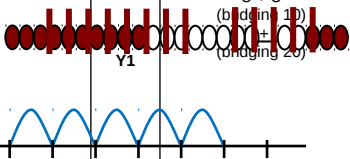
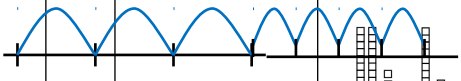
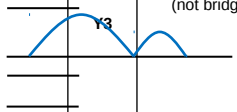
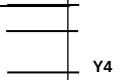


 <p>YR</p>	<p>Addition as 'combining' (using ICT photos / IWB)</p> <p>Might be recorded as: $2 + 3 = 5$</p>	<p>Practical / recorded using ICT</p>	<p>Pictures / Objects</p> <p>I buy 2 cakes and my friend buys 3 cakes. How many cakes did we buy altogether?</p>	<p>Use of a number line – horizontal and vertical</p> <table border="1" data-bbox="1176 124 1630 167"> <tr> <td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td> </tr> </table>	0	1	2	3	4	5	6	7	8	9	10	<p>1 more/less (nos up to 20)</p>	<p>Rhymes</p>
0	1	2	3	4	5	6	7	8	9	10							
 <p>Y1</p>	<p>Addition as 'counting on'</p> <p>$U + U$ (bridging 10) $U + U$ (bridging 20)</p>	<p>Practical / recorded using ICT</p>	<p>Symbols</p> <p>8 people are on the bus. 5 more get on at the next stop. How many people are on the bus now?</p> <p>[Might be recorded as: $8 + 5 = 13$]</p>	<p>Number track / Number line – jumps of 1 (modelled using bead strings)</p> <p>$18 + 5 = 23$</p> <p>+1 +1 +1 +1 +1</p> <p>18 19 20 21 22 23 24</p>	<p>Pairs to 10</p> <p>1 / 10 more/less than a number</p>	<p>Bonds up to 20</p> <p>U + multiple of 10</p> <p>TU + multiple of 10</p> <p>+9 (by +10, -1)</p>											
 <p>Y2</p>	<p>TU + TU (bridging 10s / 100)</p>	<p>Pictures / Symbols</p> <p>$23 + 12 = 35$</p>	<p>Number line (jumps of 10 and 1)</p> <p>$34 + 47$</p> <p>+10 +10 +10 +1 +1 +1 +1</p> <p>47 57 67 77 78 79 80 81</p> <p>[Also can be done in efficient jumps]</p>	<p>Partitioning</p> <p>$35 + 47$</p> <p>$40 + 30 = 70$</p> <p>$7 + 5 = 12$</p>	<p>Partitioning</p> <p>$\begin{array}{r} 30 \ 5 \\ + 40 \ 2 \\ \hline 70 \ 7 = 77 \end{array}$</p>	<p>Pairs to 20</p> <p>Pairs to 100 (using multiples of 10)</p>	<p>TU + U / multiple of 10</p> <p>U + U + U</p> <p>TU + TU</p>										
 <p>Y3</p>	<p>HTU + TU (not bridging 1000)</p> <p>HTU + HTU (not bridging 1000)</p>	<p>Number line</p> <p>$57 + 285 = 342$</p> <p>+50</p> <p>+7</p> <p>285 335 342</p>	<p>Partitioning</p> <p>$336 + 87 = 423$</p> <p>+ 300 30 6</p> <p>80 7</p> <p>300 110 13</p>	<p>Expanded vertical</p> <p>$\begin{array}{r} 374 \\ + 248 \\ \hline 12 \\ 110 \\ 500 \\ \hline 622 \end{array}$</p>	<p>Bonds to 20 / 100</p> <p>Pairs of two-digit multiples of 10</p> <p>Multiples of 50 that total 1000</p>	<p>HTU + U</p> <p>HTU + T</p> <p>HTU + H</p> <p>TU + TU</p> <p>TU + near multiple of 10</p>											
 <p>Y4</p>	<p>HTU + TU</p> <p>HTU + HTU</p> <p>ThHTU + ThHTU (incl bridging 1000)</p>	<p>Expanded vertical</p> <p>$\begin{array}{r} 874 \\ + 548 \\ \hline 12 \\ 110 \\ 1300 \\ \hline 1422 \end{array}$</p>	<p>Compact vertical</p> <p>$\begin{array}{r} 2 \ 374 \\ + 3 \ 948 \\ \hline 6 \ 322 \\ 1 \ 11 \end{array}$</p>	<p>Bonds to 1000</p> <p>Derive sums of pairs of multiples of 10 / 100 / 1000</p> <p>(Multiples of 50 that total 1000)</p> <p>Pairs of fractions to 1</p>	<p>(Pairs of multiples of 10 / 100 / 1000)</p> <p>Three, 2-digit multiples of 10</p> <p>Two, three-digit multiples of 10</p>												
 <p>Y5</p>	<p>Addition beyond 4 -digits</p> <p>Decimals up to 2dp (23.7 + 48.56)</p>	<p>Compact vertical</p> <p>$\begin{array}{r} 12 \ 374 \\ + 43 \ 948 \\ \hline 56 \ 322 \\ 1 \ 11 \end{array}$</p>	<p>Compact vertical</p> <p>$\begin{array}{r} 23.70 \\ + 48.56 \\ \hline 72.26 \\ 1 \ 1 \end{array}$</p>	<p>(derive) Bonds up to 1 (2dp)</p> <p>(derive) Bonds up to 10 (1dp)</p>	<p>5 digit + 5 digit $12 \ 462 + 2300$</p> <p>Decimal + Decimal (eg $19.7 + 3.4$)</p>												
 <p>Y6</p>	<p>Consolidate / extend Y5 including: Three numbers Decimals up to 3dp (context: measures)</p>	<p>Solve problems, recognising when one written method is more efficient.</p> <ul style="list-style-type: none"> Ella's suitcase weighed 19.5kg. She added her sun tan lotion, weighing 350g. How much did it weigh now? 28.07 m + 5.99 m 	<p>Compact vertical</p> <p>$\begin{array}{r} 3.243 \\ + 18.070 \\ \hline 21.313 \\ 1 \ 1 \end{array}$</p>														

Estimation and checking



SUBTRACTION

AGE-RELATED EXPECTATIONS

Recording

Rapid Recall

Mental Calculation

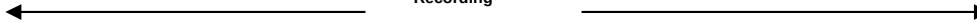
	<p>Subtraction as 'taking away' from a group</p>	<p>Practical or recorded using ICT</p> <p>Might be recorded as: 5 - 2 = 3</p>	<p>Pictures / Objects</p> <p>I have five cakes. I eat two of them. How many do I have left?</p>	<p>Use of a number line – horizontal and vertical</p> <table border="1" style="display: inline-table;"> <tr> <td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td> </tr> </table>	0	1	2	3	4	5	6	7	8	9	10	<p>1 less (nos up to 20)</p>	<p>(see recording) Rhymes</p>
0	1	2	3	4	5	6	7	8	9	10							
	<p>Subtraction as 'taking away' and 'difference' (by counting on)</p>	<p>Practical or recorded using ICT</p>	<p>Symbols</p> <p>Mum baked 9 biscuits. I ate 5. How many were left?</p> <p>[Might be recorded as: 9 - 5 = 4]</p>	<p>Taking away – jumps of 1 (modelled using bead strings)</p> <p>13 - 5 = 8</p> <p>-1 -1 -1 -1 -1</p> <p>8 9 10 11 12 13</p>	<p>Counting on – jumps of 1 (modelled using bead strings)</p> <p>11 - 8 = 3</p> <p>+1 +1 +1</p> <p>0 1 2 3 4 5 6 7 8 9 10 11</p>	<p>Subtraction facts to 10</p> <p>1 / 10 less than a number</p>	<p>Subtract numbers up to 20</p> <p>TU – multiple of 10</p>										
	<p>Subtraction as inverse of addition</p> <p>TU - TU (bridging 10s)</p>	<p>Pictures / Symbols</p> <p>45 - 22 = 23</p>	<p>Number lines - taking away</p> <p>74 - 13 = 61</p> <p>-1 -1 -1</p> <p>61 62 63 64 74</p> <p>[Also can be done in efficient jumps]</p>	<p>Number lines - counting on</p> <p>74 - 27 = 47</p> <p>+3 +4</p> <p>0 27 30 70 74</p> <p>[Also jumps can be in 10s and 1s]</p>	<p>Subtraction facts up to 20</p> <p>Differences of multiples of 10</p>	<p>Difference by counting up</p> <p>TU - U / multiple of 10</p> <p>TU-TU</p>											
	<p>TU - TU</p> <p>HTU - TU</p> <p>HTU - HTU</p>	<p>Number line - counting on</p> <p>141 - 89 = 52</p> <p>+11</p> <p>89 100 141</p>	<p>Number line - taking away</p> <p>326 - 78 = 248</p> <p>-8 -70</p> <p>248 256 326</p>	<p>Decomposition</p> <p>272 - 48 = 224</p> <p>[Red Alert]</p> <p>200 70 2</p> <p>- 40 8</p> <p>200 20 4</p>	<p>Subtraction facts up to 20</p> <p>Differences of multiples of 10</p>	<p>TU - U / TU</p> <p>HTU - U</p> <p>HTU - T</p> <p>HTU - H</p> <p>TU - near multiple of 10 (positive answers)</p>											
	<p>HTU - TU</p> <p>HTU - HTU</p> <p>THHTU - THHTU</p>	<p>Number lines - counting on</p> <p>754 - 186 = 568</p> <p>+500 +54</p> <p>186 200 700 754</p>	<p>Decomposition Partitioning</p> <p>723 - 458 = 265 [Red Alert]</p> <p>600 110 13</p> <p>700 20 3</p> <p>400 50 8</p> <p>600 110 13</p> <p>400 50 8</p> <p>200 60 5</p>	<p>Decomposition Compact vertical</p> <p>Extending to 4-digit numbers</p> <p>744</p> <p>- 367</p> <p>374</p>	<p>Derive differences of pairs of multiples of 10 / 100 / 1000</p>	<p>TU - TU</p> <p>Subtract pairs of multiples of 10 / 100 / 1000</p> <p>(Th)HTU - (Th)HTU (small difference)</p>											
<p>Y5</p>	<p>Subtraction beyond 4-digits</p> <p>Decimals up to 2dp (72.5 - 45.7)</p>	<p>Decomposition Compact</p> <p>Extending to</p> <p>72.5 - 45.7</p> <p>71.2 15</p> <p>- 4 5.7</p> <p>2 6.8</p> <p>Extending to 2dp</p>	<p>Use number facts for mental subtraction</p> <p>9 - 2 = 7</p> <p>0.9 - 0.2 = 0.7</p> <p>0.09 - 0.02 = 0.07</p>	<p>5digit - 5 digit</p> <p>Near multiple of 1000 - Near multiple of 1000 (eg 6070 - 4097)</p> <p>Decimal - Decimal (eg 9.5 - 3.7)</p>													
<p>Y6</p>	<p>Consolidate / extend Y5 including; Decimal to 3 dp relating to measures</p>	<p>Solve problem, recognising when one written method is more efficient.</p> <ul style="list-style-type: none"> > There was 2.5 litres in the jug. Stuart drank 385 ml. How much was left? > 18.07 km - 3.243 km 															

Estimation and checking

MULTIPLICATION

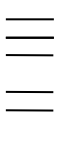
AGE-RELATED EXPECTATIONS

Recording



YR	Count repeated groups of the same size (1s / 5s / 10s)	Practical / recorded using ICT (photos, IWB)	Pictures / Objects 3 plates, 2 sweets on each plate:			Counting on in 1s and 2s	(see recording)																
Y1	Solve (practical) problems that involve combining groups of 2, 5 or 10	Practical / recorded using ICT	Pictures / Symbols There are three sweets in one bag. How many are there in five bags?	Number tracks / Number line (modelled using bead strings) 2×3 or 3×2 [two, three times] or [three groups of two]		Count on / back in 1s, 2s, 5s and 10s Doubles of numbers to 10	(see recording)																
	Multiplication as repeated addition and arrays	Pictures / Symbols There are four apples in each box. How many apples in six boxes?	Repeated addition 5×3 or 3×5	Arrays 5×3 or 3×5		Derive multiples of 2, 5 & 10 Recall 2x, 5x and 10x tables Relate to x facts (and derive related + facts) Doubles of numbers to 20	Doubles of TU numbers																
			0 3 6 9 12 15 0 5 10 15 [ref Multiplication facts ITP]	Also 14×2 as $(10 \times 2$ and $4 \times 2)$																			
		Arrays 13×4 $10 \times 4 = 40$ $3 \times 4 = 12$	Expanded grid method 13×4	Partitioning (possible use of number line to record steps) $13 \times 4 = 52$ $10 \times 4 = 40$ $3 \times 4 = 12$	Compact grid method $23 \times 4 = 80 + 12 = 92$	Count in multiples 4, 8, 50 and 100 Derive / recall 3, 4, & 8 times tables (Derive related division facts) Recognise multiples of 2, 5 and 10 up to 1000	$U \times TU \times 10 / 100$ (describe the effect) Doubles of TU / HTU numbers																
Y4	Record, support and explain: HTU x U	Compact grid method $543 \times 6 = 3258$	Expanded vertical 43×6 $18 (6 \times 3)$ $240 (6 \times 40)$ 258	Expanded vertical 237×4 (estimate: $250 \times 4 = 1000$) 237×4 $28 (4 \times 7)$ $120 (4 \times 30)$ $800 (4 \times 200)$ 948	Compact vertical 43×6 258 1	Derive / recall facts to 12×12 Multiples of numbers to 12 up to the 12^{th} multiple	$U \times U \times U$ Numbers up to $1000 \times 10 / 100$ (whole number answers and understand the effect) Doubles of TU / HTU numbers and multiples of 10 / 100																
Y5	Refine and use efficient methods: HTU x TU THHTU x TU U.t x U	Grid method 47×36 (estimate: $50 \times 40 = 2000$) <table border="1"><tr><td>x</td><td>40</td><td>7</td><td></td></tr><tr><td>30</td><td>1200</td><td>210</td><td>1410</td></tr><tr><td>6</td><td>240</td><td>42</td><td>282</td></tr><tr><td></td><td></td><td></td><td>1692</td></tr></table> Including decimals	x	40	7		30	1200	210	1410	6	240	42	282				1692	Compact vertical 237×54 (estimate: $250 \times 50 = 12\,500$) 237×54 $948 (4 \times 237)$ $11\,850 (50 \times 237)$ $12\,798 (54 \times 237)$	Compact vertical 4.7×8 (estimate: $5 \times 8 = 40$) 4.7×8 $\times \frac{8}{5}$	Compact vertical 3256×18 (estimate: $3000 \times 20 = 60\,000$) 3256×18 $26\,048 (8 \times 3256)$ $32\,560 (10 \times 3256)$ $58\,608$	Use facts to multiply pairs of multiples of 10 / 100 Use facts up to 12×12 to derive decimal x (eg 0.8×7) Identify common factors and prime numbers	TU x U (eg 42×6) Doubles of U.t Multiply decimals by 10 / 100 / 1000 Derive square and cubed numbers Know factor pairs of a number
x	40	7																					
30	1200	210	1410																				
6	240	42	282																				
			1692																				

Estimate first

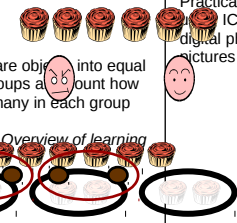
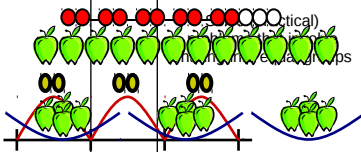

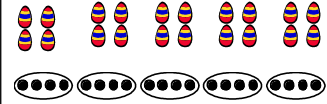
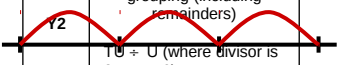
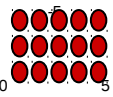
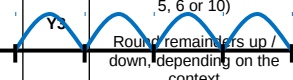
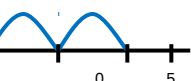
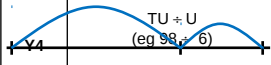



	Use efficient methods: Decimal x U (eg 31.6 x 7) ThHTU x TU	Grid method 5.65×9 (estimate: $6 \times 9 = 54$) $\begin{array}{r rr rr} \times & 5 & 0.6 & 0.05 & & \\ \hline 9 & 45 & 5.4 & 0.45 & 50.85 & \end{array}$ Answer: $5.65 \times 9 = 50.85$	Consolidate Compact vertical 3256×18 (estimate: $3000 \times 20 = 60\,000$) $\begin{array}{r} 3256 \\ \times 18 \\ \hline 26\,048 \quad (8 \times 3256) \\ 32\,560 \quad (10 \times 3256) \\ \hline 58\,608 \\ 1 \end{array}$		U.t x U Integer x 1000 / 100 / 10 / 0.1 / 0.01
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DIVISION

AGE-RELATED EXPECTATIONS

Recording

YR  Share obj into equal groups and count how many in each group ref: Overview of learning	Practical / recorded ICT (eg digital photos / pictures on IWB) Pictures / Objects 6 cakes shared between 2 6 cakes put into groups of 2	Symbols 6 cakes shared between 2 6 cakes put into groups of 2			(see recording)
	Practical / recorded using ICT Pictures / Symbols How many apples in each bowl if I share 12 apples between 3 bowls?	Number tracks / Number line (modelled using bead strings) $8 \div 2 = 4$ $6 \div 2 = 3$ 	Pictures / Symbols Four eggs fit in a box. How many boxes would you need to pack 20 eggs? 		(see recording)
Division as sharing and grouping (including remainders)  $TU \div U$ (where divisor is 2, 5 or 10)	Number lines / Arrays $15 \div 5$ 	$15 \div 5 = 3$ $10 \div 5 = 2$ $5 \div 5 = 1$		Derive / recall + facts for 2, 5 and 10 tables Derive / recall halves of even numbers to 40	$TU \div 2$ Counting up in steps
$TU \div U$ (where divisor is 2, 3, 4, 5, 6 or 10) Round remainders up / down, depending on the context 	Number lines (start from zero) $33 \div 5 = 6 \text{ r}3$ 	Partitioning (multiples of the divisor) $50 \div 4 = 12 \text{ r}2$ $10 \times 4 = 40$ $2 \times 4 = 8 \quad (48)$ [ref Number dials ITP]		Derive / recall + facts for 3, 4 and 8x tables	$TU / HTU \div 2$
Record, support and explain: $TU \div U$ (eg $96 \div 6$) 	Number lines (start from zero) $96 \div 6 = 16$ 10×6 6×6 	Chunking (vertical layout) $\begin{array}{r} 96 \\ -70 \quad (7 \times 10) \\ \hline 26 \\ -21 \quad (7 \times 3) \\ \hline 5 \end{array}$ $96 \div 7$ Answer: 13 R 5		Derive / recall + facts up to the 12 times table	Numbers up to 1000 \div 10 / 100 (whole number answers and understand the effect) Halves of TU / HTU numbers and multiples of 10 / 100
Refine and use efficient methods: 'Empty' number line (start from 0) may be used to record calculation strategy Y5	Chunking (expanded) $\begin{array}{r} 6 \overline{)196} \\ -60 \quad 6 \times 10 \\ \hline 136 \\ -60 \quad 6 \times 10 \\ \hline 76 \\ -60 \quad 6 \times 10 \\ \hline 16 \\ -12 \quad 6 \times 2 \\ \hline 4 \quad 32 \\ \hline 32 \\ \hline 0 \end{array}$ Answer: 32 R 4	Chunking (efficient) $346 \div 8$ (estimate: $400 \div 8 = 50$) $\begin{array}{r} 8 \overline{)346} \\ -320 \quad (8 \times 40) \\ \hline 26 \\ -24 \quad (8 \times 3) \\ \hline 2 \end{array}$ Answer: 43 R 2	'Short' division $291 \div 3$ (estimate: $270 \div 3 = 90$) $\begin{array}{r} 97 \\ 3 \overline{)291} \\ -27 \\ \hline 21 \\ -21 \\ \hline 0 \end{array}$ Answer: 97	Identify common factors and prime numbers	Divide using factors of the divisor (eg $8 \div 2$ by 2 and 4) Divide numbers by 10 / 100 / 1000 (including decimals) Halves of U.t / 0.th Know factor pairs of a number

Estimate first



Y6	Use efficient methods: Decimal ÷ U (eg 27.6 ÷ 8) ThHTU ÷ TU	Chunking (efficient) $25.6 \div 8$ (estimate: $24 \div 8 = 3$) $\begin{array}{r} 8 \overline{)25.6} \\ -24.0 \\ \hline 1.6 \\ -1.6 \\ \hline 0 \end{array}$ (8×3.0) (8×0.2) Answer: $25.6 \div 8 = 3.2$	Long division $432 \div 15$ becomes $\begin{array}{r} 28 \text{ r } 12 \\ 15 \overline{)432} \\ \underline{300} \\ 132 \\ \underline{120} \\ 12 \end{array}$ Answer: 28 remainder 12	$432 \div 15$ becomes $\begin{array}{r} 28 \\ 15 \overline{)432} \\ \underline{300} \\ 132 \\ \underline{120} \\ 12 \end{array}$ $\frac{12}{15} = \frac{4}{5}$ Answer: $28 \frac{4}{5}$	$432 \div 15$ becomes $\begin{array}{r} 28.8 \\ 15 \overline{)432.0} \\ \underline{300} \\ 132 \\ \underline{120} \\ 120 \\ \underline{120} \\ 0 \end{array}$ Answer: 28.8	Derive ÷ facts involving multiples of 10 / 100 (eg 240 ÷ 30) and decimals (eg $4.8 \div 6$)	Divide using factors of the divisor (eg $\div 15$ by $\div 5$ and $\div 3$) TU ÷ U U.t ÷ U Integer ÷ 1000 / 100 / 10
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