

# Royale Tutors Year 3 Mathematics Curriculum

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## 1. Number – Number and Place Value

- Count from 0 in multiples of 4, 8, 50 and 100.
- Find 10 or 100 more or less than a given number.
- Recognise the place value of each digit in a three-digit number (hundreds, tens, ones).
- Compare and order numbers up to 1000.
- Identify, represent and estimate numbers using different representations.
- Read and write numbers up to 1000 in numerals and in words.
- Solve number problems and practical problems involving these ideas.

## 2. Number – Addition and Subtraction

- Add and subtract numbers mentally, including:
  - - A three-digit number and ones
  - - A three-digit number and tens
  - - A three-digit number and hundreds
- Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.
- Estimate the answer to a calculation and use inverse operations to check answers.
- Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.

## 3. Number – Multiplication and Division

- Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.
- Write and calculate mathematical statements for multiplication and division using the multiplication tables they know.
- Use mental and progressing to formal written methods.

- 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.

#### 4. Number – Fractions

- Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts.
- Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.
- Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.
- Recognise and show, using diagrams, equivalent fractions with small denominators.
- Add and subtract fractions with the same denominator within one whole (e.g.,  $5/7 + 1/7 = 6/7$ ).
- Compare and order unit fractions and fractions with the same denominators.
- Solve problems that involve all of the above.

#### 5. Measurement

- Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).
- Measure the perimeter of simple 2-D shapes.
- Add and subtract amounts of money to give change, using both £ and p in practical contexts.
- Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.
- Estimate and read time with increasing accuracy to the nearest minute.
- Record and compare time in terms of seconds, minutes and hours.
- Use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight.
- Know the number of seconds in a minute and the number of days in each month, year and leap year.
- Compare durations of events (e.g., to calculate the time taken by particular events or tasks).

## 6. Geometry – Properties of Shapes

- Draw 2-D shapes and make 3-D shapes using modelling materials.
- Recognise 3-D shapes in different orientations and describe them.
- Recognise angles as a property of shape or a description of a turn.
- Identify right angles, recognise that two right angles make a half-turn, three make three-quarters of a turn and four a complete turn.
- Identify whether angles are greater than or less than a right angle.
- Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.

## 7. Statistics

- Interpret and present data using bar charts, pictograms and tables.
- Solve one-step and two-step questions (e.g., 'How many more?' and 'How many fewer?') using information presented in scaled bar charts and pictograms and tables.

## Suggested Termly Breakdown

- Autumn: Place value, addition & subtraction, measurement (length & mass), basic statistics.
- Spring: Multiplication, division, money, time, fractions (introduction).
- Summer: Geometry, deeper fractions, perimeter, data handling, revision.

## **Royale Tutors Year 4 Mathematics Curriculum**

### **Number & Place Value**

Count in multiples of 6, 7, 9, 25 and 1000

Find 1000 more or less than a given number

Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)

Order and compare numbers beyond 1000

Identify, represent and estimate numbers using different representations

Round any number to the nearest 10, 100 or 1000

Solve number and practical problems that involve all of the above and with increasingly large positive numbers

### **Addition & Subtraction**

Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate

Estimate and use inverse operations to check answers to a calculation

Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why

### **Multiplication & Division**

Recall multiplication and division facts for multiplication tables up to  $12 \times 12$

Use place value, known and derived facts to multiply and divide mentally

Recognise and use factor pairs and commutativity in mental calculations

Multiply two-digit and three-digit numbers by a one-digit number using formal written layout

Solve problems involving multiplying and adding, including using the distributive law

### **Fractions (including decimals)**

Recognise and show, using diagrams, families of common equivalent fractions

Count up and down in hundredths

Solve problems involving increasingly harder fractions

Add and subtract fractions with the same denominator

Recognise and write decimal equivalents of any number of tenths or hundredths

Find the effect of dividing a one- or two-digit number by 10 and 100

Round decimals with one decimal place to the nearest whole number

### **Measurement**

Convert between different units of measure (e.g., kilometre to metre)

Measure and calculate the perimeter of a rectilinear figure

Find the area of rectilinear shapes by counting squares

Estimate, compare and calculate different measures, including money

Read, write and convert time between analogue and digital 12- and 24-hour clocks

### **Geometry: Properties of Shapes**

Compare and classify geometric shapes, including quadrilaterals and triangles

Identify acute and obtuse angles and compare and order angles up to two right angles by size

Identify lines of symmetry in 2-D shapes presented in different orientations

### **Geometry: Position and Direction**

Describe positions on a 2-D grid as coordinates in the first quadrant

Describe movements between positions as translations of a given unit to the left/right and up/down

Plot specified points and draw sides to complete a given polygon

### **Statistics**

Interpret and present discrete and continuous data using appropriate graphical methods

Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs

## **Royale Tutors Year 5 Mathematics Curriculum**

### **Number & Place Value**

Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit

Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000

Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero

Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000

Solve number problems and practical problems that involve all of the above

### **Addition & Subtraction**

Add and subtract whole numbers with more than 4 digits, including using formal written methods

Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy

Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

### **Multiplication & Division**

Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers

Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers

Establish whether a number up to 100 is prime and recall prime numbers up to 19

Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method

Divide numbers up to 4 digits by a one-digit number using the formal written method of short division

Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000

### **Fractions (including decimals and percentages)**

Compare and order fractions whose denominators are all multiples of the same number

Identify, name and write equivalent fractions of a given fraction

Recognise mixed numbers and improper fractions and convert from one form to the other

Add and subtract fractions with the same denominator and denominators that are multiples of the same number

Read and write decimal numbers as fractions

Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents

Round decimals with two decimal places to the nearest whole number and to one decimal place

Read, write, order and compare numbers with up to three decimal places

Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred'

### **Measurement**

Convert between different units of metric measure (for example, kilometre and metre)

Understand and use approximate equivalences between metric units and common imperial units

Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres

Calculate and compare the area of rectangles (including squares)

Estimate volume and capacity

Solve problems involving converting between units of time

### **Geometry: Properties of Shapes**

Identify 3-D shapes, including cubes and other cuboids, from 2-D representations

Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles

Draw given angles, and measure them in degrees

Identify angles at a point and one whole turn (total  $360^\circ$ ), angles at a point on a straight line and a turn (total  $180^\circ$ )

Use the properties of rectangles to deduce related facts and find missing lengths and angles

### **Geometry: Position and Direction**

Identify, describe and represent the position of a shape following a reflection or translation

Know that the shape has not changed

### Statistics

Solve comparison, sum and difference problems using information presented in a line graph

Complete, read and interpret information in tables, including timetables





## **Royale Tutors Year 6 Mathematics Curriculum**

### **Number & Place Value**

Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit

Round any whole number to a required degree of accuracy

Use negative numbers in context, and calculate intervals across zero

Solve number and practical problems that involve all of the above

### **Addition, Subtraction, Multiplication & Division**

Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication

Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division

Interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

Divide numbers using the formal written method of short division where appropriate

Perform mental calculations, including with mixed operations and large numbers

Identify common factors, common multiples and prime numbers

Use their knowledge of the order of operations to carry out calculations involving the four operations

Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

Solve problems involving addition, subtraction, multiplication and division

### **Fractions (including decimals and percentages)**

Use common factors to simplify fractions; use common multiples to express fractions in the same denomination

Compare and order fractions, including fractions  $> 1$

Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions

Multiply simple pairs of proper fractions, writing the answer in its simplest form

Divide proper fractions by whole numbers

Associate a fraction with division and calculate decimal fraction equivalents

Identify the value of each digit in numbers given to three decimal places

Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places

Multiply one-digit numbers with up to two decimal places by whole numbers

Use written division methods in cases where the answer has up to two decimal places

Solve problems which require answers to be rounded to specified degrees of accuracy

Recall and use equivalences between simple fractions, decimals and percentages

### **Ratio and Proportion**

Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts

Solve problems involving the calculation of percentages and the use of percentages for comparison

Solve problems involving similar shapes where the scale factor is known or can be found

Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples

### **Algebra**

Use simple formulae

Generate and describe linear number sequences

Express missing number problems algebraically

Find pairs of numbers that satisfy an equation with two unknowns

Enumerate possibilities of combinations of two variables

### **Measurement**

Solve problems involving the calculation and conversion of units of measure

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, using decimal notation to up to three decimal places

Convert between miles and kilometres

Recognise that shapes with the same areas can have different perimeters and vice versa

Recognise when it is possible to use formulae for area and volume of shapes

Calculate the area of parallelograms and triangles

Calculate, estimate and compare volume of cubes and cuboids using standard units

## **Geometry: Properties of Shapes**

Draw 2-D shapes using given dimensions and angles

Recognise, describe and build simple 3-D shapes, including making nets

Compare and classify geometric shapes based on their 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

Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

## **Geometry: Position and Direction**

Describe positions on the full coordinate grid (all four quadrants)

Draw and translate simple shapes on the coordinate plane, and reflect them in the axes

## **Statistics**

Interpret and construct pie charts and line graphs and use these to solve problems

Calculate and interpret the mean as an average



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