

Fraction reasoning

Pearson Edexcel GCSE Mathematics 1MA1

Foundation and Higher • L008

Number and proportion • Review v0.9

The goal and the evidence

Connect & Check → Share → Present → Apply → Recall & Review

Choose, explain and check a fraction method.

Repair an error, then solve a fresh problem.

Starting-point diagnostic

R1–R3 • Attempt without notes

$$\frac{1}{2} + \frac{1}{4}; \left(\frac{3}{4}\right) \div \left(\frac{1}{4}\right)$$

Compare $\frac{2}{3}$ and $\frac{3}{5}$.

$$-8 - (-3); 3 + 2 \times 4$$

Repair equal units

Wrong: $1/2 + 1/3 = 2/5$

Correct: $3/6 + 2/6 = 5/6$

Your turn: repair $1/3 + 1/4$.

Repair division

$$(2/3) \div (1/6) = (2/3) \times 6 = 4$$

Your turn: $(3/5) \div (1/10)$

How many tenths fit?

Check by reversing

$$5/6 - 1/2 = 1/3$$

$$\text{Check: } 1/3 + 1/2 = 5/6$$

Your turn: $7/8 - 1/4$

A fraction of an amount

$\frac{3}{4}$ of 2 litres = $1 \frac{1}{2}$ litres

Your turn: $\frac{2}{3}$ of $\frac{3}{4}$ litre

Taking $\frac{2}{3}$ scales this positive amount down.

REPAIR, THEN TRY A FRESH QUESTION

Use a check that tests the original meaning.

Record the support you can now remove.

Diagnostic pause

Choose and explain before moving on.

Check $\frac{2}{3} + \frac{1}{6} = \frac{5}{6}$

A subtract $\frac{1}{6}$ B repeat C add $\frac{1}{6}$

Careful variation

A1 • Explain your decisions

Calculate and check (a) $\frac{1}{4} + \frac{1}{6}$ (b) $\frac{3}{4} - \frac{1}{6}$.

Show your method and check the result.

Independent application

A2 • Without prompts

Calculate (a) $(2/5) \times (3/4)$ (b) $(2/5) \div (3/4)$. Explain why the results differ.

Show your method and check the result.

Use the method in context

A3 • Explain your decisions

A full tank holds 12 litres. It is $\frac{3}{4}$ full. Then $\frac{1}{3}$ of the water currently in it is used. How much remains?

Show your method and check the result.

Intentional practice feedback

Read after attempting A3

6 litres.

Check the interpretation as well as the arithmetic.

A claim to test

C1 • Explain your decisions

A learner says $\frac{1}{2}$ of $\frac{1}{3}$ equals $\frac{1}{3}$ of $\frac{1}{2}$. Explain why and give the exact value.

Show your method and check the result.

Deepen the reasoning

C2 • Explain your decisions

Two shirts, red and blue, can each be worn with black, grey or white trousers. List all outfits. Explain how a list avoids omissions.

Show your method and check the result.

Retrieval without notes

Q1–Q6 • Use full prompts in your workbook

Q1–Q3

$$1/4 + 1/6$$

$$(2/5) \div (1/5)$$

$$(3/4) \times (2/3)$$

Q4–Q6

$$\text{HCF}(18, 24)$$

$$7/8 - 3/8$$

$$6 + 2 \times (-3)$$

Independent exit evidence

P1 • 2 marks • Without notes

Repair $2/3 + 1/4 = 3/7$ and show the common denominator. [2]

Show working. Teacher review follows.

Independent exit evidence

P2 • 2 marks • Without notes

Find $(3/4) \div (3/8)$ and give a multiplication check. [2]

Show working. Teacher review follows.

Feedback and next steps

P3 • Completion is not mastery

Name one decision you can now explain.

Choose a fresh question and a delayed check.

Before the next lesson

L009: Fractions decimals and percentages

Complete F1 tomorrow without notes.

Read and attempt F2; bring one question.

Product rule for counting

Higher alternative • H1 • 3 minutes

3 shirts $\times$ 4 trousers = 12 outfits

For each shirt, all four trousers are available.

Choices change after selection

Higher alternative • H2 • 3 minutes

Two different digits from 1,2,3,4

4 first choices × 3 remaining = 12 codes

Independent Higher evidence

HX1 • 2 marks • 2 minutes

4 shirts, 3 trousers, 2 hats

Every combination allowed. Count outfits.

Independent Higher evidence

HX2 • 2 marks • 2 minutes

Two different digits from 1 to 5

Order matters. Count codes; explain.



Optional stretch

Without notes, calculate $7/12 + 5/18$ and explain the common denominator.

Show a method. Explain a check or counterexample.

Optional deep challenge

Is $\frac{2}{3} + \frac{3}{4}$ greater than 1? Show a method without decimals.

Show a method. Explain a check or counterexample.

L008 Recall & Review



Fraction reasoning and retrieval

Fresh evidence: prove the objective

Solve a new question without prompts. Explain one check, then correct one error in your working.

Objective: Select, explain and check fraction methods; diagnose misconceptions and transfer a repaired method to a fresh problem.

Write the next practice step before you leave. It must test the method again, not simply copy today's example.

Feedback language

Use the full phrases before the abbreviations.

What Went Well (WWW)

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

Point to the method, representation, reasoning or check that improved.

Even Better If (EBI)

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

Set one precise next-step action and test it on a fresh question.

Extension route

Choose this route only after the core evidence is secure.

Stretch

Without notes, calculate $7/12 + 5/18$ and explain the common denominator.

Deep challenge

Is $2/3 + 3/4$ greater than 1? Show a method without decimals.

Explain your reasoning clearly enough that another learner could check it.