintenant	dans dix ans
l'hiver dernier	en ce moment en été	l'été prochain
l'été dernier	en hiver au printemps	cet hiver

Im Klassenzimmer



Wie sagt man "....." auf Englisch?	What does "....." mean in English?
Wie sagt man "....." auf Deutsch?	How do you say "....." in German?
Wie schreibt man das?	How do you spell it?
Ich verstehe nicht.	I don't understand.
Langsamer, bitte.	Speak more slowly please.
Ich habe mein Heft / Kuli vergessen.	I have forgotten my exercise book/ my pen.
Ich habe meine Hausaufgaben vergessen.	I have forgotten my homework.
Entschuldigung!	Sorry.
Ich weiß / ich weiß (es) nicht.	I know it/ I don't know.
Möchtest du mit mir arbeiten?	Do you want to work with me?
Wo ist....?/ Wo sind....?	Where is...?/ Where are...?
Er ist nicht hier/ sie ist nicht hier.	He is absent/ she is absent.
Ja, Herr Munn/Frau White.	Here (during registration).
Darf ich leihen?	Can I borrow....?
Darf ich ein /e/einen haben?	Can I have....?
Hast du ...?/ Haben Sie....?	Do you have.....?
Wie bitte, bitte?	Repeat please.
Ich brauche Klebstift.	I need some glue.

Useful grammar terminology

Verb	A doing word/ a being word e.g. <i>I play/ I am</i>
Infinitive	The form of the verb that you will find in the dictionary. In English it starts with 'to' and in German it ends in "en" e.g. <i>to play = spielen</i>
Conjugation	The process you follow when using the verb flowers to put the various endings onto the stem of the verb
Subject pronouns	I/you/he/she/it/we/you/they
Adjective	A describing word e.g. blue/ big/ bright/ bold...
Noun	A name of a person, a thing (concrete or abstract), a place, a quality... e.g. Sophie/ a house/ intelligence/ Köln / a beach/ kindness....
Connective	A word that joins up separate pieces of information to make a single more complex sentence e.g. The dog is black and he is called Jack
Tenses	Tenses represent the time frame you are talking about e.g. Present - I go to school Past - I went to school Future - I am going to go to school/ I will go to school



1	eins	31	einunddreißig
2	zwei	34	vierunddreißig
3	drei	40	vierzig
4	vier	50	funfzig
5	fünf	60	sechzig
6	sechs	70	siebzig
7	sieben	71	einundsiebzig
8	acht	72	zweundsiebzig
9	neun	73	dreundsiebzig
10	zehn	74	vierundsiebzig
11	elf	75	fünfundsiebzig
12	zwölf	76	sechsunundsiebzig
13	dreizehn	77	siebunundsiebzig
14	vierzehn	78	achtunundsiebzig
15	fünfzehn	79	neunundachtzig
16	sechzehn	80	achtzig
17	siebzehn	81	einundachtzig
18	achtzehn	87	siebenundachtzig
19	neunzehn	90	neunzig
20	zwanzig	91	einundneunzig
21	einundzwanzig	94	vierundneunzig
22	zweiundzwanzig	96	sechsunundneunzig
23	dreiundzwanzig	98	achtundneunzig
24	vierundzwanzig	100	(ein) hundert
25	fünfundzwanzig	162	einhundertzweiundfünfzig
26	sechsunundzwanzig	200	zweihundert
27	siebenundzwanzig	1000	(ein) tausend
28	achtundzwanzig	3884	dreitausendsechshundert
29	neunundzwanzig		vierundachtzig
30	dreißig		

Die Tage

Montag
Dienstag
Mittwoch
Donnerstag
Freitag
Samstag / Sonnabend
Sonntag

Die Monate

Januar
Februar
März
April
Mai
Juni
Juli
August
September
Oktober
November
Dezember

Meinungen

ausgeszeichnet
prima - klasse - toll
gut, sehr gut
befriedigend
mangelhaft
ungenügend
furchtbar

Ich denke
Ich finde
meiner Meinung nach
es ist
sie sind
es war
es wird ...sein
ich mag es...
es hat mir gut gefallen
I think that
I think that
In my opinion
it is
They are
It was
It will be
I like it
I liked it

	engl.	deutsch	plural
THE	der	das	die
A	ein	ein	-
SOME	-	-	-



Time phrases

normalerweise
immer
ab und zu
manchmal
nie
jetzt
Heute
im Winter
im Sommer
im Herbst
im Frühling
jede Woche
einzelmal pro Woche
gestern
letzte Woche
letztes Jahr
nächste Woche
morgen
in der Zukunft
normally
always
from time to time
sometimes
never
now
today
in Winter
in Summer
in Autumn
in Spring
every week
once a week
yesterday
last week
last year
next week
next year
tomorrow
in the future

Useful connectives

und
aber
auch
aber
weil
wenn
obwohl
mit
wo
weil
and
but
also
however
because
if
although
with
where
because

Adjectives go before the noun and so are like English, but they can change their spelling !

GRAMMAR NOTES LEARNING MAP KS3

Who does what?

ich = I
du = you (familiar)
er = he
sie = she
es = it
wir = we
ihr = you lot (familiar)
Sie = you polite
sie = they

Present Tense - Regular

ich - e
du - st
er - t
sie - t
es - t
wir - en
ihr - t
Sie - en
sie - en

spielen
TAKE OFF THE EN
→ spiel + endings

haben = to have

ich habe
du hast
er hat
sie hat
es hat
wir haben
ihr habt
Sie haben
sie haben

sein = to be

ich bin
du bist
er ist
sie ist
es ist
wir sind
ihr seid
Sie sind
sie sind

werden = to become

ich werde
du wirst
er wird
sie wird
es wird
wir werden
ihr werdet
Sie werden
sie werden

können – to be able to

ich kann
du kannst
er kann
sie kann
es kann
wir können
ihr könnt
Sie können
sie können

müssen – to have to

ich muss
du musst
er muss
sie muss
es muss
wir müssen
ihr müsst
Sie müssen
sie müssen

wollen – to want to

ich will
du willst
er will
sie will
es will
wir wollen
ihr wollt
Sie wollen
sie wollen

dürfen – to be allowed to

ich darf
du darfst
er darf
sie darf
es darf
wir dürfen
ihr dürft
Sie dürfen
sie dürfen

Modal Verbs are

always used with the
infinitive of another verb –
eg I can play football.
In German the infinitive goes
at the end of the sentence.
Ich kann Fußball spielen

was / were
ich war – I was
es war – it was
wir waren
– we were
sie waren
– they were

EXTRAS

sollen – to should!

ich sollte – I should
er sollte – he should
wir sollten – we should

Joining things

und / aber / denn – no change in words order
weil / dass / obwohl - send the verb → end
, weil es gut ist // ich finde, dass Fußball gut ist.

Comparing things

besser als nicht so gut wie
größer als nicht so groß wie
kleiner als nicht so klein wie

Future Tense

Present tense of werden + infinitive at the end of the phrase.

ich werde Fußball spielen.

wir werden nach Deutschland fahren.

Alternatives

Ich möchte Fußball spielen – I would like to play football.

ich will Fußball spielen – I want to play football

Perfect Tense

Regular verbs – add ge and take off the en and add a t
spielen → gespielt.

Add the correct part of 'haben' and 'sein' and the past participle (ge word) goes to the end of the phrase.

ich habe Fußball gespielt.

ich bin nach Leeds gefahren

You use haben for most verbs and sein for verbs of motion + to stay

Irregular Past Participles

to get	bekommen	bekommen
to visit	besuchen	besucht
to eat	essen	gegessen
to find	finden	gefunden
to win	gewinnen	gewonnen
to sleep	schlafen	geschlafen
to read	lesen	gelesen
to see	sehen	gesehen
to wear	tragen	getragen
to meet	treffen	getroffen
*to travel	fahren	gefahren

Spanish

GIVING OPINIONS

Me gusta	I like
No me gusta	I don't like
Me gusta mucho	I really like
No me gusta nada	I don't like it at all
Me encanta/Me chifla	I love
Odio	I hate
No aguanto	I can't stand
Creo que/Pienso que	I think that
En mi opinión	In my opinion
Prefiero	I prefer
Personalmente	Personally

CONJUNCTIONS - CONNECTIVES

Y	And
Pero	But
Porque	Because
También	Also
Sin embargo	However
Aunque	Although
Además	Moreover
Así que	So
Por un lado	On one hand
Por otro lado	On the other hand

SEQUENCERS

Primero	First
Luego	Then/Next
Después	Afterwards
Más tarde	Later on
Finalmente	Finally

TIME MARKERS - PRESENT

Normalmente	Normally/Usually
Siempre	Always
Nunca	Never
A veces	Sometimes
Cada <u>día</u>	Every <u>day</u>
Ahora	Now

TIME MARKERS - PAST

Ayer	Yesterday
El <u>lunes</u> pasado	Last <u>Monday</u>
La semana pasada	Last week
El fin de semana pasado	Last weekend
El mes pasado	Last month
El año pasado	Last year
Anoche	Last night

TIME MARKERS - FUTURE

Mañana	Tomorrow
El próximo <u>lunes</u>	Next <u>Monday</u>
La próxima semana	Next week
El próximo fin de semana	Next weekend
El próximo mes	Next month
El próximo año	Next year

QUANTIFIERS - INTENSIFIERS

Muy	Very
Bastante	Quite
Un poco	A little/A bit
Cada	Every/Each
Demasiado	Too (much/many)
Mucho	much/many/lots of/a lot of

USEFUL VERBS

Es	He/She/It is
Son	They are
Soy/Estoy	I am
Tengo	I have
Hay	There is/are
Puedo	I can
Quiero	I want
Hago	I do/make
Voy	I go

QUESTIONS

¿Qué?	What?
¿Por qué?	Why?
¿Dónde?	Where?
¿A dónde?	Where (to)?
¿Cuándo?	When?
¿Cómo?	How?
¿Cuánto?	How much?
¿Quién?	Who?

THE WEATHER

Hace sol	It is sunny
Está nublado	It is cloudy
Está lloviendo	It is raining
Hace frío	It is cold
Hace calor	It is hot
Hace viento	It is windy
Está nevando	It is snowing
Hay niebla	It is foggy

ADJECTIVES - POSITIVE

Divertido	Funny/Amusing
Interesante	Interesting
Genial	Great
Guay	Cool
Entretenido	Entertaining
Emocionante	Exciting
Estimulante	Stimulating
Relajante	Relaxing
Increíble	Incredible
Útil	Useful
Sensacional	Sensational
Agradable	Nice
Fácil	Easy

ADJECTIVES - NEGATIVE

Aburrido	Boring
Molesto	Annoying
Horrible	Awful
Raro	Strange/Rare
Estresante	Stressful
Agotador	Tiring
Iniútil	Useless
Asqueroso	Disgusting
Difícil	Difficult
Irritante	Irritating

MAKING COMPARISONS

Más... que	More... than
Menos... que	Less... than



ESPAÑOL

Social Science: RE

Year 7 Knowledge Organiser – Religious Education

1. World religions and beliefs. The six world faiths are; • Christianity • Islam • Judaism • Sikhism • Hinduism • Buddhism Belief – Something you feel is true. A strongly held opinion around which you might base lots of decisions about your life around. Symbol - a picture used to identify a person, group or place. It can often tell us something about them. Holy book - a book of stories and rules which is very special (holy) to the religion. Often these books are believed to be inspired by God or even God's actual words. 5. Is the world sacred? Do animals have rights? There are many environmental issues facing the world at present including different forms of pollution (air, water, plastic), the loss of animals habitats, deforestation, pesticides. As we learnt in lesson 4 many religious people feel that God created the world and left them with a responsibility therefore to look after it. They believe that the world is sacred, and they can show their love and respect for God by caring for it and trying to live sustainably. They might also be	2. What are beliefs? Beliefs are things we FEEL to be true. Beliefs are different from facts and come from our own opinions. Facts are things we KNOW are true, because we can prove them. Belief = something you feel is true. Tradition = something that people have been doing for a long time and has been passed on throughout the years. Atheist – Someone who does not believe in God. Theist – Someone who does believe in God Agnostic – Someone who does not have enough knowledge to know if God exists or not. Unsure of Gods existence. 6. Religion and death: Euthanasia Most religious people believe that physical death is not the end of life and that there is some sort of afterlife. However, they have various ideas about euthanasia which is a very controversial idea. In Islam due to the sanctity of life idea most Muslims would be against euthanasia as it is playing God. Only Allah should decide when your life ends. Jannah – The Islamic word for Heaven. Al – Aaraf – the bridge from which sinners will fall and so not get into Jannah, according to Islam. Palliative care – care received by the dying	3. Holy books Holy books are a key source of authority to religious believers helping them to make sense of their lives and supporting them with important ethical decisions. The Holy books for each of the 6 world faiths are; • Christianity - Bible • Islam – Qur'an • Judaism - Torah • Sikhism – Guru Granth Sahib • Hinduism - Rigveda • Buddhism - Tipitaka The Bible is a central source of authority for all Christian and reveals many important teachings. Christians often turn to the Bible to seek guidance and understand the history of their faith. The Bible is a collection of books. There are 39 books in the Old Testament and 27 books in the New Testament. 7. Beliefs causing conflict Around 85% of the world population believe in some sort of higher power. This figure is lower in the UK. The fact that so many people believe in a God and practice a religion has caused many different conflicts over time as	4. The sanctity of life – Creation stories? Many religious people believe that the world is sacred and holy as it has been created by God. These creation stories are often found in a religious persons' Holy book. The belief that all life is sacred might have an impact on how a religious person treats the world and gives them a greater sense of respect for the environment. The sanctity of life – the belief that life is sacred and given by God. Many people, including some religious people may feel that life started with the Big Bang - an event which scientists say began smaller than the eye of a needle and exploded, flinging all the matter of the universe into space. Time, space and matter all began with the Big Bang. In a fraction of a second, the universe grew from smaller than a single atom to bigger than a galaxy. Many people believe this event happened as the universe is still expanding today. 12. Does God exist? As we have learnt many people around the world believe in some sort of God – They are theists although believes about this God and religious vary and can cause conflicts. As a belief has no evidence it is difficult for religious people to 'prove' the existence of God. They rely on their faith but may
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Social Science: RE

actively engaged in helping with environmental problems. They might also believe that animals are important as creations of God and again therefore they have a responsibility to look after animals and the environment. St Francis of Assisi is an example of a Christian monk who used his time and energy looking after animals. 9. Religious leaders Religious Leaders – Someone who is recognized by a religious organisation as having some authority to lead in some capacity within the religion. The religious leader in Islam is known as an Imam. An Imam leads prayer and worship services at the mosque. Worshippers will repeat prayers after the Imam and copy his movements. The Imam stands facing away from the worshippers and towards Mecca. The Imam leads the five daily prayers as well as the prayers on special festivals and occasions. In Christianity the Catholic Church follow the Pope and every individual Church has a Priest. The pope and priest are always men.	Destroy not yourselves. Surely Allah is ever merciful to you. <i>Qur'an 4:29</i> Christianity has similar beliefs although different groups of Christians (denominations) may be more tolerant of some 10. What is the soul? Soul - a spiritual part of a person which we cannot see, which is said to exist after death. Many theists say it is the part of a human which is closest to God. forms of euthanasia. Many Christians believe that humans have a spiritual element to them that makes them special and sets them apart from all other animals. They believe that spiritual element is not a physical part of the body. Some people might suggest that this spiritual aspect could be thought of as a soul. Christians believe that humans are created 'in God's image' and that this spirit or soul reflects this image inside every person. Muslims believe that human beings are Allah's highest creation because they are the only living things to have a soul. They believe that Allah gives each human an individual soul soon after the baby begins to develop in the mother's womb. It is this spiritual soul that is the 'real' person. The body is simply a 'carrier'. Allah allows each soul a certain amount of time to inhabit the body.	people's ideas and believes have developed different and have caused them to fall out with each other. In Christianity the reformation caused a big conflict in the Middle Ages. You looked at this in lesson 8. There is ongoing tension between Catholics and Protestants in Northern Ireland. In Islam the Sunni Shia split still causes tension. 11. What is evil? Religious believers believe that God has a number of positive traits including: Omnipotent - all powerful Omnibenevolent - all loving Omniscient - all knowing Omnipresent - present everywhere Evil, on the other hand, is the opposite of these traits and brings violence and suffering into the world. There are lots of different ideas amongst some Muslims about the origins of evil – some believe in a figure called Satan, the devil Iblis or shaytan. For atheists and agnostics, the presence of evil and suffering in the world causes them to question the existence of God. How can an all loving powerful God allow evil to exist. This is an ultimate question and some of the justification include; Life is a test from God The Devil is at work God gave us freewill	present different ideas about the origins of the universe or ideas about the after life to back up their believes. Atheists or agnostics might use the existence of evil and suffering to deny God's existence.
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Social Science: Citizenship

Year 7 Knowledge Organiser

1. What do we Learn in Citizenship? Politics Elections and voting Laws and the justice system economy and money The role and power of the media and free press The relationship between the UK and the wider world Social change and the difference we can make	2. What are Fundamental British Values? Democracy: A culture built upon freedom and equality, where everyone is aware of their rights and responsibilities. The rule of law: The need for rules to make a happy, safe, and secure environment to live and work. Individual liberty: Protection of your rights and the rights of others around you. Mutual respect & tolerance of different faiths and beliefs: Understanding that we all don't share the same beliefs and values. Respecting those values, ideas and beliefs of others whilst not imposing our own onto them	3. What is right and wrong? Morals, or morality, is your sense of what is right and what is wrong. We use this when making decisions, particularly those which have good and bad consequences. Views of right and wrong come from: teachers, media, parents, friends, rules, and law Criminally responsible at 10 years' old A crime is an illegal action or activity for which a person can be punished by law. Law is a rule, usually made by a government, that is used to order the way in which a society behaves	4. What makes a criminal? We must avoid stereotyping when we think about who a criminal might be Why do people commit crime? Reasons: Social – People around them e.g., poverty Psychological - Their brain e.g., mental health, selfish Environmental – Surroundings, where a person lives e.g., boredom, gang culture
5. The role of the Police protecting life and property preserving order preventing the commission of offences bringing offenders to justice There are three main powers the police use to tackle crime: Stop and search Power to arrest Entry, search, and seizure STOP AND SEARCH -Used if a police officer has reasonable grounds for suspecting you are carrying illegal drugs, a weapon, stolen property, or something to commit a crime with	6. Government How a society divides up authority and power They have goals to achieve to improve the lives of groups of people in society. They call the goals policies The groups of people could be children, older people.	7. What do Local Councils do? Maintain roads and crossings so we can cross safely Maintain streetlights to make streets safer after dark so we feel secure Collect our rubbish and recycling and provide bins on our streets Oversee planning and give permission to build Maintain our parks and local spaces so we can enjoy leisure time Give licences to pubs, cafes, and restaurants to make sure they have good hygiene so people who eat there do not get sick. Plan and encourage cultural activities for us to enjoy Regulate the number of taxis on our roads and make sure they are safe	8. Role of the Local councillor representing an area- a councillor's primary role is to represent their area (ward) and the people who live within it. providing community leadership of their area - developing a vision to improve the ward for residents. developing council policies - helping the council to create services that better serve the needs of residents. taking part in planning and licensing decisions - councils are regulators, for example issuing planning permission for new buildings, and licenses for restaurants and taxis. What skills and Qualities would an ideal councillor have? Hard working. Speaks up for the community. Honest. Cares about the most vulnerable. Has a vision for the area. Has local links and knows about the issues that residents face.
Reason for S&S safer streets, remove weapons find those likely to commit violent crime	Local Govt Power over local area Apply laws set by central govt Councillors elected by residents	Central Govt Power over whole UK on many issues Sets laws and policies that apply to all of us Members of Parliament elected by constituents	

Social Science: Citizenship

9. What rights are we entitled to? Rights are entitlements that everyone of us has; these protect our freedoms and the way we live our lives. World War II was the catalyst for many of the key human rights that we have today Universal Declaration of Human Rights (UDHR) 1948 European Convention on Human Rights (ECHR) 1953- put in law in UK Human Rights Act Convention on the Rights of the Child (CRC) 1989- 42 Rights called articles	10. Citizenship: Taking action 1. Active citizenship involves people acting together or individually to achieve a change or benefit in society. It is about making a difference in society. 3. Active citizenship can be big or small. Active citizenship is an important part of democratic society. Active Citizenship Planning What is the issue? What can we do to help? Who could we help? What can we do to make change happen? Raise money Raise Awareness Target decision makers in power to change policy or law	11. Identity Identity is- 'Who a person is, or the qualities of a person or group that make them different from others'. What may have an impact on our identity? Nature The world around us - your biological background Nurture The way we are brought up Types of identity Personal Identity- Who you are Group Identity- Identity associated with belonging to a group Global Identity -Shared identity with those around the world National Identity - associated with being a citizen of a specific country Multiple Identity- person can have different identities at different times in different situations	12. Equality Diversity - understanding that each individual is unique, and recognising our individual differences Equality - where everyone is treated equally and regardless of their background, beliefs, gender or sexual orientation. Equality is also about ensuring everyone has the same chances and the opportunity to achieve the same outcomes. Protected Characteristics- The equality act makes it illegal to discriminate against people with these protected characteristics. Age Disability Gender Reassignment Marriage and civil partnerships Pregnancy or maternity Race Religion or belief Sex Sexual orientation (Gay, lesbian or bisexual)
13. Prejudice and Discrimination Prejudice - Prejudging someone, Opinions that we form without having all the information or facts e.g., that person is probably a criminal because he looks scruffy Stereotypes- A stereotype is a mistaken idea or over simplistic belief people may have about a group who have something in common e.g., religion, age, nationality. Stereotyping is a type of prejudice that ignores the differences between people. Discrimination can be defined as treating someone unfairly because of their characteristics. This is sometimes because of prejudice. Direct discrimination is when someone is treated unfairly because of a protected characteristic, such as sex or race. Indirect discrimination is when there's a practice, policy or rule which applies to everyone in the same way, but it has a worse effect on some people than others. Harassment is unwanted behaviour which you find offensive, or which makes you feel intimidated or humiliated. It can happen on its own or alongside other forms of discrimination.			



Key Learning Aims

Identify and work with a range of materials taking into account their physical and working properties and qualities
 Safety use a range of workshop tools, equipment and processes within a workshop environment
 Produce a design proposal based on a design brief and effectively communicate the ideas using a range of different techniques and taking account of any research carried out
 Understand the wider influences on design including responsible design and design influences/movements

Materials & Properties



Hardwoods come from deciduous trees, which have large flat leaves that fall in the autumn. Hardwoods take longer to grow, are not easily sourced and are expensive to buy.
 Examples include Ash, Beech, Oak and Mahogany



Softwoods come from coniferous trees. These often have pine needles, and they stay evergreen all year round - they do not lose leaves in the autumn. They are faster growing than hardwoods, making them cheaper to buy, and are considered as sustainable material. Examples include Larch, Pine and Spruce



Manufactured woods are usually made from timber waste and adhesive. To make them more aesthetically pleasing they are often veneered. They are cheap to buy.
 Examples include Medium Density Fibreboard (MDF), Plywood and Chipboard



Thermoplastics (also called thermosetting) are plastics which will soften when heated and can be reshaped.
 Examples include Nylon, Acrylic, Polypropylene and High Density Polyethylene (HDPE)

Thermosetting plastics are plastics that do not soften when they are heated when resistance to heat is permanent. They are used in many applications (e.g. car parts, electrical components, etc.).
 Examples include Epoxy Resin, Melamine, Formaldehyde and Urea Formaldehyde.

Techniques

ACCESSFM can be used when annotating and analysing ideas and products



Health & Safety

Workshop Health and Safety Rules

- 1) Bags and Coats stored on the storage racks
- 2) Blazer removed, hair tied back, sleeves rolled up
- 3) Stools tucked under and standing up when using tools and watch and follow health and safety demonstrations
- 4) Use PPE provided
- 5) Clear away tools, equipment, waste material at the end of a lesson
- 6)

Risk Assessment - Identifying potential dangers and how likely they could occur

Personal Protective Equipment (PPE)



Equipment & Tools



Key Words

Analyse - to look very closely at the problem, to break down into basic parts so that the problem can be understood. Analysis is used in the early stages of the design process.

Design - A creative process. Producing a final solution through a problem solving/creative process of developing ideas with in set constraints.

Evaluation - Critically consider how effective or successful a design is.

Hazard - a danger

Jig - A device which holds the manufacture of a product or component. Jigs make it possible to produce a series of identical products accurately, for example a drilling jig to produce a hole in a plate.

Millimetre - One thousandth of a metre. The unit of measurement in engineering.

Recycle - can materials be used that are easy to recycle when the product is finished with?

Reduce - can the use of materials be reduced?

Reuse - are there materials a designer would not use?

Re-think - what could be done differently?

Reuse - can the product be used again for another purpose?

Repair - can the product be repaired instead of thrown away?

Risk - the likelihood of something happening - associated with risk assessment.

Safety - Very important in the workplace, especially where machinery is being used. Safety rules deal with the correct use of equipment and the way to important part of safety. Products must be safe to use - no sharp or small parts, strong enough so that they do not break dangerously in use, non-toxic paints etc.

Further Reading

K33 Design and Technology Dictionary. By Peter Bull
 Stuff Matters- Mark Miodownik
 Creating my own Nemesis: The autobiography of the man who designed Alton Towers big rides, and brought the Theme Park to Britain Paperback-by John Wardley
 The Gecko's Foot: How Scientists are Taking a Leaf from Nature's Baby Peter Forbes
 How Do Wings Work-by Holger Babinsky

Watch	Visit
George Clarke's Amazing Spaces	V&A Museum
Inside the Factory	Manchester Science and Industry Museum
Film: Steve Jobs	The Design Museum

Engineering: Night Lig

Key Words

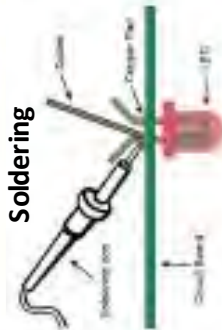
Introduction to simple electronic circuits and their symbols
Creation of a working electronic product

Equipment & Tools

Battery	Component	Symbol	Thermoplastics which will soften when heated and can be reshaped.
Slide Switch			Thermosetting plastics are plastics do not soften on heating
Resistor			High Impact Polystyrene (HIPS) one of the most widely used plastics it is easy to vacuum form, extrude, bend and mould into shape. It is available in many colours
LED			

Health & Safety

Vacuum forming



Soldering - a joining process used to join different types of metals together by melting solder



Vacuum former—used to shape a variety of plastics, a sheet of plastic is heated and then pulled around a single mold using suction.

Further Reading

<https://technologystudent.com/pcb/solder1.htm>

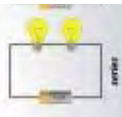
<https://www.technologystudent.com/equip1/vacform1.htm>

Building with Second hand stuff; How to reclaim, revamp, repurpose, and reuse salvaged and leftover building materials. By Chris Peterson

Choosing and using hand tools. By Andy Rae

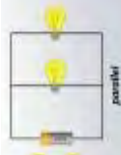
Key Words

Series circuit- is one in which all circuit elements are arranged in a single path



Parallel circuit

A way of connecting components on separate branches, so the current can take different routes around the circuit



Components—
a part or element of
something E.g.
components of an
electric circuit.

Resistance— is a measure of how difficult it is for current to flow. Resistance is measured in units called ohms (Ω).

Health & Safety



Further Reading

Year

7

Art: All about me



Key Learning Aims

To learn how to compose a design. To learn how to draw from observation. To understand the principles of colour theory. To learn how to show effective colour application.

Materials & Properties

A Guide to Colour theory:

<https://drawpaintacademy.com/a-comprehensive-guide-to-color-theory-for-artists/>

How to draw everyday objects:

<https://www.artistsandillustrators.co.uk/how-to/drawing/how-to-draw-everyday-objects/>

How to create Michael Craig Martin inspired piece.

<https://www.artistsandillustrators.co.uk/how-to/drawing/how-to-draw-everyday-objects/>

Sketchbook
Pencil

Acrylic Paint

Brushes

Watercolours

Felt Tips

Coloured pencils



Equipment & Tools

Key Words

Observation

Proportion

Shape

Colour

Harmonious
Colour

Complementary
Colour

Primary Colour

Secondary
Colour

Pattern

Composition

Line

Presentation

Palette

Value

Techniques

Observational drawing.

Effective paint application.

Design planning.



Graphic line drawing.
Effective use of colour.

Health & Safety

Learn how to paint safely and effectively.

Learn how to manage and tidy your own workstation.



Further Reading

Research Michael Craig Martin:

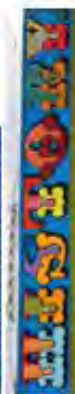
<https://www.michaelcraigmartin.co.uk/>

Research Jessica Brilli

<http://www.ibrilli.com/>

Research Ben Eine

<https://beneine.co.uk/>





Art: Portrait

Year

7

Key Learning Aims

To learn how to draw a portrait with good shape and proportion. To learn how to draw facial features from observation. To learn how to create a bold graphic portrait design.

Key Words

Observation

Proportion

Shape

Facial features

Symmetry

Composition

Line

Collage

Tone

Rendering

Colour

Materials & Properties

How to draw an expressive portrait:

<https://youtu.be/qlS0GbHR2go>

How to draw a face with accurate facial proportion:

<https://youtu.be/CirzWYMVYQ0>

Guide to a self portrait.

<https://www.npg.org.uk/whatson/self/home/>

Beginner procreate portrait tutorial.

<https://youtu.be/-t1pjbw9xk>

Equipment & Tools

Sketchbook

Pencil

Felt Tips

Collage

Graphite

Proportion sheets

Portrait photography



Techniques

Observational drawing.

Understanding proportion.



Controlled drawing.

Collage

A bold vivid design.



Health & Safety

Learn how to paint safely and effectively.

Learn how to manage and tidy your own workstation.



Further Reading

Research Stanley Chow

<https://stanleychow.co.uk/>

Research AKSE-P19

<https://www.akse-p19.com/>

National Portrait museum

<https://www.npg.org.uk/>



Art: The graphic figure

Key Learning Aims

To learn about figure proportion. To learn how to draw and explore the figure. To learn how to explore tonal shading and line. To learn how to use watercolour effectively.

Materials & Properties

How to paint like Lowry:

<https://www.youtube.com/watch?v=6KdL7qh0txA>

How to paint watercolour figures:

<https://www.youtube.com/watch?v=68DiZrqBSro>

How to draw a figure using procreate:

<https://www.youtube.com/watch?v=mulTmkf2dPc>

Figure proportion explained:

<https://www.thedrawingsource.com/figure-drawing-proportions.html>

Equipment & Tools

Sketchbook

Pencil

Mixed media paper

Felt Tips

Glue

Graphite

Chalk and charcoal



Techniques

Water-colour application

Marker pen sketching

Charcoal blending

Tonal Pencil

Styrofoam printing



Health & Safety

Learn how to paint safely and effectively.

Learn how to manage and tidy your own workstation.



Further Reading

Research LS Lowry

<https://thelowry.com/about-us/ls-lowry/lowrys-life/>

Research Swoon

<https://swoonstudio.org/>

Research Humphrey Ocean

<https://www.humphreyocean.com/>

Key Words

Observation

Proportion

Shape

Form

Line

Pose

Tone

Rendering

Mark making

Colour

Viewfinder

Expressive

Foreground

Midground

Background



Cheat Sheet!

Note Names

Symbol	Rest	Name	Beats
		Semibreve	4
		Minim	2
		Crotchet	1
		Quaver	1/2
		Semiquaver	1/4

DR T SMITH

Dynamics
Rhythm, Tempo and Metre
Texture
Structure
Melody
Instrumentation/Sonority
Tonality
Harmony



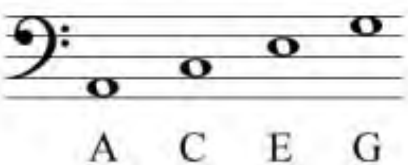
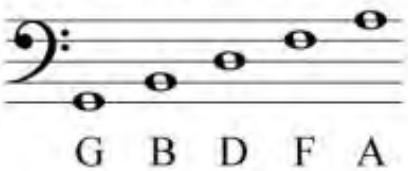
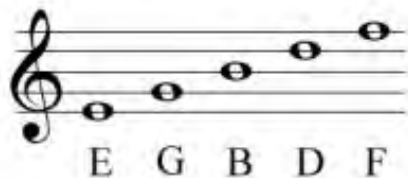
The Piano



C is to the left of the two black keys...



Lines and Spaces



Time Signatures

The top number tells you how many beats there are in a bar

The bottom number tells you what sort of beats they are

2 beats/bar

 Crotchet beat

3 beats/bar

 Crotchet beat

4 beats/bar

 Crotchet beat

You need to know and understand what the DR T SMITH Elements of Music are. Use your keywords lists to help you.

Keyword	Definition
Pitch	How high or low the music is
Tempo	How fast or slow the music is
Rhythm	How long or short the notes are, in relation to the pulse
Melody	The tune
Dynamics	How loud or quiet the music is
Instrumentation	The instruments used in a piece
Timbre	The sound or tone quality of an instrument or voice
Structure	The form/layout of a piece of music
Tonality	The types of harmonies created in a piece, determined by a hierarchy

Then you need to be able to use them in a sentence to describe pieces of music. Some examples are below:

1. The **tempo** of the piece starts **slowly** and gets **faster**
 2. In the piece, the **dynamics** start **loudly** and get **quieter** in the middle
 3. The **instrumentation** in the piece includes **guitars, flutes** and a **piano**
 4. The **rhythm** uses **short note values** and **syncopation**
- The **texture** in the piece starts very **thin**, and **builds** as the piece progresses





Year 7 Drama – Knowledge Organiser

Freeze Frame / Still Image	The performers freeze in a particular pose as if they have been captured in a photograph.
Thought Tracking	Thought tracking is where you stop the action during a scene and the characters deliver their thoughts and feelings out loud to the audience.
Tone	Adapting your voice from harsh to soft, which reflects the attitude or mood of a character.
Pace	The speed that you deliver your lines / movement.
Pitch	How high or low you make your voice.
Volume	How loud or quiet you say something on stage.
Facial Expressions	Adapting your face to show a specific emotion. The focus is usually on your eyes, eyebrows and mouth.
Body Language	The position of your body to show a clear emotion.
Movement	Where the actors move on the stage, what this communicates to the audience and the effect this has upon the drama.
Gestures	Everyday 'small actions'.
Eye Contact	Establishing eye contact with another actor or the audience.