



- 1 Write down the ratio 42 : 6 in the form $n : 1$.

(1 mark)

Divide both parts by 6

$$42 \div 6 = 7 \text{ and } 6 \div 6 = 1$$

42

$$6 = 7 : 1$$

$$\boxed{7 : 1}$$

- 2 a. Write the ratio 8 : 28 in the form $1 : n$

- b. A school has 15 teachers and 360 pupils. Write the ratio of teachers to pupils in the form $1 : n$

(2 marks)

a)

÷ both sides by 8

$$8 : 28$$

$$1 : 3.5$$

$$\boxed{1 : 3.5}$$

b)

÷ both sides by 15

$$15 : 360$$

$$1 : 24$$

$$\boxed{1 : 24}$$

- 3 In a gym class, the ratio of the number of men to the number of women is 4 : 5.

There are 20 men in the class.

Work out the total number of people in the class.

(2 marks)

4 parts represent 20 men, so 1 part = $20 \div 4 = 5$ people

$$\text{Women} = 5 \text{ parts} = 5 \times 5 = 25$$

$$\text{Total} = 20 + 25 = 45 \text{ people}$$

$$\boxed{45}$$

- 4 Kofi makes two jugs of orange squash.

Jug A: 150 ml of squash mixed with 600 ml of water.

Jug B: 200 ml of squash mixed with 900 ml of water.

Which jug has the stronger taste of orange? Show your working by writing each ratio of squash to water in the form 1 : n

(2 marks)

$$\text{Jug A} \div 150$$

$$150 : 600 = 1 : 4$$

$$\text{Jug B} \div 200$$

$$200 : 900 = 1 : 4.5$$

less water for each 1 ml of squash

Jug A

- 5 Amir, Bella and Carl share £132 in the ratio 1 : 4 : 6.

Work out how much money each of them gets.

(3 marks)

$$\text{Total parts} = 1 + 4 + 6 = 11$$

$$1 \text{ part} = £132 \div 11 = £12$$

Amir gets $1 \times £12 = £12$, Bella gets $4 \times £12 = £48$, Carl gets $6 \times £12 = £72$

Check

$$12 + 48 + 72 = 132$$

- 6 The exchange rate is £1 = €1.14.

Nadia changes £250 into euros.

Work out how many euros she gets.

(2 marks)

Each pound is worth 1.14

$$250 \times 1.14 = 285$$

Nadia gets 285

€285

7 5 miles is about 8 kilometres.

a. A school fun run is 12 km long. Work out about how many miles this is.

b. A road sign says London is 25 miles away. Work out about how many kilometres this is.

(2 marks)

a.)

$$12 \div 8 = 1.5$$

$$1.5 \times 5 = 7.5$$

7.5 miles

b.)

$$25 \div 5 = 5$$

$$5 \times 8 = 40$$

40 km

8 3 kg of potatoes cost £2.64.

Work out the cost of 7 kg of these potatoes.

(3 marks)

$$1 \text{ kg costs } 2.64 \div 3 = £0.88$$

$$7 \text{ kg costs } 7 \times £0.88 = £6.16$$

£6.16

9

Here are the prices of cinema tickets at two cinemas.

Number of tickets	2	5	8
Cinema A cost	£13	£32.50	£52
Cinema B cost	£14	£30	£46

a. At one cinema the cost is directly proportional to the number of tickets. Which cinema? Give a reason.

b. Work out the cost of 11 tickets at that cinema.

(3 marks)

a) cost of 1 ticket

Cinema A

$$13 \div 2 = 6.50$$

$$32.50 \div 5 = 6.50$$

$$52 \div 8 = 6.50$$

Cinema B

$$14 \div 2 = 7$$

$$30 \div 5 = 6$$

Cinema A, always £6.50 a ticket

b)

$$11 \times 6.50 = 71.50$$

£71.50

10

Each month Tom is paid £1800.

He saves 20% of the £1800.

He splits the rest between rent and bills in the ratio 5 : 3.

Work out how much Tom spends on rent each month.

(3 marks)

$$\text{Savings} = 20\% \text{ of } £1800 = £360, \text{ leaving } 1800 - 360 = £1440$$

$$\text{Total parts} = 5 + 3 = 8, \text{ so } 1 \text{ part} = 1440 \div 8 = £180$$

$$\text{Rent} = 5 \times £180 = £900$$

£900

- 11 3 identical machines take 10 hours to print an order of leaflets.

Work out how long 5 of these machines would take to print the same order.

(2 marks)

$$\text{Total work} = 3 \times 10 = 30 \text{ machine-hours}$$

$$\text{Time for 5 machines} = 30 \div 5 = 6 \text{ hours}$$

6 hours

- 12 In a fruit bowl there are apples, bananas and pears.

The ratio of apples to bananas is 3 : 2.

The ratio of bananas to pears is 4 : 3.

There are 24 apples in the bowl.

Work out the number of pears in the bowl.

(3 marks)

Make the banana parts match

$$\text{apples} : \text{bananas} = 3 : 2 = 6 : 4$$

So apples

$$\text{bananas} : \text{pears} = 6 : 4 : 3$$

$$6 \text{ parts} = 24 \text{ apples, so 1 part} = 4$$

$$\text{Pears} = 3 \text{ parts} = 3 \times 4 = 12$$

12

EXTENSION QUESTIONS

13 y is directly proportional to x . When $x = 6$, $y = 15$

- Find a formula for y in terms of x .
- Work out the value of y when $x = 10$
- Work out the value of x when $y = 40$

(3 marks)

a)

$$\begin{array}{l} y = kx \\ 6k = 15 \\ \div 6 \quad k = 2.5 \quad \div 6 \\ \boxed{y = 2.5x} \end{array}$$

b)

$$\begin{array}{l} y = 2.5 \times 10 \\ \boxed{y = 25} \end{array}$$

c)

$$\begin{array}{l} 2.5x = 40 \\ \div 2.5 \quad x = 16 \quad \div 2.5 \\ \boxed{x = 16} \end{array}$$

14 Leah and Sam share £480 in the ratio 5 : 7.

Sam gives 30% of his share to charity.

Leah gives £60 of her share to charity.

Sam gives more money to charity than Leah does.

Work out how much more.

(5 marks)

$$\begin{array}{l} \text{Total parts} = 5 + 7 = 12, \text{ so 1 part} = 480 \div 12 = \text{£}40 \\ \text{Leah's share} = 5 \times \text{£}40 = \text{£}200. \text{ Sam's share} = 7 \times \text{£}40 = \text{£}280 \\ \text{Sam gives } 30\% \text{ of } \text{£}280 = \text{£}84 \\ \text{Leah gives } \text{£}60 \\ \text{Difference} = 84 - 60 = \text{£}24 \\ \boxed{\text{£}24} \end{array}$$