Whole School Maths Curriculum Overview: Year 3

#TheSmawthorneExperience

Year 3	Spring Term			
Topic	Multiplication and Division B	Length and Perimeter	Fractions A	Mass and Capacity
The Big Ideas	It is important for children not just to be able to chant their multiplication tables but also to understand what the facts in them mean, to be able to use these facts to figure out others and to use in problems. It is also important for children to be able to link facts within the tables (e.g. 5× is half of 10×). They understand what multiplication means, see division as both grouping and sharing, and see division as the inverse of multiplication.	Developing benchmarks to support estimation skills is important as pupils become confident in their use of standard measures. The height of a door frame, for example, is approximately 2 metres, and a bag of sugar weighs approximately 1 kilogram.	Fractions are equal parts of a whole. Equal parts of shapes do not need to be congruent but need to be equal in area. Decimal fractions are linked to other fractions. The number line is a useful representation that helps children to think about fractions as numbers.	Developing benchmarks to support estimation skills is important as pupils become confident in their use of standard measures. The height of a door frame, for example, is approximately 2 metres, and a bag of sugar weighs approximately 1 kilogram.
Key Knowledge and Skills	• Multiples of 10 • Related calculations • Reasoning about multiplication • Multiply a 2-digit number by a 1-digit number - no exchange • Multiply a 2-digit number by a 1-digit number - with exchange • Link multiplication and division • Divide a 2-digit number by a 1-digit number - no exchange • Divide a 2-digit number by a 1-digit number - flexible partitioning • Divide a 2-digit number by a 1-digit number - with remainders • Scaling • How many ways?	• Measure in metres and centimetres • Measure in millimetres • Measure in centimetres and millimetres • Metres, centimetres and millimetres • Equivalent lengths (metres and centimetres) • Equivalent lengths (centimetres and millimetres) • Compare lengths • Add lengths • Subtract lengths • What is perimeter? • Measure perimeter • Calculate perimeter	• Measure in metres and centimetres • Measure in millimetres • Measure in centimetres and millimetres • Metres, centimetres and millimetres • Equivalent lengths (metres and centimetres) • Equivalent lengths (centimetres and millimetres) • Compare lengths • Add lengths • Subtract lengths • What is perimeter? • Measure perimeter • Calculate perimeter	• Use scales • Measure mass in grams • Measure mass in kilograms and grams • Equivalent masses (kilograms and grams) • Compare mass • Add and subtract mass • Measure capacity and volume in millilitres • Measure capacity and volume in litres and millilitres • Equivalent capacities and volumes (litres and millilitres) • Compare capacity and volume • Add and subtract capacity and volume

Stem Sentences	• There are ___ equal groups with _____altogether. • • The groups are equal because … • There are ____ lots of _____ • ____ X _____ = _____ X ________ • The next multiple of 2 is______ 4 • The previous multiple of 2 is _____ • • I know ______ is even because … • • The next multiple of 5/10 is_____ • The previous multiple of 5/10 is _____ • I know is a multiple of 5/10 because … • _____ has been shared equally into ____. • There are ____ groups of ____equal groups. in ____ • This question is sharing/grouping because … • There are _____ groups. in each group. altogether. • • ___ × 3 = ___ × 3 + ___ × 3	• To convert from centimetres to millimetres, multiply by 10. • To convert from millimetres to centimetres, divide by 10. • When multiplying by 10, the digits move one place to the left. • When dividing by 10, the digits move one place to the right. • If my number is not a multiple of 10, I need to partition it. • Centi- as a prefix means hundred. • To convert from metres to centimetres, multiply by 100. • To convert from centimetres to metres, divide by 100. • When multiplying by 100, the digits move two places to the left. When dividing by 100, the digits m • ove two places to the right. • If my number is not a multiple of 100, I need to partition it.	• If _____ is the whole then • _____ is part of the whole. • If _____ is the whole then • _____ is not part of the • whole. • A unit fraction is one equal part of a whole. The denominator is the total number of equal parts that make up a whole. • The numerator shows the number of equal parts being looked at. • If the numerators are the same, the (larger/smaller) the denominator, the (smaller/ larger) the fraction. ◦ If the numerators are the same, the larger the denominator the smaller the fraction. • If the denominators are the same, the (larger/smaller) the numerator, the (larger/ smaller) the fraction. ◦ If the denominators are the same, the larger the numerator the larger the fraction. • To find one half/ quarter/ third of (number), you share it into (denominator) equal groups and look at (numerator) equal groups.	• I estimate this (item) has a mass of (number/ unit of measure). • I estimate this book has a mass of 20g. • The (item) weighs (number)kg and (number)g. • The box weighs 1kg and 500g. • The scale increases in increments of (number/ unit). • The scale increases in increments of 10ml. • The capacity of the container is (number/ unit). • The volume of the liquid is (number/ unit). • The capacity of the container is 1l. The volume of the liquid is 300ml.

			• To find one half of 4, you share it into 2 equal group and look at 1 equal group. • The whole is (total). Half/ quarter/ third of (total) is (answer). • • The whole is 10. One half of 10 is 5.	• The volume/ capacity is (number)l and (number)ml. • • The volume is 2l and 720ml
National Curriculum Statements	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.	Pupils should be taught to: measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) measure the perimeter of simple 2-D shapes	count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 recognise, find and write fractions of a discrete set of objects: unit fractions and nonunit fractions with small denominators recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators recognise and show, using diagrams, equivalent fractions with small denominators add and subtract fractions with the same denominator within one whole [for example, 7 5 + 7 1 = 7 6] compare and order unit fractions, and fractions with the same denominators solve problems that involve all of the above.	Pupils should be taught to: measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)

Misconception	• Children may think that multiplying by 10 is always equivalent to adding a zero, rather than considering place value, which could lead to misconceptions in later years when they multiply decimals. • Children may need support to recognise when to multiply and when to divide by 10 • Children may derive incorrect division facts by using the rules they have learnt about related multiplication facts. • Children may try to find results by calculation rather than recognising the relationship between one fact and another. • When comparing number sentences, children may find it difficult to recognise which digit is referring to the size of the group and which digit is referring to the number of groups. • Children may try to work out the calculations to make comparisons, rather than using their understanding of the multiplicative structure.	• Children may measure from the end of the ruler or measuring tape rather than measuring from zero. • When using more than one ruler to measure, children may place them end to end, rather than lining up zero with the end point of the previous ruler. • Children may measure using the non-metric side of a ruler. • Children may measure from the end of the ruler or measuring tape rather than measuring from zero. • Children may give answers to the nearest centimetre rather than counting the millimetre intervals. • Children may inaccurately measure the millimetre part of a length, due to the intervals on the ruler being very close together. • Children may record a length as, for example, 5 cm and 0 mm, rather than just 5 cm.	• Children may count only the shaded or non-shaded areas of diagrams to find the denominator. • Children may not realise the importance of equal parts. • Children may not realise that different diagrams can be used to represent the same fraction. • Children may believe that 1 2 is smaller than 1 3 because 2 is less than 3 • Children need to be secure in the meanings of the symbols for greater than and less than (> and <). • The correct relationship will not be seen if the wholes are different sizes or if they are not split into equal parts. • Children may not recognise that non-unit fractions are made up of quantities of unit fractions. • When using diagrams, children may count the shaded parts as the numerator and the unshaded parts as the denominator, for example 2 3 rather than 2 5	• Children may be confused by intervals of different values due to different start and end points on number lines. • Children may count the number of divisions rather than the number of intervals. • Some children may not know what 100 or a multiple of 100 divided by 2/4/5/10 is worth. • Children may be unfamiliar with the approximate mass of objects, and thus unable to identify mistakes. • When reading scales, children may incorrectly identify the value of the intervals. • When measuring the mass of an object using balancing scales, children may incorrectly add the masses on the wrong side.
Progression	Year 2: • recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs • show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot • solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplicationand division facts, including problems in contexts. Year 4: • recall multiplication and division facts for multiplication tables up	Year 2: (length) • choose and use appropriate standard units to estimate andmeasure length/height in any direction (m/cm);mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit,using rulers,scales, thermometersand measuring vessels • compare and order lengths,mass, volume/capacity andrecord the results using >, < and = Year 4: • Convert between different units of measure [for example, kilometre to metre; hour to minute] • measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres	Year 2: • add fractions • subtract fractions • recognise, find, name and write fractions 1/3 , 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity • write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2 Year 4: count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. • solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number • add and subtract fractions with the same denominator • recognise and write decimal equivalents of any number of tenths or hundredths • solve simple measure and money problems involving fractions and decimals to two decimal places	Year 2: • choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm);mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit,using rulers,scales, thermometersand measuring vessels • compare and order lengths,mass, volume/capacityandrecord the results using >, < and = Year 4: Topic starts in Year 5

	to 12 × 12 • use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers • recognise and use factor pairs and commutativity in mental calculations multiply two-digit and three-digit numbers by a one-digit number using formal written layout solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects		recognise and show, using diagrams, families of common equivalent fractions	
Key Vocabulary	lots of, groups of ´, times, multiply, multiplication, multiplied by, multiple of, product, once, twice, three times… ten times…, times as (big, long, wide… and so on), repeated addition, array, row, column, double, halve, share, share equally, one each, two each, three each…	length, width, height, depth long, short, tall, high, low wide, narrow, deep, shallow, thick, thin longer, shorter, taller, higher… and so on longest, shortest, tallest, highest… and so on far, further, furthest, near, close distance apart/between, distance to… from… kilometre (*km*), metre (*m*), centimetre (*cm*) mile ruler, metre stick, tape measure	part, equal parts fraction one whole one half, two halves one quarter, two… three… four quarters one third, two thirds, three thirds one tenth	weigh, weighs, balances heavy/light, heavier/lighter, heaviest/lightest kilogram (*kg*), half-kilogram, gram (*g*) balance, scales, weight capacity full, half full empty holds, contains litre (*l*), half-litre, millilitre (*ml*) container