St Anne’s C of E Primary School Curriculum Plan

Subject: Maths | **Year: 6** | **Term: Spring**

Unit: Ratio

Vocabulary	Knowledge	Understanding	Skills
	Children will know (that)	Children will understand (that)	Children will be able to
Ratio- when you compare one group to another eg <u>for every</u> 3 blue counters there are 5 red counters- this is 3:5 **Proportion** – like a fraction- eg in every 8 counters, 3 are blue- this is a proportion of 3/8 **Part** **Whole** **Scale factor**- when you enlarge each side of a shape by the same amount eg if one side was 2cm and has a scale factor of 3 it would be 6cm **Enlargement**	• Pupils know that a multiplicative relationship between two amounts. • the ratio symbol as a colon. • The wording, “For every , there are ” can be written as : • which number refers to which value. • simplifying ratios is similar to simplifying fractions and that both involve dividing by common factors. • one shape is an enlargement of another if all the matching sides are in the same ratio. • similar shapes are shapes where corresponding sides are in the same proportion and the corresponding angles are equal, so if one shape is an	• the relationship between two numbers can be expressed additively or multiplicatively. For example, the relationship between 3 and 9 can be expressed as an addition (3 + 6 = 9) or a multiplication (3 × 3 = 9). • the inverse relationships related to each of these, for example 9 − 6 = 3 and 9 ÷ 3 = 3. • multiplicative relationships by using the language such as “3 times the size” and “a third of the size”. • how one value is related to another by making simple comparisons, such as: “For every 2 blue counters, there are 3 red counters.”	• complete sequences of numbers, deciding whether each relationship is additive or multiplicative. • relate ratio to their understanding of simplifying fractions. • explore ratio when given a fraction as a starting point. For example, they are told that 1/ 4 of a group of objects is blue, and they need to find the ratio of blue to not blue. • explore different ways of calculating scaled lengths using multiplicative relationships between numbers. For example, if 3 cm represents 9 cm, then to find what 6 cm represents they can either multiply 9 cm by 2 or

	enlargement of the other, the two shapes are similar. • when they multiply or divide from one amount to another, they do the same for the other value to keep the ratios equivalent.	• the order in which the notation is used is important. For example, for every 2 red cubes there are 3 blue cubes, so red to blue is 2 : 3. For every 3 blue cubes, there are 2 red cubes, so blue to red is 3 : 2 • the same ratio can be written in different forms, for example 4 : 6 can be written as 2 : 3. • the differences and similarities between ratios and fractions. a ratio compares one item with another, whereas fractions compare each part with the whole. • diagrams are accurately scaled or if the proportion of the dimensions has been changed. • language of "Each square represents …" to explain the relationship between the original image and its scale drawing.	multiply 6 cm by 3 to find the result, 18 cm. • use familiar language such as "3 times as big" before being introduced to the language of scale factors, for example "enlarged by a scale factor of 3" • draw the result of an enlargement by a given scale factor. • identify the scale factor of an enlargement when presented with both images. • Use the inverse operations to find the dimensions of the original shape given the size of the enlargement. • represent problems using bar models.

St Anne's C of E Primary School Curriculum Plan

Subject: Maths | Year: 6 | Term: Spring

Unit: Algebra

Vocabulary	Knowledge	Understanding	Skills
	Children will know (that)	Children will understand (that)	Children will be able to
Term to term rule – a rule that means you can work out any number in a sequence **Variable** –a place holder for an unknown quantity **Equation**- both sides of the equals sign have the same value **Formula** –a statement linking one or more variables **One-step equation** **Two-step equation**	• forming algebraic expressions uses letters to represent numbers. • the convention that, for example, "3t" means 3 multiplied by t; as multiplication can represent repeated addition, this is also a simpler way of writing t + t + t.	• the meanings of the terms "input", "output", "function" and "rule". • Why it is important that they follow the order of the functions; for example, the output of × 5 then + 3 will be different from + 3 then × 5. • phrases such as "2 more than a number" can be written more simply as, for example, "x + 2" or "y + 2". • that the same expression can have different values depending	• find the input from a given output, using inverse operations. • find numbers where the input is given and they need to find the output, using a mix of any of the four operations. • find a rule. • solve problems where the input and output are given, but one of the two functions is missing. find values of expressions by substituting numbers in place of the letters.

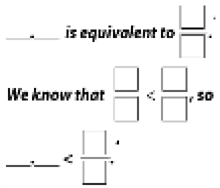
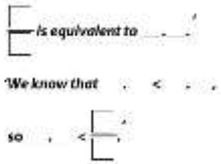
Substitution – swapping an algebraic letter for a number		on what number is substituted into it. • the difference between a formula and an expression, noticing that an expression does not have the equals sign, but a formula does. • an expression, such as 2x + 6, changes value depending on the value of x, whereas in an equation, such as 2x + 6 = 14, x has a specific value. • using inverse operations helps to solve equations. • equations with two unknown values can have several possible solutions.	• substitute numbers into abstract algebraic expressions such as 3a + 1. • use substitution to work out pairs of possible values. For example, if x + y = 9, they find the values of y for different values of x. • work systematically to find all the possible integer values.

St Anne's C of E Primary School Curriculum Plan

Subject: Maths | Year: 6 | Term: Spring

Unit: Decimals

Vocabulary	Knowledge	Understanding	Skills
	Children will know (that)	Children will understand (that)	Children will be able to
tenths **hundredths** **thousandths** **decimal** **decimal fraction** **decimal point** **decimal place** **decimal equivalent**	• what the decimal point means. • how many tenths, hundredths and thousandths are in a number. • when multiplying and dividing decimal numbers by multiples of 10, the decimal point does not move. • numbers such as 2.4 and 2.40 are the same. • common fractions such as thirds, quarters, fifths and eighths as decimals. • the line in the fraction is the same as divided by e.g. ¾ is the same as 3 ÷ 4. • **Stem Sentences** 1 is 10 times the size of one-tenth.	• the relationship between ones, tenths, hundredths and thousandths, e.g. 3 tenths is the same as 30 hundredths. • the importance of zero as a place holder when calculating with decimal numbers. • how finding an equivalent fraction where the denominator is 10, 100 or 1000 makes it easier to convert from a fraction to a decimal.	• read and write decimal numbers up to thousandths. • multiply numbers with up to 3 decimal places by 10, 100 and 1000. • calculate with decimals and use these in context, making links to money and measure. • convert fractions to tenths, hundredths and thousandths. • use short division method to convert fractions to decimals.

	One-tenth is 10 times the size of one-hundredth. 1 is 100 times the size of one-hundredth. 10 tenths is equal to 1 one. 10 hundredths is equal to 1 tenth. 100 hundredths is equal to 1 one. 18 hundredths is equal to 10 hundredths and 8 more hundredths. 10 hundredths is equal to 1 tenth. So 18 hundredths is equal to 1 tenth and 8 more hundredths, which is 0.18. Three hundredths is zero-point-zero-three.  		

St Anne’s C of E Primary School Curriculum Plan

Subject: Maths

Year: 6

Term: Autumn and Spring

Unit: Fractions

Vocabulary	Knowledge	Understanding	Skills
	Children will know (that)	Children will understand (that)	Children will be able to
fraction **unit fraction –** a fraction with a numerator of 1 **Non-unit fraction –** a fraction where the numerator is greater than or equal to the denominator (equal to or greater than one whole) **Proper fraction –** a fraction where the numerator is smaller than the denominator (less than one whole) **improper fraction – a fraction where the numerator is larder than the denominator** **equivalent fraction –** equal in value **Simplify –** to make a fraction as simple as possible, e.g. 2/10	• when calculating fractions, they need to simplify their answers. • when a numerator or denominator are prime numbers, a fraction cannot be simplified any further. • when comparing mixed numbers, they start by comparing the whole numbers. • when the numerators are the same, the larger the denominator, the smaller the fraction. • they have to make the denominators the same and change the numerators accordingly before addition or subtraction can be performed.	• how to use the highest common factor to simplify fractions. • how to use their number sense to visualise the size of fractions before converting when comparing and ordering fractions. • how to make the denominators the same in order to compare and order fractions. • how to find the lowest common multiple to find common denominators. • the link between dividing fractions by integers to multiplying by unit fractions.	• represent fractions using different pictorial representations. • use a diagram to compare fractions. • use 1/2 to compare fractions. • arrange fractions from smallest to largest and vice versa. • Pupils are able to convert a mixed number into an improper fraction and vice versa. • multiply simple pairs of fractions using diagrams. • use concrete materials and pictorial representations to divide a fraction by a whole number. • show division of fractions using pictures. • check their division by using multiplication of fractions.

can be simplified to 1/5 by dividing both top and bottom by 2 (and that is as far as we can go) **Simplest form -** A fraction is in simplest form when the top and bottom cannot be any smaller, while still being whole numbers. **mixed number –** a whole number and a fraction combined into one number **numerator,** **common numerator –** when two or more fractions have the same numerator **denominator** **common denominator –** when two or more fractions have the same denominator **equal part** **equal grouping** **equal sharing** **parts of a whole** **half, two halves** **one of two equal parts** **quarter, two quarters, three quarters** **one of four equal parts** **one third, two thirds** **one of three equal parts** **sixths, sevenths, eighths, tenths, hundredths, thousandths…**	• multiplying a number by a half is the same as dividing by 2. • of ___ is the same as — x ___. **Stem Sentences** A fraction can be simplified when the numerator and denominator have a common factor other than 1. To convert a fraction to its simplest form, divide both the numerator and the denominator by their highest common factor. We need to compare the denominators of $\frac{1}{5}$ and $\frac{4}{15}$. 15 is a multiple of 5. We can use 15 as the common denominator. We need to express both fractions in fifteenths. If one denominator is not a multiple of the other, we can multiply the two denominators to find a common denominator. We need to compare the denominators of $\frac{1}{3}$ and $\frac{3}{8}$. 8 is not a multiple of 3. 24 is a multiple of both 3 and 8. We can use 24 as the common denominator. We need to express both fractions in twenty-fourths.		• use equivalent fractions to divide fractions where the numerator is not a multiple of the interger they are dividing by. • invert the whole number into a fraction to use multiplication to solve.

	If the denominators are the same, then the larger the numerator, the larger the fraction. If the numerators are the same, then the larger the denominator, the smaller the fraction.		

St Anne’s C of E Primary School Curriculum Plan

Subject: Maths | Year: 6 | Term: Spring

Unit: Percentages

Vocabulary	Knowledge	Understanding	Skills
	Children will know (that)	Children will understand (that)	Children will be able to
Proportion **in every, for every** **per cent,** % **-** out of one hundred. Derived from the Latin per centum, meaning "hundred" or "by the hundred". **percentage**	• per cent means “out of a hundred”. • the symbol % • to find 10% of a number you must divide by 10. • converting a decimal to a fraction is helpful when converting to percentages. • to convert fractions, decimals and percentages to the same form so that they can be more easily ordered and compared. • **Stem Sentences** 50% = ½ so we divide into 2 equal parts. 25% = ¼ so we divide into 4 equal parts.	• percentage is a measure of proportion. • ‘per cent’ relates to ‘number of parts per hundred’. • the connection of percentages, fractions and decimals. • the difference between tenths and hundredths and their equivalent percentages, e.g. understanding that 0.1 is 10% not 1%. • there may be more than one way to solve a problem involving percentages and some ways are more efficient than others. • how to find the whole when they are given a percentage, e.g. If 10% of a number is 7, what is the number?	• draw bar models to represent a quantity as 100% • determine multiples of 10% of a number or quantity using the bar model. • find percentages of amounts, e.g. 35% by finding multiples of 10% and other known percentages. • convert fractions to equivalent fractions where the denominator is 100 in order to find the percentage equivalent. $\frac{12}{50} = \frac{\square}{100} = \square \%$ • convert between fractions, decimals and percentages to

	20% = 1/5 so we divide into 5 equal parts. 10% is equivalent to 1/10. To find 10% of an amount, divide by 10. 1% is equivalent to 1/100. To find 1% of an amount, divide by 100.		enable them to order and compare them. • use a bar model to show an increase and decrease in amounts.

St Anne’s C of E Primary School Curriculum Plan

Subject: Maths | **Year: 6** | **Term: Spring**

Unit: Statistics

Vocabulary	Knowledge	Understanding	Skills
	Children will know (that)	Children will understand (that)	Children will be able to
Chart, **bar chart,** **frequency table,** **Carroll diagram,** **Venn diagram** **Axis, axes** **Diagram** **Horizontal rows** **Vertical columns** **Continuous data** **Line graph**	• to use a ruler to draw vertical and horizontal lines on graphs when reading points accurately. • the formula: Mean = Total ÷ number of items • that the whole of a pie chart totals 100%. • that the angles around a point total 360 degrees and this represents 100% of the data within a pie chart.	• the difference in the type of data shown by a bar chart and a line graph. • that line graphs can show more than one set of data. • when finding the mean is useful in real life. • how to calculate fractions of amounts to interpret simple pie charts. • what the whole of a pie chart represents. • how to use their knowledge of fractions to read pie charts more efficiently. • how their knowledge of angles will help to interpret pie charts, e.g. If 180 degrees represents 15 people, 30 people took part in the survey because 180 degrees is equal to half the circle.	• make links to using number lines when reading hoizontal and vertical axes. • draw axes with different scales depending on the data that is being represented. • accurately plot points on their graphs. • solve comparison,sum and difference problems, using line graphs. • read and extract information from graphs showing more than one set of data. • use their understanding of calculating percentges of amounts to interpret pie charts.

Mean **Pie Chart**			