

Exercise walk-through

1.7

Ratio and proportion

Pearson Edexcel · International GCSE · Mathematics A

1. Topic 1 at a glance

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Foundation 1.1-1.11: integers and the four rules, fractions, decimals, indices, sets, percentages, ratio, bounds, standard form, everyday number. Higher adds recurring decimals, surds, algebraic sets, repeated percentage change and bound problems.

Must-know: multipliers $1 \pm r/100$ with reverse division; bounds $v \pm$ half the accuracy unit; standard form $a \times 10^n$ with $1 \leq a < 10$; share by parts over total.

8. Ratio and proportion

Ratio and proportion

Simplify by dividing through ($45 : 60 = 3 : 4$); share by parts over total: 350 pounds in $2 : 5$ gives 100 and 250.

The unitary method finds one unit first: 7 pens cost 4.20, one pen 0.60, 12 pens 7.20; direct proportion scales both quantities ($y = kx$).

Check yourself

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Directed numbers and BIDMAS; fractions with common denominators and reciprocals; FDP conversions including recurring decimals by algebra.

Indices, prime factorisation, HCF and LCM from Venns; surds simplified and rationalised; sets with complements and counts; percentages with multipliers, reverse and compound; ratio sharing and proportion; bounds chosen per question; standard form; units and calculator discipline.

Exercises 2.1·2.3

2.1 Simplify $45 : 60$ [1]

2.2 Share £350 in the ratio $2 : 5$ [3]

2.3 Simplify $\frac{3}{4} : 2$ (ratio of fractions) [2]

Exercises 2.1·2.3

2.1 Simplify $45 : 60$ [1]

2.1 $3 : 4$.

2.2 Share £350 in the ratio $2 : 5$ [3]

2.2 £100 and £250.

2.3 Simplify $\frac{3}{4} : 2$ (ratio of fractions) [2]

2.3 Multiply both by 4: $3 : 8$.

Exercises 2.4·3.2

2.4 5 identical buses seat 225 people. How many do 8 buses seat? [2]

3.1 (*Original.*) A alloy is copper and zinc in the ratio 7 : 3. A block weighs 950 g. (a) Find the mass of copper. (b) A second block has 273 g of zinc: find its total mass. [4]

3.2 (*Original.*) A recipe for 4 people uses 150 g of flour. (a) How much flour for 10 people? (b) With 525 g of flour available, how many whole people can be fed? [4]

Exercises 2.4·3.2

2.4 5 identical buses seat 225 people. How many do 8 buses seat? [2]

2.4 $225 \div 5 = 45$ per bus; $8 \times 45 = 360$ people.

3.1 (*Original.*) A alloy is copper and zinc in the ratio 7 : 3. A block weighs 950 g. (a) Find the mass of copper. (b) A second block has 273 g of zinc: find its total mass. [4]

3.1 (a) Copper = $\frac{7}{10} \times 950 = 665$ g. (b) Zinc is $\frac{3}{10}$ of total: total = $273 \div \frac{3}{10} = 910$ g.

3.2 (*Original.*) A recipe for 4 people uses 150 g of flour. (a) How much flour for 10 people? (b) With 525 g of flour available, how many whole people can be fed? [4]

3.2 (a) $150 \times \frac{10}{4} = 375$ g. (b) $525 \div 37.5 = 14$ people.

Exercise 3.3

3.3 (*Original.*) y is directly proportional to x ; $y = 21$ when $x = 7$. (a) Find the equation.
(b) Find y when $x = 12$. (c) Find x when $y = 45$. [4]

Exercise 3.3

3.3 (*Original.*) y is directly proportional to x ; $y = 21$ when $x = 7$. (a) Find the equation. (b) Find y when $x = 12$. (c) Find x when $y = 45$. [4]

3.3 (a) $y = kx$: $21 = 7k$ so $k = 3$, $y = 3x$. (b) $y = 36$. (c) $x = 15$.

Local review guidance: total parts found before sharing; exact amounts with units; proportion answers checked against the direction of change. This is authored classroom guidance.