

## Year 3 guidance

### Ready-to-progress criteria

Year 2 conceptual prerequisite	Year 3 ready-to-progress criteria	Future applications
<p>Know that 10 ones are equivalent to 1 ten, and that 40 (for example) can be composed from 40 ones or 4 tens.</p> <p>Know how many tens there are in multiples of 10 up to 100.</p>	<p><b>3NPV-1</b> Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10; apply this to identify and work out how many 10s there are in other three-digit multiples of 10.</p>	<p>Solve multiplication problems that involve a scaling structure, such as 'ten times as long'.</p>
<p>Recognise the place value of each digit in <i>two</i>-digit numbers, and compose and decompose <i>two</i>-digit numbers using standard and non-standard partitioning.</p>	<p><b>3NPV-2</b> Recognise the place value of each digit in <i>three</i>-digit numbers, and compose and decompose <i>three</i>-digit numbers using standard and non-standard partitioning.</p>	<p>Compare and order numbers.</p> <p>Add and subtract using mental and formal written methods.</p>
<p>Reason about the location of any <i>two</i>-digit number in the linear number system, including identifying the previous and next multiple of 10.</p>	<p><b>3NPV-3</b> Reason about the location of any <i>three</i>-digit number in the linear number system, including identifying the previous and next multiple of 100 and 10.</p>	<p>Compare and order numbers.</p> <p>Estimate and approximate to the nearest multiple of 1,000, 100 or 10.</p>
<p>Count in multiples of 2, 5 and 10.</p>	<p><b>3NPV-4</b> Divide 100 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 100 with 2, 4, 5 and 10 equal parts.</p>	<p>Read scales on graphs and measuring instruments.</p>

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<p>Add and subtract across 10, for example:</p> $8 + 5 = 13$ $13 - 5 = 8$	<p><b>3NF-1</b> Secure fluency in addition and subtraction facts that bridge 10, through continued practice.</p>	<p>Add and subtract mentally where digits sum to more than 10, for example:</p> $26 + 37 = 63$ <p>Add and subtract across other powers of 10, without written methods, for example:</p> $1.3 - 0.4 = 0.9$ <p>Add within a column during columnar addition when the column sums to more than 10 (regrouping), for example, for:</p> $126 + 148$ <p>Subtract within a column during columnar subtraction when the minuend of the column is smaller than the subtrahend (exchanging), for example, for:</p> $453 - 124$
<p>Calculate products within the 2, 5 and 10 multiplication tables.</p>	<p><b>3NF-2</b> Recall multiplication facts, and corresponding division facts, in the 10, 5, 2, 4 and 8 multiplication tables, and recognise products in these multiplication tables as multiples of the corresponding number.</p>	<p>Use multiplication facts during application of formal written layout.</p> <p>Use division facts during short division and long division.</p>
<p>Automatically recall addition and subtraction facts within 10, and across 10.</p> <p>Unitise in tens: understand that 10 can be thought of as a single unit of 1 ten.</p>	<p><b>3NF-3</b> Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10), for example:</p> $80 + 60 = 140$ $140 - 60 = 80$ $30 \times 4 = 120$ $120 \div 4 = 30$	<p>Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100), for example:</p> $8 + 6 = 14 \text{ and } 14 - 6 = 8$ <p>so</p> $800 + 600 = 1,400$ $1,400 - 600 = 800$ $3 \times 4 = 12 \text{ and } 12 \div 4 = 3$ <p>so</p> $300 \times 4 = 1,200$ $1,200 \div 4 = 300$



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<p>Automatically recall number bonds to 9 and to 10.</p> <p>Know that 10 ones are equivalent to 1 ten, and 10 tens are equivalent to 1 hundred.</p>	<p><b>3AS–1</b> Calculate complements to 100, for example:  <math>46 + ? = 100</math></p>	<p>Calculate complements to other numbers, particularly powers of 10.</p> <p>Calculate how much change is due when paying for an item.</p>
<p>Automatically recall addition and subtraction facts within 10 and across 10.</p> <p>Recognise the place value of each digit in two- and three-digit numbers.</p> <p>Know that 10 ones are equivalent to 1 ten, and 10 tens are equivalent to 1 hundred.</p>	<p><b>3AS–2</b> Add and subtract up to three-digit numbers using columnar methods.</p>	<p>Add and subtract other numbers, including four-digits and above, and decimals, using columnar methods.</p>
<p>Have experience with the commutative property of addition, for example, have recognised that <math>3 + 2</math> and <math>2 + 3</math> have the same sum.</p> <p>Be able to write an equation in different ways, for example,  <math>2 + 3 = 5</math> and <math>5 = 2 + 3</math></p> <p>Write equations to represent addition and subtraction contexts.</p>	<p><b>3AS–3</b> Manipulate the additive relationship:</p> <p>Understand the inverse relationship between addition and subtraction, and how both relate to the part–part–whole structure.</p> <p>Understand and use the commutative property of addition, and understand the related property for subtraction.</p>	<p>All future additive reasoning.</p>
<p>Recognise repeated addition contexts and represent them with multiplication equations.</p> <p>Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotitive division).</p>	<p><b>3MD–1</b> Apply known multiplication and division facts to solve contextual problems with different structures, including quotitive and partitive division.</p>	

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	<b>3F–1</b> Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts.	Use unit fractions as the basis to understand non-unit fractions, improper fractions and mixed numbers, for example:  $\frac{2}{5}$ is 2 one-fifths  $\frac{6}{5}$ is 6 one-fifths, so $\frac{6}{5} = 1\frac{1}{5}$
	<b>3F–2</b> Find unit fractions of quantities using known division facts (multiplication tables fluency).	Apply knowledge of unit fractions to non-unit fractions.
Reason about the location of whole numbers in the linear number system.	<b>3F–3</b> Reason about the location of any fraction within 1 in the linear number system.	Compare and order fractions.
Automatically recall addition and subtraction facts within 10.  Unitise in tens: understand that 10 can be thought of as a single unit of 1 ten, and that these units can be added and subtracted.	<b>3F–4</b> Add and subtract fractions with the same denominator, within 1.	Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers.
Recognise standard and non-standard examples of 2D shapes presented in different orientations.  Identify similar shapes.	<b>3G–1</b> Recognise right angles as a property of shape or a description of a turn, and identify right angles in 2D shapes presented in different orientations.	Compare angles.  Estimate and measure angles in degrees.
Compose 2D shapes from smaller shapes to match an exemplar, rotating and turning over shapes to place them in specific orientations.	<b>3G–2</b> Draw polygons by joining marked points, and identify parallel and perpendicular sides.	Find the area or volume of a compound shape by decomposing into constituent shapes.  Find the perimeter of regular and irregular polygons.



# Year 4 guidance

## Ready-to-progress criteria

Year 3 conceptual prerequisite	Year 4 ready-to-progress criteria	Future applications
Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10.	<b>4NPV-1</b> 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.	Solve multiplication problems that involve a scaling structure, such as '10 times as long'.
Recognise the place value of each digit in <i>three</i> -digit numbers, and compose and decompose <i>three</i> -digit numbers using standard and non-standard partitioning.	<b>4NPV-2</b> Recognise the place value of each digit in <i>four</i> -digit numbers, and compose and decompose <i>four</i> -digit numbers using standard and non-standard partitioning.	Compare and order numbers. Add and subtract using mental and formal written methods.
Reason about the location of any <i>three</i> -digit number in the linear number system, including identifying the previous and next multiple of 10 and 100.	<b>4NPV-3</b> Reason about the location of any <i>four</i> -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.	Compare and order numbers. Estimate and approximate to the nearest multiple of 1,000, 100 or 10.
Divide 100 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 100 with 2, 4, 5 and 10 equal parts.	<b>4NPV-4</b> 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.	Read scales on graphs and measuring instruments.
Recall multiplication and division facts in the 5 and 10, and 2, 4 and 8 multiplication tables, and recognise products in these multiplication tables as multiples of the corresponding number.	<b>4NF-1</b> Recall multiplication and division facts up to $12 \times 12$ , and recognise products in multiplication tables as multiples of the corresponding number.	Use multiplication facts during application of formal written methods. Use division facts during application of formal written methods.

Year 3 conceptual prerequisite	Year 4 ready-to-progress criteria	Future applications
<p>Use known division facts to solve division problems.</p> <p>Calculate small differences, for example:</p> $74 - 72 = 2$	<p><b>4NF-2</b> Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, for example:</p> $74 \div 9 = 8 \text{ r } 2$ <p>and interpret remainders appropriately according to the context.</p>	<p>Correctly represent and interpret remainders when using short and long division.</p>
<p>Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10), for example:</p> $80 + 60 = 140$ $140 - 60 = 80$ $30 \times 4 = 120$ $120 \div 4 = 30$	<p><b>4NF-3</b> Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100), for example:</p> $8 + 6 = 14 \text{ and } 14 - 6 = 8$ <p>so</p> $800 + 600 = 1,400$ $1,400 - 600 = 800$ $3 \times 4 = 12 \text{ and } 12 \div 4 = 3$ <p>so</p> $300 \times 4 = 1,200$ $1,200 \div 4 = 300$	<p>Apply place-value knowledge to known additive and multiplicative number facts, extending to a whole number of larger powers of ten and powers of ten smaller than one, for example:</p> $800,000 + 600,000 = 1,400,000$ $1,400,000 - 600,000 = 800,000$ $0.03 \times 4 = 0.12$ $0.12 \div 4 = 0.03$
<p>Multiply two-digit numbers by 10, and divide three-digit multiples of 10 by 10.</p>	<p><b>4MD-1</b> Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients); understand this as equivalent to making a number 10 or 100 times the size.</p>	<p>Convert between different metric units of measure.</p> <p>Apply multiplication and division by 10 and 100 to calculations involving decimals, for example:</p> $0.03 \times 100 = 3$ $3 \div 100 = 0.03$
<p>Understand the inverse relationship between multiplication and division.</p> <p>Write and use multiplication table facts with the factors presented in either order.</p>	<p><b>4MD-2</b> Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication.</p>	<p>Recognise and apply the structures of multiplication and division to a variety of contexts.</p>
	<p><b>4MD-3</b> Understand and apply the distributive property of multiplication.</p>	<p>Recognise when to use and apply the distributive property of multiplication in a variety of contexts.</p>



Year 3 conceptual prerequisite	Year 4 ready-to-progress criteria	Future applications
Reason about the location of fractions less than 1 in the linear number system.	<b>4F-1</b> Reason about the location of mixed numbers in the linear number system.	Compare and order fractions.
Identify unit and non-unit fractions.	<b>4F-2</b> Convert mixed numbers to improper fractions and vice versa.	Compare and order fractions. Add and subtract fractions where calculation bridges whole numbers.
Add and subtract fractions with the same denominator, within 1 whole, for example: $\frac{2}{5} + \frac{2}{5} = \frac{4}{5}$	<b>4F-3</b> Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers, for example: $\frac{7}{5} + \frac{4}{5} = \frac{11}{5}$ $3\frac{7}{8} - \frac{2}{8} = 3\frac{5}{8}$ $7\frac{2}{5} + \frac{4}{5} = 8\frac{1}{5}$ $8\frac{1}{5} - \frac{4}{5} = 7\frac{2}{5}$	
Draw polygons by joining marked points.	<b>4G-1</b> Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant.	Draw polygons, specified by coordinates in the 4 quadrants.
Measure lines in centimetres and metres. Add more than 2 addends. Recall multiplication table facts.	<b>4G-2</b> Identify regular polygons, including equilateral triangles and squares, as those in which the side-lengths are equal and the angles are equal. Find the perimeter of regular and irregular polygons.	Draw, compose and decompose shapes according to given properties, dimensions, angles or area.
	<b>4G-3</b> Identify line symmetry in 2D shapes presented in different orientations. Reflect shapes in a line of symmetry and complete a symmetric figure or pattern with respect to a specified line of symmetry.	Draw polygons, specified by coordinates in the 4 quadrants: draw shapes following translation or reflection in the axes.

# Year 5 guidance

## Ready-to-progress criteria

Year 4 conceptual prerequisite	Year 5 ready-to-progress criteria	Future applications
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.	<p><b>5NPV-1</b> Know that 10 tenths are equivalent to 1 one, and that 1 is 10 times the size of 0.1.</p> <p>Know that 100 hundredths are equivalent to 1 one, and that 1 is 100 times the size of 0.01.</p> <p>Know that 10 hundredths are equivalent to 1 tenth, and that 0.1 is 10 times the size of 0.01.</p>	<p>Solve multiplication problems that have the scaling structure, such as 'ten times as long'.</p> <p>Understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal fraction.</p>
Recognise the place value of each digit in four-digit numbers, and compose and decompose four-digit numbers using standard and non-standard partitioning.	<b>5NPV-2</b> Recognise the place value of each digit in numbers with up to 2 decimal places, and compose and decompose numbers with up to 2 decimal places using standard and non-standard partitioning.	<p>Compare and order numbers, including those with up to 2 decimal places.</p> <p>Add and subtract using mental and formal written methods.</p>
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.	<b>5NPV-3</b> Reason about the location of any number with up to 2 decimals places in the linear number system, including identifying the previous and next multiple of 1 and 0.1 and rounding to the nearest of each.	<p>Compare and order numbers, including those with up to 2 decimal places.</p> <p>Estimate and approximate to the nearest 1 or 0.1.</p>
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.	<b>5NPV-4</b> Divide 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in units of 1 with 2, 4, 5 and 10 equal parts.	Read scales on graphs and measuring instruments.



Year 4 conceptual prerequisite	Year 5 ready-to-progress criteria	Future applications
<p>Divide 100 and 1,000 into 2, 4, 5 and 10 equal parts.</p> <p>Find unit fractions of quantities using known division facts (multiplication tables fluency).</p>	<p><b>5NPV-5</b> Convert between units of measure, including using common decimals and fractions.</p>	<p>Read scales on measuring instruments, and on graphs related to measures contexts.</p> <p>Solve measures problems involving different units by converting to a common unit.</p>
<p>Recall multiplication and division facts up to <math>12 \times 12</math>.</p> <p>Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, for example: <math>74 \div 9 = 8 \text{ r } 2</math></p>	<p><b>5NF-1</b> Secure fluency in multiplication table facts, and corresponding division facts, through continued practice.</p>	<p>Use multiplication facts during application of formal written layout.</p> <p>Use division facts during short division and long division.</p>
<p>Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10 or 100), for example:</p> <p><math>8 + 6 = 14</math>  <math>80 + 60 = 140</math>  <math>800 + 600 = 1,400</math></p> <p><math>3 \times 4 = 12</math>  <math>30 \times 4 = 120</math>  <math>300 \times 4 = 1,200</math></p>	<p><b>5NF-2</b> Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth), for example:</p> <p><math>8 + 6 = 14</math>  <math>0.8 + 0.6 = 1.4</math>  <math>0.08 + 0.06 = 0.14</math></p> <p><math>3 \times 4 = 12</math>  <math>0.3 \times 4 = 1.2</math>  <math>0.03 \times 4 = 0.12</math></p>	<p>Recognise number relationships within the context of place value to develop fluency and efficiency in calculation.</p>
<p>Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients); understand this as equivalent to scaling a number by 10 or 100.</p>	<p><b>5MD-1</b> Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.</p>	<p>Convert between different metric units of measure.</p>

Year 4 conceptual prerequisite	Year 5 ready-to-progress criteria	Future applications
<p>Recall multiplication and division facts up to <math>12 \times 12</math>, and recognise products in multiplication tables as multiples of the corresponding number.</p> <p>Recognise multiples of 10, 100 and 1,000.</p> <p>Apply place-value knowledge to known additive and multiplicative number facts.</p> <p>Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients).</p>	<p><b>5MD–2</b> Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors.</p>	<p>Solve contextual division problems.</p> <p>Simplify fractions.</p> <p>Express fractions in the same denomination.</p>
<p>Recall multiplication facts up to <math>12 \times 12</math>.</p> <p>Manipulate multiplication and division equations.</p>	<p><b>5MD–3</b> Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.</p>	<p>Solve contextual and non-contextual multiplication problems using a formal written method.</p>
<p>Recall multiplication and division facts up to <math>12 \times 12</math>.</p> <p>Manipulate multiplication and division equations.</p> <p>Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, for example:</p> <p><math>74 \div 9 = 8 \text{ r } 2</math></p> <p>and interpret remainders appropriately according to the context.</p>	<p><b>5MD–4</b> Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.</p>	<p>Solve contextual and non-contextual division problems using a formal written method.</p>
<p>Recall multiplication and division facts up to <math>12 \times 12</math>.</p> <p>Find unit fractions of quantities using known division facts (multiplication-tables fluency).</p> <p>Unitise using unit fractions (for example, understand that there are 3 one-fifths in three-fifths).</p>	<p><b>5F–1</b> Find non-unit fractions of quantities.</p>	<p>Solve multiplication problems that have the scaling structure.</p>



Year 4 conceptual prerequisite	Year 5 ready-to-progress criteria	Future applications
<p>Recall multiplication and division facts up to <math>12 \times 12</math>.</p> <p>Reason about the location of fractions in the linear number system.</p>	<p><b>5F–2</b> Find equivalent fractions and understand that they have the same value and the same position in the linear number system.</p>	<p>Compare and order fractions.</p> <p>Use common factors to simplify fractions.</p> <p>Use common multiples to express fractions in the same denomination.</p> <p>Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.</p>
<p>Divide powers of 10 into 2, 4, 5 and 10 equal parts.</p>	<p><b>5F–3</b> Recall decimal fraction equivalents for <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{5}</math> and <math>\frac{1}{10}</math>, and for multiples of these proper fractions.</p>	<p>Read scales on graphs and measuring instruments.</p> <p>Know percentage equivalents of common fractions.</p>
<p>Recognise right angles as a property of shape or a description of a turn, and identify right angles in 2D shapes presented in different orientations.</p> <p>Identify whether the interior angles of a polygon are equal or not.</p>	<p><b>5G–1</b> Compare angles, estimate and measure angles in degrees (<math>^{\circ}</math>) and draw angles of a given size.</p>	<p>Solve problems involving missing angles.</p>
<p>Compose polygons from smaller shapes.</p> <p>Recall multiplication facts up to <math>12 \times 12</math>.</p>	<p><b>5G–2</b> Compare areas and calculate the area of rectangles (including squares) using standard units.</p>	<p>Calculate the area of compound rectilinear shapes and other 2D shapes, including triangles and parallelograms, using standard units.</p> <p>Use the relationship between side-length and perimeter, and between side-length and area to calculate unknown values.</p>



# Year 6 guidance

## Ready-to-progress criteria

Year 5 conceptual prerequisite	Year 6 ready-to-progress criteria	Key stage 3 applications
Understand the relationship between powers of 10 from 1 hundredth to 1,000 in terms of grouping and exchange (for example, 1 is equal to 10 tenths) and in terms of scaling (for example, 1 is ten times the size of 1 tenth).	<b>6NPV-1</b> Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1,000).	Understand and use place value for decimals, measures, and integers of any size.  Interpret and compare numbers in standard form $A \times 10^n$ , where $1 \leq A < 10$ , where $n$ is a positive or negative integer or zero.
Recognise the place value of each digit in numbers with units from thousands to hundredths and compose and decompose these numbers using standard and non-standard partitioning.	<b>6NPV-2</b> Recognise the place value of each digit in numbers up to 10 million, including decimal fractions, and compose and decompose numbers up to 10 million using standard and non-standard partitioning.	Understand and use place value for decimals, measures, and integers of any size.  Order positive and negative integers, decimals, and fractions.  Use a calculator and other technologies to calculate results accurately and then interpret them appropriately.
Reason about the location of numbers between 0.01 and 9,999 in the linear number system.  Round whole numbers to the nearest multiple of 1,000, 100 or 10, as appropriate.  Round decimal fractions to the nearest whole number or nearest multiple of 0.01	<b>6NPV-3</b> Reason about the location of any number up to 10 million, including decimal fractions, in the linear number system, and round numbers, as appropriate, including in contexts.	Order positive and negative integers, decimals, and fractions; use the number line as a model for ordering of the real numbers; use the symbols $=$ , $\neq$ , $<$ , $>$ , $\leq$ , $\geq$  Round numbers and measures to an appropriate degree of accuracy (for example, to a number of decimal places or significant figures).  Use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation $a < x \leq b$



Year 5 conceptual prerequisite	Year 6 ready-to-progress criteria	Key stage 3 applications
<p>Divide 1000, 100 and 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines with 2, 4, 5 and 10 equal parts.</p>	<p><b>6NPV-4</b> Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.</p>	<p>Use standard units of mass, length, time, money, and other measures, including with decimal quantities.</p> <p>Construct and interpret appropriate tables, charts, and diagrams.</p>
<p>Be fluent in all key stage 2 additive and multiplicative number facts (see <a href="#"><u>Appendix: number facts fluency overview</u></a>) and calculation.</p> <p>Manipulate additive equations, including applying understanding of the inverse relationship between addition and subtraction, and the commutative property of addition.</p> <p>Manipulate multiplicative equations, including applying understanding of the inverse relationship between multiplication and division, and the commutative property of multiplication.</p>	<p><b>6AS/MD-1</b> Understand that 2 numbers can be related additively or multiplicatively, and quantify additive and multiplicative relationships (multiplicative relationships restricted to multiplication by a whole number).</p>	<p>Understand that a multiplicative relationship between 2 quantities can be expressed as a ratio or a fraction.</p> <p>Express 1 quantity as a fraction of another, where the fraction is less than 1 and greater than 1.</p> <p>Interpret mathematical relationships both algebraically and geometrically.</p> <p>Interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning.</p>
<p>Make a given number (up to 9,999, including decimal fractions) 10, 100, 1 tenth or 1 hundredth times the size (multiply and divide by 10 and 100).</p> <p>Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10, 100, 1 tenth or 1 hundredth).</p> <p>Manipulate additive equations.</p> <p>Manipulate multiplicative equations.</p>	<p><b>6AS/MD-1</b> Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding.</p>	<p>Recognise and use relationships between operations including inverse operations.</p> <p>Use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships.</p> <p>Understand and use standard mathematical formulae; rearrange formulae to change the subject.</p>

Year 5 conceptual prerequisite	Year 6 ready-to-progress criteria	Key stage 3 applications
<p>Recall multiplication and division facts up to <math>12 \times 12</math>.</p> <p>Apply place-value knowledge to known additive and multiplicative number facts.</p>	<p><b><u>6AS/MD-3</u></b> Solve problems involving ratio relationships.</p>	<p>Use ratio notation, including reduction to simplest form.</p> <p>Divide a given quantity into 2 parts in a given part:part or part:whole ratio; express the division of a quantity into 2 parts as a ratio.</p>
<p>Be fluent in all key stage 2 additive and multiplicative number facts and calculation.</p> <p>Manipulate additive equations.</p> <p>Manipulate multiplicative equations.</p> <p>Find a fraction of a quantity.</p>	<p><b><u>6AS/MD-4</u></b> Solve problems with 2 unknowns.</p>	<p>Reduce a given linear equation in two variables to the standard form <math>y = mx + c</math>; calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically.</p> <p>Use linear and quadratic graphs to estimate values of <math>y</math> for given values of <math>x</math> and vice versa and to find approximate solutions of simultaneous linear equations.</p>
<p>Recall multiplication and division facts up to <math>12 \times 12</math>.</p> <p>Find factors and multiples of positive whole numbers, including common factors and common multiples.</p> <p>Find equivalent fractions and understand that they have the same value and the same position in the linear number system.</p>	<p><b><u>6F-1</u></b> Recognise when fractions can be simplified, and use common factors to simplify fractions.</p>	<p>Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property.</p> <p>Simplify and manipulate algebraic expressions by taking out common factors.</p>



Year 5 conceptual prerequisite	Year 6 ready-to-progress criteria	Key stage 3 applications
<p>Recall multiplication and division facts up to <math>12 \times 12</math>.</p> <p>Find factors and multiples of positive whole numbers.</p> <p>Find equivalent fractions.</p> <p>Reason about the location of fractions and mixed numbers in the linear number system.</p>	<p><b>6F-2</b> Express fractions in a common denominator and use this to compare fractions that are similar in value.</p>	<p>Order positive and negative integers, decimals and fractions.</p> <p>Use the 4 operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative.</p> <p>Use and interpret algebraic notation, including:  <math>a/b</math> in place of <math>a \div b</math>  coefficients written as fractions rather than as decimals.</p>
<p>Reason about the location of fractions and mixed numbers in the linear number system.</p> <p>Find equivalent fractions.</p>	<p><b>6F-3</b> Compare fractions with different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denominator as a comparison strategy.</p>	<p>Order positive and negative integers, decimals, and fractions; use the number line as a model for ordering of the real numbers; use the symbols <math>=</math>, <math>\neq</math>, <math>&lt;</math>, <math>&gt;</math>, <math>\leq</math>, <math>\geq</math></p>
<p>Find the perimeter of regular and irregular polygons.</p> <p>Compare angles, estimate and measure angles in degrees (<math>^{\circ}</math>) and draw angles of a given size.</p> <p>Compare areas and calculate the area of rectangles (including squares) using standard units.</p>	<p><b>6G-1</b> Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.</p>	<p>Draw shapes and solve more complex geometry problems (see Mathematics programmes of study: key stage 3 - Geometry and measures).</p>