STOC's Arithmetic Progression of skills

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place value	Representing number concretely and pictorially and partitioning in different ways to 50	Representing number concretely and pictorially and partitioning in different ways to 120	Representing number concretely and pictorially and partitioning in different ways to 1,000	Representing number concretely and pictorially and partitioning in different ways to 10,000	Partitioning including missing numbers up to one million. 910,700 = 900,000 + _____ + 700	Partitioning including missing numbers up to ten million. 3,050,020 = 3,000,000 + _____ + 20
Addition & Subtraction	represent and use number bonds and related subtraction facts within 20 3 + 7 = 14 + 6 = 10 – 8 = 20 – 11 =	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 30 + 70 = 100 - 10 =	add and subtract numbers mentally, including: <u>a three-digit number and ones</u> 273 + 5 <u>a three-digit number and tens</u> 672 + 30 100 – 21 <u>a three-digit number and hundreds</u> 492 + 500	add and subtract numbers mentally with up to 4 digits = 6,000 - 900 5873 + 90 = 7382 + 300 8000 + 1834 = 8,275 + 82	add and subtract numbers mentally with increasingly large numbers and decimals 2800 + 7200 500,000 – 5,000 10,000 – 5,400 199,999 + 345,666 <u>adding a whole</u> 4.32 + 4 <u>subtracting a whole</u> 9.87 – 3 <u>using known facts</u> 1.2 + 0.8 <u>subtracting from a whole</u> 9 – 1.9 8 – 6.71 <u>Reordering</u> 800 + 240 + 360 1.7 + 2.8 + 0.3 58 + 47 – 38	perform mental calculations, including with mixed operations, large numbers and decimals. 1,999,999 + 350,750 3,000,000 – 250,000 5.87 + 3.123 =

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	add and subtract one-digit and two-digit numbers to 20, including zero 3 + 5 = 12 + 4 = 19 + 0 = 9 – 6 = 17 - 3 =	add and subtract numbers using concrete objects, pictorial representations, and mentally. <u>a two-digit number and ones</u> 2 + 67 = = 98 + 4 = 54 – 8 <u>a two-digit number and tens</u> 33 + 10 = 41 - 10 = 30 + 50 = 67 – 40 = <u>two two-digit numbers</u> 58 + 32 = 92 – 85 = <u>adding three one-digit numbers</u> 6 + 5 + 9 =	add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction 94 + 267 468 + 375 732 – 97 = 521 - 386	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction 7,064 - 502 6,155 + 501 + 649 = 5001 – 834 7,306 – 1,847 = (with and without varied 0s in the minuend)	add and subtract whole numbers with more than 4 digits, and with decimals including using formal written methods = 864,027 + 6,932 362,973 + 576,195 750,306 – 13,847 = (with and without varied 0s in the minuend) 56.38 + 24.7 = _____= 7 – 2.25 8 – 5.123 = 26.43 – 2.012 =	add and subtract whole numbers and decimals using formal written methods (columnar addition and subtraction) 1,823,563 + 6,832,589 27,543 + 49.326 90,802 – 47.384
	solve missing number problems 7 = ___ - 9	solve problems (including using the inverse). 8 + ☐ + 4 = 17 60 + ☐ = 89 ☐ + 25 = 37 ☐ - 50 = 50 100 - ____ = 52	solve missing number problems 10 + ☐ = 302 ☐ - 10 = 298 _____ + 70 = 485 _____ + 5 = 341 826 = 800 + + 6 602 - ☐ = 594	solve missing number problems 6,562 + ___ + 628 = 8,432 ☐ - 2,746 = 4,218 7.2 + __ = 8	solve missing number problems ____ + 310,853 = 923,684 ☐ - 523,972 = 285,167 802,423 - _____ = 283,941 84 – _____ = 6.952	solve missing number problems ____ + 3,953,854 = 5,273,987 ☐ - 4,538,902 = 2,785,169 8,502,413 - _____ = 3,573,946 537 – _____ = 9.845

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						Use their knowledge of the order of operations to carry out calculations involving the four operations 6 + 4 ÷ 2 = 62 + 10 = 60 ÷ (30 – 24) = 92 - 36 ÷ 9 =
			To be completed when finished and used to check calculations above			
			estimate the answer to a calculation and use inverse operations to check answers	estimate and use inverse operations to check answers to a calculation	use rounding to check answers to answers to a calculation	use rounding to check answers to answers to a calculation
Multiplication & Division	count in multiples of twos, fives and tens 2, 4, __, 8, 10, __ Count from 0 in 5s to 50. Count back in 10s from 50.	recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables 2 x 7 = = 10 x 5 5 x 6 = 24 ÷ 2 = 15 ÷ 5 = 60 ÷ 5 = 100 ÷ 10 =	recall and use multiplication and division facts for the 4, 8 and 3. multiplication tables including missing numbers 4 x 6 = = 3 x 8 32 ÷ 4 =	recall multiplication and division facts for multiplication tables up to 12 × 12, including missing numbers = 9 x 6 99 ÷ 11 = __ x 7 = 42 108 ÷ ___ = 12	multiply and divide numbers mentally drawing upon known facts 2,400 ÷ 2 = ☐ = 240 ÷ 8 1,080 ÷ 9 =	perform mental calculations, including with mixed operations and large numbers 32 ÷ 0.8 = 40 0.32 ÷ 0.8 = 0.4 2,4000 ÷ 20 = 90 ÷ __ = 4.5 __ = 4.5 x 20 __ = 4.5 x 2 37.184 x 2 24.638 ÷ 2
				use place value, known and derived facts to multiply and divide mentally,	recognise and use square numbers and cube numbers, and the	

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				including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers 0 × 989 = 838 ÷ 1 = = 3 x 4 x 6 6 × 10 × 11 =	notation for squared (2) and cubed (3) 9^2 4^3	
	use multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays <u>Doubles to 10</u> Show 3 x 2 using an array (concrete/ pictorial) <u>Halves within 20</u> Show 18 ÷ 2 using an array (concrete/ pictorial)	calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs Show as repeated addition and in a commutative way: 5 x 3 __ = 60 ÷ 5 __ x 10 = 110 5 x __ = 45 __ ÷ 2 = 12 80 ÷ __ = 10	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 89 x 4 2 x 45 __ = 27 x 8 __ ÷ 3 = 36	multiply two-digit and three-digit numbers by a one digit number using formal written layout 9 x 41 = ☐ = 596 × 7 ___ ÷ 7 = 67 ___ ÷ 9 = 64	multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers 607 x 83	multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication 4078 x 67
						multiply one-digit numbers with up to two decimal places by whole numbers 0.5 x 28 3.9 x 30

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			write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers 52 ÷ 4 = ____ = 81 ÷ 3	divide numbers up to 3 digits by a one digit number using the formal written method of short division and interpret remainders appropriate for the context <u>2 digits</u> 91 ÷ 7 = ___ = 76 ÷ 4 86 ÷ 3 = (with remainder) <u>3 digits</u> 441 ÷ 9 = ___ = 228 ÷ 6 473 ÷ 7 = (with remainder)	divide numbers up to 4 digits by a one-digit number using the formal written method of short division including with and without remainders <u>3 digits</u> 840 ÷ 5 = (no remainder) 587 ÷ 6 = (with remainder) <u>4 digits</u> 2,534 ÷ 7 = (no remainder) 4,947 ÷ 8 (with remainder)	divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division 60 ÷ 15 = 672 ÷ 21 = (factorise) 888 ÷ 37 = 3066 ÷ 73 =
						divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division including in cases where the answer has up to two decimal places 6,552 ÷ 76 (give answer as a decimal remainder)

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			To be completed when finished and used to check calculations above			
			estimate the answer to a calculation and use inverse operations to check answers	estimate and use inverse operations to check answers to a calculation	estimate and use inverse operations to check answers to a calculation	use estimation to check answers to calculations
Fractions (including decimals and percentages)			find the effect of dividing a one-digit number by 10 8 ÷ 10 = __ = 5 ÷ 10	find the effect of dividing a one- or two-digit number by 10 and 100 48 ÷ 10 = __ = 6 ÷ 100 = 95 ÷ 100 =	multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 1,010 × 10 = = 25.34 x 10 13.05 × 1,000 = 0.1 ÷ 100 =	multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places 2.12 ÷ 10 = 0.9 ÷ 100 = 1,010 × 1,000 =

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			add and subtract fractions with the same denominator within one whole $\frac{5}{7} + \frac{1}{7}$ $\frac{9}{11} - \frac{4}{11}$	add and subtract fractions with the same denominator $\frac{1}{11} + \frac{3}{11} + \frac{5}{11}$ $\frac{7}{8} - \frac{1}{8} - \frac{3}{8}$ $1 - \frac{2}{3}$ $1 - \frac{2}{5} - \frac{1}{5}$	add and subtract fractions with the same denominator and multiples of the same number, including G 1 as a mixed number $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$ $\frac{4}{9} + \frac{2}{3}$ $1\frac{3}{4} + \frac{3}{4} =$ $1\frac{3}{7} - \frac{4}{7}$ $2 - \frac{2}{5}$ $3 - \frac{4}{7} - \frac{1}{7}$	add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions $\frac{1}{2} + \frac{1}{3}$ $\frac{2}{7} - \frac{1}{9}$ $\frac{2}{3} + 2\frac{1}{3}$ $2\frac{1}{2} - \frac{2}{3}$ $1\frac{1}{5} + 2\frac{1}{10}$ $4\frac{2}{3} + 1\frac{6}{7}$ $10 - 2\frac{1}{4}$
		find fractions of a set of objects or quantity and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ $\frac{1}{2}$ of 6 $\frac{1}{2}$ of 80 / $\frac{1}{2}$ of 90 $\frac{1}{4}$ of 16 $\frac{2}{4}$ of 36	find and write fractions of an amount: unit fractions and non-unit fractions with small denominators $\frac{1}{3}$ of 36 $\frac{3}{4}$ of 32	recognise, find and write fractions of an amount $\frac{1}{6}$ of 72 $\frac{7}{10}$ of 30 $\frac{2}{5}$ of 150 $\frac{3}{4}$ of 1,000 =	find fractions with a denominator of a multiple of 10 or 25 $\frac{3}{20}$ of 100 $\frac{5}{75}$ of 150	find the original amount $\frac{1}{6}$ of ___ = 12

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					multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams $\frac{4}{5} \times 400 =$ $1\frac{3}{4} \times 10$	multiply simple pairs of proper fractions, writing the answer in its simplest form $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ $\frac{3}{4} \times \frac{2}{5} = \frac{6}{20} = \frac{3}{10}$
						divide proper fractions by whole numbers $\frac{1}{3} \div 2 =$
					Find percentages of amounts where they are equivalent to the fractions $\frac{1}{2}, \frac{1}{4}, \frac{1}{5}, \frac{2}{5}, \frac{4}{5}$ 50% of 100 25% of 3,200 20% of 1,200	finding percentages of numbers. 2% of 3,000 80% of 115 15% of 360