

Equivalent fractions

Pearson Edexcel GCSE Mathematics 1MA1 • L006
Foundation and Higher • 60 minutes • Lesson resources

REACH FOR THE STAR | GCSE MATHEMATICS

Explain equivalence, simplify fractions, convert mixed and improper forms and compare fractions exactly.

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

Numerator: number of parts counted. Denominator: equal parts in one whole. Equivalent: same value. Improper fraction: numerator at least denominator. Mixed number: whole number plus proper fraction.

R1

Find HCF of 12 and 18.

R2

Calculate $4 \times 5 + 3$.

R3

Which is greater: 0.6 or 0.56?

Share | In pairs, predict the first step for this problem: Splitting each of three equal parts into two makes six equal parts. Thus $\frac{2}{3} = \frac{4}{6}$. Multiplying numerator and denominator by the same non-zero number multiplies by 1, preserving the value. Compare your reasons before using the worked model.

Present through worked examples

Splitting each of three equal parts into two makes six equal parts. Thus $\frac{2}{3} = \frac{4}{6}$. Multiplying numerator and denominator by the same non-zero number multiplies by 1, preserving the value. Adding the same number to both does not usually do this.

D1

Model: $\frac{2}{3} = \frac{4}{6}$ by multiplying both entries by 2. Complete $\frac{3}{5} = \frac{\quad}{20}$.

D2

Model: $\frac{18}{24} = \frac{3}{4}$ by dividing both entries by 6. Simplify $\frac{15}{25}$.

D3

Model: $2\frac{3}{4} = \frac{8}{4} + \frac{3}{4} = \frac{11}{4}$. Convert $3\frac{2}{5}$ to an improper fraction.

D4

Model: $\frac{7}{3} = 2\frac{1}{3}$ because $7 = 2 \times 3 + 1$. Convert $\frac{14}{5}$ to a mixed number; compare $\frac{3}{4}$ with $\frac{5}{8}$.

Apply with less support

Simplify by a common factor, preferably the HCF. For a mixed number, multiply wholes by the denominator, then add the numerator. For comparison, use equal denominators and compare numerators; keep the same whole.

A1

Complete $1/2 = \underline{\hspace{1cm}}/6 = \underline{\hspace{1cm}}/10$. Simplify $6/10$ and $9/15$.

A2

Convert $2\frac{5}{6}$ to an improper fraction and $19/4$ to a mixed number. Compare $2/3$ and $3/4$.

A3

A jug contains $1\frac{3}{4}$ litres. A bottle contains $7/4$ litres. Do they contain equal amounts? Explain.

Optional support: Scale both entries together.

Optional check: enter $2 \div 3$ and $4 \div 6$. Matching displays support the equivalence, but the exact fraction argument explains why. Do not replace exact fractions with rounded decimals.

Apply and extend reasoning

C1

A learner says $\frac{3}{5} = \frac{4}{6}$ because both entries increased by 1. Disprove the claim exactly.

C2

Find a fraction strictly between $\frac{1}{2}$ and $\frac{2}{3}$. Prove it is between them.

Intentional practice feedback — read after attempting

A1: $\frac{3}{6}$; $\frac{5}{10}$; both simplify to $\frac{3}{5}$.

A2: $\frac{17}{6}$; $4\frac{3}{4}$; $\frac{2}{3} = \frac{8}{12} < \frac{9}{12} = \frac{3}{4}$.

A3: Yes: $1\frac{3}{4} = \frac{4}{4} + \frac{3}{4} = \frac{7}{4}$ litres.

C1: $\frac{3}{5} = \frac{18}{30}$; $\frac{4}{6} = \frac{20}{30}$, so not equal.

C2: For example $\frac{7}{12}$: $\frac{1}{2} = \frac{6}{12} < \frac{7}{12} < \frac{8}{12} = \frac{2}{3}$.

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 Simplify $12/18$

Q2 $2\frac{1}{4}$ as an improper fraction

Q3 $11/5$ as a mixed number

Q4 Missing numerator: $3/4 = ?/20$

Q5 HCF of 18 and 30

Q6 $18 \div 3 \times 2$

Intentional retrieval feedback

Q1 $2/3$; Q2 $9/4$; Q3 $2\frac{1}{5}$; Q4 15; Q5 6; Q6 12. 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

Simplify $21/28$. State the common factor used. [2]

P2

Which is larger, $5/6$ or $7/9$? Show an exact comparison. [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

L007: Fraction operations

F1

Tomorrow convert $1\frac{4}{7}$ to an improper fraction and simplify $\frac{8}{12}$.

F2

Before L007, write $\frac{1}{2}$ and $\frac{1}{3}$ using denominator 6.

Read and prepare

Adding fractions combines counts of equal-sized parts. Rename unlike fractions using a common denominator first. We will also interpret multiplication as a fraction of an amount and division as how many groups fit.

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

Simplify $\frac{42}{70}$ and give two different fractions equivalent to it.

Deep challenge

A fraction is equivalent to $\frac{5}{8}$ and its numerator is 35. Find its denominator and justify.

Recall & Review: feedback and extension integration

Lesson L006: Fractions and equivalent forms

Objective: Explain equivalence, simplify fractions, convert mixed and improper forms and compare fractions exactly.

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 one check, correct one error and record the next practice step.

What Went Well (WWW)

I selected an efficient numerical method, showed the key steps clearly and checked the sign, size or accuracy of my answer.

Even Better If (EBI)

I will make the place-value, sign or operation decision explicit and use estimation or an inverse calculation to check a fresh question.

Integrated stretch and deep challenge

Stretch: Simplify $\frac{42}{70}$ and give two different fractions equivalent to it.

Deep challenge: A fraction is equivalent to $\frac{5}{8}$ and its numerator is 35. Find its denominator and justify.

My next-step response
