



**eClassroom**

GCSE Mathematics

# Ratio

**Questions**

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Pearson Edexcel GCSE & iGCSE Mathematics



## Section A — Foundation

### Worked Examples

#### [Fluency]

**Simplify the ratio 18:24.**

Find the HCF of 18 and 24:  $\text{HCF} = 6$

Divide both parts by 6:  $18:24 = 3:4$

#### [Reasoning]

**Share £60 in the ratio 2:3. Explain each step.**

Total parts:  $2+3=5$ . Each part =  $£60 \div 5 = £12$

First share:  $2 \times £12 = £24$     Second share:  $3 \times £12 = £36$

Check:  $£24 + £36 = £60$  ✓

#### [Problem Solving]

**In a school, ratio of teachers to students is 1:18. There are 36 teachers. How many students?**

If 1 part = 36 teachers, then 18 parts =  $18 \times 36 = 648$  students

#### [Fluency]

1. Simplify the ratio 24:36.

(1 mark)

#### [Fluency]

2. Write the ratio 1.5:4.5 in its simplest integer form.

(1 mark)

#### [Fluency]

3. Share £72 in the ratio 3:5.

(2 marks)

#### [Fluency]

4. In a class the ratio of boys to girls is 3:4. There are 24 boys. How many girls?

(2 marks)

#### [Fluency]

5. Mortar is made by mixing cement and sand in the ratio 1:4. If 15 kg of cement is used, how much sand is needed?

(2 marks)

#### [Reasoning]

6. Share £200 among three people in the ratio 2:3:5.

(3 marks)

**[Reasoning]**

7. Tom and Jerry share some money in the ratio 5:3.  
Tom receives £40 more than Jerry.  
Find how much each person receives.

**(3 marks)****[Reasoning]**

8. The ratio of A to B is 1:3. When 10 is added to A, the new ratio becomes 1:2.  
Find the original value of A.

**(3 marks)****[Problem Solving]**

9. A recipe for 4 people needs 300 g of flour.
- (a) How much flour is needed for 7 people? (2)
- (b) A chef has 500 g of flour. Is this enough for 6 people? Show your working. (2)

**(4 marks)****[Problem Solving]**

10. A map has a scale of 1:25 000.
- (a) Two towns are 4.6 cm apart on the map. Find the real distance in km. (2)
- (b) A road is 3.5 km long in real life. How long is it on the map in cm? (2)

**(4 marks)**



## Section B — Higher

### Worked Examples

#### [Fluency]

Write the ratio 4:6 in the form 1:n.

Divide both sides by 4:  $4:6 = 1:1.5$

So  $n = 1.5$

#### [Reasoning]

**A:B = 2:5 and B:C = 3:8. Find the ratio A:B:C.**

Make B the same in both:  $\text{LCM}(5,3) = 15$

A:B = 6:15    B:C = 15:40

**A:B:C = 6:15:40**

#### [Problem Solving]

**Gold alloy: 18-carat gold is  $\frac{18}{24}$  gold. 750 g of 18-carat is melted with 600 g of 9-carat ( $\frac{9}{24}$  gold). Find the carat of the combined alloy.**

Gold in mix:  $750 \times (\frac{18}{24}) + 600 \times (\frac{9}{24}) = 562.5 + 225 = 787.5$  g

Total mass: 1350 g    Carat:  $(\frac{787.5}{1350}) \times 24 = 14$  carat

#### [Fluency]

1. Write the ratio 3:5 in the form 1:n.

(1 mark)

#### [Fluency]

2. A:B = 3:5 and B:C = 2:7. Find the ratio A:B:C.

(3 marks)

#### [Fluency]

3. Divide 168 in the ratio 3:4:7.

(3 marks)

#### [Reasoning]

4.  $x:y = 2:3$  and  $y:z = 4:5$ .

Find the ratio  $x:y:z$  in its simplest form.

(3 marks)

**[Reasoning]**

5. Alloy A is copper:zinc = 3:1.

Alloy B is copper:zinc = 2:3.

Equal masses of A and B are melted together.

Find the overall ratio of copper to zinc in the mixture.

(4 marks)

**[Reasoning]**

6. Three siblings share £1260 in the ratio 2:5:7.

The eldest sibling then gives  $\frac{1}{3}$  of their share to the youngest.

Find the final amount each sibling has.

(4 marks)

**[Problem Solving]**

7. Write the ratio 2.4:3.6:1.2 as a ratio of integers in its simplest form.

(2 marks)

**[Problem Solving]**

8. A piece of jewellery contains 18-carat gold (18/24 pure gold) and 9-carat gold (9/24 pure gold).

750 g of 18-carat gold is melted with 600 g of 9-carat gold.

What is the carat of the resulting alloy?

(4 marks)

**[Problem Solving]**

9. The ratio  $(x+2):(3x-1) = 2:5$ .

Find the value of  $x$ .

(3 marks)

**[Problem Solving]**

10. A jeweller has gold worth £40 per gram and silver worth £0.50 per gram.

A ring contains gold and silver in the ratio 3:2 by mass.

Find the ratio of the value of gold to the value of silver in the ring.

(3 marks)