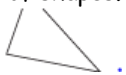
Whole School Maths Curriculum Overview: Year 2

#TheSmawthorneExperience

Year 2	Autumn Term		
Topic	Place Value	Addition and Subtraction	Shape (Geometry)
The Big Ideas	The position (place) of a digit in a number determines its value. Hence the term place value.	Understanding that addition of two or more numbers can be done in any order is important to support children's fluency. When adding two numbers it can be more efficient to put the larger number first. Understanding the importance of the equals sign meaning 'equivalent to' (i.e. that 6 + 4 = 10, 10 = 6 + 4 and 5 + 5 = 6 + 4 are all valid uses of the equals sign) is crucial for later work in algebra. Empty box problems can support the development of this key idea. Correct use of the equals sign should be reinforced at all times. Altering where the equals sign is placed develops fluency and flexibility.	It is not uncommon for pupils to say that this  is a square and this  is not, or that something like this  is a triangle. It is important for pupils to know what the properties are that make up certain shapes, and for them not to just learn the names of typical proto looking shapes. It is helpful to think about non examples of shapes. For example, why this is not a triangle:  Recognising pattern and generalising structures and relationships are key elements for laying the foundations for later work in algebra.
Key Knowledge and Skills	• Numbers to 20 • Count objects to 100 by making 10s • Recognise tens and ones • Use a place value chart • Partition numbers to 100 • Write numbers to 100 in words • Flexibly partition numbers to 100 • Write numbers to 100 in expanded form • 10s on the number line to 100 • 10s and 1s on the number line to 100 • Estimate numbers on a number line • Compare objects • Compare numbers • Order objects and numbers • Count in 2s, 5s and 10s • Count in 3s	• Bonds to 10 • Fact families - addition and subtraction bonds within 20 • Related facts Bonds to 100 (tens) • Add and subtract 1s • Add by making 10 • Add three 1-digit numbers • Add to the next 10 • Add across a 10 • Subtract across 10 • Subtract from a 10 • 10 more, 10 less • Subtract a 1-digit number from a 2-digit number (across a 10) • Add and subtract 10s Add two 2-digit numbers (not across a 10) • Add two 2-digit numbers (across a 10)	• Recognise 2-D and 3-D shapes • Count sides on 2-D shapes • Count vertices on 2-D shapes • Draw 2-D shapes Lines of symmetry on shapes • Use lines of symmetry to complete shapes • Sort 2-D shapes • Count faces on 3-D shapes • Count edges on 3-D shapes • Count vertices on 3-D shapes • Sort 3-D shapes • Make patterns with 2-D and 3-D shapes

Stem Sentences	• There is 1 ten and _____ ones. • The number is _____ • The number after _____ is _____ • The number before _____ is _____ • _____ in words is _____ • _____ in numerals is _____ • There are _____groups of 10 and _____ more. • _____ is made up of ___ tens and _____ones. • _____ is a part and _____is a part. • The whole is _____.	• There are _____ tens and _____ ones. • The number is _____. • _____ is a part and _____ is a part. • The whole is _____. • _____ can be partitioned into _____ and _____. • _____ is equal to_____ plus _____. • The start point is_____ and the end point is _____. • There are _____ intervals on the number line. • Each interval is worth _____ • The number line is counting up in _____>	• This shape is a _____ because . . . • A … is a 2-D shape. • A _____ is a 3-D shape • A triangle has _____ straight sides. • I know I have counted all the sides because … • I know this shape is a _____ because … • A square has _____ vertices • The number of vertices a shape has is _____ to the number of sides. I know that I have counted all the vertices because . . . . • This shape is symmetrical because … • I know that this is a line of symmetry because … • A mirror can help me find lines of symmetry because
National Curriculum Statements	Compare and order numbers from 0 up to 100 Use place value and number facts to solve problems Use < > and = signs correctly Count in steps of two, Three, and five from 0, and in tens from any number, forward and backward	Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures applying an increasing knowledge of mental and written methods Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a 2-digit number and ones a 2-digit number and tens two 2-digit numbers adding three 1-digit numbers show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot	Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] Compare and sort common 2-D and 3-D shapes and everyday objects Order and arrange combinations of mathematical objects in patterns and sequences

Misconceptions	Numbers such as 11, 12, 13 and 15 can often be sticking points for children as the word does not make specific reference to the number of ones as it does later in the number system. Children may write, for example, 12 as "ten-two" in words rather than "twelve". Children may mix up the tens and ones digits when writing 2-digit numbers. Children may try to count only in ones rather than making bundles of 10, which is less efficient and is more likely toresult in basic counting errors. • Children may find it harder to make numbers that have been said out loud, for example being told "thirty-five" rather than seeing "35" written. Children may just count the total number of objects rather than consider the value of things. • Some children may revert to counting in ones rather than using their earlier learning of making tens. • Children may write the digits of a number in the incorrect order, particularly if the representations are not shown in value order. • Children may not understand when the place value headings are presented differently, for example using "T" and "O" rather than "Tens" and "Ones". • Children may write the whole number in a single column, rather than considering the structure of the number. Children may write 20 in the tens column for two tens rather than just a 2.	Children may partition a number into its digits rather than considering the value of each digit, for example stating that 32 is made up of 3 and 2. When the parts of a part-whole model are "the wrong way round", children may interpret the whole incorrectly. Children may write each individual digit as a word rather than considering its place value. For example, they may write 27 as "two-seven" rather than "twenty-seven". If children are not secure with partitioning from the earlier step, they may struggle when writing numbers in words. Children may think you are not "allowed" to have more than 9 individual objects, such as 1 bundle of 10 straws and 17 more straws. • If children partition a number flexibly into, for example, 2 tens and 15 ones for 35, they may also think that 35 can be written as 215 Incorrect mathematical language can hinder understanding. For example, if children refer to the = symbol as "makes", then "32 makes 30 plus 2" makes less sense than "32 is equal to 30 plus 2". • Children may only consider the digit in a place value column rather than its value, for example writing 45 = 4 + 5 rather than 40 + 5	• Children may not recall the names of all 2-D and 3-D shapes. • Children may call 3-D shapes by the names of the faces, for example calling a cube a square. • Children may not be able to differentiate between 2-D and 3-D shapes, particularly when looking at an image. Children may miscount the sides of shapes, either not counting all the sides or counting a side more than once. • Children may identify a shape using a mental image, rather than counting its sides. • Children may believe that all 4-sided shapes look the same. Children may miscount the number of vertices a shape has, either by not counting all the vertices or counting a vertex more than once. • Children may not recognise that a shape has the same number of sides and vertices. • Children may find it difficult to use a ruler accurately. • Children may not draw their shapes with straight sides. • Children may not start lines at a vertex, which could mean that they draw an extra side/vertex. • Children may believe that there is only one way to draw a shape with a given number of sides.

Progression	**Year 1:** • Count within 100, forwards and backwards, starting with any number • Reason about the location of numbers to 20 within the linear number system, including comparing using < > and = **Year 3:** • Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10; apply this to identify and work out how many 10s there are in other threedigit multiples of 10. • Recognise the place value of each digit in three-digit numbers, and compose and decompose three-digit numbers using standard and non-standard partitioning • Reason about the location of any threedigit number in the linear number system, including identifying the previous and next multiple of 100 and 10 • Divide 100 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 100 with 2, 4, 5 and 10 equal parts	**Year 1:** • Develop fluency in addition and subtraction facts within 10. • Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers. • Read, write and interpret equations containing addition ( ), subtraction ( ) and equals ( ) symbols, and relate additive expressions and equations to real-life contexts. **Year 3:** • Secure fluency in addition and subtraction facts that bridge 10, through continued practice • Calculate complements to 100. • Add and subtract up to three-digit numbers using columnar methods. • Manipulate the additive relationship: Understand the inverse relationship between addition and subtraction, and how both relate to the part-part-whole structure. Understand and use the commutative property of addition, and understand the related property for subtraction	**Year 1:** • Recognise common 2D and 3D shapes presented in different orientations, and know that rectangles, triangles, cuboids and pyramids are not always similar to one another. • Compose 2D and 3D shapes from smaller shapes to match an example, including manipulating shapes to place them in particular orientations. **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.
Key Vocabulary	units, ones, tens, hundreds, digit, one-, two- or three-digit number, 'teens' number, place, place value stands for, represents, exchange, the same number as, as many as, equal to, Of two objects/amounts: greater, more, larger, bigger, less, fewer, smaller, Of three or more objects/amounts: greatest, most, biggest, largest, least, fewest, smallest, one more, ten more one less, ten less, compare, order size, first, second, third… tenth… twentieth, twenty-first, twenty-second…, last, last but one, before, after, next, between, half-way between, above, below	add, addition, more, plus, make, sum, total altogether, score, double, near double, one more, two more… ten more… one hundred more, how many more to make…?, how many more is… than…? how much more is…? -, subtract, subtraction, take (away), minus, leave, how many are left/left over? one less, two less… ten less… one hundred less, how many fewer is… than…? how much less is…?, difference between, half, halve =, equals, sign, is the same as, tens boundary	shape, pattern, flat, curved, straight, round hollow, solid, corner, point, pointed, face, side, edge, end, sort, make, build, draw, surface **3D SHAPES** Cube, cuboid, pyramid, sphere, Cone, cylinder **2D SHAPES** circle, circular, triangle, triangular, square, rectangle, rectangular, star, pentagon, hexagon, octagon **PATTERNS AND SYMMETRY** Size, bigger, larger, smaller, symmetrical, line of symmetry, fold, match, mirror line, reflection, pattern, repeating pattern

*Red words are the newly taught vocabulary.