



Awesomenicity

Year 5 Curriculum Guide

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Upper key stage 2 - Years 5 and 6

The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of Year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages. Pupils should read, spell and pronounce mathematical vocabulary correctly.

Place Value	Addition/Subtraction	Multiplication/Division	Fractions
<p>Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit.</p> <p>Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.</p> <p>Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000.</p> <p>Read, write, order and compare numbers with up to three decimal places.</p> <p>Solve problems involving number up to three decimal places.</p> <p>Solve number problems and practical problems that involve all of the above.</p>	<p>Add and subtract numbers mentally with increasingly large numbers.</p> <p>Add and subtract whole numbers with more than four digits, including using formal written methods (columnar addition and subtraction).</p> <p>Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p> <p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p>	<p>Multiply and divide numbers mentally, drawing upon known facts.</p> <p>Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</p> <p>Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.</p> <p>Establish whether a number up to 100 is prime and recall prime numbers up to 19.</p> <p>Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes.</p> <p>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000.</p> <p>Multiply numbers up to four digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.</p> <p>Divide numbers up to four digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.</p>	<p>Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.</p> <p>Compare and order fractions whose denominators are all multiples of the same number.</p> <p>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, $2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$].</p> <p>Add and subtract fractions with the same denominator, and denominators that are multiples of the same number.</p> <p>Read and write decimal numbers as fractions [for example, $0.71 = 71/100$].</p> <p>Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.</p> <p>Recognise the percent symbol (%) and understand that per cent relates to 'number of parts per 100', and write percentages as a fraction with denominator 100, and as a decimal fraction.</p> <p>Solve problems which require knowing percentage and decimal equivalents of $1/2$, $1/4$, $1/5$, $2/5$, $4/5$ and those fractions with a denominator of a multiple of 10 or 25.</p>

Measurement	Shape and Space	Stats, Probability & Data Handling	Time
<p>Convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre].</p> <p>Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.</p> <p>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.</p> <p>Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.</p>	<p>Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.</p> <p>Draw given angles, and measure them in degrees ($^\circ$).</p> <p>Identify:</p> <ul style="list-style-type: none"> 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 <p>Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.</p> <p>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.</p>	<p>Solve comparison, sum and difference problems using information presented in a line graph.</p> <p>Complete, read and interpret information in tables, including timetables.</p>	<p>Solve problems involving converting between units of time.</p>

National Curriculum Program of Study	Awesomenicity Lessons
<p>Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit.</p> <p>Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.</p>	<p><u>Lesson 1: Let's make place value connections</u></p> <p><u>Lesson 2: Let's expand numbers</u></p> <p><u>Lesson 3: Let's apply expanded form</u></p> <p><u>Lesson 4: Let's compare numbers</u></p> <p><u>Lesson 5: Let's write numbers in written form</u></p>
<p>Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000.</p>	<p><u>Lesson 6: Let's round numbers: nearest 10, 100 and 1,000</u></p> <p><u>Lesson 7: Let's applying rounding skills</u></p>
<p>Read, write, order and compare numbers with up to three decimal places.</p> <p>Solve problems involving number up to three decimal places.</p> <p><i>*Note, this objective is also met in addition/subtraction.</i></p>	<p><u>Lesson 8: Let's explore and order decimals</u></p> <p><u>Lesson 9: Let's explore decimals</u></p> <p><u>Lesson 10: Let's round to the nearest whole number</u></p>
<p>Solve number problems and practical problems that involve all of the above.</p>	<p><u>Lesson 11: Let's solve place value puzzles</u></p>
<p>Consolidation and assessment.</p>	<p><u>Lesson 12: Let's show what we know! (Assessment)</u></p>

Addition & Subtraction

National Curriculum Program of Study	Awesomenicity Lessons
<p>Add and subtract numbers mentally with increasingly large numbers.</p>	<p><u>Lesson 1: Let's explore mental addition strategies</u> <u>Lesson 2: Let's add using bump strategy</u> <u>Lesson 3: Let's explore compensation strategy</u> <u>Lesson 4: Let's use rounding and mental strategies to problem-solve</u> <u>Lesson 5: Let's use jump & split strategy to subtract mentally</u> <u>Lesson 6: Let's use bump strategy subtraction</u></p>
<p>Add and subtract whole numbers with more than four digits, including using formal written methods (columnar addition and subtraction).</p> <p>Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. <i>*Note, this objective is applied throughout the four operations.</i></p>	<p><u>Lesson 7: Let's explore subtraction compensation strategy</u> <u>Lesson 8: Let's apply subtraction strategies in a game</u> <u>Lesson 9: Let's add multi-digit numbers using column addition</u> <u>Lesson 10: Let's explore adding decimals</u> <u>Lesson 11: Let's use column method to investigate adding decimals</u> <u>Lesson 12: Let's use REPS to apply problem-solving skills</u> <u>Lesson 13: Let's use column method to subtract multi-digit numbers</u> <u>Lesson 14: Let's subtract decimals using column subtraction</u> <u>Lesson 15: Let's investigate using addition & subtraction with decimals</u></p>
<p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p>	<p><u>Lesson 16: Let's solve word problems</u> <u>Lesson 17: Let's using strategies to problem-solve</u></p>
<p>Consolidation and assessment.</p>	<p><u>Lesson 18: Let's show what we know! (Assessment)</u></p>

Multiplication

National Curriculum Program of Study	Awesomenicity Lessons
<p>Multiply and divide numbers mentally, drawing upon known facts.</p>	<p><u>Lesson 1: Multiply numbers using a variety of strategies</u></p>
<p>Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</p> <p>Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.</p> <p>Establish whether a number up to 100 is prime and recall prime numbers up to 19.</p> <p>Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes.</p>	<p><u>Lesson 2: Investigate Multiples</u> <u>Lesson 3: Investigate factors</u> <u>Lesson 4: Finding common factors</u> <u>Lesson 5: Investigate multiple and factor connections</u></p>
<p>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000.</p>	<p><u>Lesson 6: Multiplying by 10, 100 and 1,000</u></p>
<p>Multiply numbers up to four digits by a one-digit or two-digit number using a formal written method, including long multiplication for two-digit numbers.</p>	<p><u>Lesson 7: Multiplying multiples of 10 and 100</u> <u>Lesson 8: Multiply using place value dot strategy</u> <u>Lesson 9: Introduction to grid method</u> <u>Lesson 10: Applying grid method to multiply</u> <u>Lesson 11: Exploring creative ways to multiply</u> <u>Lesson 12: Introduction to lattice method</u> <u>Lesson 13: Applying lattice method</u> <u>Lesson 14: Introduction to partial product strategy</u> <u>Lesson 15: Applying partial product strategy</u> <u>Lesson 16: Introduction to short multiplication</u> <u>Lesson 17: Apply Short Multiplication</u></p>
<p>Consolidation and assessment.</p>	<p><u>Lesson 18: Solve multiplication word problems</u> <u>Lesson 19: Multiplication Assessment</u></p>

Division

National Curriculum Program of Study	Awesomenicity Lessons
<p>Multiply and divide numbers mentally, drawing upon known facts.</p>	<p><u>Lesson 1: Explore dividing amounts into equal groups</u> <u>Lesson 2: Identifying remainders</u> <u>Lesson 3: Use inverse operations to divide</u></p>
<p>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000.</p>	<p><u>Lesson 4: Dividing by 10 and 100</u> <u>Lesson 5: Dividing by 10, 100 and 1,000</u></p>
<p>Divide numbers up to four digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.</p>	<p><u>Lesson 6: Dividing using jump strategy</u> <u>Lesson 7: Using jump strategy to divide larger numbers</u> <u>Lesson 8: Use chunking strategy to divide large numbers</u> <u>Lesson 9: Apply chunking strategy</u> <u>Lesson 10: Identifying divisibility rules</u> <u>Lesson 11: Using long division to divide large numbers</u> <u>Lesson 12: Applying long division to divide large numbers</u></p>
<p>Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.</p>	<p><u>Lesson 13: Solving word problems</u> <u>Lesson 14: Applying problem-solving skills</u></p>
<p>Consolidation and assessment.</p>	<p><u>Lesson 15: Division Assessment</u></p>

National Curriculum Program of Study	Awesomenicity Lessons
<p>Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.</p> <p>Compare and order fractions whose denominators are all multiples of the same number.</p>	<p><u>Lesson 1: Identifying fractions in real life</u></p> <p><u>Lesson 2: Exploring and identifying equivalent fractions</u></p> <p><u>Lesson 3: Create Equivalent Fractions</u></p> <p><u>Lesson 4: Introduction to simplifying fractions</u></p>
<p>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, $2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$].</p> <p>Add and subtract fractions with the same denominator, and denominators that are multiples of the same number.</p>	<p><u>Lesson 5: Simplifying fractions</u></p> <p><u>Lesson 6: Comparing fractions</u></p> <p><u>Lesson 7: Apply comparing fraction knowledge</u></p> <p><u>Lesson 8: Find fractions of amounts</u></p> <p><u>Lesson 9: Problem-solve with fractions of amounts</u></p> <p><u>Lesson 10: Add and subtract fractions (includes mixed numbers, improper fractions)</u></p> <p><u>Lesson 11: Converting improper fractions into mixed numbers</u></p> <p><u>Lesson 12: Add and subtract fractions with unlike denominators</u></p>
<p>Read and write decimal numbers as fractions [for example, $0.71 = 71/100$].</p> <p>Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.</p> <p>Recognise the percent symbol (%) and understand that per cent relates to 'number of parts per 100', and write percentages as a fraction with denominator 100, and as a decimal fraction.</p> <p>Solve problems which require knowing percentage and decimal equivalents of $1/2$, $1/4$, $1/5$, $2/5$, $4/5$ and those fractions with a denominator of a multiple of 10 or 25.</p>	<p><u>Lesson 13: Connecting fractions to decimals and percentages</u></p> <p><u>Lesson 14: Making connections between fractions, decimals and percentages</u></p> <p><u>Lesson 15: Multiplying fractions by whole numbers</u></p>
<p>Consolidation and assessment.</p>	<p><u>Lesson 16: Fractions Assessment</u></p>

National Curriculum Program of Study	Awesomenicity Lessons
<p>Convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre].</p> <p>Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.</p> <p>Calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm²) and square metres (m²), and estimate the area of irregular shapes.</p>	<p><u>Lesson 1: Identifying different types of measurement</u></p> <p><u>Lesson 2: Measuring length with accuracy</u></p> <p><u>Lesson 3: Measuring and converting length</u></p> <p><u>Lesson 4: Converting between mm, cm, m and km</u></p> <p><u>Lesson 5: Calculating perimeter</u></p> <p><u>Lesson 6: Calculating perimeter using compound shapes</u></p> <p><u>Lesson 7: Calculating the area of rectangles</u></p> <p><u>Lesson 8: Calculating the area of compound shapes</u></p> <p><u>Lesson 9: Applying area and perimeter</u></p> <p><u>Lesson 10: Introduction to capacity</u></p> <p><u>Lesson 11: Measuring capacity and converting between units</u></p> <p><u>Lesson 12: Introduction to mass</u></p> <p><u>Lesson 13: Problem-solving mass investigation</u></p>
<p>Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.</p> <p><i>*Note, money is covered in the time and money unit.</i></p>	<p><u>Lesson 14: Metric Olympics!</u></p>
<p>Consolidation and assessment.</p>	<p><u>Lesson 15: Measurement Assessment</u></p>

National Curriculum Program of Study	Awesomenicity Lessons
<p>Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.</p> <p>Draw given angles, and measure them in degrees ($^{\circ}$).</p> <p>Identify:</p> <ul style="list-style-type: none"> 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. 	<p><u>Lesson 1: Introduction to angles</u></p> <p><u>Lesson 2: Measuring angles</u></p> <p><u>Lesson 3: Calculating angles</u></p> <p><u>Lesson 4: Drawing angles</u></p>
<p>Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.</p> <p>Identify:</p> <ul style="list-style-type: none"> distinguish between regular and irregular polygons based on reasoning about equal sides and angles. 	<p><u>Lesson 5: Using lines to draw 2D shapes</u></p> <p><u>Lesson 6: Constructing and identifying 3D shapes</u></p> <p><u>Lesson 7: Using nets to make 3D shapes</u></p>
<p>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.</p>	<p><u>Lesson 8: Locating and plotting coordinates</u></p> <p><u>Lesson 9: Plotting coordinates</u></p> <p><u>Lesson 10: Translating shapes on a grid</u></p> <p><u>Lesson 11: Making & describing translations</u></p> <p><u>Lesson 12: Identifying lines of symmetry</u></p> <p><u>Lesson 13: Reflecting shapes</u></p>
<p>Consolidation and assessment.</p>	<p><u>Lesson 14: Shape and Space Assessment</u></p>


Statistics, Probability & Data

National Curriculum Program of Study	Awesomenicity Lessons
<p>Solve comparison, sum and difference problems using information presented in a line graph.</p>	<p><u>Lesson 1: Interpreting graphs</u> <u>Lesson 2: Creating line graphs</u> <u>Lesson 3: Gathering and presenting data</u> <u>Lesson 4: Calculating mean averages</u> <u>Lesson 5: Mean, mode, median and range</u></p>
<p>List outcomes of chance experiments involving equally likely outcomes and represent probabilities of those outcomes using fractions. <i>*Note, this outcomes are not explicitly stated in the curriculum. Feel free to disregard these lessons. If these lessons are not taught, avoid printing questions 10 and 11 on page 7 of the assessment printables as it pertains to these objectives.</i></p>	<p><u>Lesson 6: Introduction to chance and probability</u> <u>Lesson 7: Using probability to make predictions</u></p>
<p>Consolidation and assessment.</p>	<p><u>Lesson 8: Statistics, Probability and Data Assessment</u></p>


National Curriculum Program of Study	Awesomenicity Lessons
<p>Solve problems involving converting between units of time.</p> <p>Complete, read and interpret information in tables, including timetables.</p>	<p><u>Lesson 1: Converting between units of time</u></p> <p><u>Lesson 2: Converting 24 hour time</u></p> <p><u>Lesson 3: Calculating elapsed time</u></p> <p><u>Lesson 4: Reading timetables</u></p>
<p>Consolidation and assessment.</p>	<p><u>Lesson 5: Time Summative Assessment</u></p>

Year 5 Checklist


Place Value

Objective	
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.	
Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000.	
Read, write, order and compare numbers with up to three decimal places.	
Solve problems involving number up to three decimal places.	
Solve number problems and practical problems that involve all of the above.	


Addition/Subtraction

Objective	
Add and subtract numbers mentally with increasingly large numbers.	
Add and subtract whole numbers with more than four digits, including using formal written methods (columnar addition and subtraction).	
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

Objective	
Multiply and divide numbers mentally, drawing upon known facts.	
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.	
Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes.	
Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000.	
Multiply numbers up to four digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.	
Divide numbers up to four digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.	

Fractions

Objective	
Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.	
Compare and order fractions whose denominators are all multiples of the same number.	
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, $2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$].	
Add and subtract fractions with the same denominator, and denominators that are multiples of the same number.	
Read and write decimal numbers as fractions [for example, $0.71 = 71/100$].	
Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.	
Recognise the percent symbol (%) and understand that per cent relates to 'number of parts per 100', and write percentages as a fraction with denominator 100, and as a decimal fraction.	
Solve problems which require knowing percentage and decimal equivalents of $1/2$, $1/4$, $1/5$, $2/5$, $4/5$ and those fractions with a denominator of a multiple of 10 or 25.	


Measurement

Objective	
Convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre].	
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.	
Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.	




Year 5 Checklist


Shape and Space

Objective	
Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.	
Draw given angles, and measure them in degrees ($^{\circ}$).	
Identify: <ul style="list-style-type: none"> • 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 	
Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.	
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.	

Statistics, Probability and Data

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

Time

Objective	
Solve problems involving converting between units of time.	
Complete, read and interpret information in tables, including timetables.	





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