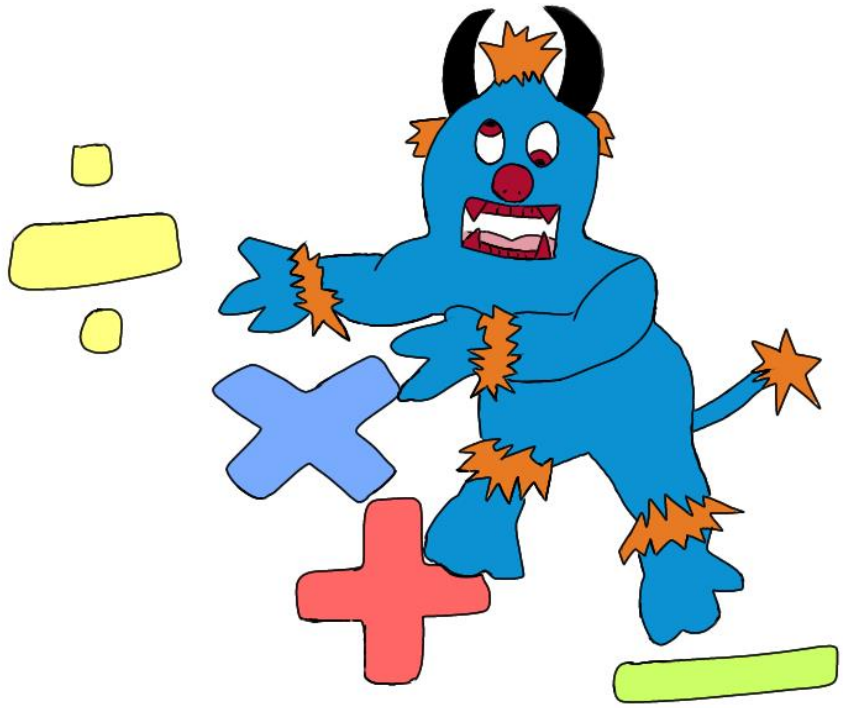
The Priestley Progress Path

Maths

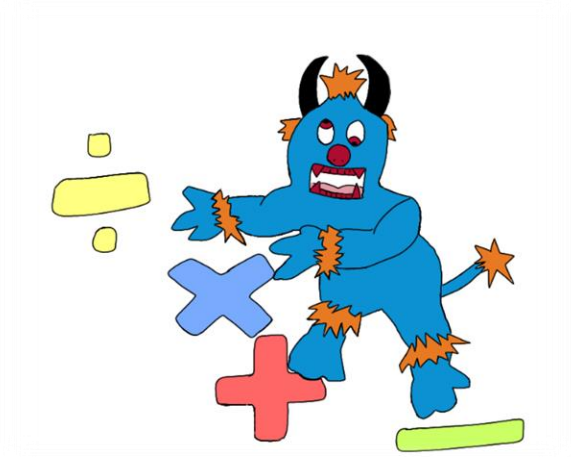


Placing learning at the heart of everything we do.

Intent

Mathematics is vital to everyday life. It is integral to all aspects of life and with this in mind, at Priestley we work hard to ensure that children develop a positive and enthusiastic attitude towards mathematics that will stay with them and set them up with the necessary skills and knowledge for them to become successful in their future adventures. The National Curriculum order for mathematics describes in detail what pupils must learn in each year group. Combined with the schemes of work applied at Priestley Primary School, this gives children a wide range of skills to develop their understanding of mathematics in a range of contexts. At Priestley, we use the EYFS framework to ensure children receive a good quality understanding of the basic concepts of Mathematics. In Years 1-6 we follow a 'Teach, Do, Review' approach.

We aim to provide the pupils with a mathematics curriculum that teaches them the necessary skills and high-quality teaching that will produce confident, accurate and motivated mathematicians. We aim to prepare them for a successful working life. We incorporate sustained levels of challenge through varied and high-quality activities with a focus on fluency, reasoning and problem solving. We encourage resilience, adaptability, and acceptance that struggle is often a necessary step in learning. Our curriculum allows children to better make sense of the world around them relating the pattern between mathematics and everyday life.



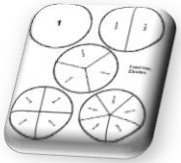
Working Mathematically.

Number & Place Value

Addition & Subtraction

Multiplication & Division

Fractions



Measurement

Properties of Shape

Position & Direction

Statistics

Implementation

White Rose & Deepening Understanding

Every class from EYFS to Y6 follows the White Rose scheme of learning which is based on the National Curriculum. Lessons may be personalised to address the individual needs and requirements for a class, but coverage is maintained. In order to further develop the children's fluency, reasoning and problem-solving, we use resources for Deepening Understanding which correlates to the White Rose lessons and further develops children's understanding of a concept and the links between maths topics.

Online Maths Tools

In order to advance individual children's maths skills in school and at home, we utilise Times Tables Rock Stars for multiplication practise, application, and consolidation. Throughout the school, Maths homework, online learning tasks and lesson inputs are set for children to access in and out of school, using MyMaths.

Concrete Pictorial Abstract (CPA)

We implement our approach through high quality teaching delivering appropriately challenging work for all individuals. To support us, we have a range of mathematical resources in classrooms including Numicon, Base10 and counters (concrete equipment). When children have grasped a concept using concrete equipment, images and diagrams are used (pictorial) prior to moving to abstract questions. Abstract maths relies on the children understanding a concept thoroughly and being able to use their knowledge and understanding to answer and solve maths without equipment or images.

Impact

Pupil Voice

Through discussion and feedback, children talk enthusiastically about their maths lessons and speak about how they love learning about maths. They can articulate the context in which maths is being taught and relate this to real life purposes. Children show confidence and believe they can learn about a new maths area and apply the knowledge and skills they already have.

Knowledge

Mathematical concepts or skills are mastered when a child can show it in multiple ways, using the mathematical language to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations. Children demonstrate a quick recall of facts and procedures. This includes the recollection of the times table.

Skills

Pupil's use acquired vocabulary in maths lessons. They have the skills to use methods independently and show resilience when tackling problems. The flexibility and fluidity to move between different contexts and representations of maths. Children show a high level of pride in the presentation and understanding of the work. The chance to develop the ability to recognise relationships and make connections in maths lessons. Teachers plan a range of opportunities to use maths inside and outside school.

EYFS Mathematicians

Will be able to:

Place Value

1. *recite numbers in order to 10*
2. *realise that anything can be counted.*
3. *count up to three or four objects by saying one number name for each item.*
4. *count out up to six objects from a larger group.*
5. *count actions or objects which cannot be moved.*
6. *count objects to 10 and begin to count beyond 10.*
7. *count an irregular arrangement of up to ten objects.*
8. *estimate how many objects they can see and check by counting them.*

Addition & Subtraction

1. *find the total of items in two groups by counting all of them.*
2. *begin to use the vocabulary involved in adding and subtracting in practical activities and discussion.*
3. *solve problems, including doubling, halving, and sharing.*

Measurement

1. *make comparisons between objects relating to size, length, weight and capacity.*
2. *compare length, weight and capacity.*
3. *begin to describe a sequence of events, real or fictional, using words, such as 'first', 'then…'*
4. *talk about and explore 2D and 3D shapes using informal and mathematical language.*
5. *select shapes appropriately: flat surfaces for a building, a triangular pattern for a roof, etc.*
6. *combine shapes to make new ones – an arch, a bigger triangle, etc.*
7. *select, rotate and manipulate shapes in order to develop spatial reasoning skills.*

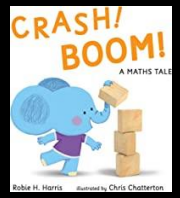
Number

1. *have a deep understanding of number to 10, including the composition of each number.*
2. *subitise (recognise quantities without counting) up to 5.*
3. *automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.*

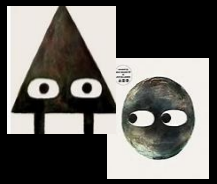
Numerical Patterns

1. *verbally count beyond 20, recognising the pattern of the counting system.*
2. *compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.*
3. *explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.*

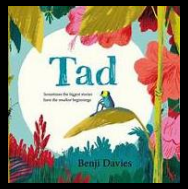
EYFS Math Bookshelf



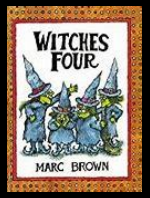
Crash! Boom!
(Robie H Harris)



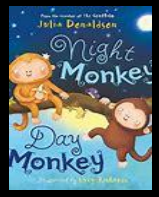
Triangle 1 & Circle
(Mac Barnett)



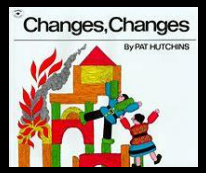
Tad
(Benji Davis)



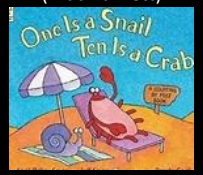
Witches Four
(Marc Brown)



Night Monkey, Day Monkey
(Julia Donaldson)

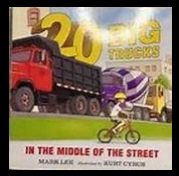


Changes, Changes
(Pat Hutchins)

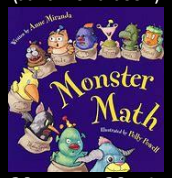


One is a Snail, Ten is a Crab.
(April & Jeff Sayre)

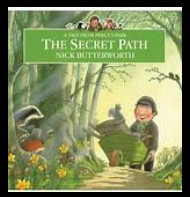
Which One Doesn't Belong?
(Christopher Danielson)



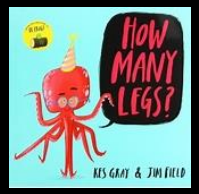
20 Big Trucks in the middle of the Street
(Mark Lee)



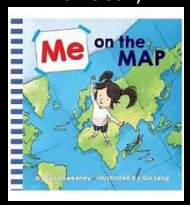
Monster Math
(Anne Miranda)



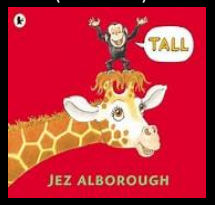
The Secret Path
(Nick Butterworth)



How Many Legs?
(Kes Gray & Jim Field)

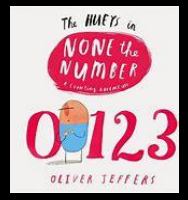


Me on the Map
(Joan Sweeney)

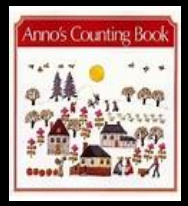


Tall
(Jez Alborough)

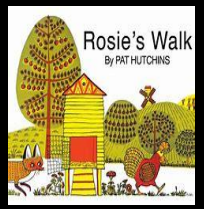
How do Dinosaurs coun to ten?
(Jane Yolen)



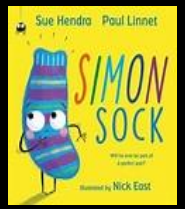
None the Number
(Oliver Jeffers)



Anno's Counting Book
(Mitsumasa Anno)



Rosie's Walk
(Pat Hutchins)



Simon Sock
(Sue Hendra & Paul Linnet)

Two of Everything
(Lily Toy Hong)

EYFS Vocabulary

Cardinal
(The number that indicates how many there are in a set)

Classification
(The identification of an object by specific attributes, such as colour, texture, shape or size)

Conversation (for number)
(The recognition that the number stays the same if none have been added or taken away)

Numeral
(The written symbol for a number; e.g. 3 ,2 , 1)

Ordinal
(A number denoting the position in a sequence e.g. 1st, 2nd, 3rd, etc or page 1, page 2, page 3 …)

Partition
(Separate a set into two or more subsets e.g. Partition a set of socks into plain and patterned)

Subitise
(Instantly recognise a small quantity, without having to count how many there are)

Number
(Number can be :
- *a count of a collection of items e.g. three boxes,*
- *a measure e.g. length or weight, or*
- *a label e.g. the number 17 bus)*

Quantity
(The amount you have of something e.g. a cup of flour, there boxes, half an hour)

Year One Mathematicians

Will be able to:

Number & Place Value

1. count to and across 100.
2. count forwards and backwards.
3. start from 0 or 1, or from any given number.
4. count numbers to 100 in numerals.
5. read numbers to 100 in numerals.
6. write numbers to 100 in numerals.
7. count in multiples of 2s, 5s and 10s
8. When given a number, identify 1 more and 1 less.
9. identify and represent numbers using objects.
10. identify numbers using pictorial representations like a number line.
11. use equal to, more than, less than (fewer), most, least to compare numbers.
12. read and write numbers from 1 to 20 in numerals.
13. read and write numbers from 1 to 20 in words.

Multiplication & Division

1. solve one-step problems involving multiplication and division.
2. calculate the answer using concrete objects, pictorial representations an arrays with the support of the teacher.

Fractions

1. recognise, find, and name a half.
2. know it is 1 of 2 equal parts of an object, shape or quantity.
3. recognise, find and name a quarter.
4. know it is 1 of 4 equal parts of an object, shape or quantity.

Addition & Subtraction

1. read, write and understand mathematical statements using addition (+), subtraction (-) and equals (=) signs
2. represent and use number bonds.
3. show related subtraction facts within 20.
4. add and subtract one-digit and two-digit numbers up to 20, including 0.
5. solve one-step problems that involve addition and subtraction.
6. use concrete objects and pictorial representations.
7. solve missing number problems such as 7 = ? - 9.

Measurement

1. compare lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]
2. compare mass / weight [for example heavier/lighter, more/less]
3. compare capacity and volume [for example empty/full /almost empty/almost full]
4. compare time [before/after]
5. measure and begin to record lengths and heights.
6. measure and begin to record mass/weight.
7. measure and begin to record capacity and volume.
8. measure and begin to record time (hours, minutes, seconds).
9. recognise different denominations of coins and notes.
10. know the value of different denominations of coins and notes.
11. sequence events in chronological order [first, next, after that, finally].
12. recognise and use language relating to dates [days of the week, weeks, months and years].
13. tell the time to the hour and
14. tell the time to half past the hour
15. draw the hands on a clock face to show o'clock and half past times.

Properties of Shape

1. recognise and name common 2-D [square, circle, triangle, rectangle, pentagon, hexagon].
2. recognise and name common 3-D shapes [cube, cuboid, sphere].

Position & Direction

1. describe the position of an object [next to, under, on top of, near].
2. give and explain directions [forwards, backwards, left, right]
3. describe movements, including whole, half, quarter and three-quarter turns.

Year One Vocabulary

Number & Place Value

numeral twenty-one, twenty-two ……. one hundred forwards backwards
equal to equivalent to most least many odd even
multiple of half-way between above below

Addition & Subtraction

addition near double half halve subtract equals
is the same as number bonds/pairs missing number

Multiplication & Division

multiplication multiply multiplied by multiple division dividing grouping array

Capacity & Volume

litre half litre capacity volume more than less then quarter full

Time

January February March April May June July August September
October November December spring summer autumn winter day week
weekend month year earlier/later first midnight date always never often
how long ago? how long will it be to ..? how often? sometimes usually once
twice half past quarter past quarter to clock face hour hand minute hand hours
minutes

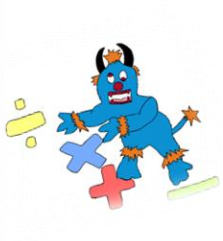
Year One Vocabulary

Money

change dear costs more cheap costs less cheaper costs the same as
how much? how many? total

Fractions

fraction equal part grouping equal sharing parts of a whole half one
of two equal parts quarter one of four equal parts



Properties of shape

symmetry symmetrical pattern

Position & Direction

underneath centre journey quarter turn three quarter turn

Estimating

roughly

Weight

Kilogram

3D Shape

cuboid cylinder

2D Shape

point pointed

Length

centimetre ruler metre stick

Statistics

vote table

General

problem problem solving mental mentally explain your thinking.

Year Two Mathematicians

Will be able to:

Multiplication & Division

1. *recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables.*
2. *recognise odd and even numbers.*
3. *calculate multiplication and division questions within the 2, 5 and 10 tables.*
4. *write them using the multiplication (×), division (÷) and equals (=) signs.*
5. *show that multiplication of 2 numbers can be done in any order (commutative).*
6. *show that division of 1 number by another cannot be done in any order.*
7. *solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods.*

Fractions

1. *recognise 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity.*
2. *find 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity.*
3. *name and write 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity.*
4. *write simple fractions, for example 1/2 of 6 = 3*
5. *recognise the equivalence of 2/4 and 1/2.*

Addition & Subtraction

1. *solve problems with addition and subtraction.*
2. *use concrete objects and pictorial representations, including those involving numbers, quantities, and measures to solve problems.*
3. *apply my increasing knowledge of mental and written methods.*
4. *recall addition and subtraction facts to 20.*
5. *use addition and subtraction facts to 20.*
6. *derive and use related facts up to 100.*
7. *add and subtract numbers using concrete objects, pictorial representations, and mentally.*
8. *add and subtract a two-digit number and 1s.*
9. *add and subtract a two-digit number and 10s.*
10. *add and subtract 2 two-digit numbers.*
11. *add 3 one-digit numbers.*
12. *show that addition of 2 numbers can be done in any order (commutative).*
13. *show that subtraction of one number from another cannot be done in any order.*
14. *recognise and use the inverse relationship between addition and subtraction.*
15. *use the inverse to check calculations and solve missing number problems.*

Number & Place Value

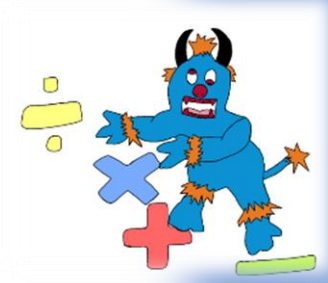
1. *count in steps of 2, 3, and 5 from 0.*
2. *count in 10s from any number, forward and backward.*
3. *recognise the place value of each digit in a two-digit number (10s, 1s)*
4. *identify numbers using different representations, including the number line.*
5. *represent numbers in many ways.*
6. *estimate numbers.*
7. *compare and order numbers from 0 up to 100.*
8. *use <, > and = signs to compare numbers*
9. *read and write numbers to at least 100 in numerals.*
10. *read and write numbers to at least 100 in words.*
11. *use place value and number facts to solve problems.*

Year Two Mathematicians

Will also be able to:

Measurement

1. *choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm).*
2. *choose and use appropriate standard units to estimate and measure mass (kg/g).*
3. *choose and use appropriate standard units to estimate and measure temperature (°C)*
4. *choose and use appropriate standard units to estimate and measure capacity (litres/ml).*
5. *measure to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.*
6. *compare and order lengths.*
7. *compare and order mass.*
8. *compare and order volume/capacity.*
9. *record the results using >, < and =*
10. *recognise and use symbols for pounds (£) and pence (p).*
11. *combine amounts to make a particular value.*
12. *find different combinations of coins that equal the same amounts of money.*
13. *solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.*
14. *compare and sequence intervals of time.*
15. *tell and write the time to five minutes, including quarter past/to the hour.*
16. *draw the hands on a clock face to show these times.*
17. *know the number of minutes in an hour.*
18. *know the number of hours in a day*



Properties of Shape

1. *identify and describe the properties of 2-D shapes, including the number of sides.*
2. *identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces.*
3. *identify 2-D shapes on the surface of 3-D shapes.*
4. *compare and sort common 2-D and 3-D shapes and everyday objects.*

Statistics

1. *interpret and construct simple pictograms, tally charts, block diagrams and tables.*
2. *ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.*
3. *ask and answer questions about totalling and comparing categorical data.*

Position & Direction

1. *order and arrange combinations of mathematical objects in patterns and sequences*
2. *use mathematical vocabulary to describe position, direction, and movement.*
3. *describe movement in a straight line and distinguish between rotation as a turn.*
4. *spot right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).*

Year Two Vocabulary

Number & Place Value

two hundred…… one thousand count in 3's /4's …… tally sequence continue
predict rule > greater than < less than one/two/three digit place place value
represents exchange

Addition & Subtraction

one hundred or more one hundred or less number facts tens boundary

Multiplication & Division

groups of times once twice three times…. ten times repeated addition
divide divided by divided into share share equally left left over
one /two /three each…. ten each group in pairs/ threes… tens equal groups column

Time

fortnight 5,10,15 minutes past digital analogue clock watch timer seconds

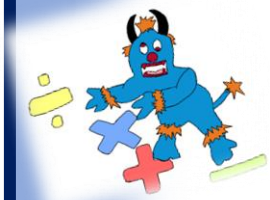
Fractions

equivalent fraction mixed number numerator denominator two halves
two quarters three quarters on third two thirds one of three equal parts

Length

further furthest tape measure

Year Two Vocabulary



Money

bought sold

Estimating

exact exactly

Properties of shape

surface line symmetry

Position & Direction

underneath centre journey quarter

Weight

gram measuring scale

3D Shape

cuboid cylinder

2D Shape

rectangle circular triangular pentagon
hexagon octagon

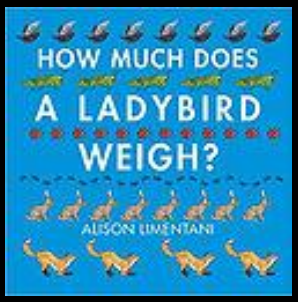
Statistics

vote table

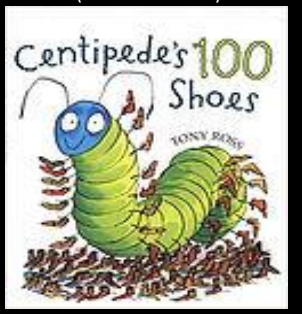
General

problem problem solving mental mentally
explain your thinking
explain your method describe the pattern describe the rule
investigate
mental calculation written calculation

Key Stage One Math Bookshelf



How Much Does A Ladybird Weigh?
(Alison Limentai)



Centipedes 100 Shoes
(Tony Ross)

Year Three Mathematicians

Will be able to:

Number & Place Value

1. *count from 0 in multiples of 4, 8, 50 and 100.*
2. *find 10 or 100 more or less than a given number.*
3. *recognise the place value of each digit in a 3-digit number (100s, 10s, 1s).*
4. *compare and order numbers up to 1,000.*
5. *identify, represent, and estimate numbers using different representations.*
6. *read and write numbers up to 1,000 in numerals and in words.*
7. *solve number problems and practical problems involving these ideas.*

Multiplication & Division

1. *recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.*
2. *write and calculate mathematical statements for multiplication and division using the multiplication tables that I know.*
3. *solve problems with two-digit numbers times one-digit numbers, using mental and progressing to formal written methods*
4. *solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.*

Addition & Subtraction

1. *mentally add and subtract a three-digit number and 1s.*
2. *mentally add and subtract a three-digit number and 10s.*
3. *mentally add and subtract a three-digit number and 100s.*
4. *add and subtract numbers with up to 3 digits.*
5. *use formal written methods of columnar addition and subtraction.*
6. *estimate the answer to a calculation and use inverse operations to check answers.*
7. *solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.*

Fractions

1. *count up and down in tenths.*
2. *recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10.*
3. *recognise, find, and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.*
4. *recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.*
5. *recognise and show, using diagrams, equivalent fractions with small denominators.*
6. *add and subtract fractions with the same denominator within one whole.*
7. *compare and order unit fractions, and fractions with the same denominators.*
8. *solve problems that involve all of the above.*

Year Three Mathematicians

Will be able to:

Measurement

1. *measure, compare, add and subtract lengths (m/cm/mm).*
2. *measure, compare, add and subtract mass (kg/g).*
3. *measure, compare, add and subtract volume/capacity (l/ml).*
4. *measure the perimeter of simple 2-D shapes.*
5. *add and subtract amounts of money to give change, using both £ and p in practical contexts.*
6. *tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.*
7. *estimate and read time with increasing accuracy to the nearest minute.*
8. *record and compare time in terms of seconds, minutes, and hours.*
9. *use vocabulary such as o'clock, am/pm, morning, afternoon, noon, and midnight.*
10. *know the number of seconds in a minute and the number of days in each month, year and leap year.*
11. *compare durations of events.*

Statistics

1. *interpret and present data using bar charts, pictograms, and tables.*
2. *solve one-step and two-step questions using information presented in scaled bar charts and pictograms and tables.*

Properties of Shape

1. *draw 2-D shapes and make 3-D shapes using modelling materials.*
2. *recognise 3-D shapes in different orientations and describe them.*
3. *recognise angles as a property of shape or a description of a turn.*
4. *identify right angles.*
5. *recognise that 2 right angles make a half-turn.*
6. *recognise that 3 make three quarters of a turn and 4 a complete turn.*
7. *identify whether angles are greater than or less than a right angle.*
8. *identify horizontal and vertical lines and pairs of perpendicular and parallel lines.*

Year Three Vocabulary

Number & Place Value

multiple of *factor of* *relationship* *Roman Numerals*

Addition & Subtraction

one more *ten more* *one hundred more* *one less* *ten less*

one hundred less *boundary*

Multiplication & Division

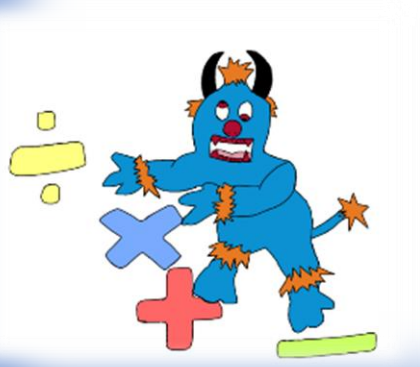
multiple *factor* *product* *left over* *remainder*

Time

century *calendar* *date earliest* *a.m.* *p.m.* *Roman Numeral* *12-hour clock*

Fractions

sixths *sevenths* *eighths* *tenths*



Length

centimetre *ruler* *metre stick*

Measurement

measuring scale *division* *approximately*

Year Three Vocabulary

Properties of shape

perimeter

Position & Direction

underneath centre journey quarter

3D Shape

hemisphere prism triangular prism

2D Shape

pentagon pentagonal hexagon hexagonal
octagon octagonal quadrilateral
right angled parallel perpendicular octagon

Statistics

list table chart bar chart frequency table
Carroll diagram
Venn diagram label title axis axes
diagram

Temperature

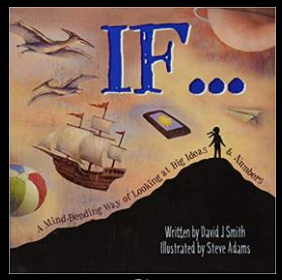
centigrade

General

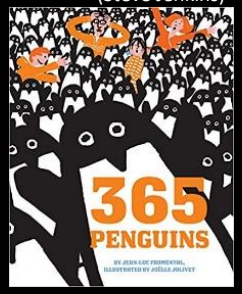
greatest value least value statement

Key Stage Two Math Bookshelf

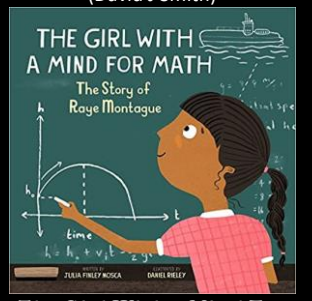
Just a Second
(Steve Jenkins)



If...
(David J Smith)



365 Penguins
(Jean-Luc Fromental & Joelle Jolivet)



The Girl With a Mind For Math
(Julia Finley Mosca)

Actual Size
(Steve Jenkins)

Year Four Mathematicians

Will be able to:

Number & Place Value

1. *count in multiples of 6, 7, 9, 25 and 1,000.*
2. *find 1,000 more or less than a given number.*
3. *count backwards through 0 to include negative numbers.*
4. *recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s and 1s)*
5. *order and compare numbers beyond 1,000.*
6. *identify, represent, and estimate numbers using different representations.*
7. *round any number to the nearest 10, 100 or 1,000.*
8. *solve number and practical problems that involve all of the above and with increasingly large positive numbers.*
9. *read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of 0 and place value.*

Fractions & Decimals

1. *recognise and show, using diagrams, families of common equivalent fractions.*
2. *count up and down in hundredths.*
3. *recognise that hundredths arise when dividing an object by a 100 and dividing tenths by 10.*
4. *solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.*
5. *add and subtract fractions with the same denominator.*
6. *recognise and write decimal equivalents of any number of tenths or hundredths.*
7. *recognise and write decimal equivalents to ¼; ½; ¾*
8. *find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths, and hundredths.*
9. *round decimals with 1 decimal place to the nearest whole number.*
10. *compare numbers with the same number of decimal places up to 2 decimal places.*
11. *solve simple measure and money problems involving fractions and decimals to 2 decimal places.*

Addition & Subtraction

1. *add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.*
2. *estimate and use inverse operations to check answers to a calculation.*
3. *solve addition and subtraction two-step problems in contexts.*
4. *decide which operations and methods to use and why.*

Multiplication & Division

1. *recall multiplication and division facts for multiplication tables up to 12 × 12.*
2. *use place value, known and derived facts to multiply and divide mentally, including multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers.*
3. *recognise and use factor pairs and commutativity in mental calculations.*
4. *multiply two-digit and three-digit numbers by a one-digit number using formal written layout.*
5. *solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.*

Year Four Mathematicians

Will be able to:

Measurement

1. *convert between different units of measure.*
2. *measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres.*
3. *find the area of rectilinear shapes by counting squares.*
4. *estimate, compare, and calculate different measures, including money in pounds and pence.*
5. *read, write, and convert time between analogue and digital 12 and 24-hour clocks.*
6. *solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days.*

Position & Direction

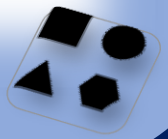
1. *describe positions on a 2-D grid as coordinates in the first quadrant.*
2. *describe movements between positions as translations of a given unit to the left/right and up/down.*
3. *plot specified points and draw sides to complete a given polygon.*

Statistics

1. *interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.*
2. *solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.*

Properties of Shape

1. *compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.*
2. *identify acute and obtuse angles.*
3. *compare and order angles up to 2 right angles by size.*
4. *identify lines of symmetry in 2-D shapes presented in different orientations.*
5. *complete a simple symmetric figure with respect to a specific line of symmetry.*



Year Four Vocabulary

Number & Place Value

one thousand ten thousand hundred thousand million equal to
equivalent to more less most least tally next consecutive
Roman Numerals integer positive negative above/below zero minus
negative numbers

Addition & Subtraction

inverse

Multiplication & Division

inverse square squared cube cubed

Time

leap year millennium noon date of birth timetable arrive depart

Fractions & Decimals

hundredths decimal decimal fraction decimal point decimal place
decimal equivalent proportion

Length

breadth edge perimeter square centimetre (cm2)

Measurement

unit standard unit metric unit

Statistics

survey questionnaire data

Year Four Vocabulary

Properties of shape

line *construct* *sketch* *centre angle* *right angled base*
square based reflect *reflection regular* *irregular*

Position & Direction

north-east *north-west* *south-east* *south-west* *NE/NW/SE/SW*
horizontal *vertical* *diagonal translate* *translation rotate* *rotation degree*
reflection ruler *set square* *angle measurer* *compass*

3D Shape

3D *three-dimensional* *spherical*

2D Shape

2D *two-dimensional* *oblong* *rectilinear* *equilateral triangle*
isosceles triangle *scalene triangle* *heptagon* *octagon* *octagonal quadrilateral*
parallelogram *rhombus* *trapezium polygon*

Weight

mass *big* *bigger* *small* *smaller* *weight* *heavy/light*
heavier/lighter *heaviest/lightest*

General

justify *make a statement*

Multiplication & Division

1. identify multiples and factors.
2. find all factor pairs of a number, and common factors of two numbers.
3. know and use the vocabulary of prime numbers, prime factors, and composite (non-prime) numbers.
4. establish whether a number up to 100 is prime and recall prime numbers up to 19.
5. multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.
6. multiply and divide numbers mentally drawing upon known facts.
7. divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.
8. multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000.
9. recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)
10. solve problems involving multiplication and division, including using my knowledge of factors and multiples, squares and cubes.
11. solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.
12. solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

Number & Place Value

1. read, write, order, and compare numbers to at least 1,000,000.
2. determine the value of each digit.
3. count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.
4. interpret negative numbers in context.
5. count forwards and backwards with positive and negative whole numbers, including through 0.
6. round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000.
7. solve number problems and practical problems that involve all of the above
8. read Roman numerals to 1,000 (M) and recognise years written in Roman numerals.

Year Five Mathematicians

Will be able to:

Addition & Subtraction

1. add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction).
2. add and subtract numbers mentally with increasingly large numbers.
3. use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.
4. solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

Fractions & Decimals

1. compare and order fractions whose denominators are all multiples of the same number.
2. identify, name, and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.
3. recognise mixed numbers and improper fractions.
4. convert them from one form to the other and write mathematical statements > 1 as a mixed number.
5. add and subtract fractions with the same denominator.
6. add and subtract fractions with denominators that are multiples of the same number.
7. multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.
8. read and write decimal numbers as fractions.
9. recognise and use thousandths and relate them to tenths, hundredths, and decimal equivalents.
10. round decimals with 2 decimal places to the nearest whole number and to 1 decimal place.
11. read, write, order and compare numbers with up to 3 decimal places.
12. solve problems involving number up to 3 decimal places.
13. recognise the per cent symbol (%) and understand that per cent relates to “number of parts per 100”.
14. write percentages as a fraction with denominator 100, and as a decimal fraction.
15. solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and fractions with a denominator of a multiple of 10 or 25.

Year Five Mathematicians

Will be able to:

Measurement

1. *convert between different units of metric measure.*
2. *understand and can use approximate equivalences between metric units and common imperial units such as inches, pounds, and pints.*
3. *measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.*
4. *calculate and compare the area of rectangles (including squares) including using standard units, square centimetres (cm2) and square metres (m2).*
5. *estimate the area of irregular shapes.*
6. *estimate volume and capacity.*
7. *solve problems involving converting between units of time.*
8. *use all four operations to solve problems involving measure using decimal notation including scaling.*

Properties of Shape

1. *identify 3-D shapes, including cubes and other cuboids, from 2-D representations.*
2. *know angles are measured in degrees.*
3. *estimate and compare acute, obtuse and reflex angles.*
4. *draw given angles and measure them in degrees (o).*
5. *identify angles at a point and 1 whole turn (total 360o).*
6. *identify angles at a point on a straight line and half a turn (total 180o).*
7. *identify other multiples of 90o.*
8. *use the properties of rectangles to deduce related facts and find missing lengths and angles.*
9. *distinguish between regular and irregular polygons based on reasoning about equal sides and angles.*

Statistics

1. *solve comparison, sum and difference problems using information presented in a line graph.*
2. *complete, read and interpret information in tables, including timetables.*

Position & Direction

1. *identify, describe, and represent the position of a shape following a reflection or translation.*
2. *use the appropriate language and know that the shape has not changed.*

Year Five Vocabulary

Number & Place Value

factor pair *> greater than* *equal to* *< less than*

formula *divisibility* *square number* *prime number* *ascending/descending order*

Addition & Subtraction

ones boundary *tens boundary*

Estimating

round to the nearest ten thousand

Fractions & Decimals

proper/improper *fraction* *equivalent fraction* *reduced to* *cancel*

proportion *in every* *for every* *percentage* *percent* *%*

Length

square centimetre (cm2) *square metre (m2)* *square millimetre (mm2)*

Measurement

imperial unit

Statistics

database *bar line* *chart line* *graph maximum/minimum* *value outcome*

Year Five Vocabulary

Properties of shape

line *construct* *sketch* *centre angle* *right angled base*

square based *reflect* *reflection* *regular* *irregular*

Position & Direction

coordinate *protractor*

3D Shape

octahedron

2D Shape

x-axis *y-axis* *quadrant*

Capacity & Volume

pint *gallon*

Money

discount *currency*

General

explain your reasoning

Year Six Mathematicians

Will be able to:

Addition & Subtraction Multiplication & Division

1. *multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.*
2. *divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division.*
3. *interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.*
4. *divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.*
5. *perform mental calculations, including with mixed operations and large numbers.*
6. *identify common factors, common multiples, and prime numbers.*
7. *use my knowledge of the order of operations to carry out calculations involving the 4 operations.*
8. *solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.*
9. *solve problems involving addition, subtraction, multiplication, and division.*
10. *use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.*

Number & Place Value

1. *read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.*
2. *round any whole number to a required degree of accuracy.*
3. *use negative numbers in context and calculate intervals across 0.*
4. *solve number and practical problems that involve all of the above.*

Ratio & Proportion

1. *solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.*
2. *solve problems involving the calculation of percentages and the use of percentages for comparison.*
3. *solve problems involving similar shapes where the scale factor is known or can be found.*
4. *solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.*

Fractions & Decimals

1. *use common factors to simplify fractions.*
2. *use common multiples to express fractions in the same denomination.*
3. *compare and order fractions, including fractions >1.*
4. *add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.*
5. *multiply simple pairs of proper fractions, writing the answer in its simplest form.*
6. *divide proper fractions by whole numbers.*
7. *associate a fraction with division and calculate decimal fraction equivalents for a simple fraction.*
8. *identify the value of each digit in numbers given to three decimal places.*
9. *multiply and divide numbers by 10, 100 and 1,000 giving answers are up to three decimal places.*
10. *multiply one-digit numbers with up to 2 decimal places by whole numbers.*
11. *use written division methods in cases where the answer has up to 2 decimal places.*
12. *solve problems which require answers to be rounded to specified degrees of accuracy.*
13. *recall and use equivalences between simple fractions, decimals, and percentages, including in different contexts.*

Year Six Mathematicians

Will be able to:

Measurement

1. *solve problems involving the calculation and conversion of units of measure, using decimal notation up to 2 decimal places where appropriate.*
2. *use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa.*
3. *use decimal notation to up to 3 decimal places.*
4. *convert between miles and kilometres.*
5. *recognise that shapes with the same areas can have different perimeters and vice versa.*
6. *recognise when it is possible to use formulae for area and volume of shapes.*
7. *calculate the area of parallelograms and triangles.*
8. *calculate, estimate, and compare volume of cubes and cuboids using standard units.*

Properties of Shape

1. *draw 2-D shapes using given dimensions and angles.*
2. *recognise, describe, and build simple 3-D shapes, including making nets.*
3. *compare and classify geometric shapes based on their properties and sizes.*
4. *find unknown angles in any triangles, quadrilaterals, and regular polygons.*
5. *illustrate and name parts of circles, including radius, diameter, and circumference.*
6. *that the diameter is twice the radius.*
7. *recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.*

Statistics

1. *interpret and construct pie charts and line graphs and use these to solve problems.*
2. *calculate and interpret the mean as an average.*

Position & Direction

1. *describe positions on the full coordinate grid (all 4 quadrants).*
2. *draw and translate simple shapes on the coordinate plane and reflect them in the axes.*

Algebra

1. *use simple formulae.*
2. *generate and describe linear number sequences.*
3. *express missing number problems algebraically.*
4. *find pairs of numbers that satisfy an equation with two unknowns.*
5. *enumerate possibilities of combinations of 2 variables.*

Year Six Vocabulary

Number & Place Value

prime number *factorise* *prime factor* *digital total*

Algebra

formula *formulae* *equation* *unknown variable*

Fractions & Decimals

Ratio

Weight

tonne *pound* *ounce*

Length

yard *foot* *feet* *inches* *circumference*

Capacity & Volume

centilitre *cubic centilitres (cm3)* *cubic metres (m3)* *cubic millimetres (mm3)*
cubic kilometres (km3)

3D Shape

dodecahedron net *open* *closed*

Fractions & Decimals

ratio

Money

profit *loss*

Temperature

temperature *degree* *centigrade*

2D Shape

kite

Position & Direction

reflex angle

Properties of Shape

circumference *concentric* *arc net* *open* *closed* *intersecting* *intersection*
plane base *square base size*

Statistics

pie chart *mean* *mode* *median* *range* *statistics* *distribution*

Maths Across The Curriculum

Geography

From statistics to maps, Maths is also important in Geography:

1. *Collecting and representing data from field trips or for weather investigations.*
2. *Grid references and coordinates.*
3. *Using scales on Ordnance Survey maps to establish the correct distance between two points.*
4. *Google Maps can be used to bring Geography and Maths skills together.*
5. *Converting between units of measure can help with the understanding of distances and space.*

Science

Almost every scientific investigation is likely to require one or more of the mathematical skills. Whilst children are working scientifically, they will constantly need to be drawing on their understanding of statistics, place value and measure. Data handling is used extensively in Science. Most charts and graphs that are used in science are also used in maths.

History

Dates are the key here when looking at how we can use maths in history lessons.

1. *Historical timelines can be used as a basis for finding the difference in dates.*
2. *Historical dates can also be utilised for sequencing events.*
3. *Charts and graphs can provide extremely useful historical information which children can analyse.*
4. *Roman numerals to denote monarchy.*

Music

Music can be used in mathematics lessons for making up songs about basic facts or clapping, however, maths can also be used in music lessons.

1. *Time and speed can be represented by tempo which is the number of beats per minute (BPM).*
2. *Equivalent fractions can be shown using musical notation where a different type of note is worth a different fraction of a whole beat.*