

DIVISION - YEAR 1

VOCABULARY: groups of..., equal rows, lots of..., half/halve, sharing

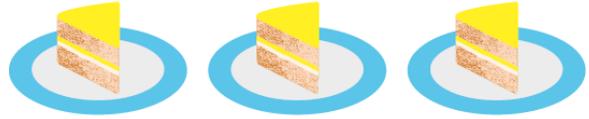
Mental calculation/recall of Division facts:

*halves of all even numbers to 20, counting in 2s/10s

*sharing equally

(word problems)

Put 12 cherries equally on 3 slices of cake.
How many cherries are there on each slice of cake?



Make a mark on each group as you share out the items, one at a time, saying the number each time you make a mark



There are 4 cherries on each slice of cake.

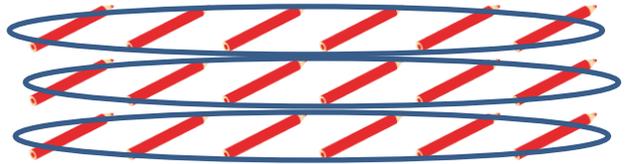
*grouping equally

(word problems)

Ravi has 18 pencils.
He puts 6 pencils in each box.
How many boxes does Ravi need?



Draw circles to group the items in groups of ...



Ravi needs 3 boxes.

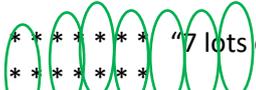
DIVISION - YEAR 2

VOCABULARY: how many ... go into ...?, ÷

Mental calculation/recall of Division facts:

*division facts for 2,3,4,5,10 times tables, counting in 5s

[Y1: halves of all even numbers to 20, counting in 2s/10s]

<p>*grouping equally, by sorting cubes</p>	<p>$15 \div 5$ read as "how many 5s go into 15?"</p>  <p>"3 lots of 5 go into 15"</p>
<p>*grouping equally, by circling</p>	<p>$14 \div 2$ read as "how many 2s go into 14?"</p>  <p>"7 lots of 2 go into 14"</p>
<p>*grouping equally, using counting up</p>	<p>$30 \div 5$ read as "how many 5s go into 30?"</p> <p>"5,10,15,20,25,30" putting one finger up each time</p> <p>"6 lots of 5 go into 30"</p>
<p>*understanding of relationship with multiplication</p>	<p>$4 \times 10 = 40$ read as "4 lots of 10 is equal to 40"</p> <p>used to write related division fact:</p> <p>$40 \div 10 = 4$ read as "how many 10s go into 40?"</p> <p>4 lots of 10 go into 40"</p>
<p>*missing box questions</p>	<p>$\square \div 2 = 6$</p> <p>read as "how many 2s go into this number?"</p> <p>6 lots of 2 go into this number"</p> <p>Use times table knowledge, or count up in 2s</p>
<p>*missing box questions</p>	<p>Lots of experience of using cubes to group equally:</p> <p>$10 \div 2 = \square$ read as "how many 2s go into 10?"</p> <p>$10 \div 5 = \square$ read as "how many 5s go into 10?"</p> <p>Link with commutativity of multiplication:</p> <p>$5 \times 2 = 10$ read as "5 lots of 2 is equal to 10"</p> <p>$2 \times 5 = 10$ read as "2 lots of 5 is equal to 10"</p> <p>So $45 \div \square = 9$ can be changed to $45 \div 9 = \square$</p>
<p>*grouping equally (word problems)</p>	<p>Amira shares 12 keyrings equally between 2 children. How many do they each get?</p> <p>Draw 2 boxes, mark alternately in each one, counting to 12 // / / / // Each child gets 6</p> <p>/// / /// keyrings. </p>
<p>*sharing equally (word problems)</p>	<p>Ruby has 15 marshmallows to put into bags of 5. How many bags does she need?</p> <p>Write $15 \div 5$ read as "how many 5s go into 15?"</p> <p>Use times tables knowledge, or write out times table, or draw 15 marks and circle around in 5s.</p> <p>She needs 3 bags.</p>

DIVISION - YEAR 3 2-digit ÷ 1-digit

VOCABULARY: division, divided by, partition

Mental calculation/recall of Division facts:

*division facts for 6,8 times tables

[Y2: division facts for 2,3,4,5,10 times tables, halves of all even numbers to 20, counting in 2s/5s/10s]

*understanding of the difference between grouping equally and sharing equally	Lots of experience of using cubes to group equally and share equally $12 \div 4$ interpreted as “how many lots of 4 can be made from 12?” $12 \div 4$ interpreted as “if you put 12 into 4 equal-sized groups, how many are there in each group?”
---	---

*family of multiplication and division facts	Using arrays * * * * * * * * * * * * * * * $3 \times 8 = 24$ read as “3 lots of 8 is equal to 24” so $24 \div 8 = 3$ read as “how many 8s go into 24? 3” * * * * * * * * * * * * * * * $8 \times 3 = 24$ read as “8 lots of 3 is equal to 24” so $24 \div 3 = 8$ read as “how many 3s go into 24? 8”
--	---

*÷ 10	$230 \div 10$ <table style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr><td style="border: 1px dashed gray; padding: 5px;">H</td><td style="border: 1px dashed gray; padding: 5px;">T</td><td style="border: 1px dashed gray; padding: 5px;">U</td></tr> <tr><td style="border: 1px dashed gray; padding: 5px;"> </td><td style="border: 1px dashed gray; padding: 5px;"> </td><td style="border: 1px dashed gray; padding: 5px;"> </td></tr> <tr><td style="border: 1px dashed gray; padding: 5px;">2</td><td style="border: 1px dashed gray; padding: 5px;">3</td><td style="border: 1px dashed gray; padding: 5px;">0</td></tr> <tr><td style="border: 1px dashed gray; padding: 5px;"> </td><td style="border: 1px dashed gray; padding: 5px;">2</td><td style="border: 1px dashed gray; padding: 5px;">3</td></tr> </table> <div style="display: inline-block; vertical-align: middle; margin-left: 10px;"> $\div 10$ </div>	H	T	U				2	3	0		2	3	Each digit moves one column to the right (down the PV chart)
H	T	U												
2	3	0												
	2	3												

*dividing a 2-digit multiple of 10, and a 3-digit multiple of 100	$6 \div 3 = 2$ $60 \div 3 = 20$ $600 \div 3 = 200$
---	--

*using partitioning into H,T,U to divide a 3-digit number (each part divisible)	$486 \div 2$ $400 \div 2 \quad 80 \div 2 \quad 6 \div 2$ $200 + 40 + 3 = 243$
---	---

*using partitioning into numbers in the times table to divide a 2-digit number	$78 \div 3$ repeatedly partition into 10 lots of (30) then into other multiples of 3 $30 \div 3 \quad 30 \div 3 \quad 18 \div 3$ $10 + 10 + 6 = 26$
--	---

DIVISION - YEAR 4 3-digit ÷ numbers up to 12

VOCABULARY: quotient, remainders

Mental calculation/recall of Division facts:

*division facts for 7,9,11,12 times tables, counting in 25s/50s

[Y3: division facts for 2,3,4,5,6,8,10 times tables, halves of all even numbers to 20, counting in 2s/5s/10s]

<p>*$b \div 1$</p>	<p>$6 \div 1 = 6$ "how many 1s are in 6? 6"</p>																														
<p>*$b \div b$</p>	<p>$6 \div 6 = 1$ "how many 6s are in 6? 1"</p>																														
<p>*$\div 100$</p>	<p>$470 \div 100$</p> <table border="1" data-bbox="699 461 1040 743"> <tr> <td>Th</td> <td>H</td> <td>T</td> <td>U</td> <td>t</td> <td>h</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>4</td> <td>7</td> <td>0</td> <td>.</td> <td></td> </tr> <tr> <td></td> <td></td> <td>4</td> <td>7</td> <td>.</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>4</td> <td>.</td> <td>7</td> </tr> </table> <p>Each digit moves two columns to the right (down the PV chart)</p> <p>$\div 10$ $\div 10$</p>	Th	H	T	U	t	h								4	7	0	.				4	7	.					4	.	7
Th	H	T	U	t	h																										
	4	7	0	.																											
		4	7	.																											
			4	.	7																										
<p>*2-digit number (not bigger than 12 lots of) ÷ number 2→12, with a remainder</p>	<p>Use times tables knowledge $39 \div 5$ read as "how many 5s go into 39?" Work back from 39 to find the biggest multiple of 5 that is less than 39 (35), → quotient is 7 $39 - 35 = 4 \rightarrow$ remainder is 4 so $39 \div 5 = 7 \text{ rem } 4$</p>																														
<p>*using partitioning into numbers in the times table to divide a 3-digit number (multiple)</p>	<p>$651 \div 3$</p> <p>$300 \div 3 \quad 300 \div 3 \quad 30 \div 3 \quad 21 \div 3$ $100 + 100 + 10 + 7 = 217$</p>																														
<p>*using partitioning into numbers in the times table to divide any 3-digit number (leaving a remainder)</p>	<p>$356 \div 3$</p> <p>$300 \div 3 \quad 30 \div 3 \quad 24 \div 3 \quad \text{rem } 2$ $100 + 10 + 8 = 118 \text{ rem } 2$</p>																														

DIVISION - YEAR 5 4-digit ÷ numbers up to 12

VOCABULARY: divisible by..., factors, factor pairs, prime numbers, prime factors, common factors, lowest common factor, short division method

Mental calculation/recall of Division facts:

*using times tables facts to divide multiples of powers of 10, eg $2800 \div 40 = 70$

[Y4: division facts for all times tables up to 12×12

halves of all even numbers to 20, counting in 2s/5s/10s/25s/50s]

* $\div 1000$

$250 \div 1000$

Th	H	T	U	t	h
	2	5	0	.	
		2	5	.	
			2	.	5
			0	.	2 5

Each digit moves three columns to the right (down the PV chart)

$\div 10$
 $\div 10$
 $\div 10$

*4-digit ÷ 1-digit short division (no remainder)

$$\begin{array}{r} 0 \ 2 \ 9 \ 4 \\ 8 \overline{) 2 \ 3 \ 5 \ 2} \\ \underline{2 } \\ \ 3 \\ \underline{ \ 2 } \\ \ 5 \\ \underline{ \ 4 } \\ \ 2 \\ \underline{ \ 2 } \\ \ 0 \end{array}$$

How many 8s go into 2? 0

Write 2 above the number in the next column

How many 8s go into 23? 2 ($2 \times 8 = 16$)

$23 - 16 = 7$

Write 7 above the number in the next column

How many 8s go into 75? 9 ($9 \times 8 = 72$)

$75 - 72 = 3$

Write 3 above the number in the next column

How many 8s go into 32? 4

*4-digit ÷ 1-digit short division (with remainder)

$$\begin{array}{r} 0 \ 5 \ 6 \ 7 \ \text{rem } 3 \\ 8 \overline{) 4 \ 5 \ 3 \ 9} \\ \underline{4 } \\ \ 5 \\ \underline{ \ 4 } \\ \ 3 \\ \underline{ \ 2 } \\ \ 9 \\ \underline{ \ 8 } \\ \ 3 \end{array}$$

How many 8s go into 4? 0

Write 4 above the number in the next column

How many 8s go into 45? 5 ($5 \times 8 = 40$)

$45 - 40 = 5$

Write 5 above the number in the next column

How many 8s go into 53? 6 ($6 \times 8 = 48$)

$53 - 48 = 5$

Write 5 above the number in the next column

How many 8s go into 59? 7 ($7 \times 8 = 56$)

$59 - 56 = 3$

Remainder = 3

DIVISION - YEAR 6 any size number ÷ number up to 12

VOCABULARY: long division, decimal remainders, fraction remainders, divisor, dividend, divisible by..., factors, factor pairs, prime numbers, prime factors, common factors, lowest common factor, short division

Mental calculation/recall of Division facts:

*using times tables facts to divide by decimal numbers with 1 significant digit eg $28 \div 0.7 = 40$

[Y5: using times tables facts to divide multiples of powers of 10, eg $2800 \div 40 = 70$, division facts for all times tables up to 12×12

halves of all even numbers to 20, counting in 2s/5s/10s/25s/50s]

*long division

	0	2	9	4	
8	)	2	3	5	2
		2	3		
		1	6		
			7	5	
			7	2	
				3	2
				3	2
					0

How many 8s go into 2? 0

Write 2 underneath, move down the 3

How many 8s go into 23? 2 ($2 \times 8 = 16$)

Write 16, do $23 - 16 = 7$

Move down the 5

How many 8s go into 75? 9 ($9 \times 8 = 72$)

Write 72, do $75 - 72 = 3$

Move down the 2

How many 8s go into 32? 4 ($4 \times 8 = 32$)

Write 32, do $32 - 32 = 0$

*long division with decimal remainder

	0	5	6	7	.	3	7	5	
8	)	4	5	3	9	.	0	0	0
		4	5						
		4	0						
			5	3					
			4	8					
				5	9				
				5	6				
					3	0			
					2	4			
						6	0		
						5	6		
							4	0	
							4	0	
								0	

When you get to $59 - 56 = 3$, mark a decimal point after the 9 in 4539 and after the 7 in 567. Keep writing 0s and moving them down until no more are required (or until you have an answer with enough decimal places).

*division with remainder shown as a fraction

	0	5	6	7	$\frac{3}{8}$
8	)	4	5	3	9
		4			
			5		
				5	

Use short division or long division.

When you get to a remainder of 3, write a fraction of 3 over the divisor, 8

Simplify the fraction if it is not in its simplest form.