

Mathematics Year 5 Summer Term

Block 1 Shape

Step 1 Understanding and use degrees	In this small step, children recap and build on learning from previous years. They should already be familiar with the idea that an angle is a measure of turn and be able to describe angles as acute or obtuse by comparing them to a right angle. This step introduces degrees as a unit of measure for turn, including the degree symbol. Children explore the fact that there are 360° in a full turn, and therefore 180° in half a turn, 90° in a quarter turn (or right angle) and 270° in a three-quarter turn. They use this knowledge and the language of clockwise and anticlockwise to describe turns, including in the context of compass directions and clocks. Children may begin to recognise other common angles, such as 45° being half a right angle, but there is no requirement to measure or explore more complex angles, such as 67° or 241° , at this point, as this is covered in later steps.
Step 2 Classify angles	In this small step, children classify angles using knowledge of right angles from the previous step. In Year 4, children classified angles as acute or obtuse based on whether an angle was less than or greater than a quarter turn (right angle). They begin by revisiting this and are also introduced to reflex angles for the first time. It is important that children are able to visually classify an angle as acute, obtuse or reflex by comparing them to right angles and straight lines. Use of angle finders, such as the right angle, may provide support. Once secure in this, children can then begin to look at classifying angles numerically. They should be able to state, for example, that 23° is an acute angle because it is less than 90° , 134° is an obtuse angle because it is greater than 90° but less than 180° , and 210° is a reflex angle because it is greater than 180° . As well as identifying and classifying angles, children should draw examples of each angle type.
Step 3 Estimate angles	In this small step, children estimate the sizes of angles based on knowledge of what right angles and angles on a straight line look like and measure in degrees. Children should already be able to look at an angle and identify whether it is acute, obtuse or reflex, and they now progress to estimating the size of the angle. To begin with, it is important to explore the idea of halfway between already known angles, for example 45° is half of a right angle and 135° is halfway between a right angle and a straight line. From here, children can start to estimate given angles by comparing them to these key amounts. For example 80° is greater than half a right angle but less than a right angle and is closer to 90° than 45° . As well as estimating the sizes of given angles, children start to draw angles approximately of a given size.
Step 4 Measure angles up to 180°	In this small step, children use a protractor to measure angles up to 180° . It is important to begin by recapping the concept of estimating angles. Children then read the sizes of angles, where a protractor is shown over the top of the angle, so they know that the protractor is already in the correct position. Children should then be given protractors to position themselves in order to measure angles. Model the steps to successfully using a protractor: make sure that the zero line of the protractor is on one of the lines of the angle; position the centre point of the protractor on the vertex; read the correct scale to determine what size the angle is. Children count up from the zero line to get to the correct angle. By estimating the size of the angle before measuring, they are less likely to read the wrong scale. For this step, children do not measure angles greater than 180° .
Step 5 Draw lines and angles accurately	In this small step, children draw lines and angles accurately and use what they have learnt about shapes to construct shapes. Children begin by drawing straight lines of given lengths, in both centimetres and millimetres. Ensure that children are measuring using the correct scale, for example centimetres, not inches. Model how to use a protractor to draw a given angle. Instruct children to draw a straight line, then to move the protractor so that the zero line is on the line they have drawn, and the centre of the protractor is on the end of the line. They then mark the angle, remove the protractor and draw

	another line. Encourage children to label any angles that they draw. Once comfortable with drawing given lines and angles, they can explore drawing whole shapes accurately from a given description. This step is a good opportunity to revisit the properties of different triangles and quadrilaterals.
Step 6 Calculate angles on a straight line	In this small step, children move on to calculating angles based on given information, rather than always using a protractor to measure angles. When looking at drawings of angles, distinguish between those that are and are not to scale, and discuss why a protractor is or is not useful in that context. Recap prior learning that a full turn is 360° and model this with a child turning through 360° . Children use a protractor to measure angles around a point to see that they add up to 360° . Any slight differences will be due to human error and should be discussed. Children then calculate missing angles using the knowledge that all the angles sum to 360° . They can either subtract each known angle from the total of 360° , or add the known angles first and then subtract this total from 360° . Children should also recognise that if they know that the angles around a point are equal, 360 can be divided by the number of angles to find the size of one of the angles.
Step 7 Calculate angles on a straight line	In this small step, children see that the total of the angles on a straight line is half the total of the angles around a point. Children should recognise that a half turn is the same as a straight line, meaning that adjacent angles on a straight line sum to 180° . Looking at a protractor will reinforce this point, as children will see that the 0° to 180° line is a straight line. Once children are secure in the understanding that both a half turn and a straight line are equal to 180° , they move on to working out unknown angles on a straight line. As with the previous step, explore both methods of calculation: the whole (180°) subtract each part; or add the parts first, then subtract from the whole. Finally, children use division to work out equal angles knowing that the total is 180° , for example five equal angles on a straight line will all be 36° , because $180 \div 5 = 36$
Step 8 Lengths and angles in shapes	In this small step, children explore different strategies for calculating missing lengths and angles in shapes. Start by recapping what perimeter is and how to calculate it, so that children can use this to work out missing lengths. Once children are confident at calculating the perimeter of a rectangle, move on to the perimeter of compound shapes composed of multiple rectangles. Encourage them to explore the fact that the area is multiplied by the number of rectangles used, but the same relationship is not true for the perimeter. Using what they have learnt in previous steps, children can work out missing angles within shapes, both on a straight line and around a point. The rule that angles in a triangle sum to 180° is not covered formally until Year 6
Step 9 Regular and irregular polygons	In this small step, children explore regular and irregular polygons. It is important to discuss with children that the words “polygon” and “shape” are not interchangeable. A polygon refers to a 2-D, fully enclosed shape formed from straight lines. Show examples and non-examples of polygons to help with this understanding. Move on to explore what a regular polygon is, allowing children to see that not only do all sides have to be the same length, but the angles must also be equal. A good example is the difference between a square and a rectangle: while the angles are all equal, the sides are not. Ensure that children understand that equal sides are indicated by hatch marks. Once children are confident at identifying regular and irregular polygons, ask them to calculate the perimeter of regular shapes when given the length of one side. They may also explore finding the length of each side of a regular polygon when given the perimeter.
Step 10 3D shapes	In this small step, children start by recapping the names of 3-D shapes, and then move on to their properties. Seeing models of 3-D shapes will help to remind children of the differences between faces, edges and vertices. Identifying the 2-D shapes on the faces of the 3-D shapes allows children to compare shapes and will provide a basis for their learning of nets in Year 6 Children also look at 2-D drawings of 3-D shapes on isometric paper, identifying the 3-D shape as well as its properties. By counting the dots on each side, they can identify equal lengths that can be used to tell the difference between, for example, a cube and a cuboid. Finally, children look at drawings of compound 3-D shapes made up of two or three simple 3-D shapes and identify which 3-D shapes were used to make the shape.
Block 2 Position and Direction	
Step 1 Read and plot coordinates	Children first saw a coordinate grid in Year 4 when they read and plotted points on a grid. They also translated points and described translations. In this small step, they recap reading and plotting coordinates on a coordinate grid. They still work only within the first quadrant (positive numbers for both coordinates), with the four-quadrant grid being taught in Year 6 Remind children what a coordinate looks like and what each number refers to. Highlight the importance of reading and plotting the x-value of the coordinate first. Children identify the coordinates of given points on a grid, then move on to

	plotting points with given coordinates. This can lead to drawing shapes on a coordinate grid with given coordinates or working out the coordinates of a shape from known information.
Step 2 Problem solving with coordinates	In this small step, children move on from reading and plotting coordinates on a grid to solving problems involving knowledge and understanding of coordinates. Children begin by looking at shapes on a grid where the axes are not fully labelled. By knowing the coordinates of one vertex, children can count up, down or across on the grid to work out the missing coordinates of the other vertices. They can also suggest possible coordinates for vertices based on the area or perimeter of a shape if they know the coordinates of one vertex. Children then move on to problem solving when there are no gridlines, where they need to use the given coordinates to work out any missing coordinates and counting squares is not an option. By knowing that the coordinates of points on horizontal lines have the same y-coordinates and those on vertical lines have the same x-coordinates, children can find missing coordinates in rectilinear shapes.
Step 3 Translation	In Year 4, children translated shapes on a coordinate grid and described translations. This small step revisits that learning, on both a squared grid and a coordinate grid. Children begin by translating a single point, before translating full shapes. Model translations on a grid, telling children that the point or shape moves to a different position, but remains exactly the same size and orientation. Children then translate shapes, starting with either up/down or left/right before moving on to a combination of both directions. Show children two shapes on a grid where one is a translation of the other and ask them to describe the translation that has taken place. It is important to model this by looking at how one vertex has been translated, rather than considering the gap between the two shapes, as children can often confuse the two.
Step 4 Translation with coordinates	Children first identified vertical lines of symmetry in shapes in Year 2. In this small step, that learning is extended to include any line of symmetry in a 2-D shape. Begin by recapping the definition of a line of symmetry. Mirrors are a useful aid for this. Children then identify shapes on a grid that have a mirror line. Once they are confident at finding a single line in a shape (horizontal, vertical or diagonal), they move on to identifying shapes that have more than one line of symmetry. Children can also identify lines of symmetry on shapes without the aid of the grid that they can use to check the size of both parts by counting. It is worth remembering that this is the first time that children have explored shapes with multiple lines of symmetry in different orientations, and a lot of modelling may be needed.
Step 5 Lines of symmetry	Children first identified vertical lines of symmetry in shapes in Year 2. In this small step, that learning is extended to include any line of symmetry in a 2-D shape. Begin by recapping the definition of a line of symmetry. Mirrors are a useful aid for this. Children then identify shapes on a grid that have a mirror line. Once they are confident at finding a single line in a shape (horizontal, vertical or diagonal), they move on to identifying shapes that have more than one line of symmetry. Children can also identify lines of symmetry on shapes without the aid of the grid that they can use to check the size of both parts by counting. It is worth remembering that this is the first time that children have explored shapes with multiple lines of symmetry in different orientations, and a lot of modelling may be needed.
Step 6 Reflection in horizontal and vertical lines	Building on the previous step, in this small step children complete reflections for the first time. Begin by looking at what reflection is and how it is different from translation. The use of mirrors is helpful for this, but this time children need to place the mirror on the given line rather than in the middle of the shape. As well as using squared paper, model reflecting a shape on a coordinate grid where the mirror line is a line parallel to one of the axes, reflecting one vertex of the shape at a time. For added challenge, children can reflect shapes where the grid is not shown and they have to work out the new coordinates of the shape by considering how far away from the mirror line each coordinate is, rather than counting squares.
Block 3 Decimals	
Step 1 Use known facts to add and subtract decimals within 1	In this small step, children add and subtract decimals within 1 whole using known facts. They will move on to using a formal method to add and subtract decimals later in this block. Through unitising, children are able to make connections between whole numbers and decimals. For example, 7 ones + 9 ones = 16 ones, therefore 7 hundredths + 9 hundredths = 16 hundredths. Ensure that children have a good understanding of place value, as a common error is to ignore the place value of decimals, leading to incorrect calculations such as $0.48 + 0.3 = 0.51$. Using a stem sentence allows children

	to recognise that the unit they are adding or subtracting must be the same, so in this example $48 \text{ hundredths} + 30 \text{ hundredths} = 78 \text{ hundredths}$. Hundred squares and place value charts are useful representations to support children when adding and subtracting decimals within 1 whole.
Step 2 Complements to 1	In this small step, children find complements to 1 for numbers with up to 3 decimal places. It is important for children to see the links with number bonds to 10, 100 and 1,000, and it may be useful to revise these first. The use of ten frames and hundred squares can support children to see the number bonds to 10 and 100 and the corresponding number bonds to 1 for numbers with 1 or 2 decimal places respectively. The number bonds to 1,000 and corresponding 3-decimal place bonds to 1 can be more challenging, but children should be encouraged to apply the same principles as for numbers with fewer decimal places.
Step 3 Add and subtract decimals across 1	In this small step, children add and subtract decimals that cross 1. For some numbers, using known facts is again a useful strategy, for example $6 + 7 = 13$, so $0.6 + 0.7 = 1.3$. Children can also use their experience from the previous step of finding complements to 1, using the “make 1” strategy to help them add and subtract. This requires a secure understanding of flexible partitioning, which allows them to partition decimals into appropriate numbers. For example, when calculating $0.64 + 0.45$, children can use their knowledge of finding complements to 1: $0.64 + 0.36 = 1$, therefore 0.45 should be partitioned into 0.36 and 0.09, leading to $0.64 + 0.36 = 1$ and $1 + 0.09 = 1.09$. Part-whole models or other diagrams can be used to support this. Similarly, when subtracting decimals, encourage children to subtract to get to 1 first, then subtract the remaining decimal.
Step 4 Add decimals with the same number of decimal places	In this small step, children add decimal numbers with the same number of decimal places, using the formal written method for the first time. Children begin by looking at calculations with no exchanges before moving on to calculations that involve exchanges and numbers with up to 3 decimal places. Place value charts and counters are extremely helpful in ensuring that children understand the value of each digit and when an exchange is needed. When there are 10 or more in a place value column, children can physically exchange, for example, 10 tenths for 1 whole. They could also compare using column methods for integers and decimals, for example comparing $46 + 38$ with $4.6 + 3.8$. Children also perform decimal calculations with money, converting amounts in pence to pounds if necessary.
Step 5 Subtract decimals with the same number of decimal places	In this small step, children subtract numbers with the same number of decimal places, using the formal written method for the first time. As with addition, children first look at calculations with no exchanges, before moving on to calculations that involve exchanges and numbers up to 3 decimal places. Place value charts and counters continue to support understanding of the value of each digit and when an exchange is needed. Again, children should look at the formal and practical methods alongside each other to begin with. When an exchange is needed, children can physically exchange, for example, 1 one for 10 tenths. They could also compare using column methods for integers and decimals, for example comparing $76 - 28$ with $7.6 - 2.8$. Give children opportunities to apply subtraction to real-life contexts, for example using measures and money.
Step 6 Add decimals with different numbers of decimal places	In this small step, children extend their knowledge of adding decimal numbers to include numbers with a different number of decimal places. Emphasise the importance of lining up the decimal point in order to ensure that digits with the same place value are also aligned. A place value chart is a useful representation to reinforce this, as children can see the value of each digit in the correct place value column. Children could be encouraged to “fill” empty columns with trailing zeros to promote an understanding of using the zero as a placeholder and making it easier to see how the numbers line up. Children could also use estimation to think about whether their answers are sensible. As in previous steps, it may be useful to begin with examples that do not require an exchange, so that children can focus on the new learning of adding numbers with a different number of decimal places.
Step 7 Subtract decimals with different numbers of decimal places	In this small step, children extend their knowledge of subtracting decimal numbers to include numbers with a different number of decimal places. It is important that children continue to practise lining up the decimal point carefully and ensure that each digit is in the correct column. A place value chart could be used to reinforce this. In the column method, show children how to “fill” empty columns with zeros, which will support them when exchanges are required. They need to be secure with the fact that, for example, 6 and 6.0 have the same numerical value, as do 4.7 and 4.70 and so on. Children need a good understanding of column subtraction from previous steps, knowing when to make an exchange – particularly when zeros are involved.
Step 8	In this small step, children explore a range of different calculation strategies to solve addition and subtraction problems, making decisions about which strategy would be the most effective for each problem. Encourage children to consider the question carefully rather than automatically choosing the same

Efficient strategies for adding and subtracting decimals	option every time. They can experiment by solving the same calculation in a number of ways and considering which way was the most efficient and why. In particular, discuss when mental strategies are more appropriate than written, for example when compensation can be used, such that adding 9.99 can be simplified to add 10 and then subtract 0.01. Number lines are useful to support this approach.
Step 9 Decimal sequences	In this small step, children combine their knowledge of number sequences and decimals to explore decimal sequences. Given a range of sequences, children look for patterns and use and find simple rules that involve adding or subtracting a decimal each time. It is important to note that they are not expected to generate algebraic expressions at this stage. Children should, however, use the language associated with sequences such as “term” and “rule”. They should make predictions about the next term or subsequent terms in a sequence or, given different terms in a sequence, work backwards to find previous terms. Number lines are useful for representing sequences. This step supports children’s understanding of counting in decimals, particularly across an integer, and prepares them for further study of sequences in Year 6
Step 10 Multiply by 10, 100 and 1000	In this small step, children learn to multiply decimals by 10, 100 and 1,000 Children multiplied integers by 10 and 100 in Year 4 and moved on to multiply by 1,000 in the Autumn term of Year 5. Despite this experience, they may still make the mistake of over-generalising and simply “adding zeros”. Concrete resources and stem sentences can be used to enable children to make accurate generalisations about what happens to the digits in a number when they multiply by 10, 100 or 1,000. Representations such as place value charts allow children to physically move plain counters to the left and recognise that all digits move, for example, 1 place to the left when multiplying by 10. They can also use a Gattegno chart to recognise that multiplying by 10 and “10 times the size” is the same.
Step 11 Divide by 10, 100 and 1000	In this small step, children explore dividing integers and decimal numbers by 10, 100 and 1,000. This builds on their learning from Year 4, where they learned to divide 1- and 2-digit numbers by 10 Children should begin to recognise the links with multiplying by 10, 100 and 1,000 and notice the inverse relationship. Concrete resources and stem sentences can be used to enable children to make accurate generalisations about what happens to the digits in a number when they divide by 10, 100 or 1,000. A place value chart allows children to physically move counters to the right and recognise that all of the digits move, for example, 2 places to the right when dividing by 100. Children can also use a Gattegno chart to recognise that dividing by 10 and “one-tenth of the size” is the same.
Step 12 Multiply and divide decimals-missing values	In this small step, children apply their knowledge of multiplying and dividing by 10, 100 and 1,000 to work out missing values. Through the use of concrete resources and stem sentences in the two previous steps, children have generalised what happens to the digits in a number when they multiply and divide by 10, 100 or 1,000. They now use these generalisations to support them to find missing values in calculations. Gattegno charts can be used to recognise how many rows a counter has moved up or down, allowing children to work out if the number is 10, 100 or 1,000 times greater or smaller. A place value chart allows them to physically move counters to the left or right to work out if the number is 10, 100 or 1,000 times greater or smaller. Children should recognise the inverse relationship between multiplying and dividing by 10, 100 and 1,000 and use this to find the missing values.
Block 4 Negative Numbers	
Step 1 Understanding negative numbers	In this small step, children are introduced to negative numbers for the first time. The focus of this step is exploring negative numbers in real-life contexts, including temperatures, distances above and below sea level and floors in a building that go underground. In this first step, only vertical representations are used to develop understanding of the concept. Draw attention to the fact that negative numbers can be seen as a reflection of the positive numbers. This will help to avoid the common misconception of counting 3, 2, 1, 0, -10, -9, -8 ... Careful attention should be paid to language choices and children should be encouraged to say, for example, -3 as “negative three” rather than “minus three”, so that they see negative numbers as numbers rather than operations. At this stage, children do not need to calculate using negative numbers.
Step 2 Count through zero in ones	In this small step, children become more fluent with negative numbers and explore counting both forwards and backwards through zero in 1s. Counting in other multiples through zero will be covered in the next step. Alongside the vertical representations used in the previous step, children now see horizontal number lines. This will help to reinforce the reflective nature of positive and negative numbers. Use of horizontal number lines provides an

	opportunity to revisit and develop skills in labelling and identifying numbers on a number line covered in earlier blocks. Once confident with counting both forwards and backwards through zero on a number line, children then apply these skills to solving problems involving change in temperature.
Step 3 Count through zero in multiples	In this small step, children continue to practise counting both forwards and backwards through zero, but now in multiples other than 1s. Initially, the focus is on counting where zero is included in the count, which leads to a reflective pattern, for example $-6, -4, -2, 0, 2, 4, 6$. Once children are confident with this, they explore counting through zero that does not follow this pattern, for example $8, 5, 2, -1, -4, -7$. Encourage children to explore how partitioning of the multiple can support counting through zero. For example, when counting back in 5s from 3, they can use the fact that 5 can be partitioned into 3 and 2. This will allow them to first jump to zero and then from zero to reach -2 . Number lines, both vertical and horizontal, continue to be a key representation in supporting this understanding.
Step 4 Compare and order negative numbers	In this small step, children compare and order integers that include negative numbers. A common misconception is to apply the abstract “rules” of positive numbers to negative numbers. For example, children may believe that because 10 is greater than 3, then -10 must be greater than -3 . Number lines are a key representation to help address this misconception. By comparing positive numbers and reflecting on their positions on a number line, children can begin to generalise that greater numbers lie to the right on a number line. Therefore, because -3 lies to the right of -10 , it is greater. It can also be helpful to discuss real-life contexts to support this understanding. For example, children may be comfortable with the fact that, for example, -5 degrees is colder than -1 degree and can then apply this to show that $-5 < -1$. Once children are confident with comparing two numbers, they can begin to order groups of integers that include both positive and negative numbers.
Step 5 Find the difference	In this small step, children look at finding the difference between positive and negative numbers. As with previous steps, vertical and horizontal number lines are a key representation in supporting this understanding. To begin with, children count either forwards or backwards in 1s through zero, seeing that the difference is the number of jumps between the two numbers. They then look at more efficient strategies by jumping to and from zero and adding the two jumps together to find the difference. For example, to find the difference between -4 and 3, they can jump 3 from 3 to 0 and then 4 from 0 to -4 . The difference is $3 + 4 = 7$. Contextual problems, such as finding the difference between temperatures or distances above and below ground, are very common, so this step is key for working with negative numbers.
Block 5 Converting Units	
Step 1 Kilograms and kilometres	Children first encountered kilograms in Year 3 and kilometres in Year 4. This small step revisits both of these units of measure and their relationships to grams and metres, respectively. Begin by discussing what units of measure are and how different units of measure are used for different purposes. Remind children of what kilograms and kilometres are, discussing examples of when each would be used. Then explain that the prefix “kilo-” always means one thousand, so 1,000 grams is equivalent to 1 kilogram and 1,000 metres is equivalent to 1 kilometre. Bar models and double number lines are useful representations for showing the conversions. Make links to multiplying and dividing integers and decimals by 1,000, covered earlier in the year. Children should also be confident with conversions of simple fractions such as $1/2 \text{ kg} = 500 \text{ g}$ and $3/4 \text{ km} = 750 \text{ m}$.
Step 2 Millimetres and millilitres	Children first encountered millimetres and millilitres as units of measure in Year 3. In this small step, they convert between millimetres and metres and between millilitres and litres for the first time. As in the previous step, begin by reminding children what these units of measure are and what they are likely to be used for. Then discuss the prefix “milli-”, explaining that it means one thousandth. Model conversions by multiplying amounts given in litres and metres by 1,000 and dividing amounts given in millimetres and millilitres by 1,000. The use of bar models and double number lines will help children’s understanding of these conversions. Children then move on to converting amounts given in litres and metres, including decimals and fractions. Finally, they use this understanding to solve problems that require conversions between these units of measure.
Step 3 Convert units of length	In this small step, children build on their learning in the previous two steps to convert the units of metric lengths – millimetres, centimetres and metres. Recap what types of things would be measured by each unit of measure, and when each one would be inappropriate, for example measuring the playground in millimetres or measuring a pencil sharpener in metres. Measuring and drawing lines of specific lengths in centimetres and millimetres help with children’s understanding of these measures. Model how to convert between these units. Begin by discussing the difference between milli- and centi-

	meaning that they multiply a length given in metres by 100 to convert it to centimetres, and by 1,000 to convert it to millimetres. Then use division to convert the other way. When children are confident with integer values, they can move on to converting fractional and decimal lengths in metres.
Step 4 Convert between metric and imperial units	In this small step, children are introduced to imperial units of measure and learn to convert between metric and imperial units. Begin by having a conversation about different units of measure, asking children to name as many as they can. Sort children's suggestions into metric and imperial units. Explain that the metric and imperial systems are different ways of measuring the same type of thing and it can depend on where you are as to which you use, for example road signs in England are in miles, but in France they are in kilometres. Model exchanging between the units covered in this step: inches and centimetres, kilograms and pounds, and pints and millilitres. It is important to explain the term "approximately" in this context and that the conversions given are not exact. Explain the meaning of "≈" as "approximately equal to". When children are confident converting between units, they can solve problems that include both metric and imperial measures.
Step 5 Convert units of time	Children have encountered units of time and converted between them in previous years. In this small step, they revisit and extend this learning and solve problems involving units of time. Ask children to name as many different units for measuring time as they can. Encourage them to think of longer units such as days, weeks, months and years as well as smaller units such as seconds, minutes and hours. Model the different conversions, many of which, such as days in a week and minutes in an hour, will be familiar from previous learning and everyday experience, but others, such as days in a year or days in different months, may need recapping. Double number lines are a useful representation to support many of the conversions. Once children are confident converting between different units of time, they can solve problems that involve different units.
Step 6 Calculate timetables	Earlier in the year, in the statistics block, children read and interpreted timetables. In this small step, this learning is revisited and extended to include using timetables to solve problems that involve calculations with time. Begin by recapping what timetables are, their purpose and how they are used. Show different timetables and explain how they show what is happening when. Model how to calculate using a timetable, for example lengths of time between events, how long a television programme is, times between stops on a train/bus journey. These can be challenging, especially when the times cross an hour; a number line can be used to support these calculations. Children answer questions across a range of different timetables, then think of their own questions that could be answered with the information given in a timetable. Finally, children create their own accurate timetable with information provided.
Block 6 Volume	
Step 1 Cubic centimetres	In Year 3, children compared volumes of liquids using words such as "empty", "full", "more" and "less". In this small step, they learn that volume refers to the amount of three-dimensional space an object takes up, and they measure volume using cubes. Children make simple shapes with interlocking cubes and describe the volume of each shape in terms of the number of cubes. They then look at pictorial representations and work out how many cubes there are in each shape, including counting the cubes that cannot be seen in the picture. They then find the volume of a variety of shapes, using both concrete and pictorial representations, using the fact that each cube has a volume of one cubic centimetre (written 1 cm ³). Finally, they make and measure the volumes of cuboids. Children recognise that some of the cubes in a pictorial representation cannot be seen, but that the total volume can be found by counting the number of cubes in each layer. This leads to the formula to work out the volume of a cuboid, which is covered in Year 6
Step 2 Compare volume	This small step builds on the previous step by comparing the volumes of different shapes. In Year 3, children compared the volume of liquid in different containers using simple vocabulary. In this small step, they find the volume of different shapes by counting cubes, then decide which shape has the greater volume. Begin by looking at 3-D shapes made from interlocking cubes, asking children to say which contains more cubes and so has the greater volume. Children can then move on to pictorial representations, working out the number of cubes needed to make each shape before deciding which has the greater volume. Finally, children compare cuboids. They may find it easier to make the cuboids themselves in order to work out the volume, or they may count the number of cubes in each layer, then multiply this by the height of the shape.
Step 3 Estimate volume	In this small step, children estimate the volumes of different objects, by using cubes with a volume of 1 cm ³ and building a shape similar to the 3-D object. Give children cubes and ask them to estimate the volumes of objects found in the classroom. For example, they could estimate the volume of a

	<p>small book by making a similar-sized cuboid with interlocking cubes. For each object, discuss whether the actual volume is greater or less than the estimate. For example, an apple may have a smaller volume than that of a similar-sized cuboid. Children then consider the volumes of much larger objects such as rooms. They discuss why cubic centimetres would be inappropriate for larger volumes and think about the need for different units such as cubic metres.</p>
<p>Step 4 Estimate capacity</p>	<p>In the final small step of this block, children move on to looking at the capacity of different objects. Children should be aware of the difference between capacity and volume from earlier learning, knowing that the capacity of, for example, a jug is how much liquid the jug can hold and that volume refers to how much liquid is actually in the jug. They should also know that the term “capacity” is most commonly used when looking at amounts of liquid, and they will have met the measures litres and millilitres as far back as Year 2. They may need reminding that 1 litre is equal to 1,000 millilitres. Spend some time showing children containers of different sizes, discussing the capacity of each, then matching capacities to containers. Looking at containers that children may be more familiar with, such as a 330 millilitre can and a 2 litre bottle, will help them with estimating the capacity of unknown containers. They can then estimate the capacity of a container where a known amount of something is already inside it.</p>