

Year 7 Term 2 Addition and Subtraction



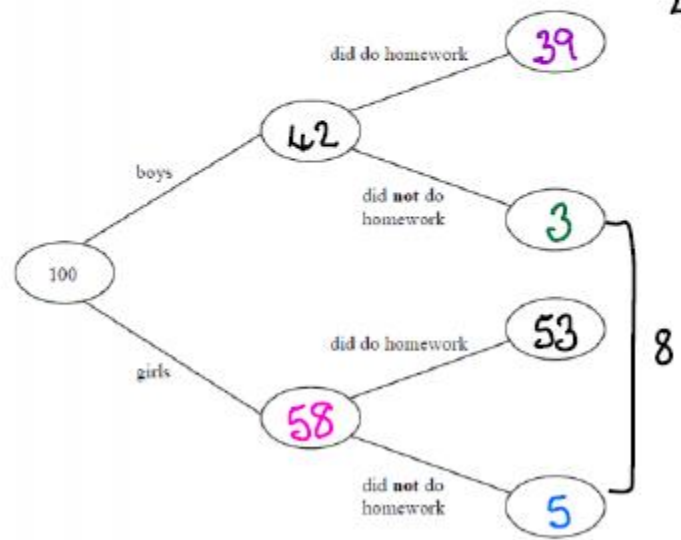
- 100 students had some homework. ✓
42 of these students are boys. ✓
8 of the 100 students did not do their homework. ✓
53 of the girls did do their homework. ✓

$$100 - 42 = 58$$

$$58 - 53 = 5$$

$$8 - 5 = 3$$

$$42 - 3 = 39$$



The two-way table shows some information about how some men and some women travelled to work yesterday.

	Train	Car	Bus	Total
Men	12	10	6	28
Women	11	4	7	22
Total	23	14	13	50

(a) Work out the total number of women.

$$50 - 28 = 22$$

22 (1)

(b) Work out the number of people who travelled to work by train yesterday.

$$12 - 6 = 7$$

$$28 - (12 + 6) = 10$$

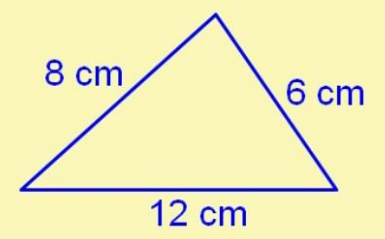
$$10 + 4 = 14$$

$$22 - (4 + 7) = 11$$

$$12 + 11 = 23$$

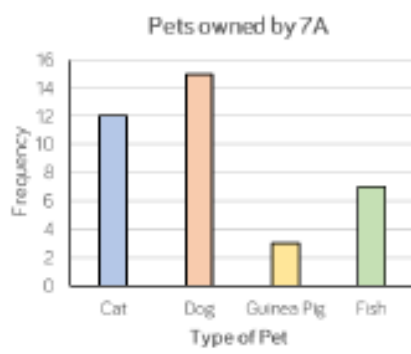
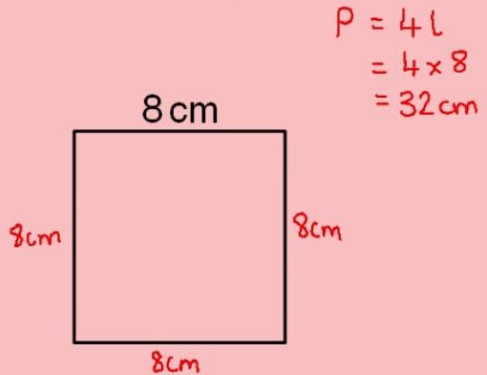
23 (3)

What is the perimeter of this triangle?



$$8 + 6 + 12 = 26 \text{ cm}$$

Find the perimeter of this square, which has sides of length 8 cm.



The bar chart shows the number of children in a class of 30 pupils who have various types of pet. What is the total of the frequencies? Why is this not total not 30? What is the difference between the number of pupils with a dog and the number with a guinea pig? What other questions can you ask?

Written method for addition Mathswatch 17

- Line up the digits in the correct columns

e.g. $132 + 239$

	H	T	U
132	1	3	2
239	2	3	9
+			
	3	7	1

Written method for subtraction Mathswatch 18

- Line up the digits in the correct columns

e.g. $327 - 119$

	H	T	U
327	3	2	7
-	1	1	9
	2	0	8

Multiply & divide by 10, 100, 1000

(Mathswatch 30)

- By moving the digits

To multiply by 10 move the dp ONE place RIGHT

e.g. 3.52×10
 $= 35.2$

Multiples mathswatch 28

- Multiples are the number sequences that make up the tables

Example

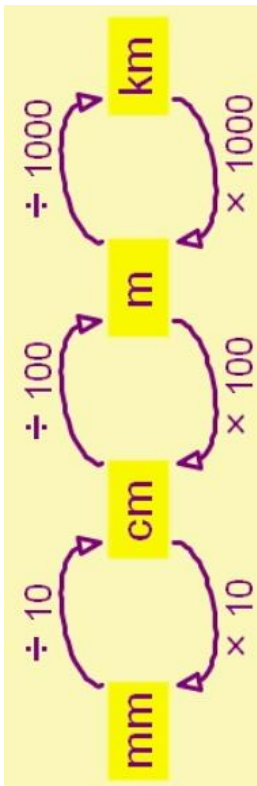
The multiples of 2 are:

2 4 6 8 10 ...

- FACTORS** are what divides exactly into a number

e.g. Factors of 12 are:

1	12
2	6
3	4



1/2 Multiply by a two digit number

(Mathswatch 19)

Try different methods to find which suits you

e.g. 152×34

COLUMN METHOD

$$\begin{array}{r} 152 \\ 34 \times \\ \hline 608 \quad (\times 4) \\ 4560 \quad (\times 30) \\ \hline 5168 \end{array}$$

e.g. 152×34

GRID METHOD

	100	50	2
30	3000	1500	60
4	400	200	8

$152 \times 34 = 3400 + 1700 + 68 = 5168$

e.g. $4928 \div 32$

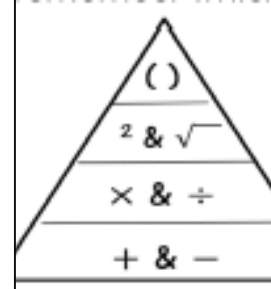
SHORT DIVISION METHOD

(Except write down some of your tables down first)

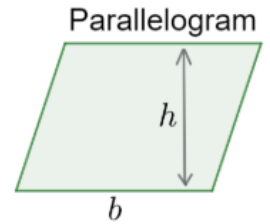
32
64
96
128
160

$$\begin{array}{r} 0154 \\ 32 \overline{)4912} \end{array}$$

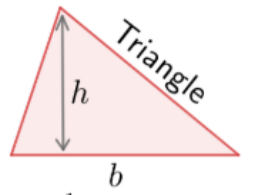
$4928 \div 32 = 154$



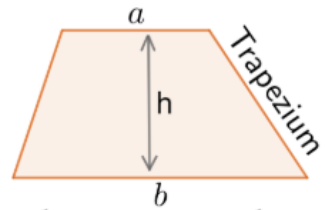
Area = length \times width = $L \times W$



Area = base \times height = bh



Area = $\frac{1}{2} \times$ base \times height = $\frac{1}{2}bh$



Area = $\frac{1}{2}(a + b) \times$ height = $\frac{1}{2}(a + b)h$

Decimals (Mathswatch 17,18,66 and 67)

Add & subtract- Line up the decimal points

Multiply - take out decimal point

Multiply

Put decimal point back in

e.g. 3.2×0.4

- 32×4 (remove decimal points)
- 128 (multiply)
- 1.28 (put decimal point back in-2 decimal places)

Divide - make divisor into a whole number

Multiply both numbers

e.g. $2.84 \div 0.2$ (multiply both numbers by 10)

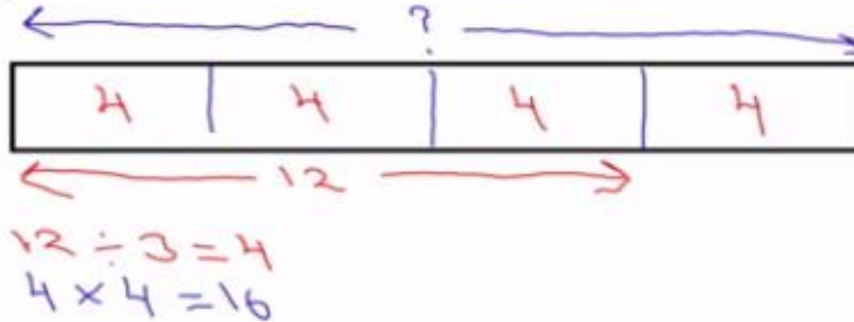
- $28.4 \div 2$
- 14.1

What is $\frac{2}{3}$ of £18?

$$£18 \div 3 = £6$$

$$2 \times £6 = £12$$

If $\frac{3}{4}$ of a number is 12. Find the number



What is $\frac{4}{5}$ of £37?

$$£37 \div 5 = £7.40$$

$$4 \times £7.40 = £29.60$$

Calculate 32% of £864

$$\frac{32}{100} \times 864 = £276.48$$

There are 600 people in the cinema.

$\frac{1}{6}$ of the 600 people are boys. $600 \div 6 = 100$
 $100 \times 1 = 100$

$\frac{3}{10}$ of the 600 people are girls. $600 \div 10 = 60$
 $60 \times 3 = 180$

The rest of the people are adults.

Work out how many people are adults.

$$100 + 180 = 280 \text{ children altogether}$$

$$600 - 280 = 320 \text{ adults}$$

Percentage	How to find
50%	Half the amount
25%	Half of 50%
10%	Divide amount by 10
5%	Half of 10%
20%	Double 10%
1%	Divide 10% by 10
15%	Add 10% and 5%

The rules for multiplying and dividing negative numbers:

If the signs of the two numbers are different

If the signs of the two numbers are the same

the answer will be negative

the answer will be positive

eg $3 \times (-5) = -15$
 $(-3) \times 5 = -15$
 $12 \div (-2) = -6$
 $(-12) \div 2 = -6$

eg $3 \times 5 = 15$
 $(-3) \times (-5) = 15$
 $12 \div 2 = 6$
 $(-12) \div (-2) = 6$

x	-3	-2	-1	0	1	2	3
-3	9	6	3	0	-3	-6	-9
-2	6	4	2	0	-2	-4	-6
-1	3	2	1	0	-1	-2	-3
0	0	0	0	0	0	0	0
1	-3	-2	-1	0	1	2	3
2	-6	-4	-2	0	2	4	6
3	-9	-6	-3	0	3	6	9

Negative numbers (Mathswatch 23 and 68)



$2 > -2 \rightarrow$ We say 2 is bigger than -2

$-1 < 3 \rightarrow$ We say -1 is less than 3

Remember the rules:

- When subtracting go down the number line
- When adding go up the number line
- $8 + -2$ is the same as $8 - 2 = 6$
- $8 - +2$ is the same as $8 - 2 = 6$
- $8 - -2$ is the same as $8 + 2 = 10$

Solve the following equations:

a) $3x + 6 = 30$ $x = 8$
 $x \rightarrow \boxed{\times 3} \rightarrow \boxed{+6} \rightarrow 30$
 $8 \leftarrow \boxed{\div 3} \leftarrow \boxed{-6} \leftarrow 30$

b) $5x - 1 = 19$ $x = 4$
 $x \rightarrow \boxed{\times 5} \rightarrow \boxed{-1} \rightarrow 19$
 $4 \leftarrow \boxed{\div 5} \leftarrow \boxed{+1} \leftarrow 19$

c) $\frac{x}{4} + 3 = 6$ $x = 12$
 $x \rightarrow \boxed{\div 4} \rightarrow \boxed{+3} \rightarrow 6$
 $12 \leftarrow \boxed{\times 4} \leftarrow \boxed{-3} \leftarrow 6$

d) $\frac{x}{2} - 4 = 2.5$ $x = 13$
 $x \rightarrow \boxed{\div 2} \rightarrow \boxed{-4} \rightarrow 2.5$
 $13 \leftarrow \boxed{\times 2} \leftarrow \boxed{+4} \leftarrow 2.5$

Year 7 Term 2 Fractional Thinking

Simplify fraction (Mathswatch 26)

See what number divides exactly into both the numerator and denominator

$$\text{e.g. } \frac{8}{12} \xrightarrow{\div 4} \frac{2}{3}$$

$$\text{e.g. } \frac{15}{40} \xrightarrow{\div 5} \frac{3}{8}$$

$$\frac{1}{3} + \frac{3}{4} = \frac{4}{12} + \frac{9}{12} = \frac{13}{12} = 1\frac{1}{12}$$

$$\frac{8}{9} - \frac{5}{6} = \frac{48}{54} - \frac{45}{54} = \frac{3}{54} = \frac{1}{18}$$

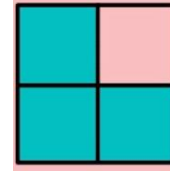
$$1\frac{1}{3} + 2\frac{3}{4} = \frac{49}{12} = 4\frac{1}{12}$$

$$\frac{4}{3} + \frac{11}{4} = \frac{16}{12} + \frac{33}{12} = \frac{49}{12}$$

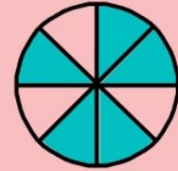
$$4\frac{2}{5} - 2\frac{1}{2} = \frac{19}{10} = 1\frac{9}{10}$$

$$\frac{22}{5} - \frac{5}{2} = \frac{44}{10} - \frac{25}{10} = \frac{19}{10}$$

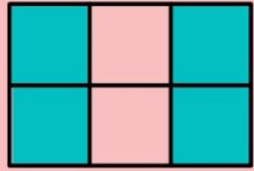
What fraction of these shapes is shaded?



$$\frac{3}{4}$$



$$\frac{5}{8}$$



$$\frac{4}{6}$$

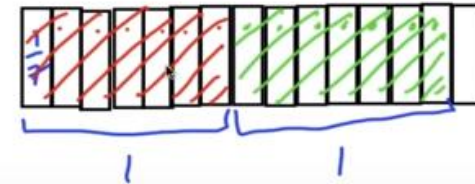
Example 1: (Mixed to improper)

$$2\frac{1}{3} = \frac{7}{3}$$



Example 2: (Improper to mixed)

$$\frac{15}{7} = 2\frac{1}{7}$$



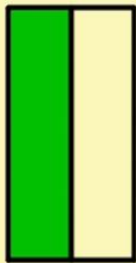
$$\frac{1}{4} + \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$$



$$\frac{2}{5} + \frac{1}{5} = \frac{3}{5}$$

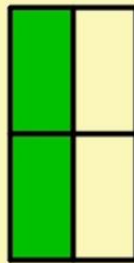


$$\frac{7}{10} - \frac{3}{10} = \frac{4}{10} = \frac{2}{5}$$



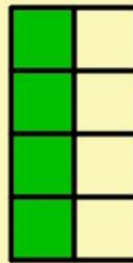
$$\frac{1}{2}$$

$$1 \div 2 = 0.5$$



$$\frac{2}{4}$$

$$2 \div 4 = 0.5$$



$$\frac{4}{8}$$

$$4 \div 8 = 0.5$$