Year 4 Ready to progress – Maths

Number and place value	Number- Four Operations	Number- Fractions (including decimals)
● NPV-1 Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100 ● NPV-2 Recognise the place value of each digit in four-digit numbers, and compose and decompose four-digit numbers using standard and non-standard partitioning. ● NPV-3 Reason about the location of any four-digit number in the linear number system, including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each. ● NPV-4 Divide 1,000 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1,000 with 2, 4, 5 and 10 equal parts.	● 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 ● recall multiplication and division facts for multiplication tables up to 12 × 12 ● 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 ● 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 to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	● recognise and show, using diagrams, families of common equivalent fractions ● count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10 ● 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 ● add and subtract fractions with the same denominator ● recognise and write decimal equivalents of any number of tenths or hundreds ● recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ ● 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 ● round decimals with 1 decimal place to the nearest whole number ● compare numbers with the same number of decimal places up to 2 decimal places ● solve simple measure and money problems involving fractions and decimals to 2 decimal places

<table>
<tr><th colspan="2">Measurement</th></tr>
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convert between different units of measure [for example, kilometre to metre; hour to minute]
measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
find the area of rectilinear shapes by counting squares
estimate, compare and calculate different measures, including money in pounds and pence
read, write and convert time between analogue and digital 12- and 24-hour clocks
solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days

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<tr><th>Geometry – Properties of shapes</th><th>Geometry – Position and direction</th></tr>
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compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
identify acute and obtuse angles and compare and order angles up to 2 right angles by size
identify lines of symmetry in 2-D shapes presented in different orientations
complete a simple symmetric figure with respect to a specific line of symmetry

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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

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<tr><th>Statistics</th></tr>
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interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs
solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs

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Year 5 Ready to progress – Maths

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<th>Number- Four Operations</th>
<th>Number- Fractions (including decimals and percentages)</th>
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add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
add and subtract numbers mentally with increasingly large numbers
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
identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 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, including long multiplication for two-digit numbers
multiply and divide numbers mentally, drawing upon known facts
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
multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000
recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³)
solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes
solve problems involving addition, 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

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compare and order fractions whose denominators are all multiples of the same number
identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]
add and subtract fractions with the same denominator, and denominators that are multiples of the same number
multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams
read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$]
recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
round decimals with 2 decimal places to the nearest whole number and to 1 decimal place
read, write, order and compare numbers with up to 3 decimal places
solve problems involving number up to 3 decimal places
recognise the per cent symbol (%) and understand that per cent relates to ‘number of parts per 100’, and write percentages as a fraction with

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Number and 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

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- interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0
- round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000
- solve number problems and practical problems that involve all of the above
- read Roman numerals to 1,000 (M) and recognise years written in Roman numerals

denominator 100, and as a decimal fraction

- solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25

Measurement	Geometry – Properties of shapes

• convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre]
• understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints
• measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
• calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm^2) and square metres (m^2), and estimate the area of irregular shapes
• estimate volume [for example, using 1 cm^3 blocks to build cuboids (including cubes)] and capacity [for example, using water]
• solve problems involving converting between units of time
• use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling
	• 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 1 whole turn (total 360°)
	  • angles at a point on a straight line and half a turn (total 180°)
	  • other multiples of 90°
	  • use the properties of rectangles to deduce related facts and find missing lengths and angles
	  • distinguish between regular and irregular polygons based on reasoning about equal sides and angles

Statistics	**Geometry – Position and direction**
• solve comparison, sum and difference problems using information presented in a line graph • complete, read and interpret information in tables, including timetables	• identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed