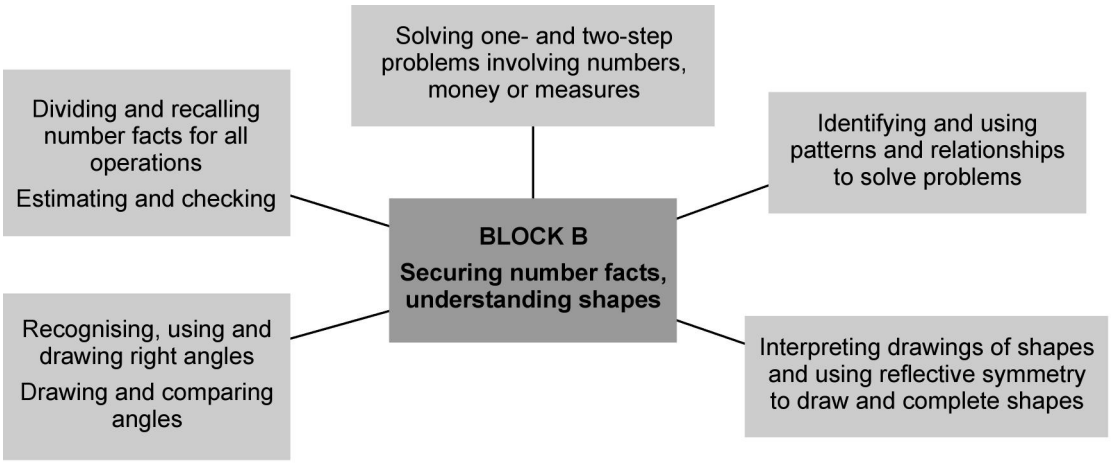
Year 3: Block B — Three 3-week units

Securing number facts, understanding shapes



Objectives	Units		
End-of-year expectations (key objectives) are highlighted	1	2	3
• Solve one-step and two-step problems involving numbers, money or measures, including time, choosing and carrying out appropriate calculations		✓	✓
• Represent the information in a puzzle or problem using numbers, images or diagrams; use these to find a solution and present it in context, where appropriate using £.p notation or units of measure	✓	✓	✓
• Identify patterns and relationships involving numbers or shapes, and use these to solve problems	✓	✓	✓
• Read and write proper fractions (e.g. $^{3}/_{7}$, $^{9}/_{10}$), interpreting the denominator as the parts of a whole and the numerator as the number of parts; identify and estimate fractions of shapes; use diagrams to compare fractions and establish equivalents		✓	✓
• Derive and recall all addition and subtraction facts for each number to 20, sums and differences of multiples of 10 and number pairs that total 100	✓	✓	✓
• Derive and recall multiplication facts for the 2, 3, 4, 5, 6 and 10 times-tables and the corresponding division facts; recognise multiples of 2, 5 or 10 up to 1000	✓	✓	✓
• Use knowledge of number operations and corresponding inverses, including doubling and halving, to estimate and check calculations	✓		✓
• Relate 2-D shapes and 3-D solids to drawings of them; describe, visualise, classify, draw and make the shapes	✓	✓	✓
• Draw and complete shapes with reflective symmetry; draw the reflection of a shape in a mirror line along one side		✓	
• Use a set-square to draw right angles and to identify right angles in 2-D shapes; compare angles with a right angle; recognise that a straight line is equivalent to two right angles			✓

Speaking and listening objectives for the block

Objectives	Units		
	1	2	3
• Sustain conversation, explaining or giving reasons for their views or choices	✓	✓	
• Develop and use specific vocabulary in different contexts			✓

Opportunities to apply mathematics in science

Activities		Units		
		1	2	3
3f	Light and shadows: Draw and complete shapes with reflective symmetry, such as objects and their shadows. Observe and record changes to the shapes of shadows over a day. Relate 2-D shapes to drawings by matching drawings of shadows to the objects that cast the shadows.	✓	✓	✓

Key aspects of learning: focus for the block

Enquiry	**Problem solving**	**Reasoning**	Creative thinking
Information processing	Evaluation	Self-awareness	**Managing feeling**
Social skills	**Communication**	Motivation	Empathy

Vocabulary

problem, solution, calculate, calculation, operation, inverse, answer, method, explain, reasoning, pattern, predict, estimate, approximate

add, subtract, multiply, divide, group, sum, total, difference, plus, minus, double, halve, multiple, product

pound (£), penny/pence (p), note, coin, units of measurement and their abbreviations

triangle, square, rectangle, quadrilateral, pentagon, hexagon, octagon, circle, semicircle, cube, cuboid, pyramid, cone, cylinder, prism, sphere, hemisphere, face, edge, vertex/vertices, surface, solid, side, straight, curved, diagram, right-angled

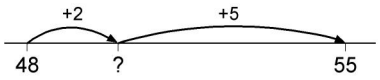
line of symmetry, mirror line, reflection, symmetrical, reflective symmetry

Building on previous learning

Check that children can already:

- solve one-step problems in the context of numbers, measures or money
- check solutions make sense in the context of the problem
- recognise patterns in numbers or shapes and predict and test with examples
- recall addition and subtraction facts for each number to at least 10, all pairs with totals to 20 and all pairs of multiples of 10 with totals up to 100
- recall multiplication facts for the 2, 5 and 10 times-tables and the related division facts
- recognise multiples of 2, 5 and 10 up to 100
- describe the properties of and sort common 2-D and 3-D shapes and recognise them in pictures
- identify and draw lines of symmetry
- identify right angles in shapes and as quarter turns

Unit 3B1 3 weeks

Objectives *Children's learning outcomes in italic*	Assessment for learning
• Represent the information in a puzzle or problem using numbers, images or diagrams; use these to find a solution and present it in context, where appropriate using £.p notation or units of measure *I can solve problems using numbers, pictures and diagrams*	Tell me how you solved this problem. Did you make any notes or drawings to help you? Describe them to me. Find the total of 3, 4, 5, 6 and 7. Jot down how you work it out. Which numbers did you start with? Why? Explain what you wrote down.  Jay drew this number line to work out 48 + 7. What is the missing number? Why did he split the 7 into 2 then 5? What do you think the answer to 38 + 7 would be?
• Identify patterns and relationships involving numbers or shapes, and use these to solve problems *I can describe patterns when I solve problems*	Sort the numbers 1 to 20 into two groups: 'multiples of 5' and 'not multiples of 5'. What do you notice? Tell me a number bigger than 100 that would go in each group. 9 – 3 = 6. What is 90 – 30, and 900 – 600? How do you know? What addition calculation would you use to work out 13 – 8? Why can you use addition to work out subtraction? 16 – ☐ = 9. How would you find the missing number? All the shapes on this table except one are prisms. Which shape does not belong? How did you recognise the odd one out?
• Derive and recall all addition and subtraction facts for each number to 20, sums and differences of multiples of 10 and number pairs that total 100 *I know and use addition and subtraction facts for all numbers to 20*	Tell me two numbers that sum to 17. And another pair? What would you add to 7 to make a total of 16? Give me three pairs of numbers that total 19. Now tell me some of the subtraction facts that use these numbers. What two numbers could I subtract to make 13? What is 15 – 2? What is 15 – 4? What is 15 – 6? Can you do a similar thing but start from 17 – 2?
• Derive and recall multiplication facts for the 2, 3, 4, 5, 6 and 10 times-tables and the corresponding division facts; recognise multiples of 2, 5 or 10 up to 1000 *I know the 2, 3, 4, 5, 6 and 10 times-tables and use them for division facts* *I recognise multiples of 2, 5 and 10*	What is 7 × 4? Did you know or did you work thorough one of the times table? Which table did you use? Start at 1 × 4 and work through the 4 times table with me to 10 × 4. Can you tell me the two multiplication facts either side of 7 × 4? Now tell me the answer to 5 × 4 and the two facts either side of it. What is 3 × 4? Tell me the answer to12 ÷ 4. What is 6 × 3? What division fact can you tell me? Is 238 a multiple of 10? What digit would have to change to make it a multiple of 10? Is 238 a multiple of 2? How do you know? What about 338? 458? What digit in a number helps us to recognise multiples of 2, 5 or 10?
• Use knowledge of number operations and corresponding inverses, including doubling and halving, to estimate and check calculations *I can estimate and check my calculations*	What is 50 + 30? If we know that 50 + 30 = 80, how can this help us to estimate 53 + 27? Give me an estimate for 83 – 28, 81 – 52. What is 24 ÷ 6? Can we check this with a multiplication? If half of 30 is 15, what is double 15? Give me the doubling facts for these halving facts: half of 32 is 16, half of 34 is 17, …
• Relate 2-D shapes and 3-D solids to drawings of them; describe, visualise, classify, draw and make the shapes *I can recognise shapes from drawings*	Here are some drawings of 3-D solids. Which drawings show cylinders? Name any other solids you can see in the drawings. Can you see any prisms and pyramids? In this drawing there are triangles, rectangles, squares and other quadrilaterals. Show me these shapes. Are there any pentagons? What about octagons?

Objectives *Children's learning outcomes in italic*	Assessment for learning
• Sustain conversation, explaining or giving reasons for their views or choices *I can follow up points, share my views with others and join in whole-class discussions*	This group said that to add 3 + 4 + 5 + 6 + 7 they would add the largest numbers first. Is this the method you would choose? Why or why not? Listen to Sue's method for adding 48 + 7. What other methods could we use? Which method do you think is best for this calculation? Why? Suggest another calculation where you could use your method.

Learning overview

Children extend their knowledge of **number facts and properties of numbers and shapes**. They use this knowledge to **solve mathematical problems**.

Children strengthen their recall of number facts, recalling facts quickly and applying them accurately. They develop strategies to enable them to **derive quickly all addition and subtraction facts for each number to 20** and sums and differences of multiples of 10. Children understand the relationship between addition and subtraction. They state the addition fact corresponding to any subtraction fact and vice versa. They use their understanding of this inverse relationship to check subtraction calculations.

Children count from zero in steps of 2, 3, 4, 5, 6 and 10 and use the sequences generated to **establish multiplication and division facts**. They recite these times-tables, begin to locate a fact from the relevant table and start to recognise multiples of 3, 4 and 6. They identify numbers to 1000 that are multiples of 2, 5 or 10. They sort a set of numbers using criteria such as: 'These numbers are multiples of 5', or: 'These numbers are in the 6 times-table.'

Children **use their knowledge of number pairs** for 10 and 20 to **add and subtract efficiently**. For example, to calculate 48 + 7 they add 2 to bridge through 50 then add the remaining 5.

They use knowledge that addition can be done in any order to calculate efficiently. For example, they put the larger number first to work out 4 + 37, or identify pairs of numbers that total 10 to work out 3 + 4 + 5 + 6 + 7.

Children **use their increasing understanding of place value to derive new facts** from known facts. For example, they use the fact 7 – 2 = 5 to establish that 70 – 20 = 50 and 700 – 200 = 500. They calculate all pairs of multiples of 100 with a total of 1000 (e.g. 300 + 700), and doubles of multiples of 10 (e.g. 80 + 80). They explain their calculation strategies.

Children choose appropriate operations to **solve one- and two-step problems** involving number, money and measures, such as:

Jake wants to buy a comic that costs £1. He saves 25p one week and 40p the next. How much more money does he need to buy the comic?

A piece of tape is 100 cm long. I cut off seven pieces, each 5 cm long. How much tape is left?

Children follow and contribute to class discussions about possible methods for solving particular problems. They respond to suggestions and statements by others and suggest alternatives. They use their increasing understanding of the four operations to create their own word problems. They **use patterns, properties and relationships between numbers to solve puzzles**, such as:

Place the numbers 1 to 9 in a 3 by 3 grid so that the total of each row is 15.

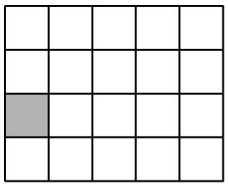
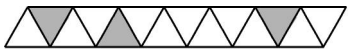
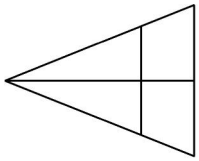
I am a two-digit number. My digits total 12 and have a difference of 4. Who am I?

Children **use patterns, properties and relationships between shapes to solve problems**. They recognise 3-D shapes and make collections, for example, of shapes that are prisms. They know that

a prism has the same cross-section along its length, and that its two end-faces are identical. They name and describe solids, using the correct language: 'A triangular prism has two identical triangular faces at opposite ends and the other three faces are rectangles'; 'A hemisphere is a sphere cut in half. It has one flat face and a curved surface.' They **sort 3-D shapes using criteria such as the number of vertices, edges or faces**. They find the number of edges of assorted prisms to **investigate the general statement**: *The number of edges of a prism is always a multiple of 3.*

Children **extend their knowledge of 2-D shapes**. They know that a quadrilateral is any flat shape with four straight sides. They choose a shape to match properties described by others; for example, they find a shape that is 'half a circle', or 'is not a right-angled triangle' or 'has four right angles and opposite sides equal'. Children **create 2-D shapes** using a variety of equipment. For example, they fold and cut paper to make squares, octagons and stars; they use geostrips; they put two identical shapes together then describe the new shape; they use a computer program to generate, identify and compare new shapes. They describe the properties of the shapes that they have generated.

Unit 3B2 — 3 weeks

Objectives *Children's learning outcomes in italic*	**Assessment for learning**
• Solve one-step and two-step problems involving numbers, money or measures, including time, choosing and carrying out appropriate calculations *I can explain how I solve problems*	Look at this problem. I buy two comics that cost 30p each. How much change will I get from £1? Wayne starts to solve the problem by working out 30 × 2 = 60. What does this answer tell us? What does he need to do next? Eggs are bought in boxes of six. How many boxes do I need to buy if I want 18 eggs? How would you work out this problem? What are the answers to 8 × 4, 8 ÷ 4? Make up a problem to match each calculation.
• Represent the information in a puzzle or problem using numbers, images or diagrams; use these to find a solution and present it in context, where appropriate using £.p notation or units of measure *I can draw pictures and make notes to help me solve a problem*	Tell me how you solved this problem. Did you make any notes or drawings to help you? Can you describe them to me? Work out 47 + 29. Show me how you worked it out on a number line. How many wheels are there on seven cars? What did you write down/draw to help you work this out? Think of a problem that this picture could represent. 
• Identify patterns and relationships involving numbers or shapes, and use these to solve problems *I can describe and continue patterns*	What fact can help you to work out 60 + 61? 14 + 3 = 17, 14 + 13 = 27, 14 + □ = 37. What is the missing number? How do you know? Mark multiplies 7 by 4 to get 28. What operation will now turn 28 into 7? Shade more squares so that this rectangle has one line of symmetry. 
• Read and write proper fractions (e.g. $\frac{3}{7}$, $\frac{9}{10}$), interpreting the denominator as the parts of a whole and the numerator as the number of parts; identify and estimate fractions of shapes; use diagrams to compare fractions and establish equivalents *I can find $\frac{1}{2}$ and $\frac{1}{4}$ of different shapes*	Complete the shading on this diagram so that one half of the shape is shaded.  Take 20 cubes. Make a shape which is $\frac{1}{2}$ red and $\frac{1}{4}$ blue. What fraction of the shape is not red or blue? Is this shape divided into quarters? Explain how you know. 
• Derive and recall all addition and subtraction facts for each number to 20, sums and differences of multiples of 10 and number pairs that total 100 *I know and use addition and subtraction facts for all numbers to 20* *I can add and subtract multiples of 10 in my head*	What is 3 + 7? Give me two other pairs that total 10. What is 30 + 70? Give me other pairs that total 100. What is 40 + 50? What is 70 – 40? Here are four multiples of 10: 50, 80, 30, 60. Pick one, now add this one, now subtract this one. What must I add to the answer to make 100? What would I subtract to make 30?

Objectives *Children's learning outcomes in italic*	Assessment for learning
• Derive and recall multiplication facts for the 2, 3, 4, 5, 6 and 10 times-tables and the corresponding division facts; recognise multiples of 2, 5 or 10 up to 1000 *I know the 2, 3, 4, 5, 6 and 10 times-tables and use them for division facts* *I recognise multiples of 2, 5 and 10*	Count in threes from zero, and back again. Draw jumps of 3 on a number line. How would you use this to find 8 × 3, 18 ÷ 3? What multiplication fact can you use to work out 30 ÷ 6? What is 4 × 3? What is 8 × 3? What is the relationship between these? Use the digits 4, 0 and 5 to make a number that is a multiple of 2. Now make a multiple of 5. Now make a multiple of 10.
• Relate 2-D shapes and 3-D solids to drawings of them; describe, visualise, classify, draw and make the shapes *I can name and describe shapes* *I can sort shapes into sets, saying what is the same about each of the shapes* *I can recognise whether a 2-D shape is symmetrical or not and describe how I know*	Which of these drawings shows a sphere? A pyramid? A cube? How did you recognise these shapes? To draw a picture of a cube, would you use straight or curved lines? What about a cylinder? Select from this set a shape that has: no right angles; all sides equal; five vertices. One of the shapes does not belong in this set. Find the odd one out. Explain how you found it.
• Draw and complete shapes with reflective symmetry; draw the reflection of a shape in a mirror line along one side *I can draw a symmetrical shape* *I can reflect a shape when the mirror line is one of its sides*	Which of the shapes on this page are symmetrical? How could you check? Reflect this semicircle in the mirror line. What shape does this make?  mirror line
• Sustain conversation, explaining or giving reasons for their views or choices *I can discuss how I solved a problem with other children and explain why I chose my method*	Did everyone on this table use the same method? Which method would you choose now if you had to do a similar problem? Ask Mark to explain how he solved this problem. What did you do differently?

Learning overview

Children **choose and use the appropriate operations** to solve problems and puzzles involving all four operations. They use their knowledge of number facts and place value to add and subtract a pair of numbers mentally or using pencil-and-paper jottings. They solve problems such as:

Three monkeys ate a total of 25 nuts. Each of them ate a different odd number of nuts. How many nuts did each of the monkeys eat? Find as many different ways to do it as you can.

Children discuss how they found their solutions, explaining their choice of method.

Children **recall number facts** quickly and apply them accurately in a range of situations. They **recognise and generate patterns** of similar calculations, such as 14 + 3 = 17, 14 + 13 = 27, 14 + 23 = 37 and articulate what is the same and what is different about such related calculations. They use the patterns in such sequences to add and subtract one- and two-digit numbers; for example, they use the fact that 9 – 7 = 2 to work out that 19 – 7 = 12 or 89 – 7 = 82.

Children **use number facts and place value** to add or subtract a multiple of 10 to or from a two-digit number. They extend this to **add or subtract a near-multiple of 10**. For example, they

calculate 47 + 29 by calculating 47 + 30 then subtracting 1 from the answer. They may do the calculation entirely mentally, make notes of the steps taken or record them on a number line. Children use their recall of doubles to **calculate near-doubles** such as 60 + 61, asking: *What do I know that will help me to work out 60 + 61?*

Children know by heart the 2, 5 and 10 times-table facts and **learn the 3, 4 and 6 times-tables**. They understand that multiplication can be done in any order. Children **appreciate that multiplication and division are inverse operations** and use this to derive quickly the associated division facts for any given multiplication fact, and vice versa. They apply their knowledge of multiplication and division to **solve missing-number problems**, such as □ ÷ 3 = 6, and word problems such as:

Eggs are bought in boxes of six. How many boxes do I need to buy if I want 18 eggs?

How many wheels are there on seven cars?

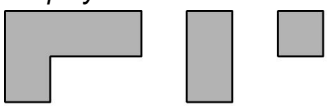
They show their understanding by creating multiplication and division problems of their own.

Children **find halves and quarters of shapes** by folding. They appreciate that finding $\frac{1}{2}$ of a shape involves dividing it into two equal pieces and finding $\frac{1}{4}$ of a shape involves dividing it into four equal pieces. Through practical experience, they appreciate that $\frac{2}{4}$ is equivalent to $\frac{1}{2}$. They investigate which shapes can easily be divided into halves or quarters and which cannot. They find alternative ways of dividing squares and rectangles in half and into quarters.

Children **develop their understanding of line symmetry**. They identify examples in the environment of shapes with and without symmetry, describing similarities and differences between them. They identify lines of symmetry of assorted shapes and pictures and check them using a mirror or by folding. They complete partly drawn shapes and patterns to make them symmetrical about a given line. They recognise when shapes have no line of symmetry and create their own shapes with no line of symmetry.

Children apply their understanding of symmetry. They investigate the symmetry of common 2-D shapes such as squares, rectangles, semicircles and triangles. They solve puzzles involving symmetry, such as:

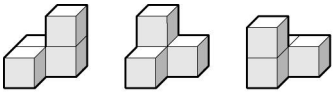
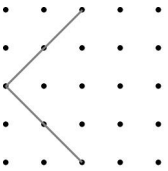
Combine these three shapes to make a shape with at least one line of symmetry. Describe the shape you have made. How many different shapes can you make?



Children **make models, patterns and shapes** with increasing accuracy. They describe the features of shapes and patterns with increasing precision, using vocabulary such as ‘right-angled’, ‘vertices’ and ‘prism’. They are able to build an unseen shape described to them by an adult or child. They match familiar 3-D shapes to pictures of them and build 3-D shapes from pictures, describing the key features that help them to do this.

Unit 3B3 — 3 weeks

Objectives *Children's learning outcomes in italic*	Assessment for learning
• Solve one-step and two-step problems involving numbers, money or measures, including time, choosing and carrying out appropriate calculations *I can solve a problem by writing down what calculation I should do*	A box holds 35 nuts. John eats 17 nuts. How many nuts are left? How many people can have 5 nuts each? How many nuts are there in 3 boxes? What calculation did you do each time? Anna has a 50p coin and three 20p coins. How much is this altogether? Show how you worked out the answer. How did you decide what calculations to do?
• Represent the information in a puzzle or problem using numbers, images or diagrams; use these to find a solution and present it in context, where appropriate using £.p notation or units of measure *I can draw a picture to help make sense of a problem*	A spider has eight legs. How many legs do six spiders have? How did you find the answer? What did you write down or draw? Anna is 118 cm tall. Her brother is 97 cm tall. How much taller is Anna? Draw a picture or use a number line to help you to find the answer. Ali had 50 apples. He sold some and then had 20 left. Which of these is a number sentence that shows this? A □ – 20 = 50 B 20 – □ = 50 C □ – 50 = 20 D 50 – □ = 20
• Identify patterns and relationships involving numbers or shapes, and use these to solve problems *I can find numbers or shapes that match a property*	What is special about the shaded numbers in the grid? Suggest some other numbers that would be shaded. 61 62 63 64 **65** 66 67 68 69 **70** 71 72 73 74 **75** 76 77 78 79 **80** 81 82 83 84 **85** 86 87 88 89 **90** Look at this set of 2-D shapes. Identify the shapes in the set that have one right angle, two right angles, more than two right angles.
• Read and write proper fractions (e.g. $^3/_7$, $^9/_{10}$), interpreting the denominator as the parts of a whole and the numerator as the number of parts; identify and estimate fractions of shapes; use diagrams to compare fractions and establish equivalents *I can say what fraction of a shape is shaded*	What fraction of this shape is shaded? Can you say this fraction in another way?  Roughly how much of this cake has been eaten? 
• Derive and recall all addition and subtraction facts for each number to 20, sums and differences of multiples of 10 and number pairs that total 100 *I know and use all addition and subtraction facts to 20* *I can find what to add to a number to make 100*	Tell me some addition and subtraction facts with the answer 12. What is 12 – 7? What is 120 – 70? How did you find the answer? Rick says 38 + 72 = 100. Is he right? What mistake has he made?

Objectives *Children's learning outcomes in italic*	Assessment for learning
• Derive and recall multiplication facts for the 2, 3, 4, 5, 6 and 10 times-tables and the corresponding division facts; recognise multiples of 2, 5 or 10 up to 1000 *I know the 2, 3, 4, 5, 6 and 10 times-tables and use them for division* *I recognise multiples of 2, 5 and 10*	Two numbers multiply to make 20. What could they be? If you cannot remember the 4 times-table, how could you work it out? Find a number between 10 and 20 that gives a remainder when divided by 3. Find a number that is a multiple of 2 but is not a multiple of 10.
• Use knowledge of number operations and corresponding inverses, including doubling and halving, to estimate and check calculations *I can estimate and check my calculations*	Half of 38 is 19. Use the word 'double' to make a sentence with the same numbers. Find which two of these calculations are wrong: A Half of 34 is 18 B 35 – 19 = 16 C 35 ÷ 5 = 12
• Relate 2-D shapes and 3-D solids to drawings of them; describe, visualise, classify, draw and make the shapes *I can describe the properties of shapes* *I can sort shapes using different properties*	I dip a triangular prism in paint and make a print of each face. What shapes will I print? Use cubes to make these shapes: 
• Use a set-square to draw right angles and to identify right angles in 2-D shapes; compare angles with a right angle; recognise that a straight line is equivalent to two right angles *I can say whether the angles of a 2-D shape are right angles or whether they are smaller or bigger*	Find a quadrilateral that has two angles that are smaller than right angles and two that are bigger than right angles. Which shapes always have four right angles? Draw two lines to complete the square. 
• Develop and use specific vocabulary in different contexts *I can picture a shape in my head when it is described to me* *I can describe a shape so that others can draw it*	Imagine two squares the same size placed so that they touch side to side. What shape does this make?

Learning overview

Children continue to improve their **knowledge of number facts**, recalling them quickly and applying them accurately. They derive quickly **pairs of numbers that total 100** and use them in calculations. For example, to find the difference between 115 and 89 they add 11 to 89 to reach 100, then add a further 15 to reach 115. They use mental, mental with jottings or written methods to support their understanding and communicate their thinking. They are able to explain their methods and reasoning and to **evaluate which method is more efficient**.

Children **use a range of vocabulary associated with multiplication and division**, including *multiple* and *product*. They use their knowledge of doubles to 20 to derive quickly, supported by jottings where necessary, doubles of multiples of 5 to 100 (e.g. 75 × 2), doubles of multiples of 50 to 500 (e.g. 450 × 2), and all corresponding halves. Children use their knowledge of multiplication facts and place value to **multiply one-digit numbers by multiples of 10** to solve problems such as:

I stack 6 boxes on top of each other to make a tower. Each box is 30 cm tall. How tall is the tower?

Rani has 20 ml of medicine each day for one week. How much medicine does he have altogether?

Children **understand the relationships** between addition and subtraction, halving and doubling and multiplication and division; they check subtraction calculations with addition, halving with doubling, and division with multiplication. They also check with an equivalent calculation or alternative calculation strategy. For example, they check 35 × 2 with two 40s minus two 5s.

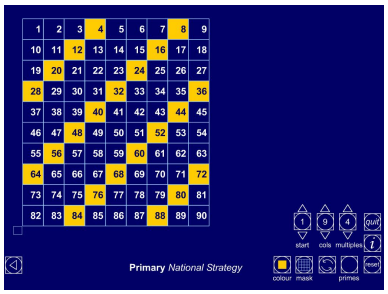
Children choose appropriately from the four operations to **solve one- and two-step word problems** involving numbers money and measures such as:

How many 20-minute cartoons can be saved on a 2-hour video tape?

I want to raise £5 for a sponsored walk. So far, three people have given me 70p each. How much more money do I need?

They **choose suitable calculation strategies** and **use appropriate recording** to support their understanding and record what they have done.

Children use their knowledge of number properties to **solve mathematical problems or puzzles**. They recognise simple patterns and relationships, for example to find a pair of numbers with a sum of 17 and a product of 70. They make and investigate general statements such as: *A number ending in 1 cannot be in the 2, 4, 5 or 10 times-table*. They explore patterns using the ITP 'Number grid'.



Children use their understanding of division to **recognise and find fractions of shapes**. For example, they recognise that $\frac{1}{5}$ of a shape made from 10 squares will contain 2 squares because 10 ÷ 5 = 2. They recognise that $\frac{1}{5}$ of the shape is the same as '2 pieces out of 10' and that therefore $\frac{1}{5}$ is equivalent to $\frac{2}{10}$. They solve problems such as finding all the possible ways of shading $\frac{1}{3}$ of a 6-square strip.

Children extend their knowledge of shape properties. They use appropriate mathematical vocabulary to **describe the features** of common 2-D and 3-D shapes including semicircles, hemispheres and prisms. They **describe angles in 2-D shapes**, identifying whether each angle is equal to, greater than or smaller than a right angle. They create and describe their own shapes; for example, they use a set-square to explore whether it is possible to draw a quadrilateral with exactly two right angles. They sort and classify collections of 2-D shapes in different ways using a range of properties including: 'all sides are of equal length,' 'has at least one right angle' or 'has at least one line of symmetry'. They record their classifications on **Venn and Carroll diagrams**, including diagrams involving more than one criterion.

Children apply their knowledge of shape properties to **solve mathematical problems or puzzles** such as:

Can a triangle have two right angles?

How many different shapes can you make by placing two identical right-angled triangles edge to edge? How do you know you have found them all? Describe each shape.