6.2	Fluency Focus	NC Objectives	Remember (Prior knowledge)	Know (New knowledge)	Mathematics Guidance June 2020 Ready-to-progress criteria
1		identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places multiply one-digit numbers with up to two decimal places by whole numbers use written division methods in cases where the answer has up to two decimal places	compare numbers with the same number of decimal places up to two decimal places read, write, order and compare numbers with up to three decimal places 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 multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication	Identify the value of each digit in numbers given to three decimal places multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places multiply one-digit numbers with up to two decimal places by whole numbers use written division methods in cases where the answer has up to two decimal places	6AS/MD-3

2		recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison	recognise and write decimal equivalents to $^{1}/_{4}$; $^{1}/_{2}$; $^{3}/_{4}$ recognise and write decimal equivalents of any number of tenths or hundredths read and write decimal numbers as fractions (e.g. 0.71 = $^{71}/_{100}$) Divide 100 into equal parts	recall and use equivalences between simple fractions and decimals, including in different contexts (and vice versa) (purposefully left out percentages to ensure we follow WRM scheme) Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^{3}/_{8}$) recognise the per cent symbol (%) and understand that per cent relates to “number of parts per hundred”, and write percentages as a fraction with denominator 100 as a decimal fraction recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. Order equivalences between simple fractions, decimals and percentages Calculate percentages of amounts	6AS/MD-3

3		use simple formulae generate and describe linear number sequences express missing number problems algebraically find pairs of numbers that satisfy an equation with two unknowns enumerate possibilities of combinations of two variables.	recognise and use the inverse relationship between addition and subtraction and use this to check calculations and **missing number** problems solve problems, including **missing number** problems, using number facts, place value, and more complex addition and subtraction. solve problems, including **missing number** problems, involving multiplication and division, including integer scaling	Express missing number problems algebraically (forming expressions) Substitute into expressions use simple formulae	**6ASMD4**
4		use simple formulae generate and describe linear number sequences express missing number problems algebraically find pairs of numbers that satisfy an equation with two unknowns enumerate possibilities of combinations of two variables.	express missing number problems algebraically (forming expressions)	Solve equations find pairs of numbers that satisfy number sentences involving two unknowns enumerate all possibilities of combinations of two variables	**6ASMD4**

5		solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places convert between miles and kilometres	convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) read, write and convert time between analogue and digital 12 and 24-hour clocks solve problems involving converting between units of time understand and use equivalences between metric units and common imperial units such as inches, pounds and pints	use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate convert between miles and kilometres	
6		recognise that shapes with the same areas can have different perimeters and vice versa calculate the area of parallelograms and triangles calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units [for example, mm3 and km3].	measure the **perimeter** of simple 2-D shapes measure and calculate the **perimeter** of composite rectilinear shapes in centimetres and metres calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes	recognise that shapes with the same areas can have different **perimeters** and vice versa calculate the area of parallelograms and triangles calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units [e.g. mm^3 and km^3].	

7		• solve problems involving unequal sharing and grouping using knowledge of fractions and multiples	No prior knowledge on NCETM	Use the language of ratio Link ratio to fractions Introduce the ratio symbol and calculate within ratio (basic fluency and then problem solving) (x 3 lessons)	6AS/MD3
8		• solve problems involving similar shapes where the scale factor is known or can be found • solve problems involving the relative sizes of 2 quantities where missing values can be found by using integer multiplication and division facts • calculate and interpret the mean as an average • illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius	No prior knowledge on NCETM solve comparison, sum and difference problems using information presented in a line graph identify 3-D shapes, including cubes and other cuboids, from 2-D representations	Use and calculate with scale factors, then calculating scale factors Solve proportion problems Calculate the mean Identify and calculate the radius and diameter	
9		• interpret and construct pie charts and line graphs and use these to solve problems	complete, read and interpret information in tables, including timetables	Read, interpret and draw line graphs Solve problems with line graphs Read and interpret pie charts, put percentages into a pie chart and pupils must solve problems with the percentages Draw pie charts	

10		• draw 2-D shapes using given dimensions and angles • recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles	identify: * angles at a point and one whole turn (total 360) * angles at a point on a straight line and ½ a turn (total 180) * other multiples of 90	Measure with a protractor Calculate angles on a straight line and at a point Calculate vertically opposite angles	
11		• compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons	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	Calculate angles in a triangle Calculate angles in a quadrilateral Introduce 'hatch marks' for equal lengths, then calculate angles within 'special triangles,' followed by 'special quadrilaterals.' (x 2 – 3 lessons)	
12		• compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons • recognise, describe and build simple 3-D shapes, including making nets	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 draw given angles, and measure them in degrees identify 3-D shapes, including cubes and other cuboids, from 2-D representations	Combine all angles knowledge to problem solve e.g. provide "exterior angle" of a triangle with one "interior angle" and calculate other angles Calculate the sum of interior angles in regular polygons Construct shapes accurately Identify 3d shapes from their nets, and draw nets from 3d shapes	