

Ratio & Proportion: Hard Practice Paper 6

Q1. A bag holds red and blue counters in the ratio 5 : 2. When 12 red counters are taken out, the ratio becomes 3 : 2. How many blue counters are in the bag?

- A. 10 B. 12 C. 8 D. 15 E. 18

Q2. Two gears turn together. One has 12 teeth and the other has 30 teeth. How many turns does the small gear make while the large gear turns 8 times?

- A. 18 B. 16 C. 20 D. 24 E. 3

Q3. Two similar triangles have corresponding sides in the ratio 2 : 3. The larger triangle has an area of 45 cm^2 . What is the area of the smaller one?

- A. 20 cm^2 B. 30 cm^2 C. 22.5 cm^2 D. 15 cm^2 E. 10 cm^2

Q4. $A : B = 2 : 3$ and $B : C = 5 : 4$. If A, B and C add up to 74, what is C?

- A. 18 B. 20 C. 30 D. 24 E. 32

Q5. The table shows three journeys. Which train has the greatest average speed?

Train	Distance	Time
A	180 km	2 hours
B	245 km	3.5 hours
C	300 km	3 hours

- A. Train A
- B. Train C
- C. Train B
- D. Trains A and C are equal
- E. They are all the same

Q6. A shopkeeper mixes tea costing £8 per kg with tea costing £14 per kg to make a mixture worth £10 per kg. In what ratio does he mix them?

- A. 4 : 3
- B. 1 : 2
- C. 3 : 1
- D. 2 : 1
- E. 1 : 1

Q7. The number of members of a club increases in the ratio 5 : 4, new to old. What percentage increase is this?

- A. 20%
- B. 25%
- C. 80%
- D. 125%
- E. 45%

Q8. A recipe for 4 people uses 300 g of flour and 200 ml of milk. A cook has 1 kg of flour and 700 ml of milk. What is the greatest number of whole people he can cook for?

- A. 10
- B. 14
- C. 12
- D. 16
- E. 13

Q9. Two cyclists set off together along the same road. One rides at 12 km/h and the other at 15 km/h. After how long is the faster one 4 km ahead?

- A. 45 minutes
- B. 1 hour
- C. 2 hours
- D. 1 hour 20 minutes
- E. 1 hour 30 minutes

Q10. A map has a scale of 1 : 25 000. A field is drawn as a rectangle 4 cm by 3 cm. What is its real area?

- A. 12 km²
- B. 7.5 km²
- C. 0.75 km²
- D. 0.12 km²
- E. 75 km²

Q11. Four activities are chosen by pupils in the ratio 2 : 3 : 3 : 4. The results are drawn as a pie chart. What is the angle of the largest sector?

- A. 120°
- B. 90°
- C. 144°
- D. 100°
- E. 60°

Q12. Water flows into a tank at 12 litres a minute for 15 minutes, and then the rate drops to 8 litres a minute. How long does it take altogether to collect 300 litres?

- A. 40 minutes
- B. 25 minutes
- C. 35 minutes
- D. 27 minutes
- E. 30 minutes

Q13. The ratio of a woman's age to her son's age is 5 : 2. In 8 years' time the ratio will be 2 : 1. How old is the son now?

- A. 20
- B. 14
- C. 18
- D. 12
- E. 16

Q14. A mixture weighing 4 kg is made of three ingredients in the ratio 5 : 3 : 2 by mass. How much more of the first ingredient is there than of the third?

- A. 1.2 kg B. 0.8 kg C. 1.5 kg D. 2 kg E. 0.4 kg

Q15. The table shows three sizes of the same fruit juice. Which size is the best value for money?

Size	Price
250 ml	90p
1 litre	£3.40
1.5 litres	£5.25

- A. The 1.5 litre size
B. The 250 ml size
C. The 1 litre size
D. The 250 ml and 1 litre sizes are equal
E. They are all the same value