Ratio and Proportion

27 September 2019 16:43

Ratio : compares quantities

Simplify a ratio

8 : 12 HCF 4

$\frac{8}{4} : \frac{12}{4} = 2:3$

Eg 1) €400 is shared out between Liz and Mark in the ratio of 5 : 3. Find out how much each recieve

Liz : Mark

5 shares : 3 shares

Find the total no. of shares

5 + 3 = 8

Find out 1 share

400 ÷ 8 = 50

50 x 5 : 50 x 3

= €250 : €150

C/W → H/W Pg 102 Q1, 2, 3.

T&T3 5.2

T&T3 5.2.pptx

PROJECT MATHS

Text & Tests

Leaving 3 Certificate

chapter 5

Arithmetic

Section 5.2 Ratio and proportion

Example 1

A sum of money is divided in the ratio 1 : 3 : 5.
If the smallest part is €250, find the sum of money.

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Example 2

The number of pages in a magazine increased from 64 to 80.
The original price of €4.40 increased in the same ratio.
What is the new price of the magazine?

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Exercise 5.2

1. €80 is divided between two pupils in the ratio 7 : 3.
How much does each pupil get?

$7+3 = 10$ shares

$\frac{80}{10} = 8$ 1 share.

$7 \times 8 = 56$

$3 \times 8 = 24$

80

Exercise 5.2

2. €572 is divided in the ratio 2 : 3 : 6. Find the smallest share.

$2+3+6 = 11$ shares

$\frac{572}{11} = 52$ 1 share

$52 \times 2 = €104$

Exercise 5.2

A B C

3. A prize fund is divided between *A*, *B* and *C* in the ratio 4 : 3 : 2 respectively.
If *C*'s share is €1224, find the total fund.

C 2 shares = 1224

1 share $\frac{1224}{2}$ = 612 1 share.

A 4 × 612 = 2448

B 3 × 612 = 1836

C 2 × 612 = + 1224

Total €5508

Exercise 5.2

4. In a school the ratio of girls to boys is 7 : 2.
If there are 735 girls in the school, how many boys are there?

Exercise 5.2

5. An alloy consists of copper, zinc and tin in the ratio 1 : 3 : 5.
If there are 45 kg of tin in the alloy, find its total mass.

Exercise 5.2

6. Express as a ratio in whole numbers: $\frac{1}{2} : \frac{1}{4} : \frac{1}{12}$

① The LCD = 12
② Put the LCD by the numerators
③ Divide the denominator into the LCD
④ Multiply what is left.

6(1) : 3(1) : 1(1)
= 6 : 3 : 1 Ratio as a whole number

H/W Q 7 Pg 102

Exercise 5.2

7. €1575 was shared among three people in the ratio $1 : 2 : \frac{1}{2}$.
Calculate the smallest share.

Exercise 5.2

8. The perimeter of a rectangle is 200 cm.
If length : breadth $= 7 : 3$, find the area of the rectangle.

Exercise 5.2

9. A factory employs 360 unskilled workers, one skilled worker for every 5 unskilled workers and 1 foreman for every 12 skilled workers.
Calculate the number of people employed in the factory.

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Exercise 5.2

11. In a school, the ratio of the number of students to the number of computers is $1 : \frac{2}{5}$.
If there are 100 computers in the school, work out the number of students in the school.

Exercise 5.2

12. Alice builds a model of a house. She uses a scale of 1 : 20.
The height of the real house is 10 metres.
(i) Work out the height of the model.

The width of the model is 80 cm.
(ii) Work out the width of the real house.

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Exercise 5.2

13. A map is drawn to a scale of 1 : 20 000.

(i) Find the actual distance, in kilometres, between two points which are 15 cm apart on the map.

(ii) Find the length on the map of a road which is 3.6 km in length.

Exercise 5.2

14. The scale on a map is 1 :25 000. The length of a wall on the map is 3.2 mm. Find the actual length in metres.

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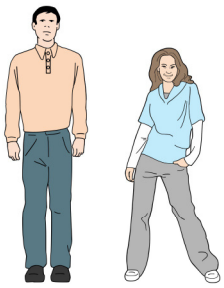
Exercise 5.2

15. In the photograph John's height is 5 cm and his sisters's height is 4 cm.
John's actual height is 1.5 m.
What is his sister's actual height?



Exercise 5.2

16. The number of pages in a comic book was increased from 48 to 80. If the price, which was previously €6.00, is increased in the same ratio, what should the new price be?

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Exercise 5.2

17. A petrol company carried out a fuel consumption test and found that the winter to summer ratio for the same car over the same test track was 3.5 : 4. The winter fuel consumption rate was 8.4 km per litre. Find the summer consumption rate.

Exercise 5.2

18. In St Mark's School the ratio of pupils to teachers is 17.2 : 1.

(i) Rewrite the ratio in the form $m : n$, where m and n are both whole numbers.

(ii) What is the smallest possible number of pupils in the school?

(iii) If the actual total of pupils and teachers is 1456, how many teachers are there?

Exercise 5.2

19. The table opposite gives the relationship between some metric units and imperial units of measure.

Use the table to perform the following conversions:

(i) Convert 50 miles to kilometres.
(ii) Convert 160 km to miles.
(iii) Convert 900 cm to feet.
(iv) Convert 12 feet to centimetres.
(v) Convert 40 kg to pounds.
(vi) Convert 88 pounds to kilograms.
(vii) Convert 40 litres to pints.
(viii) Convert 84 pints to litres.

Metric unit	Imperial unit
8 km	5 miles
30 cm	1 foot
1 kg	2.2 pounds
1 litre (ℓ)	1.75 pints
4.5 litres	1 gallon

Exercise 5.2

20. By how many metres is 15 miles greater than 23.5 km?

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Exercise 5.2

21. Tea served in a canteen is made from a mixture of two different types of tea, type A and type B. Type A costs €12.15 per kg. Type B costs €12.90 per kg.
The mixture costs €12.65 per kg.
If the mixture contains 7 kg of type A, how many kilograms of type B does it contain?

Answers 5.2

1. €56, €24 **2.** €104 **3.** €5508
4. 210 **5.** 81 kg **6.** 6 : 3 : 1
7. €225 **8.** 2100 cm^2 **9.** 438
10. (i) 10 kg (ii) 15 kg
11. 250
12. (i) 50 cm (ii) 16 m
13. (i) 3 km (ii) 18 cm
14. 80 m **15.** 1.2 m
16. €10.00 **17.** 9.6 km/ℓ
18. (i) 86:5 (ii) 86 (iii) 80
19. (i) 80 km (ii) 100 miles (iii) 30 ft
(iv) 360 cm (v) 88 lb (vi) 40 kg
(vii) 70 pints (viii) 48 ℓ
20. 500 m **21.** 14 kg