



The national curriculum puts this in a different section; however, it does link to algebra.

Suggested reasoning tasks – NCETM. Although some activities have the same titles in different year groups, they are progressive and the NCETM documents should be checked to see the specific ideas for your year group. Please note that all NCETM reasoning tasks are suggestions. They are there to be used and adapted for similar tasks.

Mathematics Mastery linked calculation skills.

Number, Place Value and Rounding

Reception/ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Count reliably with numbers from 1 – 20 Say which is 1 more or 1 less than a given number up to 20. Order numbers 1 - 20	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. <i>Spot the mistake.</i> <i>True or False.</i> <i>What comes next?</i> Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens. <i>Spot the mistake.</i> <i>True or False.</i> <i>What comes next?</i> Given a number, identify one more and one less <i>Spot the mistake.</i> <i>True or False.</i> <i>What comes next?</i>	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward. <i>Spot the mistake.</i> <i>True or False.</i> <i>What comes next?</i> <i>Missing numbers (link to multiplication)</i> <i>Making links (link to multiplication)</i> Recognise the place value of each digit in a two-digit number (tens, ones) <i>Do, then explain.</i> <i>Make up an example.</i> Identify, represent and estimate numbers using different	Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number. <i>Spot the mistake.</i> <i>True or False.</i> <i>What comes next?</i> <i>Missing numbers (link to multiplication)</i> <i>Making links (link to multiplication)</i> Recognise the place value of each digit in a three-digit number (hundreds, tens, and ones).	Count in multiples of 6, 7, 9, 25 and 1000. <i>Spot the mistake.</i> <i>True or False.</i> <i>What comes next?</i> <i>Missing numbers (link to multiplication)</i> <i>Making links (link to multiplication)</i> Find 1000 more or less than a given number. <i>Spot the mistake.</i> <i>True or False.</i> <i>What comes next?</i> Count backwards through zero to include negative numbers. Recognise the place value of each digit in a four-digit number (thousands,	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit. <i>Do, then explain.</i> <i>Make up an example.</i> Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000. <i>Spot the mistake.</i> <i>True or False.</i> <i>What comes next?</i> <i>Missing numbers (link to multiplication)</i> <i>Making links (link to multiplication)</i> Interpret negative numbers in context,	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. <i>Do, then explain.</i> <i>Make up an example.</i> Round any whole number to a required degree of accuracy. <i>Possible answers.</i> <i>What do you notice?</i> Use negative numbers in context, and



	<p>Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least. <i>Do, then explain.</i></p> <p>Read and write numbers from 1 to 20 in numerals and words.</p> <p>Count all items. Counting on. Part-Part-Whole Model. Regrouping one to make 10. Tens frame. Partitioning using cubes/number line/beads/dienes. Number lines. Bar Model.</p>	<p>representations, including the number line</p> <p>Compare and order numbers from 0 up to 100; use $<$, $>$ and $=$ signs. <i>Do, then explain.</i></p> <p>Read and write numbers to at least 100 in numerals and in words. <i>Do, then explain.</i> <i>Make up an example.</i></p> <p>Use place value and number facts to solve problems.</p> <p>Rounding and adjusting. Part-Part-Whole Model. Number lines. Bar Model. Tens frame.</p>	<p><i>Do, then explain.</i> <i>Make up an example.</i></p> <p>Compare and order numbers up to 1000. <i>Do, then explain.</i></p> <p>Identify, represent and estimate numbers using different representations.</p> <p>Read and write numbers up to 1000 in numerals and in words. <i>Do, then explain.</i> <i>Make up an example.</i></p> <p>Solve number problems and practical problems involving these ideas. Rounding and adjusting. Part-Part-Whole Model. Number lines. Bar Model.</p>	<p>hundreds, tens, and ones). <i>Do, then explain.</i> <i>Make up an example.</i></p> <p>Order and compare numbers beyond 1000. <i>Do, then explain.</i></p> <p>Identify, represent and estimate numbers using different representations.</p> <p>Round any number to the nearest 10, 100 or 1000. <i>Possible answers.</i> <i>What do you notice?</i></p> <p>Solve number and practical problems that involve all of the above and with increasingly large positive numbers.</p> <p>Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value. <i>Do, then explain.</i> <i>Make up an example.</i></p> <p>Rounding and adjusting. Part-Part-Whole Model.</p>	<p>count forwards and backwards with positive and negative whole numbers, including through zero. <i>Spot the mistake.</i> <i>True or False.</i> <i>What comes next?</i></p> <p>Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000. <i>Possible answers.</i> <i>What do you notice?</i></p> <p>Solve number problems and practical problems that involve all of the above.</p> <p>Read Roman numerals to 1000 (M) and recognise years written in Roman numerals. <i>Do, then explain.</i> <i>Make up an example.</i></p> <p>Rounding and adjusting. Part-Part-Whole Model.</p>	<p>calculate intervals across zero. <i>Spot the mistake.</i> <i>True or False.</i> <i>What comes next?</i></p> <p>Solve number and practical problems that involve all of the above.</p> <p>Missing numbers (link to multiplication) Making links (link to multiplication)</p> <p>Rounding and adjusting. Part-Part-Whole Model. Number lines. Bar Model.</p>
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			Missing number problems. Missing digit problems, Word problems.	Number lines. Bar Model.	Number lines. Bar Model.	
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Number – Addition and Subtraction

Reception/ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Add and subtract two single digit numbers. (ELG)</p> <p>Count on or back to find the answer. (ELG)</p> <p>Solve problems, including doubling, halving and sharing. (ELG)</p>	<p>Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs.</p> <p>Fact families. What else do you know? Missing symbols. Convince me. Missing numbers.</p> <p>Represent and use number bonds and related subtraction facts within 20.</p> <p>Continue the pattern. Missing numbers.</p> <p>Add and subtract one-digit and two-digit numbers to 20, including zero.</p> <p>Working backwards,</p>	<p>Solve problems with addition and subtraction:</p> <ul style="list-style-type: none"> • Using concrete objects and pictorial representations, including those involving numbers, quantities and measures. • Applying their increasing knowledge of mental and written methods. <p>Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.</p> <p>Continue the pattern. Missing numbers.</p> <p>Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:</p> <ul style="list-style-type: none"> • A two-digit number and ones. 	<p>Add and subtract numbers mentally, including:</p> <ul style="list-style-type: none"> • A three-digit number and ones. • A three-digit number and tens • A three-digit number and hundreds. <p>True or false? Hard and easy questions. (Which questions are hard/easy? Why?)</p> <p>Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.</p> <p>Convince me.</p>	<p>Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.</p> <p>Convince me.</p> <p>Estimate and use inverse operations to check answers to a calculation.</p> <p>Making and estimate. Always, sometimes, never. Use the inverse. Size of an answer.</p> <p>Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.</p> <p>True or false?</p>	<p>Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction).</p> <p>Convince me.</p> <p>Add and subtract numbers mentally with increasingly large numbers.</p> <p>True or false? Hard and easy questions. (Which questions are hard/easy? Why?)</p> <p>Use rounding to check answers to calculations and determine, in the context of a</p>	<p>Convince me.</p>



	<p>What do you notice?</p> <p>Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = ? - 9$.</p> <p>Making an estimate. Is it true that? Count all items. Counting on. Part-Part-Whole Model. Regrouping one to make 10. Tens Frame. Partitioning using cubes/number line/beads/dienes. Adding 1, 2, 3 more. Adding 3 single digits – make ten first. Introduce column method for regrouping. Adding multiples of ten. MM Page 11 – 16</p> <p>Take away from ones. Counting back. Part-Part-Whole.</p>	<ul style="list-style-type: none">• A two-digit number and tens.• Two two-digit numbers• Adding three one-digit numbers. <p>True or false? Hard and easy questions. (Which questions are hard/easy? Why?) Other possibilities.</p> <p>Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.</p> <p>Fact families. What else do you know? Missing symbols.</p> <p>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. Making and estimate. Always, sometimes, never.</p> <p>Convince me.</p> <p>Part-Part-Whole Model. Counting on in tens and ones.</p>	<p>Estimate the answer to a calculation and use inverse operations to check answers. Making and estimate. Always, sometimes, never. Use the inverse. Size of an answer.</p> <p>Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.</p> <p>Add and subtract mentally $3d+1d$, $3d+2d$, $3d+3d$ with and without regrouping. Written column method for regrouping with up to 4d. Find 10, 100 more or less. MM Page 36 - 39</p>	<p>Hard and easy questions. (Which questions are hard/easy? Why?)</p> <p>Count forwards and backwards in 10s, 100s and 1000s up to 10 000. Known facts and place value to add and subtract 100s and 1000s mentally. Partitioning with known facts. Round and adjust – number line. Near doubles. Written column method. Decimal numbers – dienes and place value counters. MM Page 46 - 50</p>	<p>problem, levels of accuracy. Making and estimate. Always, sometimes, never.</p> <p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p> <p>Use the inverse. Size of an answer.</p> <p>Count forwards or backwards in powers of 10 up to 1 000 000. Known facts and place value using part-whole and bar model. Partitioning with known facts. Counting on and back to calculate the difference. Round and adjust. Near doubles. Partition both numbers and combine the parts.</p>	
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	<p>Make ten. Regroup 10 into 10 ones. Take away from 10s. Partitioning without regrouping. Subtracting multiples of 10. Column method with regrouping. MM Page 11 & 17 - 20</p>	<p>Using known facts. Partitioning and adding tens and ones. Rounding and adjusting. Make ten strategy. Partitioning to add without regrouping. Column method with regrouping. MM Page 23 – 26</p> <p>Counting back in multiples of 10 and 100. Known facts. Subtract tens and ones. Round and adjust. Make 10. Partitioning without regrouping. Column method with regrouping. MM Page 23 & 27 - 29</p>			<p>Written column method. MM Page 57 - 64</p>	
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Number – Multiplication and Division

Reception/ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. Missing numbers (link to multiplication) Making links (link to multiplication)	Recall multiplication and division facts for multiplication tables up to 12×12 . Missing numbers (link to multiplication) Making links (link to multiplication)	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. <i>Always, sometimes, never?</i>	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. <i>Prove it.</i>



	<p>and arrays with the support of the teacher.</p> <p>Making Links. Spot the mistake. Skip counting in 2s, 5s, 10s from 0. Making equal groups and counting the total – concrete and pictorial resources. Repeated addition. MM Page 21 – 22</p> <p>Sharing objects equally – concrete and pictorial resources. MM Page 21 – 22</p>	<p>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs. Prove it.</p> <p>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. Making Links.</p> <p>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</p>	<p>Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. Use a fact. Prove it. How close can you get?</p> <p>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. Spot the mistake. Which comes next?</p> <p>Making Links. True or false?</p>	<p>Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. Use a fact.</p> <p>Recognise and use factor pairs and commutativity in mental calculations. Making Links. Always, sometimes, never?</p> <p>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. Prove it. How close can you get?</p> <p>Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects. Spot the mistake.</p>	<p>Know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers. Always, sometimes, never?</p> <p>Establish whether a number up to 100 is prime and recall prime numbers up to 19. Always, sometimes, never?</p> <p>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. Prove it. How close can you get?</p> <p>Multiply and divide numbers mentally drawing upon known facts. Use a fact.</p> <p>Divide numbers up to 4 digits by a one-digit number using the formal written method</p>	<p>How close can you get?</p> <p>Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. Prove it. How close can you get?</p> <p>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. Prove it. How close can you get?</p> <p>Perform mental calculations, including with mixed operations</p>
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		<p>True or false? Use the inverse. Spot the mistake. Which comes next?</p> <p>Skip counting in 2s, 3s, 4s, 5s, 10s from 0. Repeated addition. Arrays. Commutative multiplication. Part-Part-Whole model. Doubling to derive new facts. MM Page 30 – 33</p> <p>Sharing. Grouping. Part-Part-Whole model. MM Page 30 & 34 - 35</p>	<p>Doubling to derive new facts. Skip counting in 2s, 3s, 4s, 5s, 6s, 8s, 10s. Part-Part-Whole model with arrays and bar models. Commutativity and inverse operations. Ten times greater. Multiplying by 10 and 100. Known facts for x10 and x100. Multiplying 2d with partitioning – with and without regrouping. MM Page 40 – 44</p> <p>Dividing multiples of 10, 100 and 1000 by 10, 100 and 1000 using scaling down and grouping. MM Page 40 & 45</p>	<p>Which comes next?</p> <p>Multiplying by 10 and 100. Using known facts and place value for mental multiplication involving multiples of 10 and 100. Multiplying by partitioning. Mental multiplication of three 1-digit numbers using the associative law. Sort multiplication of 3d by 1d. MM Page 51 – 54</p> <p>Divide by 10 and 100. Derived facts. Short division of 4d by 1d. Division of a 1d or 2d by 10 and 100. MM Page 51 & 55 - 56</p>	<p>of short division and interpret remainders appropriately for the context. Prove it. How close can you get?</p> <p>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. Making Links.</p> <p>Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3). Always, sometimes, never?</p> <p>Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes. Spot the mistake. Which comes next?</p>	<p>and large numbers. True or false? Hard and easy questions. (Which questions are hard/easy? Why?) Use a fact.</p> <p>Identify common factors, common multiples and prime numbers. Always, sometimes, never? use Use their knowledge of the order of operations to carry out calculations involving the four operations. Missing symbols. What else do you know? Which is correct? Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p> <p>Solve problems involving addition, subtraction,</p>
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					<p>Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. Spot the mistake. Which comes next?</p> <p>Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. Spot the mistake. Which comes next?</p> <p>Multiply and divide whole numbers and decimal numbers by 10, 100 and 1000. Using known facts to derive multiplication facts. Doubling and halving. Multiply by partitioning and multiplying each part. Using known factors.</p>	<p>multiplication and division. Spot the mistake. Which comes next?</p> <p>Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. Making and estimate. Always, sometimes, never. Use the inverse. Size of an answer.</p> <p>Missing numbers (link to multiplication) Making links (link to multiplication)</p> <p>Multiply and divide whole numbers and decimal numbers by 10, 100 and 1000. Using known facts to derive multiplication facts. Doubling and halving. Multiply by partitioning and multiplying each part.</p>
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					<p>Formal written method of short multiplication. Multiplying by 2d numbers. Derived facts from known facts. Using knowledge of multiples to divide. Using knowledge of factors to divide. Short division – 4d by 1d. Long division – 4d by 2d. MM Page 65 - 74</p>	<p>Using known factors. Formal written method of short multiplication. Multiplying by 2d numbers. Derived facts from known facts. Using knowledge of multiples to divide. Using knowledge of factors to divide. Short division – 4d by 1d. Long division – 4d by 2d. MM Page 65 - 74</p>
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Number – Fractions (including decimals and percentages)

Reception/ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Solve problems, including doubling, halving and sharing. (ELG)	<p>Recognise, find and name a half as one of two equal parts of an object, shape or quantity. <i>What do you notice?</i></p> <p>Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. <i>True or false?</i></p>	<p>Recognise, find, name and write fractions $\frac{1}{3}$ $\frac{1}{4}$ $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity. <i>What do you notice?</i></p> <p>Write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.</p> <p><i>True or false?</i> <i>Odd one out.</i> <i>What do you notice?</i> <i>Ordering.</i></p>	<p>Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. <i>Spot the mistake.</i> <i>Which comes next?</i></p> <p>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. <i>What do you notice?</i></p> <p>Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. <i>What do you notice?</i> <i>True or false?</i></p>	<p>Recognise and show, using diagrams, families of common equivalent fractions. <i>Odd one out.</i> <i>What do you notice?</i></p> <p>Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. <i>Spot the mistake.</i> <i>Which comes next?</i> <i>What do you notice?</i></p> <p>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.</p> <p>Add and subtract fractions with the same denominator. <i>What do you notice?</i> <i>Continue the pattern.</i></p>	<p>Compare and order fractions whose denominators are all multiples of the same number. <i>Give an example.</i> <i>Correct order?</i> <i>Explain how you know...</i></p> <p>Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. <i>Odd one out.</i> <i>What do you notice?</i></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, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1$ and $\frac{1}{5}$]. <i>What do you notice?</i> <i>Continue the pattern.</i></p> <p>Add and subtract fractions with the same denominator and</p>	<p>Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. <i>Always, sometimes, never?</i> <i>Odd one out.</i> <i>What do you notice?</i></p> <p>Compare and order fractions, including fractions > 1. <i>Give an example.</i> <i>Correct order?</i> <i>Explain how you know...</i></p> <p>Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. <i>Another and another.</i></p> <p>Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$].</p>



			<p>Recognise and show, using diagrams, equivalent fractions with small denominators. Odd one out. What do you notice?</p> <p>Add and subtract fractions with the same denominator within one whole [for example, $5/7 + 1/7 = 6/7$]. What do you notice? Continue the pattern.</p> <p>Compare and order unit fractions, and fractions with the same denominators. Give an example. Correct order? Explain how you know... Solve problems that involve all of the above. Ordering.</p>	<p>Recognise and write decimal equivalents of any number of tenths or hundredths. Complete the pattern. Another and another.</p> <p>Recognise and write decimal equivalents to $1/4$, $1/2$, and $3/4$. Ordering.</p> <p>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. Do, then explain. Make up an example. Undoing. Another and another.</p> <p>Round decimals with one decimal place to the nearest whole number. Possible answers. What do you notice? Do, then explain. Top tips.</p> <p>Compare numbers with the same number of decimal places up to two decimal places.</p>	<p>denominators that are multiples of the same number. What do you notice? Continue the pattern.</p> <p>Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. Continue the pattern. What is the question?</p> <p>Read and write decimal numbers as fractions [for example, $0.71 = 71/100$]. Complete the pattern. Another and another.</p> <p>Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. Do, then explain. Make up an example. What do you notice? Complete the pattern. Another and another.</p> <p>Round decimals with two decimal places to the nearest whole number</p>	<p>Continue the pattern. What is the question?</p> <p>Divide proper fractions by whole numbers [for example, $1/3 \div 2 = 1/6$]. Continue the pattern. What is the question?</p> <p>Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $3/8$]. Making Links. Complete the pattern. Another and another. Undoing.</p> <p>Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places. Do, then explain. Make up an example. Missing symbol. What needs to be added to...?</p>
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				<p>Do, then explain. Missing symbol. What needs to be added to...?</p> <p>Solve simple measure and money problems involving fractions and decimals to two decimal places.</p> <p>True or false? Give an example. Correct order? Explain how you know...</p>	<p>and to one decimal place. Possible answers. What do you notice? Do, then explain. Top tips.</p> <p>Read, write, order and compare numbers with up to three decimal places. Missing symbol. What needs to be added to...?</p> <p>Solve problems involving number up to three decimal places.</p> <p>Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal. Ordering. Explain your thinking. Which is more?</p> <p>Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$,</p>	<p>Undoing. Another and another.</p> <p>Multiply one-digit numbers with up to two decimal places by whole numbers. Continue the pattern. What is the question? Undoing. Another and another.</p> <p>Use written division methods in cases where the answer has up to two decimal places. Prove it. How close can you get? Can you find? Undoing. Another and another.</p> <p>Solve problems which require answers to be rounded to specified degrees of accuracy. Possible answers. What do you notice? Do, then explain. What's the same, what's different?</p>
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					<p>1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25.</p> <p>True or false? Undoing. Another and another.</p>	<p>Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</p> <p>Ordering.</p> <p>What do you notice? True or false?</p>
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Measurement

Reception/ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Use everyday language to talk about size, weight, capacity, position, time and money to compare quantities and objects and solve problem. (ELG)</p>	<p>Compare, describe and solve practical problems for:</p> <ul style="list-style-type: none"> Lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]. Mass/weight [for example, heavy/light, heavier than, lighter than]. Capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]. 	<p>Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.</p> <p>Application</p> <p>Compare and order lengths, mass, volume/capacity and record the results using >, < and =</p>	<p>Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).</p> <p>Write more statements.</p> <p>Measure the perimeter of simple 2-D shapes.</p> <p>Testing conditions.</p> <p>Add and subtract amounts of money to give change, using both £ and p in practical contexts.</p> <p>Possibilities.</p>	<p>Convert between different units of measure [for example, kilometre to metre; hour to minute].</p> <p>The answer is... What do you notice?</p> <p>Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres.</p> <p>Testing conditions.</p> <p>Find the area of rectilinear shapes by counting squares.</p> <p>Always, sometimes, never?</p> <p>Estimate, compare and calculate different</p>	<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>The answer is... What do you notice?</p> <p>Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.</p> <p>The answer is... What do you notice?</p>	<p>Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.</p> <p>Write more statements. The answer is... What do you notice?</p> <p>Use, read, write and convert between standard units, converting measurements of</p>



	<ul style="list-style-type: none">• Time [for example, quicker, slower, earlier, later]. <p>Top tips.</p> <p>Measure and begin to record the following:</p> <ul style="list-style-type: none">• Lengths and heights.• Mass/weight.• Capacity and volume• Time (hours, minutes, seconds). <p>Application</p> <p>Recognise and know the value of different denominations of coins and notes.</p> <p>Possibilities.</p> <p>Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening].</p> <p>Explain thinking.</p> <p>Recognise and use language relating to dates, including days</p>	<p>Top tips. Position the symbols.</p> <p>Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value.</p> <p>Possibilities.</p> <p>Find different combinations of coins that equal the same amounts of money.</p> <p>Possibilities.</p> <p>Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.</p> <p>Possibilities.</p> <p>Compare and sequence intervals of time.</p> <p>Undoing. Explain thinking.</p>	<p>Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.</p> <p>Do, then explain. Make up an example. Working backwards.</p> <p>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.</p> <p>Undoing. Explain thinking. Working backwards.</p> <p>Know the number of seconds in a minute and the number of days in each month, year and leap year.</p> <p>The answer is... What do you notice?</p>	<p>measures, including money in pounds and pence.</p> <p>Top tips. Position the symbols. Write more statements.</p> <p>Read, write and convert time between analogue and digital 12- and 24-hour clocks.</p> <p>Working backwards. The answer is... What do you notice?</p> <p>Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.</p> <p>Working backwards. The answer is... What do you notice?</p> <p>Undoing. Explain thinking. Possibilities.</p>	<p>Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.</p> <p>Testing conditions.</p> <p>Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes.</p> <p>Top tips. Always, sometimes, never?</p> <p>Estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water].</p> <p>Top tips.</p> <p>Solve problems involving converting between units of time.</p> <p>Working backwards.</p>	<p>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.</p> <p>The answer is... What do you notice?</p> <p>Convert between miles and kilometres.</p> <p>The answer is... What do you notice?</p> <p>Recognise that shapes with the same areas can have different perimeters and vice versa.</p> <p>Testing conditions.</p> <p>Recognise when it is possible to use formulae for area and volume of shapes.</p> <p>Undoing.</p>
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	<p>of the week, weeks, months and years.</p> <p>Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.</p>	<p>Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. Working backwards.</p> <p>Know the number of minutes in an hour and the number of hours in a day. Working backwards. The answer is... What do you notice?</p>	<p>Compare durations of events [for example to calculate the time taken by particular events or tasks]. Undoing. Explain thinking.</p> <p>Top tips. Position the symbols.</p>		<p>The answer is... What do you notice?</p> <p>Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling. Write more statements.</p> <p>Undoing. Other possibilities.</p>	<p>Always, sometimes, never?</p> <p>Calculate the area of parallelograms and triangles. Always, sometimes, never?</p> <p>Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³]. Always, sometimes, never? Top tips.</p> <p>Undoing. Other possibilities.</p>
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Geometry – Properties of shapes

Reception/ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Explore the characteristics of everyday objects and shapes and use mathematical language to describe them. (ELG)</p>	<p>Recognise and name common 2-D and 3-D shapes, including:</p> <ul style="list-style-type: none"> • 2-D shapes [for example, rectangles (including squares), circles and triangles]. • 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]. <p>What's the same, what's different? Visualising.</p> <p>True or False? Other possibilities.</p>	<p>Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.</p> <p>What's the same, what's different? Visualising.</p> <p>Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces.</p> <p>What's the same, what's different? Visualising.</p> <p>Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid].</p> <p>What's the same, what's different? Visualising.</p>	<p>Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them.</p> <p>Other possibilities.</p> <p>Recognise angles as a property of shape or a description of a turn.</p> <p>Convince me.</p> <p>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.</p> <p>Convince me.</p> <p>Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</p> <p>Convince me.</p>	<p>Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.</p> <p>Always, sometimes, never? Other possibilities.</p> <p>Identify acute and obtuse angles and compare and order angles up to two right angles by size.</p> <p>Convince me.</p> <p>Identify lines of symmetry in 2-D shapes presented in different orientations.</p> <p>What's the same, what's different? Visualising.</p> <p>Complete a simple symmetric figure with respect to a specific line of symmetry.</p> <p>Other possibilities.</p>	<p>Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.</p> <p>What's the same, what's different? Visualising.</p> <p>Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.</p> <p>Convince me.</p> <p>Draw given angles, and measure them in degrees (o).</p> <p>Other possibilities.</p> <p>Identify:</p> <ul style="list-style-type: none"> • Angles at a point and one whole turn (total 360o) • Angles at a point on a straight line and 2 1 a turn (total 180o) • Other multiples of 90o 	<p>Draw 2-D shapes using given dimensions and angles.</p> <p>Other possibilities.</p> <p>Recognise, describe and build simple 3-D shapes, including making nets.</p> <p>What's the same, what's different? Visualising. Other possibilities.</p> <p>Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons.</p> <p>Always, sometimes, never? Other possibilities.</p>



		<p>Compare and sort common 2-D and 3-D shapes and everyday objects. <i>Always, sometimes, never?</i> <i>Other possibilities.</i></p>	<p><i>What's the same, what's different?</i> <i>Visualising.</i> <i>Always, sometimes, never?</i> <i>Other possibilities.</i></p>		<p><i>Convince me.</i></p> <p>Use the properties of rectangles to deduce related facts and find missing lengths and angles. <i>Always, sometimes, never?</i> <i>Other possibilities.</i></p> <p>Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. <i>Always, sometimes, never?</i> <i>Other possibilities.</i></p>	<p>Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. <i>What's the same, what's different?</i> <i>Visualising.</i></p> <p>Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. <i>Convince me.</i></p>
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Geometry – Position and Direction

Reception/ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Recognise, create and describe patterns. (ELG)	Describe position, direction and movement, including whole, half, quarter and three-quarter turns. <i>Working backwards.</i>	Order and arrange combinations of mathematical objects in patterns and sequences. <i>What comes next? Explain why.</i> Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise). <i>Working backwards.</i>	<i>Working backwards.</i>	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. <i>Working backwards.</i>	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. <i>Working backwards.</i>	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. <i>Working backwards.</i>



Statistics

Reception/ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		<p>Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.</p> <p>Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.</p> <p>Ask and answer questions about totalling and comparing categorical data.</p> <p>True or false? Convince me. What's the same, what's different?</p> <p>Create questions.</p>	<p>Interpret and present data using bar charts, pictograms and tables.</p> <p>True or false? Convince me. What's the same, what's different?</p> <p>Solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.</p> <p>Create questions.</p>	<p>Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.</p> <p>True or false? Convince me. What's the same, what's different?</p> <p>Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.</p> <p>Create questions.</p>	<p>Solve comparison, sum and difference problems using information presented in a line graph.</p> <p>Create questions.</p> <p>Complete, read and interpret information in tables, including timetables.</p> <p>True or false? Convince me. What's the same, what's different?</p>	<p>Interpret and construct pie charts and line graphs and use these to solve problems.</p> <p>True or false? Convince me. What's the same, what's different?</p> <p>Calculate and interpret the mean as an average.</p> <p>Create questions. Missing information.</p>



Ratio and Proportion

Reception/ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
						<p>Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.</p> <p>What else do you know? Do, then explain.</p> <p>Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison.</p> <p>What else do you know? Undoing.</p> <p>Solve problems involving similar shapes where the scale factor is known or can be found.</p> <p>Spot the mistake. Unpicking.</p> <p>Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.</p> <p>Other possibilities.</p>

Algebra

Reception/ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number	Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. Connected calculation.	Solve problems, including missing number problems, using number facts, place value, and more complex	Connected calculation. Perimeter can be expressed algebraically as $2(a+b)$ where a and b are the same dimensions	Use the properties of rectangles to deduce related facts and find missing lengths and angles. Connected calculation. Undoing.	Use simple formulae. Undoing. Generate and describe linear number sequences. Generalising. Express missing number problems algebraically. Connected calculation. Find pairs of numbers that satisfy an equation with two unknowns. Connected calculation.



	<p>problems such as $7 = ? - 9$. Connected calculation.</p> <p>Represent and use number bonds and related subtraction facts within 20. Connected calculation.</p> <p>Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening].</p>	<p>Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. Connected calculation.</p> <p>Compare and sequence intervals of time. True or False?</p> <p>Order and arrange combinations of mathematical objects in patterns and sequences. True or False?</p>	<p>addition and subtraction. Connected calculation.</p> <p>Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling. Connected calculation.</p>	<p>in the same unit. Undoing.</p>	<p>Enumerate possibilities of combinations of two variables. Connected calculation.</p> <p>Recognise when it is possible to use formulae for area and volume of shapes. Undoing. Always, sometimes, never?</p>
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