Your notes

KS3 Maths: revision notes

Ratio and proportion

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Ratio

- A **ratio** compares amounts: 3 : 2. Simplify by dividing by the HCF: 12 : 18 = 2 : 3.
- To write a **ratio** in the form 1 : n, divide both parts by the first part: 5 : 20 = 1 : 4.
- In the **ratio** 3 : 5, there are 8 parts, so the first amount is 3/8 of the total.

Sharing in a ratio

- Add the parts, find one part, then multiply: share £40 in the **ratio** 3 : 5. There are 8 parts, so 1 part = £5, and the shares are £15 and £25.
- If you know one amount: red to blue is 3 : 4 and there are 12 red, so 1 part = 4 and there are 16 blue.

Proportion

- **Direct proportion**: find one first (the **unitary method**). If 4 pens cost £3, 1 pen costs 75p, so 10 pens cost £7.50.
- Recipes: a recipe for 4 uses 200 g of flour, so a recipe for 6 uses 300 g.
- **Best buys**: compare the price per gram or per item: 500 g for £2.00 is 0.4p per gram; 750 g for £2.70 is 0.36p per gram, so the larger pack is better value.
- **Inverse proportion**: as one amount goes up, the other goes down. If 4 people take 6 days, 8 people take 3 days.

Scales and rates

- A map **scale** of 1 : 50 000 means 1 cm on the map is 50 000 cm (500 m) in real life.
- Speed = distance ÷ time: 150 miles in 3 hours is 50 miles per hour.

Key terms

Ratio	A comparison of two or more amounts, written like 3 : 2.
Simplest form	A ratio that can't be divided any further by a common factor.
Proportion	A part of the whole, or a relationship where amounts change together.
Direct proportion	When one amount doubles, the other doubles too.
Inverse proportion	When one amount doubles, the other halves.
Unitary method	Finding the value of one item first.
Scale	The ratio of a length on a map or drawing to the real length.
Best buy	The option that gives the most for your money.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What is 12 : 18 in its simplest form?
2. £40 is shared in the ratio 3 : 5. What is the larger share?
3. The ratio of boys to girls in a class is 2 : 3. What fraction of the class are girls?
4. 4 pens cost £3. How much do 10 pens cost?
5. A recipe for 4 people uses 200 g of flour. How much flour is needed for 6 people?
6. 4 people take 6 days to paint a house. How long would 8 people take?
7. A map has a scale of 1 : 50 000. How far in real life is 2 cm on the map?
8. Which is the better buy: 500 g for £2.00 or 750 g for £2.70?

Answers

1. 2 : 3
2. £25
3. 3/5
4. £7.50
5. 300 g
6. 3 days
7. 1 km
8. 750 g for £2.70

What to do next

Practise 12 questions on this topic

Try 4 exam questions, with mark schemes

Read the lesson, one step at a time

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