St Anne's C of E Primary School Curriculum Plan

Subject: Maths | Year: 6 | Term: Autumn

Unit: Number and place value

Vocabulary	Knowledge	Understanding	Skills
	Children will know (that)	Children will understand (that)	Children will be able to
≥ greater than or equal to **≤ less than or equal to** **Roman numerals** **integer, positive, negative above/below zero, negative numbers** **formula** - a mathematical rule written using symbols, usually as an equation describing a certain relationship between quantities. **Divisibility** - can be divided evenly without leaving a remainder. **factorise** - the reverse of expanding brackets. **prime factor** - a prime number that divides exactly into another given number. **ascending/descending order** **digit total** – the sum of all the digits in a number, e.g. the digit total of 364 is 3+6+4 = 13	• the value of each digit in a number up to 10 000 000 • why it is helpful to round numbers, e.g. when estimating calculations or when working with very large numbers such as populations. • where to put commas or separators when writing numbers greater than 10 000 • the inequality symbols < and > **Stem Sentences** One million is one thousand thousands. The _____ represents _____. The value of the _____ is _____.	• the importance of the placeholder in numbers • which place value column to look at when rounding numbers • which two numbers a given number lies between when rounding. • The convention of rounding up if numbers are exactly halfway • where negative numbers are used in real life contexts	• use negative numbers in context and calculate intervals across zero • read, write, compare and order numbers up to 10 000 000 • round any number to a required degree of accuracy

	a is between _____ and _____. The previous multiple of one million is _____. The next multiple of one million is _____. ***a*** is nearest to _____. ***a*** is _____ when rounded to the nearest million.		

St Anne's C of E Primary School Curriculum Plan

Subject: Maths | Year: 6 | Term: Autumn

Unit: Addition and Subtraction (Four Operations)

Vocabulary	Knowledge	Understanding	Skills
	Children will know (that)	Children will understand (that)	Children will be able to
Addition **Add, more, and, make, sum, total, altogether** **Double** **Near double** **Half, halve** **One more, two more… ten more** **Addends – the numbers added together to make the sum** **Subtraction**	• how to use place value to line up numbers with more than 4 digits accurately • when an exchange is and isn't needed • how to round numbers in order to estimate • the most appropriate number to round to, e.g. the nearest 10, 100 or 1000 • that addition can be done in any order but subtraction cannot **Stem Sentences**	• '0' as a place holder	• use manipulatives and pictorial representations to demonstrate how to add and subtract • add and subtract increasingly larger numbers mentally • use formal written methods to add and subtract numbers greater than 4-digits • use rounding to estimate and check answers • solve addition and subtraction muti-step problems

Take away, minus, fewer, less, difference between **One less, two less… ten less** **Minuend** – a quantity or number from which another is to be subtracted **Subtrahend** - a quantity or number to be subtracted from another. **Equals** **Is equal to, is the same as** **Number bonds** **Number pair** **Number facts** **Part, part, whole** **Partition** **Recombine** **Missing number** **Tens boundary / Hundreds boundary** **Commutative** - involving the condition that a group of quantities connected by operators gives the same result whatever the order of	If one addend is increased by an amount and the other addend is decreased by the same amount, the sum remains the same.		

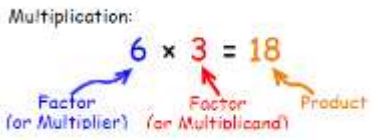
the quantities involved, e.g. $a \times b = b \times a$. **Approximate** - something is almost, but not completely, accurate or exact; roughly			

St Anne's C of E Primary School Curriculum Plan

Subject: Maths | Year: 6 | Term: Autumn

Unit: Multiplication and division (Four Operations)

Vocabulary	Knowledge	Understanding	Skills
	Children will know (that)	Children will understand (that)	Children will be able to
Multiplication **Multiply** **Multiplied by** **Groups of** **Times** **Repeated addition** **Multiple** - The result of multiplying a number by an integer (not by a fraction).	• 'long multiplication' is an algorithm involving multiplication, then addition of partial products. • remainders can be expressed as a whole number, a fraction or a decimal. • how to use a systematic approach to find all the common factors of numbers. • in mixed operation calculations, calculations are not carried out from left to right. • the convention that when there is no operation sign written, this means multiply. • when it is more efficient to carry out a mental strategy	• when multiplying two numbers that are multiples of 10, 100 or 1000, you multiply the number of tens, hundreds or thousands and then adjust the product using place value. e.g. 30 x 40 = 3 x 4 x 10 x 10 = 3 x 4 x 100 = 12 x 100 = 1,200 • the compensation property of multiplication, e.g. 5 x 8 = 10 x 4.	• use short multiplication to multiply numbers by a single-digit number. • use long multiplication to multiply numbers by a two-digit number. • multiply and divide by 10, 100, 1000 using concrete and pictorial representations and then by visualising place value charts. • use the compensation property of multiplication to complete equations such as 0.3 x 320 = 3 x ?, and to help them solve calculations such as 0.3 x 320.

Common multiple - A multiple that is common to two or more numbers. **Factor** - Numbers we can multiply together to get another number. **Common factor** - When we find the factors of two or more numbers, and then find some factors are the same ("common"), then they are the "common factors". **Multiplicand** – The number to be multiplied **Multiplier** – The number by which the multiplicand is multiplied by **Product** – The result of a multiplication  **Division**	rather than a written computaional method. **Stem Sentences** "If I multiply one factor by a number, I must divide the other factor by the same number for the product to stay the same." "If I multiply one factor by a number, and keep the other factor the same, I must multiply the product by the same number." "If one factor is made ten times the size, the product will be en times the size."	• two two-digit numbers can be multiplied by partitioning one of the factors, calculating partial products and then adding these partial products together. This can be extended to multiplying three-digit numbers by two-digit numbers. • how portioning in different ways, other than according to place value, supports division of larger numbers. • how using factor pairs can support dividing, e.g. 780 ÷ 20 = 780 ÷ 10 ÷ 2 • each step in the 'long division' process • how to change a remainder into a fraction or a decimal. • how to interpret the remainder, e.g. 380 ÷ 12 = 31r8 could mean 31 full packs or 32 packs needed, depending on the context. • how to break numbers down to their prime factors. • how the order of operations affects the answer.	• list multiples of the divsor to help them solve disions more easily. • find common factors of numbers. • find whether or not a number up to 100 is prime. • solve problems involving square and cubed numbes. • use known facts from one calculation to determine the answer to another similar calculation, e.g. 5,138 ÷ 14 = 367 use this to to calculate 367 x 15

Dividing **Divide** **Divided by** **Divided into** **Grouping** **Sharing** **Shared equally** **Left over** **Remainder** **Equal groups of** **Dividend** – The amount that you want to divide up. **Divisor** – The number we divide by. **Quotient** - The answer after we divide one number by another. **dividend ÷ divisor = quotient.** **Commutative law** - The Law that says you can swap numbers around			

and still get the same answer when you add or when you multiply. **Distributive law** - multiplying a number by a group of numbers added together is the same as doing each multiplication separately. **Prime number** - A number that is only divisible by itself and 1 to leave a whole number. **Composite number** - A whole number that can be made by multiplying other whole numbers. **Square number** - the number we get after multiplying an integer (not a fraction) by itself. **Cubed number** - The whole number is used three times, just like the sides of a cube. **Prime factor** - A factor that is a prime number.			

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 can be simplified to 1/5 by	• 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.

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: Autumn

Unit: Converting units

Vocabulary	Knowledge	Understanding	Skills
	Children will know (that)	Children will understand (that)	Children will be able to
length **centimetre** **metre** **millimetre** **kilometre** **mile** **foot, feet** **inch, inches** **weight**	• which operation to use when converting a smaller unit of measurement to a larger one and vice versa. • the difference between capacity (the amount an object can contain) and volume (the amount actually in an object). • the unit of measure that would be the most appropriate to measure different items. • 5 miles is approximately equal to 8 km. 1 foot is equal to 12 inches 1 pound is equal to 16 ounces 1 stone is equal to 14 pounds 1 gallon is equal to 8 pints	• the link between multiplying and dividing by 10, 100 and 1,000 when converting between units of length, mass and capacity. • the role of zero as a place holder when performing some calculations, as questions will involve varied numbers of decimal places. • how to work out what each mark is worth on a scale.	• read, write and recognise all metric measures for length, mass and capacity. • convert between metres,centimetres and millimetres; litres and millilitres; kilograms and grams; seconds, minutes and hours etc • use a ruler to measure 2-D shapes. • use decimals to express units of measure when converting. • compare measurements in different units and determine 'greater than', 'less than' and 'equal to'.

mass **tonne** **kilogram** **gram** **pound** **ounce** **capacity** **volume** **litre** **millilitre** **centilitre** **a.m., p.m.** **digital/analogue clock/watch, timer** **12-hour clock time, 24-hour clock time**	1 inch is approximately 2.5 cm • the symbol '≈' as "is approximately equal to". **Stem Sentences** There are 1000 grams in a kilogram so to convert grams to Kilograms we divide by 1000. There are 100 centimetres in a metres so when we convert centimetres to metres, we divide by 100.		• find approximate conversions from miles to km and from km to miles. • perform related conversions, both within imperial measures and between imperial and metric. • determine how many seconds there are in a minute, how many minutes in an hour, how many hours in a day, and so on. • find fractions of time and convert these into decimals using division.