



Whole School Maths Curriculum Overview: Year 4

#TheSmawthorneExperience



Year 4	Summer Term					
Topic	Decimals B	Money	Time	Shape	Statistics	Position and direction
The Big Ideas	<p>Fractions arise from solving problems, where the answer lies between two whole numbers. Fractions express a relationship between a whole and equal parts of a whole. Children should recognise this and speak in full sentences when answering a question involving fractions. For example, in response to the question What fraction of the chocolate bar is shaded? the pupil might say Two sevenths of the whole chocolate bar is shaded. Equivalency in relation to fractions is important. Fractions that look very different in</p>	<p>The smaller the unit, the greater the number of units needed to measure (that is, there is an inverse relationship between size of unit and measure).</p>		<p>During this year, pupils increase the range of 2-D and 3-D shapes that they are familiar with. They know the correct names for these shapes, but, more importantly, they are able to say why certain shapes are what they are by referring to their properties, including lengths of sides, size of angles and number of lines of symmetry. The naming of shapes sometimes focuses on angle properties (e.g. a rectangle is right-angled), and sometimes on properties of sides (e.g. an equilateral triangle is an equal sided triangle). Shapes can belong to more than one classification. For example, a square is a rectangle, a parallelogram, a rhombus and a quadrilateral.</p>	<p>In mathematics the focus is on numerical data. These can be discrete or continuous. Discrete data are counted and have fixed values, for example the number of children who chose red as their favourite colour (this has to be a whole number and cannot be anything in between). Continuous data are measured, for example at what time did each child finish the race? (Theoretically this could be any time: 67.3 seconds, 67.33 seconds or 67.333 seconds, depending on the degree of accuracy that is applied.) Continuous data are best represented with a line graph where every point on the line has a potential value.</p>	<p>During this year, pupils increase the range of 2-D and 3-D shapes that they are familiar with. They know the correct names for these shapes, but, more importantly, they are able to say why certain shapes are what they are by referring to their properties, including lengths of sides, size of angles and number of lines of symmetry. The naming of shapes sometimes focuses on angle properties (e.g. a rectangle is right-angled), and sometimes on properties of sides (e.g. an equilateral triangle is an equal sided triangle). Shapes can belong to more than one classification. For example, a square is a rectangle, a parallelogram, a rhombus and a quadrilateral.</p>

	<p>their symbolic notation can mean the same thing.</p>					
<p>Key Knowledge and Skills</p>	<ul style="list-style-type: none"> • Step 1 Make a whole with tenths • Step 2 Make a whole with hundredths • Step 3 Partition decimals • Step 4 Flexibly partition decimals • Step 5 Compare decimals • Step 6 Order decimals • Step 7 Round to the nearest whole number • Step 8 Halves and quarters as decimals 	<ul style="list-style-type: none"> • Step 1 Write money using decimals • Step 2 Convert between pounds and pence • Step 3 Compare amounts of money • Step 4 Estimate with money • Step 5 Calculate with money • Step 6 Solve problems with money 	<ul style="list-style-type: none"> • Step 1 Years, months, weeks and days • Step 2 Hours, minutes and seconds • Step 3 Convert between analogue and digital times • Step 4 Convert to the 24 hour clock • Step 5 Convert from the 24 hour clock 	<ul style="list-style-type: none"> • Step 1 Understand angles as turns • Step 2 Identify angles • Step 3 Compare and order angles • Step 4 Triangles • Step 5 Quadrilaterals • Step 6 Polygons • Step 7 Lines of symmetry • Step 8 Complete a symmetric figure 	<ul style="list-style-type: none"> • Step 1 Interpret charts • Step 2 Comparison, sum and difference • Step 3 Interpret line graphs • Step 4 Draw line graphs 	<ul style="list-style-type: none"> • Step 1 Describe position using coordinates • Step 2 Plot coordinates • Step 3 Draw 2-D shapes on a grid • Step 4 Translate on a grid • Step 5 Describe translation on a grid

Stem Sentences

"The tenths digit is in the _____ place." (e.g., "The tenths digit is in the first place after the decimal point.")
 "In the number 0.7, the digit 7 represents _____ tenths." (e.g., "In the number 0.7, the digit 7 represents seven tenths.")
 "0.1 is equal to one _____." (e.g., "0.1 is equal to one tenth.")
 "0.01 is equal to one _____." (e.g., "0.01 is equal to one hundredth.")
 Comparing Decimals:
 "0.4 is _____ than 0.2." (e.g., "0.4 is greater than 0.2")
 "0.5 is _____ than 0.50." (e.g., "0.5 is equal to 0.50")
 "Which is larger, 0.3 or 0.35? I know this because _____." (e.g., "Which is larger, 0.3 or 0.35? I know this because 0.35 has 5 hundredths, and

Basic Counting and Conversion:
 "One pound is equal to 100 pence."
 "There are 100 one pence coins in £1."
 "I can count £1 coins in 1s."
 "I can count £2 coins in 2s."
 "I can count £5 notes in 5s."
 "I can count £10 notes in 10s."
 "I can count £20 notes in 20s."
 Calculating Totals:
 "(Number) + (Number) = 100 so (number)p + (number)p = £1" (e.g., 45 + 55 = 100 so 45p + 55p = £1)
 "(Number/coins) = (total)" (e.g., Three 10p coins = 30p)
 "(Number/coins or notes) + (number/coins or notes) = (total pounds) (total pence)" (e.g., Two £5 notes + 2p = £5 and 2p)

- Days of the week:
- "Today is [day], yesterday was [day]."
- "Tomorrow is [day], today is [day]."
- "Yesterday was [day], today is [day]."
- Months of the year:
- "My birthday is in [month]."
- Time:
- "The time is [number] o'clock."
- "The time is half past [number]."
- "There are [number] hours in a day."
- Relationship s between time intervals:
- "The [activity] starts at [time] and finishes at [time]."
- "The [activity] takes

- 2D Shapes:
- "A square has four equal sides and four right angles."
- "A rectangle has opposite sides that are equal in length."
- "A triangle has three sides and three angles."
- "A circle has one curved side and no corners."
- "A shape with two long sides and two short sides is a rectangle."
- "A shape with four equal sides and no right angles is a rhombus."
- "This shape has four sides and two pairs of parallel sides, it is a parallelogram."
- "A regular hexagon has six equal sides and six equal angles."
- "This shape is symmetrical, and the line of symmetry is horizontal/vertical/diagonal."
- 3D Shapes:
- "A cube has six square faces, 12 edges, and 8 vertices."
- "A sphere has one curved surface."
- "A cylinder has two circular faces and one curved surface."

- Bar Charts:
- "The most popular item is _____."
- "The least popular item is _____."
- "There is a difference of _____ between _____ and _____."
- "The total number of people surveyed is _____."
- "The bar for _____ reaches _____."
- "_____ is twice as popular as _____."
- Pictograms:
- "Each symbol represents _____."
- "_____ has the most symbols, which represents _____."
- "_____ has the fewest symbols,

- Describing Position:
- "The object is located at coordinates (,)."
- "The shape is positioned to the (left/right) of the (object)."
- "The point is (above/below) the line."
- "The shape is in the (top/bottom) (left/right) corner."
- Describing Movement (Translation):
- "The shape has been translated (number) units to the (left/right)."
- "The shape has been translated (number) units up/down."
- "The shape has been moved (number) squares in the direction of the arrow."
- "The new coordinates of the point are (,)."
- Describing Turns (Rotation):
- "The shape has been rotated by a (quarter/half/three-quarter) turn."
- "The shape has been rotated clockwise/anticlockwise ."
- "The shape has been turned around a central point."

	0.3 has no hundredths.")		[number] [time unit]."	<ul style="list-style-type: none"> • "A cone has one circular face and one curved surface." • "This 3D shape has flat faces and curved surfaces, it is a prism." • 	<p>which represents _____."</p> <ul style="list-style-type: none"> • "There are _____ more _____ than _____." • <i>General Statistics:</i> • "The range of the data is _____." • "The mode of the data is _____." • "The median of the data is _____." • 	
National Curriculum Statements	Pupils should be taught to: <ul style="list-style-type: none"> • recognise and write decimal equivalents of any number of tenths or hundredth • recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ 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 	estimate, compare and calculate different measures, including money in pounds and pence	<ul style="list-style-type: none"> • Convert between different units of measure [for example, kilometre to metre; hour to minute] 	<ul style="list-style-type: none"> • compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes • identify acute and obtuse angles and compare and order angles up to two right angles by size • identify lines of symmetry in 2-D shapes presented in different orientations • complete a simple symmetric figure with respect to a specific line of symmetry. 	<ul style="list-style-type: none"> • interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. • solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs 	<ul style="list-style-type: none"> • 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

	<p>round decimals with one decimal place to the nearest whole number • compare numbers with the same number of decimal places up to two decimal places • solve simple measure and money problems involving fractions and decimals to two decimal places</p>					
<p>Misconception</p>	<ul style="list-style-type: none"> • When finding 1 whole, children may confuse tenths and hundredths by incorrectly using a zero as a placeholder, for example $0.06 + 0.04 = 1$ • If number bonds to 100 are not secure, children may make bridging errors such as $74 \text{ hundredths} + 36 \text{ hundredths} = 1 \text{ whole}$. • When finding a whole, children may confuse tenths and hundredths, for example $0.09 + 0.01 = 1$. • Children may not realise that it is possible to make 1 whole by adding a fraction and a 	<ul style="list-style-type: none"> • Children may omit zeros, for example writing both £2 and 50p and £2 and 5p as £2.5 • Unfamiliarity with the use of the pound and pence notation may lead to incorrect notation, such as £4.25p or 4.25p • Children may make errors with placeholders, for example thinking £4.20 is equal to 42 pence. • Children may make errors with place value, for example writing 425p as £42.5 or £0.425 • Children may use the pound and pence notation incorrectly, for 	<ul style="list-style-type: none"> • Children may think that there are always exactly 4 weeks in a month. • Children may need to revisit the number of days in each month regularly before these facts are secure. • When converting units of time, children may rely on additive reasoning, rather than multiplicative reasoning. • When converting units of time, children may rely on additive reasoning, rather than multiplicative reasoning. • Children are familiar with the base 10 number system, so they may assume that there are 100 seconds in a 	<ul style="list-style-type: none"> • Children may confuse clockwise and anticlockwise. • Children may need reminding about the meaning of half, quarter and three-quarters. • Children may relate angles to the distance between two points on a line rather than the measure of turn between the lines. • Children may initially think that there is only one acute and one obtuse angle (usually 18 and 36 of a turn) in the same way that there is only one right angle. • Children may think that any angle greater than a right angle is obtuse. • Children may confuse the terms "acute" and "obtuse". • Children may assume that a longer pair of lines always creates a greater angle. 	<ul style="list-style-type: none"> • Children may assume that the scale on a bar chart always goes up in 1s. • Children may choose symbols that are difficult to work with, either in terms of complexity or their appropriateness for splitting into equal parts. • Children may assume that the scale on a bar chart always goes up in 1s. • Children may see the word "more" and assume that they need to add, even when the question is "How many more ...?" • Children may assume that the pictures in a pictogram represent 1, instead of looking at the key. 	<ul style="list-style-type: none"> • Children may confuse the x- and y-values of the coordinates and read them in the wrong order. • Children may need support to read coordinates of points on the axes. • Children may confuse the x- and y-values of the coordinates and plot them in the wrong order. • Children may confuse the x- and y-values of the coordinates and read or plot them in the wrong order. • Children may not recognise shapes drawn on grids in non-standard orientations and/or may think that a shape is impossible to draw, for example a square if the sides are not horizontal and vertical. • When translating a shape or point, children may count the point it is on as "1" and not translate enough spaces. • When translating shapes, children may translate just one vertex and then draw the shape, leading to incorrect corresponding vertices.

	<p>decimal, for example $34 \div 100 = 0.34$ or $100 \div 100 = 1$</p>	<p>example £425p, £4.25p or 4.25p.</p>	<p>minute or 100 minutes in an hour.</p>			
<p>Progression</p>	<p>Year 3: Topic starts in Year 4 Year 5: • read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$] • recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents • round decimals with two decimal places to the nearest whole number and to one decimal place • read, write, order and compare numbers with up to three decimal places • solve problems involving number up to three decimal places</p>	<p>Year 3: • add and subtract amounts of money to give change, using both £ and p in practical contexts Year 5: • use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.</p>	<p>Year 3: • tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks • 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 • know the number of seconds in a minute and the number of days in each month, year and leap year compare durations of events [for example to calculate the time taken by particular events or tasks].</p>	<p>Year 3: • Recognise right angles as a property of shape or a description of a turn, and identify right angles in 2D shapes presented in different orientations. • Draw polygons by joining marked points, and identify parallel and perpendicular sides Year 5: • 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. • identify 3-D shapes, including cubes and other cuboids, from 2-D representations • know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles • draw given angles, and measure them in degrees • identify: angles at a point and one whole turn (total 360°) angles at a point on a straight line and 1/2 a turn (total 180°) other multiples of 90° • use the properties of rectangles to deduce related facts and find missing lengths and angles • distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</p>	<p>Year 3: • interpret and present data using bar charts, pictograms and tables • 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 Year 5: • interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. • solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs</p>	<p>Year 3: • Recognise right angles as a property of shape or a description of a turn, and identify right angles in 2D shapes presented in different orientations. • Draw polygons by joining marked points, and identify parallel and perpendicular sides Year 5: • 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. • identify 3-D shapes, including cubes and other cuboids, from 2-D representations • know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles • draw given angles, and measure them in degrees • identify: angles at a point and one whole turn (total 360°) angles at a point on a straight line and 1/2 a turn (total 180°) other multiples of 90° • use the properties of rectangles to deduce related facts and find missing lengths</p>

			<p>Year 5: • solve problems involving converting between units of time.</p>			<p>and angles • distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</p>
<p>Key Vocabulary</p>	<p>'regroup', 'partition', 'equivalent' and 'fractions', as well as 'tenths' and 'hundredths' columns integer, one more, one less, greater than (>), less than (<), regroup, partition, equivalent, fraction, tenths column and hundredths column. decimal point, decimal place, tenth (0.1), hundredth (0.01), digit, whole number, ascending, fraction, equivalent, convert, number bond, rounding up, rounding down, place value</p>	<p>pounds (£), pence (p), notes, coins, change, cheaper, more expensive, rounding, nearest, estimate, over estimate, under estimate, greater than (>), less than (<.)</p>	<p>seconds, minute, hours, days, weeks, months, years, convert, equal to (=), compare, 12-hour, digital, units of time, analogue, 24-hour, am, pm</p>	<p>equilateral, scalene and isosceles angle translation coordinate quadrant right angle</p>	<p>line graph', 'discrete data' and 'continuous data' table, bar chart, pictogram, key, compare, altogether, more than, less than, least, most, greatest, smallest, line graph, discrete data, continuous data</p>	<p>equilateral, scalene and isosceles angle translation coordinate quadrant right angle</p>

