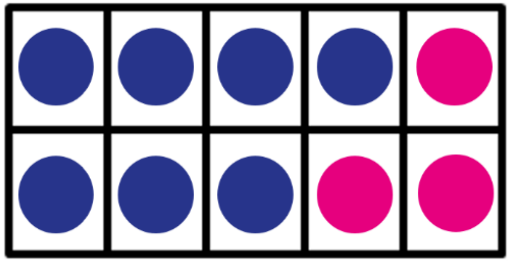
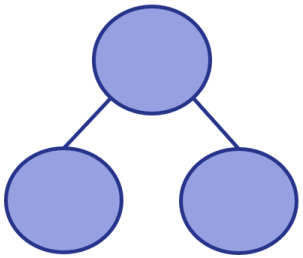
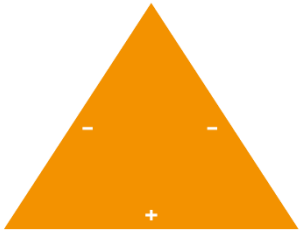
Known and Related Facts – Addition and Subtraction

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number bonds within 5. Some number bonds to 10.	Number bonds within 10. Number bonds to 10.	Number bonds to 10 and 20. Number bonds within 10 and 20. Number bonds to 100 multiples of 10. Complements to 100.	Number bonds scaled by 10 and 100. Complements to 100. Complements to 1000, multiples of 50.	Number bonds scaled by 100 and 1,000. Complements to 1000, multiples of 25. Number bonds to 1 ($\frac{1}{10}$s) Complements to 1 ($\frac{1}{10}$s and $\frac{1}{100}$s)	Number bonds scaled by, 1000, $\frac{1}{10}$ or $\frac{1}{100}$. Complements to 10,000, 100,000 1,000,000. Complements to 1 ($\frac{1}{1000}$s).	Consolidation of all KS2 facts with a focus on missing box calculations that include bridging. 400 + ? = 1,200 0.06 + ? = 1.4 1.7 - ? = 0.9 Continue sequences involving addition.







Progression in Mental Addition

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Known and related facts	4 + 3 14 + 3	54 + 3 40 + 30	154 + 3 400 + 300	4,000 + 3,000 0.4 + 0.3 0.04 + 0.03	40,000 + 30,000 400,000 + 300,000 0.004 + 0.003	Children entering Year 6 should be secure with a range of mental and written strategies. Focus on revisiting and retaining these strategies. Encourage children to look at the numbers involved in a range of calculations and reason about the most effective method for each calculation. Present children with missing number questions and ensure that children can use an appropriate method to find the missing number.
Place Value	10 + 4	54 + 20	524 + 50 560 + 300 394 + 10 987 + 100	3,400 + 300 3,976 + 100 6,000 + 90 6.1 + 0.3 2.5 + 0.05	54,000 + 3,000 296,729 + 10,000 400,000 + 80,000 + 5,000 4.572 + 0.005	
Place Value with partitioning one or both numbers	-	24 + 35	135 + 42 672 + 126	1204 + 321 2.5 + 6.4	10,340 + 9,400 4.5 + 2.093 4.76 + 2.216	
Counting on with bridging	8 + 5	48 + 5	148 + 5 80 + 50 680 + 50	3,428 + 5 5,380 + 50 3,800 + 500 0.08 + 0.05	268,000 + 5,000 80,000 + 50,000 280,000 + 50,000 1.928 + 0.005	
Place Value with partitioning, extending into bridging	-	18 + 16 48 + 25	76 + 62 460 + 150	760 + 380 2.36 + 5.27	54,765 + 11,400 8,347 + 7,200 87,000 + 65,000 4.73 + 4.091	
Near Doubles	4 + 5	5 + 6 6 + 7	60 + 50 70 + 80	600 + 500 6,000 + 5,000 1.6 + 1.5 0.06 + 0.05	15,000 + 16,000 150,000 + 160,000 0.006 + 0.005	
Reordering	2 + 7	4 + 7 + 6	53 + 29 + 47 99 + 145 + 201	520 + 241 + 380 2400 + 850 + 600 4.61 + 6.2 + 0.19	146 + 58 – 26 = 5.327 + 1.35 + 0.003	
Compensating	-	35 + 9 35 + 19 35+18	364 + 9 364 + 19 364 + 90 364 + 98	567 + 199 6729 + 998 4.6 + 1.9 4.78 + 1.99	739,036 + 90,000 657,086 + 98,000 6.764 + 0.009	
Adjusting	-	9 + 8 19 + 7	99 + 76 199 + 42	999 + 762 0.9 + 0.4 4.6 + 1.9 4.78 + 1.99	19,999 + 78 199,999 + 23,231 6.764 + 0.009	

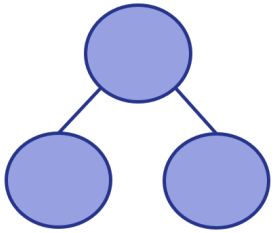
Progression in Mental Subtraction

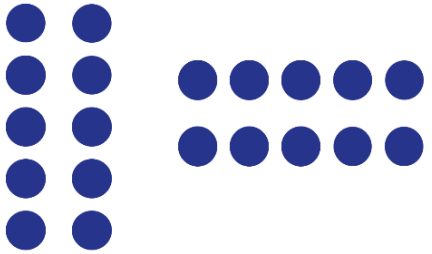
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Known and related facts	7 – 4	87 – 4 70 – 40	147 – 4 700 - 400	7,000 – 4,000 0.7 - 0.4 0.07 – 0.04 1 – 0.06	70,000 – 40,000 700,000 – 400,000 0.007 – 0.004 1 – 0.008	Children entering Year 6 should be secure with a range of mental and written strategies. Focus on revisiting and retaining these strategies. Encourage children to look at the numbers involved in a range of calculations and reason about the most effective method for each calculation. Present children with missing number questions and ensure that children can use an appropriate method to find the missing number.
Place Value	17 – 7 17 - 10	67 - 7 78 – 40	570 – 40 758 – 400 404 - 10	5700 - 400 7021 - 1000 4,000 - 300 6.77 – 0.7 5.27 – 0.04	234,000 – 4,000 100,752 - 1,000 400,000 – 5,000 4.386 – 0.07 7.927 – 0.05	
Counting back with bridging	12 – 5	82 – 5 92 – 15	182 – 5 120 – 50 820 - 50	3422 - 5 5320 - 50 3200 - 500 3.2 – 0.5 5.32 - 0.05	302,000 – 5,000 340,000 - 80,000 5.132 - 0.005 24 - 3.042	
Finding the difference	-	21 – 18 52 – 45	92 – 88 310 – 250 404 – 395	808 – 770 1,005 – 950 7200 – 6500 5.2 – 4.8 1 – 0.63	51,000 – 45,000 350,000 - 290,000 1 – 0.584	
Compensating	-	27 – 9 47 - 19	237 – 9 237 - 18 237 – 99 237 - 98 237 - 90	83 - 28 142 – 98 256 – 129 3457 - 997 8.75 - 1.99	45,982 - 9,998 178,350 - 99,999 178,350 - 49,999 9.973 - 0.009	
Adjusting	-	-	-	7000 – 4927	50,000 – 6,283 200,000 - 4,382 1 – 0.692 24 - 3.042	

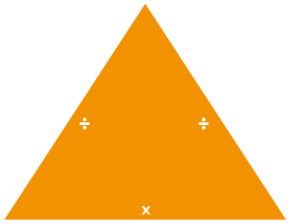
Known and Related Facts – Multiplication and Division

EYFS and Key Stage 1

EYFS	Year 1	Year 2
Double numbers up to 5. Share 10, 8, 6, 4, 2 equally in practical contexts and understand that these numbers are even. .	Double numbers up to 10. Recall half of 10, 8, 6, 4 and 2. Count on and back in 2s, 5s, and 10s Share into 2, 5 and 10 equal groups.	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables. Link multiplying and dividing by 2 to doubling and halving.



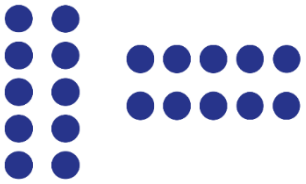


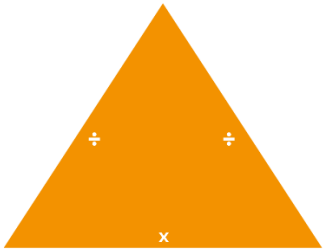


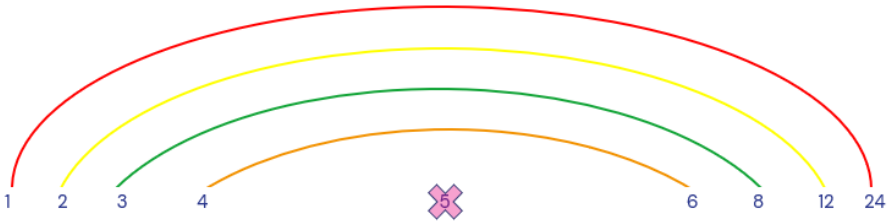
Known and Related Facts – Multiplication and Division

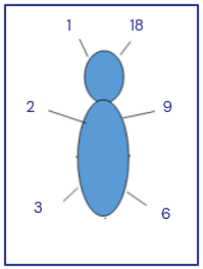
Key Stage 2

Year 3	Year 4	Year 5	Year 6
Recall and use multiplication and division facts for the 2, 3, 4, 5, 8 and 10 multiplication tables. Use place value knowledge to derive scaled multiplication facts. (Scaled by 10) Count in multiples of 50 and 100 and explain the relationship between them.	Recall and use multiplication and division facts for multiplication tables up to 12 x 12. Use place value knowledge to derive scaled multiplication facts. (Scaled by 100) Count in multiples of 25 and 1000. Use place value knowledge to derive scaled multiplication facts. (Scaled by 100)	Recall and use multiplication and division facts for multiplication tables up to 12 x 12. Use place value knowledge to derive scaled multiplication facts. (Scaled by 1000, $\frac{1}{10}$ or $\frac{1}{100}$.) Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. Recall prime numbers up to 19. Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	Recall and use multiplication and division facts for multiplication tables up to 12 x 12. Solve missing box calculations with a range of scaled facts. 0.4 x ? = 2.4 2400 ÷ ? = 80 Identify common factors, common multiples and prime numbers. Continue sequences involving multiplication (Algebra).









First4Maths

Progression in Mental Multiplication

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Known and Related Facts	-	5 x 2 = 2 x 5	4 x 8 40 x 8	6 x 7 60 x 7 600 x 7	4,000 x 7 40 x 70 400 x 70 0.4 x 7 0.04 x 7	? x 7 = 28,000 40 x ? = 2,800 400 x ? = 28,000 0.4 x ? = 2.8 ? x 7 = 0.28
Doubling	Double 9	Double 14 Double 17 Double 40 Double 35	Double 38 Double 70 Double 65 Double 300 3 x 4 4 x 8	Double 78 Double 340 Double 800 Double 4,000 16 x 4 15 x 8	Double 678 Double 8,000 Double 12,000 Double 7.8 125 x 4 120 x 8	Apply doubling to problem solving and algebra. 2n + 4 =
Multiplying by Powers of 10	-	3 x 10	30 x 10	36 x 10 845 x 10 68 x 100	38,456 x 10 3,672 x 100 782 x 1,000 6.48 x 10/100/1,000	6.936 x 10/100/1000
Partitioning	-	-	24 x 5	132 x 3	2.62 x 4	All of these methods are taught prior to Year 6. Children will reflect on the numbers involved in a calculation and choose the most appropriate strategy.
Compensating	-	5 x 9	8 x 9	7 x 9 39 x 5	150 x 9	
Associative Law	-	-	-	2 x 4 x 7 = 2 x 7 x 4	6 x 4 x 7 = 6 x 7 x 4	
Distributive Law	-	-	-	6 x 7 = 6 x (5 + 2) = 6 x 5 + 6 x 2 = 30 + 12	250 x 7 = 250 x (4 + 3) = 1000 + 750	
Double one side, half the other	-	-	-	18 x 5 24 x 5	24 x 50 36 x 25	
Multiplying by a Power of 10 and halving	-	-	8 x 5	6 x 5 18 x 5 24 x 5	18 x 5 24 x 50 36 x 25	
Factorising	-	-	-	7 x 6 = 7 x 3 x 2	53 x 20 = 53 x 2 x 10 Or = 53 x 10 x 2	75 x 6 = 75 x 2 x 3

Progression in Mental Division

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Known and Related Facts	-	10 ÷ 2 = 5 10 ÷ 5 = 2	32 ÷ 4 320 ÷ 4	42 ÷ 7 420 ÷ 7 4,200 ÷ 7	28,000 ÷ 7 2,800 ÷ 70 28,000 ÷ 70 2.8 ÷ 7 0.28 ÷ 7	2.8 ÷ ? = 0.4 0.28 ÷ ? = 7
Halving	Halve 8	Halve 16 Halve 80 Halve 90	Halve 84 Halve 92 Halve 140 Halve 130 Halve 800 28 ÷ 4	Halve 156 Halve 680 Halve 1,600 Halve 8,000 64 ÷ 4 120 ÷ 8	Halve 1,350 Halve 16,000 Halve 15.6 500 ÷ 4 1,000 ÷ 8	Apply halving to problem solving and algebra. $\frac{n}{2} + 7$
Dividing by Powers of 10	-	70 ÷ 10	300 ÷ 10	360 ÷ 10 7 ÷ 10 45 ÷ 10 8 ÷ 100 76 ÷ 100	38.2 ÷ 10 3,672 ÷ 100 6,450 ÷ 1,000	76.62 ÷ 10 64.2 ÷ 100 782 ÷ 1,000
Distributive Law	-	-	-	48 ÷ 3 = 30 ÷ 3 + 18 ÷ 3	384 ÷ 6 = 360 ÷ 6 + 24 ÷ 6	In Year 6, children will apply the distributive law of division to chunking.
Factorising	-	-	-	-	460 ÷ 20 = 460 ÷ 10 ÷ 2 or = 460 ÷ 2 ÷ 10	120 ÷ 15 = 120 ÷ 3 ÷ 5