

Ratio and sharing

Pearson Edexcel GCSE Mathematics 1MA1 • L013
Foundation and Higher • 60 minutes • Lesson resources

REACH FOR THE STAR | GCSE MATHEMATICS

Interpret ratios, simplify them and share quantities using equal parts while distinguishing part-to-part from part-to-whole.

Work without a calculator except where a check is invited. Write on the lines or replace them with typed answers. Attempt before reading intentional practice feedback.

Connect & Check

Ratio: ordered comparison of quantities. Part-to-part: compares one component with another. Part-to-whole: compares a component with the total. Equal parts: units of a common size used to share.

R1

Simplify $12/18$ and find HCF of 12 and 18.

R2

Find $2/5$ of 50.

R3

A whole has $3/4$ equal to 24. Find the whole.

Share | In pairs, predict the first step for this problem: Red:blue = 2:3 means for every two equal red parts there are three equal blue parts. There are five parts altogether, so red is $\frac{2}{5}$ of the whole, not $\frac{2}{3}$. Scaling both terms by the same positive factor preserves the ratio. Compare your reasons before using the worked model.

Present through worked examples

Red:blue = 2:3 means for every two equal red parts there are three equal blue parts. There are five parts altogether, so red is $\frac{2}{5}$ of the whole, not $\frac{2}{3}$. Scaling both terms by the same positive factor preserves the ratio.

D1

Model: 12:18 = 2:3 by dividing both terms by 6. Simplify 15:25.

D2

Model: red:blue=2:3 gives red fraction $\frac{2}{5}$ and blue $\frac{3}{5}$. For red:blue=3:4, find both fractions of the total.

D3

Model: share £50 in ratio 2:3. Five parts; £10 each; shares £20 and £30. Share £56 in ratio 3:4.

D4

Model: A:B=2:5 and B=30. One part is 6, so A=12. If A:B=3:7 and B=35, find A and the total.

Apply with less support

Keep the named order and convert quantities to matching units before simplifying. To share a total, add ratio parts, divide the total by that sum, then multiply for each share. If one share or the difference is given, match it to its number of parts first.

A1

Simplify 6:9, 12:18 and 20:30. What is unchanged?

A2

Share 72 in ratio 5:3. Then, for $A:B=4:7$ and $A=20$, find B.

A3

A mixture uses concentrate:water=1:4. Make 750 ml of mixture. How much of each is needed?

Optional support: Use a common factor.

Optional check after A3: $750 \div 5 \times 1 = 150$; $750 \div 5 \times 4 = 600$. Check $150 + 600 = 750$ and $150:600 = 1:4$. A correct sum alone does not establish the ratio.

Apply and extend reasoning

C1

A:B=2:3 and B=12. A learner says A=8, so A is $\frac{2}{3}$ of the total. Identify what is correct and repair the claim.

C2

A:B=3:5 and B is 14 more than A. Find A and B.

Intentional practice feedback — read after attempting

A1: All 2:3.

A2: 45 and 27; B=35.

A3: 150 ml concentrate and 600 ml water.

C1: A=8 is correct. Total=20, so A is $\frac{2}{5}$ of the total.

C2: Difference is 2 parts=14; one part=7; A=21, B=35.

Correct one response and explain your change. Stretch is available to either tier; temporary support needs do not determine entry tier.

Recall & Review through retrieval

Work without notes. Six retrieval points; this attempt does not establish mastery. Equivalent exact numeric forms are accepted. Where accuracy is requested, also state the requested form in your written work.

Q1 Total parts in ratio 3:5

Q2 First share when 40 is shared 3:5

Q3 Second term: $12:18 = 2:?$

Q4 Red fraction of total for red:blue=2:3

Q5 $A:B=4:7$, $A=20$. Find B.

Q6 35% of 80

Intentional retrieval feedback

Q1 8; Q2 15; Q3 3; Q4 $\frac{2}{5}$; Q5 35; Q6 28. Correct and retry tomorrow, then in one week.

Prove independently and improve

P1–P2: five minutes without notes; 4 marks. Your teacher reviews explanations and method marks.
P3 has no mark.

P1

Share £63 in ratio 2:5. Show the value of one part. [2]

P2

A:B=3:5. Express A as a fraction of the total and explain the denominator. [2]

P3

Name one decision you can now explain. Set a fresh question and a date for checking it without support.

Teacher feedback: _____

Fresh question and retry date: _____

Delayed independent evidence: _____

Prepare for the next lesson

L014: Scale and proportion

F1

Tomorrow simplify 18:24 and share 40 in ratio 3:5.

F2

Before L014, 2 cm on a diagram represents 10 m. How many metres does 1 cm represent?

Read and prepare

In direct proportion, multiplying one quantity by a factor multiplies the other by the same factor. A scale drawing uses one constant length ratio. Match units before writing a scale such as 1:500.

Digital workbook: save locally where available; export a JSON backup before closing or moving the file. Restore only this lesson/version. Printing records answers, not mastery. Live browser checks remain pending; use Word/PDF if required.

Optional extension activities

Stretch

Split £126 in ratio 2:3:4 and check the parts total.

Deep challenge

A sum is split $A:B=3:5$ and $B:C=2:3$. Find $A:B:C$ in whole numbers.

Recall & Review: feedback and extension integration

Source-integrated WWW/EBI and extension page

Lesson L013: Ratio and sharing

Objective: Interpret ratios, simplify them and share quantities using equal parts while distinguishing part-to-part from part-to-whole.

Timing for a 60-minute lesson

0-7 Connect & Check; 7-14 Share; 14-25 Present/model; 25-44 Apply route choice/practice; 44-52 independent exam-style check; 52-60 Recall & Review, WWW/EBI and next step.

Recall & Review evidence

At the end of the lesson, solve a fresh question without prompts, explain a check, correct one error and record the next practice step.

What Went Well (WWW)

I selected a suitable representation or multiplier and kept the reference amount clear.

Even Better If (EBI)

I will state the whole/part, show each operation and check that the size of my answer is reasonable.

Integrated stretch and deep challenge

Stretch: Split £126 in ratio 2:3:4 and check the parts total.

Deep challenge: A sum is split $A:B=3:5$ and $B:C=2:3$. Find $A:B:C$ in whole numbers.

My next-step response
