



Working with Ratio



← REVISE THIS TOPIC

1 Divide in 30 the ratio 5 : 1 [2 marks]

	Total	
$5 : 1$	6	$5 + 1 = 6$
$25 : 5$	30	$30 \div 6 = 5$
		$5 \times 5 = 25$
		$5 \times 1 = 5$

Answer 25 and 5

2 Divide in 40 the ratio 2 : 3 [2 marks]

	Total	
$2 : 3$	5	$2 + 3 = 5$
$16 : 24$	40	$40 \div 5 = 8$
		$2 \times 8 = 16$
		$3 \times 8 = 24$

Answer 16 and 24

3 Divide in 200 the ratio 3 : 7 [2 marks]

	Total	
$3 : 7$	10	$3 + 7 = 10$
$60 : 140$	200	$200 \div 10 = 20$
		$3 \times 20 = 60$
		$7 \times 20 = 140$

Answer 60 and 140





4 Adam and Bella share £63 in the ratio 2 : 5
Work out how much money Bella receives.

[2 marks]

	A : B	Total	
	2 : 5	7	$2 + 5 = 7$
$\times 9$	18 : 45	63	$63 \div 7 = 9$
			$2 \times 9 = 18$
			$5 \times 9 = 45$

Answer £ 45

5 A bag contains 32 counters that are either green or blue.

green counters : blue counters = 5 : 3

Work out the number of blue counters in the bag.

[2 marks]

	G : B	Total	
	5 : 3	8	$5 + 3 = 8$
$\times 4$	20 : 12	32	$32 \div 8 = 4$
			$5 \times 4 = 20$
			$3 \times 4 = 12$

Answer 12

6 Alice and Ben share £42 in the ratio 2 : 1
Work out how much money Alice receives.

[2 marks]

	A : B	Total	
	2 : 1	3	$2 + 1 = 3$
$\times 14$	28 : 14	42	$42 \div 3 = 14$
			$2 \times 14 = 28$
			$1 \times 14 = 14$

Answer £ 28





7 A bag contains 40 red counters and some blue counters.

red counters : blue counters = 5 : 3

Work out the number of blue counters.

[2 marks]

$$\begin{array}{r}
 R : B \\
 \hline
 5 : 3 \\
 \times 8 \quad \left(\quad \right) \times 8 \\
 \hline
 40 : 24
 \end{array}$$

$$\begin{array}{r}
 40 \div 5 = 8 \\
 8 \times 3 = 24
 \end{array}$$

Answer 24

8 Charlie and Daisy share some money in the ratio 2 : 5

Charlie receives £28

Work out how much Daisy receives.

[2 marks]

$$\begin{array}{r}
 C : D \\
 \hline
 2 : 5 \\
 \times 14 \quad \left(\quad \right) \times 14 \\
 \hline
 28 : 70
 \end{array}$$

$$\begin{array}{r}
 28 \div 2 = 14 \\
 14 \times 5 = 70
 \end{array}$$

Answer £ 70

9 A piece of rope is cut into two pieces.

Length of shorter piece : length of longer piece = 4 : 5

The longer piece is 90 cm long.

Work out the length of the shorter piece.

[2 marks]

$$\begin{array}{r}
 S : L \\
 \hline
 4 : 5 \\
 \times 18 \quad \left(\quad \right) \times 18 \\
 \hline
 72 : 90
 \end{array}$$

$$\begin{array}{r}
 90 \div 5 = 18 \\
 18 \times 4 = 72
 \end{array}$$

Answer 72 cm



Turn over ►



10 Ethan, Freya and Grace share £65 in the ratio 2 : 3 : 5

Work out how much money each of them receives.

[3 marks]

		$2 + 3 + 5 = 10$
		$65 \div 10 = 6.5$
$E : F : G$	$Total$	
$2 : 3 : 5$	10	$2 \times 6.5 = 13$
$13 : 19.50 : 32.50$	65	$3 \times 6.5 = 19.50$
		$5 \times 6.5 = 32.50$

Ethan £ 13

Freya £ 19.50

Grace £ 32.50

11 Isla takes part in a triathlon where she must swim, ride a bike and then run.

The ratio of the time she spends swimming, riding and running is:

$$\text{swimming} : \text{riding} : \text{running} = 5 : 14 : 8$$

Isla spent 20 minutes running.

Work out how long she spent swimming and riding.

[3 marks]

		$20 \div 8 = 2.5$
		$5 \times 2.5 = 12.5$
$S : Ri : Ru$		$14 \times 2.5 = 35$
$5 : 14 : 8$		
$12.5 : 35 : 20$		

Time spent swimming 12.5 minutes

Time spent riding 35 minutes





12 Kai buys one tea, one coffee and one cake from a shop.

price of a tea : price of a coffee : price of a cake = 3 : 5 : 8

Kai pays a total of £6.72

Work out the price of a tea from the shop.

[3 marks]

T	Co	Ca	Total
3	5	8	16
126	210	336	672

$3 + 5 + 8 = 16$
 $672 \div 16 = 42$
 $3 \times 42 = 126p$
 (£1.26)

Answer £ 1.26

13 A country kept track of the gold, silver and bronze medals they win at a sporting competition.

gold medals : silver medals : bronze medals = 1 : 4 : 7

The country won 24 silver medals.

Work out how many medals the country won in total.

[3 marks]

G	S	B	Total
1	4	7	12
6	24	42	72

$24 \div 4 = 6$
 $1 + 4 + 7 = 12$
 $12 \times 6 = 72$

Answer 72





14 Leo and Millie share some money in the ratio 2 : 9

Millie receives £35 more than Leo.

Work out how much money Leo receives.

[2 marks]

L : M	D:ff	
2 : 9	7	$9 - 2 = 7$
10 : 45	35	$35 \div 7 = 5$
		$2 \times 5 = 10$

Answer £ 10

15 A bag contains black and white counters in the ratio 7 : 2

There are 85 more black counters than white counters.

Work out how many counters are in the bag in total.

[2 marks]

B : W	D:ff	
7 : 2	5	$7 - 2 = 5$
119 : 34	85	$85 \div 5 = 17$
		$7 + 2 = 9$
		$9 \times 17 = 153$

Answer 153

16 Hannah uploads the same video to YouTube, TikTok and Instagram.

YouTube views : TikTok views : Instagram views = 7 : 9 : 3

The video receives 14 400 more views on TikTok than YouTube.

Work out how many views the video received on Instagram.

[2 marks]

Y : T : I	D:ff	
7 : 9 : 3	2	$9 - 7 = 2$
50400 : 64800 : 21600	14400	$14400 \div 2 = 7200$
		$3 \times 7200 = 21600$

Answer 21600





17 Flour, butter and sugar are used to make biscuits in the ratio shown below.

flour : butter : sugar = 3 : 2 : 1

Gordan uses 480 g of flour to make biscuits.

Work out how much butter and sugar he should use.

[3 marks]

		$480 \div 3 = 160$
	<u>F : B : S</u>	$160 \times 2 = 320$
$\times 160 \leftarrow$	<u>3 : 2 : 1</u>	$160 \times 1 = 160$
	480 : 320 : 160	

Butter 320 g

Sugar 160 g

18 Ruby and Paige both throw the shot put.

Ruby's distance thrown : Paige's distance thrown = 5 : 9

Paige threw the shotput 3.6 m further than Ruby.

Work out how far Paige threw the shot put.

[2 marks]

	<u>R : P</u> <u>Diff</u>	$9 - 5 = 4$
$\times 0.9 \leftarrow$	<u>5 : 9</u> <u>4</u>	$3.6 \div 4 = 0.9$
	4.5 : 8.1 3.6	$9 \times 0.9 = 8.1$

Answer 8.1 m





19 Sebastian did three maths exam papers.

Paper 1 mark : Paper 2 mark : Paper 3 mark = 7 : 6 : 9

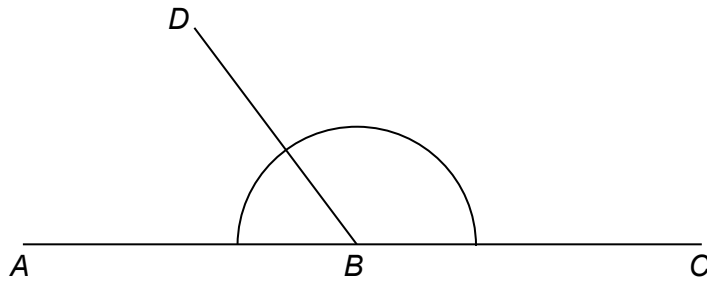
Sebastian's Paper 1 mark was greater than 50 but less than 60.

Work out how many marks he scored in total for all three papers. [3 marks]

$$\begin{array}{r}
 P1 : P2 : P3 \\
 \hline
 7 : 6 : 9 \\
 \times 8 \left. \begin{array}{l} \downarrow \\ \downarrow \end{array} \right\} \times 8 \\
 \hline
 56 : 48 : 72 \\
 \hline
 56 + 48 + 72 = 176
 \end{array}$$

Answer 176

20



ABC is a straight line.

angle ABD : angle DBC = 19 : 26

Work out the size of angle ABD. [3 marks]

ABD : DBC	Total	
19 : 26	45	$19 + 26 = 45$
76 : 104	180	$180 \div 45 = 4$
		$19 \times 4 = 76$

Answer 76





21 The angles of a triangle are in the ratio 2 : 3 : 7

Show that the triangle has exactly two acute angles.

[4 marks]

	Total	
$2 : 3 : 7$	12	$2 + 3 + 7 = 12$
$30 : 45 : 105$	180	$180 \div 12 = 15$
30° and 45° are acute as they are less than 90°		$15 \times 2 = 30^\circ$
105° is obtuse		$15 \times 3 = 45^\circ$
		$15 \times 7 = 105^\circ$

22 Sky Blue paint is made by mixing blue and white paint as shown below.

Sky Blue Paint
blue : white = 5 : 3

Laura wants to make Sky Blue paint.

She mixes 720 ml of blue paint with 400 ml of white paint.

Work out how much more white paint she should add to make Sky Blue paint.

[3 marks]

$B : W$	$720 \div 5 = 144$
$5 : 3$	$3 \times 144 = 432$
$720 : 432$	$432 - 400 = 32$
$432 - 400 = 32$	

Answer 32 ml





23

A drink is made using juice and water in the ratio shown below.

$$\text{juice} : \text{water} = 2 : 11$$

Umar has 500 ml of juice and 3000 ml of water.

Work out the maximum amount of drink Umar can make.

[3 marks]

$$\text{Juice } 500 \div 2 = 250 \leftarrow \text{lower}$$

$$\text{Water } 3000 \div 11 = 272.72\dots$$

$$2 \times 250 = 500 \text{ ml juice}$$

$$11 \times 250 = 2750 \text{ ml water}$$

$$500 + 2750 = 3250$$

Answer 3250 ml

24

A paint mixture is made by mixing yellow and white paint in the ratio shown.

$$\text{yellow} : \text{white} = 10 : 3$$

Zaria has 1.8 litres of yellow paint and 600 ml of white paint.

$$\approx 1800 \text{ ml}$$

Work out the greatest amount of paint mixture that Zaria can make.

Give your answer in millilitres.

[3 marks]

$$\text{Yellow } 1800 \div 10 = 180 \leftarrow \text{lower}$$

$$\text{white } 600 \div 3 = 200$$

$$10 \times 180 = 1800 \text{ ml yellow}$$

$$3 \times 180 = 540 \text{ ml white}$$

$$1800 + 540 = 2340$$

Answer 2340 ml





25

A cake recipe uses butter, sugar and flour in the ratio shown below.

$$\text{butter : sugar : flour} = 2 : 3 : 5$$

Nadia has

400 g of butter

500 g of sugar

750 g of flour

Nadia makes the largest cake possible using the recipe.

Work out how much of each ingredient Nadia will use.

[4 marks]

$$\text{Butter } 400 \div 2 = 200$$

$$\text{Sugar } 500 \div 3 = 166.6\dots$$

$$\text{Flour } 750 \div 5 = 150 \leftarrow \text{lower}$$

$$2 \times 150 = 300 \text{ g}$$

$$3 \times 150 = 450 \text{ g}$$

$$5 \times 150 = 750 \text{ g}$$

Butter 300 g

Sugar 450 g

Flour 750 g





26 A shop sells red balloons and blue balloons.

Red balloons are sold in packs of 10

Blue balloons are sold in packs of 12

Tom buys twice as many packs of red balloons as he does blue balloons.

In total Tom buys 128 balloons.

Work out how many packs of red balloons Tom buys.

[4 marks]

$$\begin{array}{l}
 R : B \\
 \hline
 \text{packs} \quad 2 : 1 \\
 \text{balloons} \quad 20 : 12
 \end{array}$$

R : B	Total
20 : 12	32
<u>80 : 48</u>	128

$$80 \div 10 = 8 \text{ packs}$$

Answer 8





27 A shop sells AA and AAA batteries.

AA batteries are sold in packs of 8
AAA batteries are sold in packs of 6.

One day the shop sells a total of 960 batteries.

AA battery packs sold : AAA battery packs sold = 5 : 4

Work out the number of AA battery packs that were sold.

[4 marks]

$$\begin{array}{l}
 \text{AA : AAA} \\
 \text{packs } \times 8 \quad 5 : 4 \quad \times 6 \\
 \text{batteries } \quad 40 : 24
 \end{array}$$

AA : AAA	Total
40 : 24	64
<u>600 : 360</u>	960

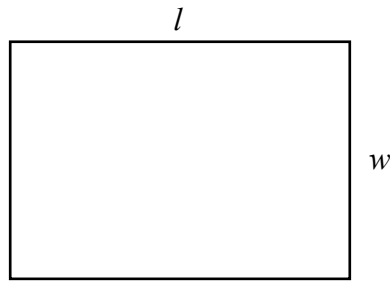
$$600 \div 8 = 75 \text{ packs}$$

Answer 75





28 Here is a rectangle with a perimeter of 24 cm.



$l : w = 3 : 2$

Work out the area of the rectangle.

[5 marks]

$l + w + l + w = 24$

$2w + 2l = 24$

$w + l = 12$

l	w	Total
3	2	5
7.2	4.8	12

Note: Blue arrows indicate scaling from the first row to the second row by a factor of 2.4.

$7.2 \times 4.8 = 34.56$

Answer 34.56 cm²





29 Richard has some 50 pence coins and some 20 pence coins.

number of 50 pence coins : number of 20 pence coins = 2 : 3

The total value of all the coins that Richard has is £56

Work out how many of each coin Richard has.

[5 marks]

		50p	:	20p	
coins	$\times 50$	2	:	3	$\times 20$
value		100	:	60	

	50p	:	20p		Total
$\times 35$	100	:	60		160
	3500	:	2100		5600

$3500 \div 50 = 70$	50p coins
$2100 \div 20 = 105$	20p coins

Number of 50 pence coins = 70

Number of 20 pence coins = 105

