

Cross Curricular Maths

In order to help children catch up following the school closures in March, it is imperative that mathematics is embedded across the curriculum, wherever possible. Clearly this is not possible in all areas, however below are some places where maths can be taught alongside foundation topics.

These are just a few ideas. You know your topics better than I do, so if you have ideas that work better with the specific areas you are going to cover in your topic please feel free to replace mine. Similarly, please feel free to add more ideas – the more the merrier!

Year 1

Topics:

Great Fire of London (H)

Great Britain (G)

China (G)

Dinosaurs (H)

The River Leven (G)

The Seaside (H)

Number & Place Value

- Count to and past 100, forwards and backwards starting from any number
- Count and read numbers to 100 in numerals
- Count and write numbers to 100 in numerals
- Count in jumps of 2s, 5s, and 10s – Great Fire of London – dates surrounding the fire
- Identify one more and one less of a given number – Great Fire of London – dates surrounding the fire e.g. what was the date the day after the fire started?
- Find and show numbers using objects and pictures including number lines and use: equal to, more than, less than (fewer), most, least
- Read and write 1 to 20 in numbers – history – any dates
- Read and write 1 to 20 in words – history – any dates
- Count in 2s, 5s, and 10s to solve problems
- Partition and combine numbers using apparatus if required

Addition & Subtraction

- Read and understand number statements using +, - and =
- Write number statements using +, - and = - Great Britain – Number of cities in England + Wales + Scotland
- Change calculations to give the same answers, e.g. $3+2=5$ so $2+3=5$
- Show that addition is the opposite of subtraction, e.g. if $3+2=5$, then $5-3=2$
- Remember most of the number bonds for 10 and link the connected facts
- Use number bonds up to 20
- Use subtraction facts up to 20
- Add one and two digit numbers up to 20 - Great Britain – Number of cities in England + Wales + Scotland
- Subtract one digit and two digit numbers to 20
- Answer problems that use addition and subtraction, including missing number problems, using objects and pictures

Multiplication & Division

- Answer multiplication questions using objects, pictures and other equipment
- Answer division questions using objects, pictures and other equipment

Fractions

- Find and name $\frac{1}{2}$ (half) of an object, shape or amount – DT / Art – cutting in half
- Find $\frac{1}{4}$ (quarter) of an object, shape or amount – DT / Art – cutting into quarters

Measures

- Solve problems for length and height by telling which objects are longer or shorter / taller or shorter
- Solve problems for mass and weights by telling which objects are heavier or lighter
- Solve problems for capacity and volume by telling if a container is empty, half full or full and if there is more in one container than another
- Solve problems for time. I can tell if something is quicker or slower. I can tell if something happened earlier or later
- Measure weight or mass and write these measurements down
- Measure capacity or volume and write these measurements down
- Measure time in hours, seconds or minutes and write these measurements down
- Tell how much different coins or notes are worth – **Seaside – buying ice cream / fish & chips**
- Tell when things happened by using these words: before, after, next, first, today, yesterday, tomorrow, morning, afternoon, evening - **English**
- Talk about dates using the days of the week, weeks, months and years – **history – all topics**
- Tell what the time is in hours and half past the hour. I can draw these on a clock face
- Measure and begin to record length / height – **All geog topics – measuring distances on simple maps. Dinosaurs – measuring height of toy dinosaurs.**

These can be covered in various science experiments and DT projects

Geometry

- Recognise and name common 2-D shapes such as rectangles, squares, circles and triangles – **Art / DT**
- Recognise and name common 3-D shapes such as cuboids, cubes, pyramids and spheres – **Art / DT**
- Talk about whole, half, quarter and three quarter turns. I can use this to explain movement, direction and position – **English**

Year 2

Topics

Castles (H)

7 Wonders of the World (G)

Cholera in Hutton Rudby (H)

Naturally Nutritious (G)

Captain Cook vs Neil Armstrong (H)

The Seaside (G)

Number & Place Value

- Count forward and backward in jumps of 2, 3 and 5 from 0 and in 10s from any number
- Find the place value of each digit in a number with tens and units *Any numbers used across the topics e.g. the amount of days it took Armstrong to reach the moon.*
- Find and show numbers using different equipment such as number lines and number squares
- Compare and order numbers from 0 to 100 using $<$, $>$ and $=$ *Any numbers used across the topics e.g. the amount of days it took Armstrong to reach the moon vs how many days it took Captain Cook to reach Australia.*
- Read and write numbers to 100 in numbers *Any numbers used across the topics e.g. time it took to build a certain castle etc.*
- Read and write numbers to 100 in words *Any numbers used across the topics e.g. the amount of days it took Armstrong to reach the moon.*
- Use number facts and place value to answer questions
- Partition two-digit numbers into different combinations of tens and ones using apparatus *Any numbers used across the topics e.g. time it took to build a certain castle etc.*
- Recall the multiples of 10 below and above any 2 digit number

Addition & Subtraction

- Use reasoning within addition
- Solve problems with addition and subtraction including those involving numbers, quantities and measures by using objects or pictures *– 7 wonders – difference in distances between wonders. Difference in ages of wonders etc.*
- Answer simple addition and subtraction questions in my head as well as by writing them down
- Recall all number bonds to 10, use these to work out bonds to 20, and link related facts
- Use addition and subtraction facts to 20 quickly and work out similar facts to 100
- Add and subtract a 2 digit number and a 1 digit number mentally and when using objects, number lines and pictures
- Add and subtract a 2 digit number and tens mentally and when using objects, number lines and pictures
- Add and subtract two 2 digit numbers mentally and when using objects, number lines and pictures
- Add and subtract three one digit numbers mentally and when using objects, number lines and pictures
- Show that adding 2 numbers can be done in any other, but subtraction cannot
- Show that subtraction is the opposite of addition and use this to check my work
- Remember doubles and halves up to 20
- Use estimation to check that my answers to a calculation make sense
- Solve missing number problems using addition and subtraction

Multiplication & Division

- Remember and use multiplication and division facts for the 2, 5 and 10 tables, including recognising odd and even numbers
- Answer multiplication and division problems within the tables using \times , \div and $=$
- Show that multiplying two numbers can be done in any other but division cannot
- Answer questions involving multiplication and division mentally and with objects *– Castles – multiplying / dividing turrets*
- Answer questions involving multiplication and division using arrays and repeated addition *– 7 wonders – how many wonders are there overall? 7 natural + 7 ancient + 7 man made*
- Use multiplication facts for 2, 5 and 10 to make deductions outside known multiplication facts
- Solve multiplication and division word problems with more than one step
- Rewrite addition statements as simplified multiplication statements *– 7 wonders – 7 natural wonders + 7 man made wonders = 7×2*

Fractions

- Find, name and write fractions of a length, shape, set of objects or amount, including $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, and $\frac{3}{4}$ - **DT / Art - Cutting; Seaside - Sorting shells**
- Write simple fractions facts such as $\frac{1}{2}$ of 6 = 3 and $\frac{2}{4} = \frac{1}{2}$

Measures

- Choose the right units to measure length, height, mass, temperature or capacity. I can read to the nearest unit and do this on rulers or scales - **7 Wonders & Castles - heights / sizes; 7 Wonders - temperature in their countries; Seaside - Temperature; Cook vs Armstrong - size of ship / rocket**
- Compare amounts using these signs: <, > or = - **As above**
- Use the £ and p signs. I can use notes and coins to make a particular amount - **Seaside - Price of ice cream**
- Find different ways for coins to add up to an amount - **Seaside - Price of ice cream**
- Add and subtract money and give change - **Seaside - Price of ice cream**
- Put different events in order and compare them - **7 Wonders - building of the 7 wonders; Castles - building of various castles; Cook vs Armstrong - setting sail / taking off vs landing**
- Tell the time to 5 minutes. I can tell when it is quarter to or quarter past an hour. I can draw these on a clock - **Naturally nutritious - knowing when it is time for a healthy snack**
- Tell you how many minutes are in an hour and how many hours are in a day
- Read scales in divisions of ones, twos, fives and tens - **Science - measuring for experiments**
- Read scales where not all numbers on the scale are given and work out points in between - **Science - measuring for experiments**
- Read the time on a clock to the nearest quarter of an hour

Geometry - **Most of these could be linked to 2 and 3d castles in the Castles topic as castles are essentially made up of squares & rectangles**

- Notice and explain the properties of 2-D shapes e.g. the number of sides and line of symmetry - Notice and explain the properties of 3-D shapes e.g. the number of edges, vertices and faces -
- Name some 2-D and 3-D shapes in pictures or in a group and know some of their properties
- Spot 2-D shapes on the surface of 3-D shapes in pictures or in a group and know some of their properties
- Compare and sort common 2-D and 3-D shapes and everyday objects
- Order mathematical objects in patterns and sequences
- Use mathematical vocabulary to describe position, direction and movement. This could include movement in a straight line - **Cook vs Armstrong - Captain Cook's voyage; Seaside - directions around the beach; ICT - programming BeeBots**

Statistics

- Read and draw simple pictograms, tally charts, block diagrams and simple tables
- Ask and answer simple questions by counting the number of objects in each category
- Ask and answer questions about totaling and comparing grouped data

These can be covered in various science experiment

Year 3

Topics

Stone Age (H)

Deserts (G)

Rainforests (G)

Hutton Rudby Over Time (H)

Greeks (H)

Capital Cities & Rivers (G)

Number & Place Value

- Count from 0 in multiples of 4, 8, 50 and 100 and can find 10 or 100 more or less than a given number
- Recognise the place value of each digit of a number with hundreds, tens and ones – *Greeks / Stone Age - dates*
- Compare and order numbers up to 1000 – *Hutton Rudby – early population figures over time*
- Find, show and estimate numbers using objects and pictures
- Read and write numbers up to 1000 in numbers – *Hutton Rudby – early population figures over time*
- Read and write numbers up to 1000 in words – *Hutton Rudby – early population figures over time*
- Solve number and word problems

Addition & Subtraction

- Add and subtract numbers in my head including a three digit number and ones – *Deserts – compare difference in rainfall*
- Add numbers with up to three digits using formal column methods
- Add and subtract numbers in my head, including a three digit number and tens
- Subtract numbers with up to three digits using formal column methods – *Hutton Rudby – difference in early population figures*
- Add and subtract numbers in my head, including a three digit number and hundreds
- Estimate the answer to a calculation and use this and inverse operations to check answers
- Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction

Multiplication & Division

- Recall and use multiplication and division facts for the 3, 4 and 8 times tables
- Calculate multiplication and division problems, both mentally and in writing, using the times tables, including two digit numbers times one digit numbers
- Solve problems, including missing number problems, involving multiplication and division, including factors and ratio

Fractions

- Count up and down in tenths and know that tenths are made from dividing an object into 10 equal parts and in dividing one digit numbers or quantities by 10 – *Rainforest – separate an aerial photo of the rainforest into tenths, perhaps to demonstrate deforestation*
- Write and find fractions of a set of data and can recognise fractions with small denominators – *Rainforest – separate species into fractions*
- Find and use fractions of numbers such as $\frac{1}{4}$ of 8 = 2 and $\frac{3}{4}$ of 8 = 6
- Identify and show equivalent fractions
- Add fractions with the same denominator within one whole
- Subtract fractions with the same denominator within one whole
- Compare and order fractions with the same denominator
- Solve fraction problems

Measures

- Measure, compare add and subtract: lengths (m/cm & mm); mass (kg/g); volume & capacity (l/ml) – *Science experiments & DT will give opportunities for this*
- Measure the perimeter of simple 2-D shapes - *DT*

- Add and subtract money giving change, using pounds and pence. I can do this with real coins and notes
- Tell the time on a clock face. I can do this if it uses the Roman numerals from I to XII and I can use a 12 or 24 hour clocks – **Capital Cities – compare the time in various capital cities around the world**
- Write the time on a clock face. I can do this if I use Roman numerals from I to XII and I can use 12 or 24 hour clocks – **Capital Cities – compare the time in various capital cities around the world**
- Estimate and read the time to the nearest minute. I can record time in seconds, minutes and hours. I can use the words o'clock, a.m., p.m., morning, afternoon, noon and midnight
- Tell you the number of seconds in a minute and how many days there are in a month, a year, and in a leap year
- Compare how much time is taken by different events or tasks – **Capital Cities – time taken to traverse various cities**

Geometry

- Draw 2-D shapes and make 3-D shapes using modelling materials. I can recognise 3-D shapes in different orientations – **Greeks – recognise shapes in different orientations in Greek art / sculptures**
- Recognise angles as properties of shape. I know that angles are a description of a turn
- Spot right angles. I can spot when angles are greater or less than a right angle – **All topics – spot right angles in various pictures, videos etc**
- Know that two right angles make a half-turn, three make three quarters of a turn and four make a full turn
- Spot horizontal and vertical lines and pairs of perpendicular and parallel lines – **All topics – spot in various pictures, videos etc**

Statistics

- Interpret and present data using bar charts, pictograms and tables – **Science experiments**
- Solve one-step and two-step questions e.g. "How many more?" and "How many fewer?" using information presented in scaled bar charts, pictograms and tables – **Science experiments**

Year 4

Topics

Romans (H)

Water Cycle (G)

Physical & Human Features of Snow-Covered Regions Comparison (G)

Dark Ages (H)

Vikings (H)

Climate Change (G)

Number & Place Value

- Count in multiples of 6, 7, 8, 9, 25 and 1000
- Find a 1000 more or less than a given number – History topics – what year was 1000 years before / after Romans, Vikings etc.
- Count backwards through 0 to include negative numbers – Climate Change & Comparison – temperatures; Water Cycle – depth below sea level
- Recognise the place value of each digit of a four-digit numbers (thousand, hundreds, tens and ones) – History topics – dates on timelines
- Order and compare numbers beyond 1000 – History topics – order dates, most recent etc; Comparison – snowfall, prices, number of visitors a day / week / month (as appropriate), height of mountains
- Identify, represent and estimate numbers using different representations including measures – Climate Change – measures e.g. rainfall in an area now compared to 20 years ago; temperature comparisons etc.
- Round numbers to the nearest 10, 100 or 1000 – Comparison – visitors, snowfall, height of mountains- History topics rounding dates on timelines
- Solve number and practical problems that involve large positive numbers
- Read Roman numerals to 100 and know that the number system has changed to include 0 and place value – Romans

Addition & Subtraction

- Add numbers with up to four digits using formal column methods – Comparison – total visitors over a time period
- Use estimating and inverse operations to check my answers
- Subtract numbers with up to four digits using formal column methods – Comparison between visitors to ski slope in Europe vs North America.
- Solve two step addition and subtraction problems using different methods and explain why I use them

Multiplication & Division

- Recall times table facts up to 12x12
- Use place value and number facts to multiply and divide mentally, including multiplying by 1 and 0; dividing by 1; and multiplying together 3 numbers
- Use factor pairs in mental calculations
- Multiply two digit and three digit numbers by a one digit number using a formal written method
- Solve problems involving multiplication and addition, including the distributive law such as $3 \times (12 + 14) = 3 \times 12 + 3 \times 14$

Fractions

- Recognise and show, using diagrams, families of common equivalent fractions – Romans – $\frac{1}{2}$ of the soldiers is the equivalent as the fraction $\frac{2}{4}$ of the soldiers.
- Count up and down in hundredths and know that dividing an object by 100 creates hundredths and 10 creates tenths – Romans – Centurians being in command of 100 soldiers, 1 tenth of his soldier would be 10 soldiers
- Solve problems involving fractions to calculate quantities and fractions to divide quantities
- Add and subtract fractions with the same denominator
- Find and write decimal equivalents using tenths and hundredths
- Find and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$
- Divide one and two digit numbers by 10 and 100 and can explain the effect this has on place value – Romans – Centurians being in command of 100 soldiers, 1 tenth of his soldier would be 10 soldiers
- Round decimals using tenths to the nearest whole number – Climate Change – rainfall, temperature; Water Cycle – water levels, rainfall.
- Compare numbers with the same number of decimal places up to two decimal places – Climate Change – rainfall,

temperature; Water Cycle – water levels, rainfall.

Measures

- Solve simple money and measure problems involving fractions and decimals to two decimal places – Climate Change – rainfall, temperature; Water Cycle – water levels, rainfall.
- Convert different units of measurement e.g. I can convert kilometers into meters or hours into minutes – Comparison – height of mountains, size of resort; Vikings – time it would take a longboat to get from Scandinavia to England
- Measure and calculate the perimeter of a rectilinear figure (including squares) in centimeters and meters – History topics – perimeter of model homes from each age
- Find the area of rectilinear shapes by counting squares – History topics – area of model homes from each age
- Estimate, compare and calculate different measures, including money in pounds and pence – Comparison – prices in different resorts
- Read, write and convert time between analogue and digital 12- and 24- hour clocks Romans – time taken to march between cities; Vikings – time taken to cross the sea
- Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days – Romans – time taken to march between cities; Vikings – time taken to cross the sea; Comparison – time taken to get from one resort to another

Geometry

- Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes Geography topics – Designing own ski resort & using geometric shapes on map
- Identify acute and obtuse angles and compare and order angles up to two right angles by size
- Identify lines of symmetry in 2D shapes presented in different orientations
- Plot positions on a 2-D grid as positive number coordinates – Geography topics – map work, designing own ski resort
- Describe movements between positions as translations of a given unit to the left / right and up / down History topics – movements/translations between model homes from each age
- Plot points I am given and draw sides to complete a given polygon

Statistics

- Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time charts – Science experiments Geography – recording and presenting rainfall, temperature
- Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs – Science experiments Geography – recording and presenting rainfall, temperature

Year 5

Topics

Tudors (H)

Cartography (G)

Ancient Egypt (H)

Oceans (G)

Victorians (H)

Japan (G)

Number & Place Value

- Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit – **Japan - populations**
- Keep multiplying a number by 10 or 100 up to 1,000,000 & count back – **Cartographers – different scales on maps**
- Use negative numbers in context when looking at temperature or money; counting forwards and backwards through – **Oceans – temperature, depth**
- Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000 – **Japan - populations**
- Solve number and practical problems that involve ordering and comparing numbers to 1,000,000, counting forwards or backwards in steps, negative numbers and rounding
- Read Roman numerals to 1000 and recognise years written in these – **All history topics - dates**

Addition & Subtraction

- Add and subtract numbers with more than four digits using written methods
- Add and subtract two and three digits in my head
- Use rounding to check answers to calculations and determine levels of accuracy
- Solve addition and subtraction problems needing more than one step and can work out which operation and method is most suitable

Multiplication & Division

- Find multiples and factors of a number and can identify factors common to two different numbers
- Use vocabulary relating to prime numbers, prime factors and composite numbers
- Work out if any given number up to 100 is a prime number and can recall prime numbers up to 19
- Multiply numbers up to 4-digits by a 1 or 2-digit number using a formal written method
- Mentally multiply and divide numbers using the times tables
- Divide numbers with up to four digits by a one digit number using formal written methods and can explain remainders
- Multiply and divide numbers by 10, 100 and 1000 – **Cartographers – different scales on maps**
- Identify and use square numbers and their notation
- Solve problems involving multiplication and division, using factors and multiples, squares and cubes
- Identify and use cube numbers and their notations
- Solve problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates

Fractions

- Compare and order fractions whose denominations are all multiples of the same number – **Egyptians – fractions of population in various social standings**
- Find and name equivalent fractions whose denominations are all multiples of the same number – **History – Equivalent fractions of Henry VIII's wives beheaded etc**
- Find and name equivalent fractions of a given fractions including tenths and hundredths
- Write equivalent fractions of a given fraction including tenths and hundredths – **Cartographer – amount of map covered in forest (for example).**
- Identify mixed numbers and improper fractions and convert from one to another such as $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1 \frac{1}{5}$
- Add and subtract fractions whose denominators are all multiples of the same number – **Any of the above**
- Multiply fractions by whole numbers using objects and pictures
- Read and write decimal numbers as fractions such as $0.71 = \frac{71}{100}$

- Identify and use thousandths and can explain how they relate to tenths and hundredths and their decimal equivalents
- Round numbers with two decimal places
- Read, write, order and compare numbers with up to three decimal places
- Solve problems involving numbers with up to three decimal places
- Identify the percent symbol (%) and how it relates to parts per hundred, hundredths and decimals
- Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{3}{5}$ and those fractions with a denominator of a multiple of 10 or 25

Measures

- Convert between different forms of metric measurement e.g. Kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and milliliter – *Science experiments, DT, Art*
- Understand and compare equivalences between metric and common imperial units such as inches, pounds and pints
- Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres – *Cartographers – perimeter of rectilinear shapes found within maps*
- Calculate and compare the area of rectangles (including squares) and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes – *Cartographers – perimeter of shapes found within maps; Tudors & Victorians – area and perimeter of rooms in royal residences*
- Estimate volume, e.g. Using 1cm³ blocks to build cuboids (including cubes) and capacity, e.g. using water
- Solve problems involving converting between units of time – *Tudors – time in minutes between various Henry VIII wives arrest and execution; Science experiments*
- Use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation, including scaling

Geometry

- Identify 3-D shapes, including cubes and other cuboids, from 2-D representations
- Estimate and compare acute, obtuse and reflex angles and know that angles are measured in degrees
- Draw given angles, and measure them in degrees (°) – *Cartographers – drawing shapes on a map*
- Identify angles at a point and one whole turn (total 360°) – *ICT – giving instructions for an algorithm e.g. directions on Scratch*
- Identify angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°) – *ICT – giving instructions for an algorithm e.g. directions on Scratch*
- Identify other multiples of 90°
- Use the properties of rectangles to deduce related facts and find missing lengths and angles
- Tell the difference between regular and irregular polygons. I can do this using reasoning about equal sides and angles – *Cartographers – shapes found on a map*
- Identify, describe and represent the position of a shape following a reflection or translation. I can use mathematical vocabulary to explain this and I know that the shape has not changed – *Cartographers – moving items on a map*

Statistics

- I can solve comparison, sum and difference problems using information presented in a line graph – *Science experiments*
- Complete, read and interpret information in tables, including timetables – *Science experiments*

Year 6

Topics

World Wars (H)

Volcanoes (G)

Mayans (H)

Number & Place Value

- Round any number to a required degree of accuracy – *World Wars – number related to deaths; Volcanoes – volume of volcano, level lava rises to after eruption*
- Use negative numbers in context when looking at temperature or money; counting in jumps forward and backwards through 0 – *World Wars – debts following WW1 & 2*
- Solve number and practical problems that involve ordering and comparing numbers up to 10,000,000, rounding to a required degree of accuracy, using negative numbers and calculating intervals across zero – *World Wars - populations*
- Show an understanding of place value including decimals

Addition & Subtraction

- Mentally calculate using a mix of four operations – *World Wars – countries joining the war, deaths*
- Solve problems with more than one step and operation and explain why I used them
- Solve addition and subtraction word and practical problems
- Use estimation to check answers to calculations and determine an appropriate degree of accuracy
- Solve addition and subtraction multi-step problems, deciding which operations and methods to use and explain why they were suitable

Multiplication & Division

- Multiply numbers up to four digits by a two-digit number using a formal written method
- Divide numbers up to four digits by a two-digit number using a formal written method of long division, showing remainders, fractions or rounding as appropriate – *World Wars - rationing*
- Divide numbers of up to four digits by a two-digit number using a formal written method of short division, showing remainders, fractions or rounding as appropriate – *World Wars - rationing*
- Mentally calculate using a mix of four operations and increasingly large numbers
- Identify common factors, multiple and prime numbers
- Use the order of importance of the four operations when answering questions
- Solve problems involving addition, subtraction, multiplication and division
- Use estimating to check answers and problem solving
- Use common factors and multiples to simplify fractions and express fractions in the same denomination

Fractions

- Compare and order fractions including those > 1
- Add and subtract fractions with different denominators and mixed numbers – *World Wars – fraction of population in army + navy + RAF*
- Multiply simple pairs of proper fractions, writing the answers in the simplest form such as $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$
- Divide proper fractions by whole numbers such as $\frac{1}{3} \div 2 = \frac{1}{6}$
- Link a fraction with division and work out decimal fractions such as knowing that 7 divided by 21 is the same as $\frac{7}{21}$ and that this is equal to $\frac{1}{3}$, and 0.378 is $\frac{3}{8}$ as a simple fraction
- Explain the place value of any digit in a number with up to 3 decimal places and multiply or divide these by 10, 100 or 1000
- Multiply numbers less than 10 with up to 2 decimal places by whole numbers
- Use written division methods for numbers with up to two decimal places
- Solve problems which require answers to be rounded to specified degrees of accuracy
- Use equivalences between simple fractions, decimals and percentages to help me solve problems

Measures

- Solve problems involving the calculation and conversions of units of measure, using decimal notation up to three

- places if I need to
- Use, read, write and convert between standard units. I can convert measurement of length, mass, volume and time from a smaller unit to a larger unit and vice versa. I can do this using decimal notation up to three decimal places – **Volcanoes – volume of a volcano; World Wars – size of ships, planes etc; Mayans – size of Chichen Itza**
- Convert between miles and kilometres – **World Wars – many different distances e.g. miles of trenches, advancements etc.**
- Recognise the shapes with the same areas can have different perimeters and vice versa
- Recognise when it is possible to use formulae to find the areas or volumes of shapes
- Calculate the areas of parallelograms and triangles – **Mayans – Chichen Itza**
- Calculate, estimate and compare volumes of cubes and cuboids using standard units, including cubic centimetres (cm³), cubic metres (m³). I can extend this to other units – **Mayans – Chichen Itza, made of large cubes**

Geometry

- Draw 2-D shapes using given dimensions and angles
- Recognise, describe and build simple 3-D shapes, including making nets – **Mayans – Chichen Itza / other temples; Volcanoes – create a volcano**
- Compare and classify geometric shapes based on their properties and sizes. I can also find unknown angles in any triangles, quadrilaterals or regular polygons
- Recognise angles where they meet at a point, are on a straight line or are vertically opposite. I can then find any missing angles
- Recognise, describe and build simple 3D shapes, including making nets – **Mayans – Chichen Itza / other temples; Volcanoes – create a volcano**
- Compare and classify geometrical shapes based on properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
- Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius – **Volcanoes – rough radius, diameter, circumference of aerial photo of volcanoes**
- Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles
- Describe positions in all four quadrants on a full coordinate graph – **World Wars – pinpointing places of interest on a map**
- Draw and translate simple shapes on the coordinate plane and reflect these in the axis – **World Wars – map work**

Statistics

- Interpret and construct pie charts and line graphs and use these to solve problems – **Science experiments**
- Calculate and interpret the mean as an average – **Science experiments**

Ratio

- Solve problems that involve the relative sizes of two things where the missing number can be found by multiplying or dividing by whole numbers – **World Wars – relative sizes of armies; Mayans – size of Chichen Itza and other temples relative to pyramids of Egypt**
- Solve problems involving the calculation of percentages and use percentages for comparisons – **World Wars – lots of percentage opportunities e.g. amount of population conscripted, amount of an army injured in a battle etc.; Volcanoes – amount of a country / area covered by volcano, amount of a city engulfed in lava**
- Solve problems involving shapes where the scale factor is known or can be found
- Solve problems involving unequal sharing and grouping and use knowledge of fractions and multiples to do so

Algebra

- Use simple formulae – **World Wars – code breaking**
- Create and describe linear number sequences
- Record missing number problems algebraically
- Find pairs of numbers which complete an equation with two unknowns
- Create a list of possibilities of the combination of two variables