

Date: 20.07.22

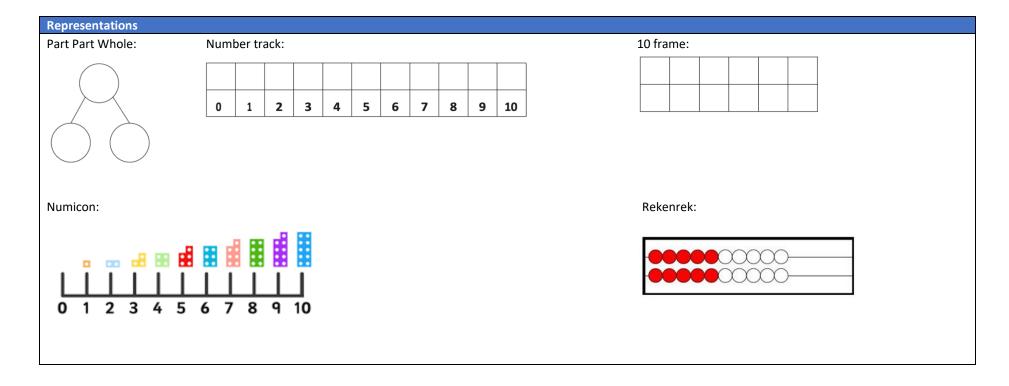
EYFS

Summary: outcomes	Key facts	CFU: ready to progress if
Addition within 5	0: 0+0	Fluent with all addends to
	1: 0+1, 1+0	1, 2, 3, 4, and 5
	2: 0+2, 1+1, 2+0	
	3: 0+3, 1+2, 2+1, 3+0	*Ensure these are understood commutatively, i.e. 0+1 = 1+0
	4: 0+4, 1+3, 2+2, 3+1, 4+0	
	5: 0+5, 1+4, 2+3, 3+2, 4+1, 5+0	
Subtraction within 5	0: 0-0	Fluent with all subtrahends to
	1: 1-0	1, 2, 3, 4, and 5
	2: 2-0, 2-1, 2-2	
	3: 3-0, 3-1, 3-2, 3-3	
	4: 4-0, 4-1, 4-2, 4-3, 4-4	
	5: 5-0, 5-1, 5-2, 5-3, 5-4, 5-5	

Representations				
Part Part Whole:	Numicon:	Number track:	5 frame:	Rekenrek:
		0 1 2 3 4 5		••••••

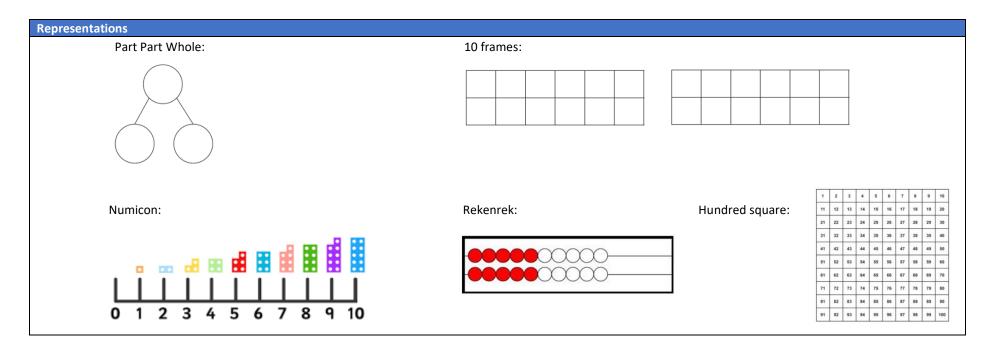


Summary: outcomes	Key facts	CFU: ready to progress if
Addition within 10	As EYFS, plus:	Fluent with all addends to
	6: 0+6, 1+5, 2+4, 3+3, 4+2, 5+1, 6+0	1, 2, 3, 4, 5, 6, 7, 8, 9 and 10
	7: 0+7, 1+6, 2+5, 3+4, 5+2, 6+1, 7+0	
	8: 0+8, 1+7, 2+6, 3+5, 4+4, 5+3, 6+2, 7+1, 8+0	*Ensure these are understood commutatively, i.e. 0+1 = 1+0
	9: 0+9, 1+8, 2+7, 3+6, 4+5, 5+4, 6+3, 7+2, 8+1, 9+0	
	10: 0+10, 1+9, 2+8, 3+5, 4+6, 5+5, 6+4, 7+3, 8+2, 9+1, 10+0	
Subtraction within 10	As EYFS, plus:	Fluent with all subtrahends to
	6: 6-0, 6-1, 6-2, 6-3, 6-4, 6-5, 6-6	1, 2, 3, 4, 5, 6, 7, 8, 9 and 10
	7: 7-0, 7-1, 7-2, 7-3, 7-4, 7-5, 7-6, 7-7	
	8: 8-0, 8-1, 8-2, 8-3, 8-4, 8-5, 8-6, 8-7, 8-8	
	9: 9-0, 9-1, 9-2, 9-3, 9-4, 9-5, 9-6, 9-7, 9-8, 9-9	
	10: 10-0, 10-1, 10-2, 10-3, 10-4, 10-5, 10-6, 10-7, 10-8, 10-9, 10-10	





Summary: outcomes	Key facts	CFU: ready to progress if
Doubling	As EYFS & Y1, plus:	Fluent with all addends for 1-20
	Addends for 11, 12, 13, 14, 15	*Ensure these are understood commutatively, i.e. 0+1 = 1+0
	Double 1, 2, 3, 4, 5	
	Double 6, 7, 8, 9, 10	Able to double 1-20
	Double 11, 12, 13, 14, 15	*Ensure these are understood multiplicatively, i.e. "double" = 2x
Halving	As EYFS & Y1, plus:	Fluent with all subtrahends for 1-20
	Halve 2, 4, 6, 8, 10	
	Halve 12, 14, 16, 18, 20	Able to halve 1-20
	Halve 22, 24, 26, 28, 30	*Ensure these are understood multiplicatively, i.e. "double" = ÷2
Times Tables	2xT, 5xT, 10xT	Able to recall all products & quotients for 2xT, 5xT, 10xT
		Example: $3 \times 2 = 6 \Rightarrow$ "three twos are six"





Summary: outcomes	Key facts	CFU: ready to progress if
Doubling & Halving	As EYFS & KS1, plus:	
	Double 16, 17, 18, 19, 20	Able to recall doubles for 16, 17, 18, 19, 20
	Halve 32, 34, 36, 38, 40	Able to recall all halves of 32, 34, 36, 38, 40
Complements to 100	As EYFS & KS1, plus:	
	Addends & subtrahends for 16, 17, 18, 19, 20	Fluent with addends for 16, 17, 18, 19, 20
	Complements (pairs) to make 100 from multiples of 10:	Fluent with complements to 100 from multiples of 10
	0+100, 10+90, 20+80, 30+70, 40+60, 50+50, 60+40, 70+30, 80+20,	Fluent with complements to 100 from multiples of 5
	90+10, 100+0	*Ensure the main error is understood: 35 + 75 ≠ 100 (because the
	Complements (pairs) to make 100 from multiples of 5:	Tens make 100 already, the Ones produce an extra 10)
	0+100, 5+95, 15+85, 25+75, 35+65, 45+55, 55+45, 65+35, 75+25,	
	85+15, 95+5	
Times Tables	As Y2, plus:	Able to recall all products & quotients for 2xT, 5xT, 10xT, 4xT, 8xT,
	4xT, 8xT, 3xT, 6xT	3xT, 6xT
		Example: $3 \times 2 = 6 \rightarrow$ "three twos are six"

Part Part Whole:	Hundred Square:	1 2 3 4 5 6 7 8 9 10	10 frames with Place Value 'Tens' counters:
		11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50	10 10 10
		51 S2 S3 S4 S5 S6 S7 S8 S9 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	
		81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	



Summary: outcomes	Key facts	CFU: ready to progress if
Doubling & Halving	As EYFS to Y3, plus:	
	Double 15, 25, 35, 45, 55	Able to recall doubles for 15, 25, 35, 45, 55
	Halve of 90, 70, 50, 30	Able to recall all halves of 90, 70, 50, 30
	Halve of 9, 7, 5, 3	Able to recall all halves of 9, 7, 5, 3
Complements to 100	As EYFS to Y3, plus:	
	Complements (pairs) to make 100 from all integers, such as 51+49, 52+48,	Fluent with complements to 100 from integers
	53+47, 54+46, etc.	*Ensure the main error is understood: 34 + 76 ≠ 100 (because
	Complements (pairs) to make 100 from all Hundredths, such as 0.51+0.49,	the Tens make 100 already, the Ones produce an extra 10)
	0.52+0.48, 0.53+.047, 0.54+0.46, etc.	Fluent with complements to 1 from Hundredths
Times Tables	As EYFS to Y3, plus:	Able to recall all products & quotients for all xT
	7xT, 9xT, 11xT, 12xT	Example: $3 \times 2 = 6 \rightarrow$ "three twos are six"

Representations									
Part Part Whole:	Hundred Square:	1	2	3 4	5	6	7 8	9	10
		11	12	3 14	15	16	17 18	19	20
		21	22	3 24	25	26	27 28	29	30
			32	_	-		-	_	-
			52	-	-		-	-	
		-	62		-		-	-	
		71	72	3 74	75	76	77 78	79	80
		81	82	3 84	85	86	87 88	89	90
		91	92	3 94	95	96	97 98	99	100



Summary: outcomes	Key facts	CFU: ready to progress if
Doubling & Halving	As EYFS to Y4, plus:	
	Double 2-digit numbers through flexible partitioning, such as:	Fluent with doubling any 2-digit number
	double 27 = (2 x 25) + (2 x 2) = (2 x 20) + (2 x 2)	
	Halve 2-digit numbers through flexible partitioning, such as:	Fluent with halving any 2-digit number
	half of 73 = $(70 \div 2) + (3 \div 2) = (60 \div 2) + (13 \div 2)$	
Complements to 1,000	As EYFS to Y4, plus:	
	Complements (pairs) to make 1,000 from all integers, such as	Fluent with complements to 1,000 from integers
	Ones adjust: 550+450, 551+449	*Ensure the main error is understood:
	Tens adjust: 552+448, 562+438	340 + 760 ≠ 100 (because the Hundreds make 1,000 already,
	Hundreds adjust: 662+338, 762+238	the Tens produce an extra 100)
Times Tables	All xT	Able to recall all products & quotients for all xT
		Example: $3 \times 2 = 6 \Rightarrow$ "three twos are six"
Fractions, Decimals &	Y5 Common FDP Set:	Able to recall equivalences between Y5 Common FDP Set
Percentages	$\frac{1}{2} = 0.5 = 50\%$ $\frac{1}{4} = 0.25 = 25\%$ $\frac{1}{5} = 0.2 = 20\%$ $\frac{1}{10} = 0.1 = 10\%$	

Representations		
Part Part Whole:	Hundred Square:	FDP towers:



Summary: outcomes	Key facts	CFU: ready to progress if
Doubling & Halving	As EYFS to Y4, plus:	
	Double 3-digit numbers through flexible partitioning, such as:	Fluent with doubling any 3-digit number
	double 327 = (2 x 300) + (2 x 25) + (2 x 2) = (2 x 300) + (2 x 20) + (2 x 2)	
	Halve 2-digit numbers through flexible partitioning, such as:	Fluent with halving any 3-digit number
	half of $373 = (300 \div 2) + (70 \div 2) + (3 \div 2) = (300 \div 2) + (60 \div 2) + (13 \div 2)$	
Complements to 1,000	As EYFS to Y5, plus:	
	Complements (pairs) to make 1 from all Thousandths, such as	Fluent with complements to 1 from adjusted Thousandths
	Thousandths adjust: 0.551+0.449, 0.552+0.448	*Ensure the main error is understood:
	Hundredths adjust: 0.552+0.448, .0562+0.438	0.341 + 0.769 ≠ 100 (because the Hundreds make 1,000
	Tenths adjust: 0.662+.0338, 0.762+0.238	already, the Tens produce an extra 100 and the One produce
		an extra 10)
Times Tables	All xT	Able to recall all products & quotients for all xT
		Example: $3 \times 2 = 6 \rightarrow$ "three twos are six"
Fractions, Decimals &	Y6 Common FDP:	Able to recall equivalences between Y6 Common FDP Set
Percentages	Quarters: $\frac{1}{4}$ = 0.25 = 25% $\frac{3}{4}$ = 0.25 = 75%	
	Fifths: $\frac{1}{5} = 0.2 = 20\%$ $\frac{2}{5} = 0.4 = 40\%$ $\frac{3}{5} = 0.6 = 60\%$ $\frac{4}{5} = 0.8 = 80\%$	
	Tenths: $\frac{1}{10} = 0.1 = 10\%$ $\frac{2}{10} = 0.2 = 20\%$ $\frac{3}{10} = 0.3 = 30\%$ $\frac{4}{10} = 0.4 = 40\%$	

Representations			
Part Part Whole:	Hundred Square:	1 2 3 4 5 6 7 8 9 10 FDP towers:	
		11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	
		31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50	
		51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 79	
		71 72 73 74 75 76 77 78 79 80	
		81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	



Appendix

Appendix 1: Factual fluency progression summary table from the DFE non-statutory Mathematics guidance: key stages 1 and 2

	Year 1	Year 2	Year 3	Year 4	Year 5
Additive factual fluency	Addition and subtraction within 10.	Addition and subtraction across 10.	Secure and maintain fluency in addition and subtraction within and across 10, through continued practice.		
Multiplicative factual fluency			Recall the 10 and 5 multiplication tables, and corresponding division facts.	Recall the 3, 6 and 9 multiplication tables, and corresponding division facts.	Secure and maintain fluency in all multiplication tables, and corresponding division facts, through continued practice.
			Recall the 2, 4 and 8 multiplication tables, and corresponding division facts.	Recall the 7 multiplication table, and corresponding division facts.	
				Recall the 11 and 12 multiplication tables, and corresponding division facts.	



Appendix 2: Addition and subtraction facts from the DFE non-statutory Mathematics guidance: key stages 1 and 2

+	0	1	2	3	4	5	6	7	8	9	10
0	0+0	0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9	0+10
1	1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+10
2	2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8	2+9	2+10
3	3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7	3+8	3+9	3+10
4	4+0	4+1	4+2	4+3	4+4	4+5	4+6	4+7	4+8	4+9	4+10
5	5+0	5+1	5+2	5+3	5+4	5+5	5+6	5+7	5+8	5+9	5+10
6	6+0	6+1	6+2	6+3	6+4	6+5	6+6	6+7	6+8	6+9	6+10
7	7+0	7+1	7+2	7+3	7+4	7+5	7+6	7+7	7+8	7+9	7+10
8	8+0	8+1	8+2	8+3	8+4	8+5	8+6	8+7	8+8	8+9	8+10
9	9+0	9+1	9+2	9+3	9+4	9+5	9+6	9+7	9+8	9+9	9+10
10	10+0	10+1	10+2	10+3	10+4	10+5	10+6	10+7	10+8	10+9	10+10

The full set of addition calculations that pupils need to be able to solve with automaticity are shown in the table above. Pupils must also be able to solve the corresponding subtraction calculations with automaticity.

Pupils must be fluent in these facts by the end of year 2, and should continue with regular practice through year 3 to secure and maintain fluency. It is essential that pupils have automatic recall of these facts before they learn the formal written methods of columnar addition and subtraction.



Appendix 3: Addition and subtraction facts from the DFE non-statutory Mathematics guidance: key stages 1 and 2

1 × 1	1 × 2	1 × 3	1 × 4	1 × 5	1 × 6	1 × 7	1 × 8	1 × 9	1 × 10	1 × 11	1 × 12
2 × 1	2 × 2	2 × 3	2 × 4	2 × 5	2 × 6	2 × 7	2 × 8	2 × 9	2 × 10	2 × 11	2 × 12
3 × 1	3 × 2	3 × 3	3 × 4	3 × 5	3 × 6	3 × 7	3 × 8	3 × 9	3 × 10	3 × 11	3 × 12
4 × 1	4 × 2	4 × 3	4 × 4	4 × 5	4 × 6	4 × 7	4 × 8	4 × 9	4 × 10	4 × 11	4 × 12
5 × 1	5 × 2	5 × 3	5 × 4	5 × 5	5 × 6	5 × 7	5 × 8	5 × 9	5 × 10	5 × 11	5 × 12
6 × 1	6 × 2	6 × 3	6 × 4	6 × 5	6 × 6	6 × 7	6 × 8	6 × 9	6 × 10	6 × 11	6 × 12
7 × 1	7 × 2	7 × 3	7 × 4	7 × 5	7 × 6	7 × 7	7 × 8	7 × 9	7 × 10	7 × 11	7 × 12
8 × 1	8 × 2	8 × 3	8 × 4	8 × 5	8 × 6	8 × 7	8 × 8	8 × 9	8 × 10	8 × 11	8 × 12
9 × 1	9 × 2	9 × 3	9 × 4	9 × 5	9×6	9 × 7	9 × 8	9×9	9 × 10	9 × 11	9 × 12
10 × 1	10 × 2	10 × 3	10 × 4	10 × 5	10 × 6	10 × 7	10 × 8	10 × 9	10 × 10	10 × 11	10 × 12
11 × 1	11 × 2	11 × 3	11 × 4	11 × 5	11 × 6	11 × 7	11 × 8	11 × 9	11 × 10	11 × 11	11 × 12
12 × 1	12 × 2	12 × 3	12 × 4	12 × 5	12 × 6	12 × 7	12 × 8	12 × 9	12 × 10	12 × 11	12 × 12

Pupils must be fluent in these facts by the end of year 4, and this is assessed in the multiplication tables check. Pupils should continue with regular practice through year 5 to secure and maintain fluency.

The 36 most important facts are highlighted in the table. Fluency in these facts should be prioritised because, when coupled with an understanding of commutativity and fluency in the formal written method for multiplication, they enable pupils to multiply any pair of numbers