

Fraction operations

Pearson Edexcel GCSE Mathematics 1MA1

Foundation and Higher • L007

Number and proportion • Review v0.9

The goal and the evidence

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

Calculate exactly with all four fraction operations.

Explain why the method works and check its result.

Starting-point diagnostic

R1–R3 • Attempt without notes

$\frac{1}{2}$ and $\frac{1}{3}$ in sixths

$1\frac{1}{2}$ as an improper fraction

Simplify $\frac{6}{15}$.

Adding equal units

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

Your turn: $\frac{1}{4} + \frac{1}{3}$

Use twelfths.

Half of three quarters

Explain the representation

$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	

Three columns are $\frac{3}{4}$. Half of those = $\frac{3}{8}$.

Subtracting equal units

$$3/4 - 1/6 = 9/12 - 2/12 = 7/12$$

Your turn: $5/6 - 1/4$

Keep the denominator: it names the unit.

A fraction of a fraction

$$(1/2) \times (3/4) = 3/8$$

Your turn: $(2/3) \times (3/5)$

Simplify the result.

Dividing by a fraction

$$(3/4) \div (2/5) = (3/4) \times (5/2)$$

The divisor becomes 1 when scaled by 5/2.

Your turn: $(2/3) \div (4/5)$

CHOOSE THE METHOD FROM THE OPERATION

Add/subtract: equal-sized parts.

Divide: multiply by the divisor's reciprocal.

Diagnostic pause

Choose and explain before moving on.

$$\frac{1}{2} + \frac{1}{3} = ?$$

A $\frac{2}{5}$ B $\frac{5}{6}$ C $\frac{2}{6}$

Careful variation

A1 • Explain your decisions

Use the same fractions $\frac{1}{2}$ and $\frac{1}{3}$ with $+$, $-$, $\times$ and $\div$. Compare the four answers.

Show your method and check the result.

Independent application

A2 • Without prompts

Calculate (a) $\frac{2}{5} + \frac{3}{10}$ (b) $\frac{7}{8} - \frac{1}{3}$ (c) $\left(\frac{3}{4}\right) \times \left(\frac{2}{9}\right)$ (d) $\left(\frac{5}{6}\right) \div \left(\frac{5}{12}\right)$.

Show your method and check the result.

Use the method in context

A3 • Explain your decisions

A ribbon is $2 \frac{1}{2}$ m long. Pieces are $\frac{3}{4}$ m long. How many complete pieces can be cut and how much remains?

Show your method and check the result.

Intentional practice feedback

Read after attempting A3

3 complete pieces; $\frac{1}{4}$ m remains.

Check the interpretation as well as the arithmetic.

A claim to test

C1 • Explain your decisions

Does multiplying two positive numbers always make a larger result? Give a fraction counterexample.

Show your method and check the result.

Deepen the reasoning

C2 • Explain your decisions

Why does dividing by $\frac{1}{2}$ double a quantity? Explain with $\frac{3}{4}$, then check by multiplication.

Show your method and check the result.

Retrieval without notes

Q1–Q6 • Use full prompts in your workbook

Q1–Q3

$$1/3 + 1/6$$

$$3/4 - 1/8$$

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

Q4–Q6

$$(3/5) \div (3/10)$$

$1 \frac{2}{3} \rightarrow$ improper

$$\text{LCM}(4,6)$$

Independent exit evidence

P1 • 2 marks • Without notes

Calculate $\frac{2}{3} + \frac{1}{4}$, showing the common denominator. [2]

Show working. Teacher review follows.

Independent exit evidence

P2 • 2 marks • Without notes

Calculate $(3/5) \div (9/10)$, showing the reciprocal step.
[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

L008: Fraction reasoning and retrieval

Complete F1 tomorrow without notes.

Read and attempt F2; bring one question.

Optional stretch

Calculate $\frac{5}{6} - \frac{3}{8}$ and $\frac{2}{3} \times \frac{9}{10}$, simplifying each.

Show a method. Explain a check or counterexample.

Optional deep challenge

A learner says $\frac{3}{4} \div \frac{2}{5} = \frac{6}{20}$. Explain and correct.

Show a method. Explain a check or counterexample.

L007 Recall & Review



Fraction operations

Fresh evidence: prove the objective

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

Objective: Calculate exactly with fractions using all four operations and explain why each method works.

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

Calculate $\frac{5}{6} - \frac{3}{8}$ and $\frac{2}{3} \times \frac{9}{10}$, simplifying each.

Deep challenge

A learner says $\frac{3}{4} \div \frac{2}{5} = \frac{6}{20}$. Explain and correct.

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