

Fractions decimals and percentages

Pearson Edexcel GCSE Mathematics 1MA1 • L009
Foundation and Higher • 60 minutes • Lesson resources

REACH FOR THE STAR | GCSE MATHEMATICS

Convert between fractions, decimals and percentages, and compare proportions on a consistent basis.

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

Percentage: parts per hundred. Proportion: part relative to the whole. Terminating decimal: ends after finitely many places. Recurring decimal: a digit or block repeats indefinitely.

R1

Simplify $25/100$ and $75/100$.

R2

Calculate 0.07×100 and $35 \div 100$.

R3

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

Share | In pairs, predict the first step for this problem: 25% means $25/100$, so it equals $1/4$ and 0.25. Decimal to percentage multiplies the numerical value by 100 and adds %. Fraction to decimal uses division. The percentage sign changes. Compare your reasons before using the worked model.

Present through worked examples

25% means $25/100$, so it equals $1/4$ and 0.25. Decimal to percentage multiplies the numerical value by 100 and adds %. Fraction to decimal uses division. The percentage sign changes the unit: 0.25 is 25%, not 0.25%.

D1

Model: $3/5 = 60/100 = 0.6 = 60\%$. Write $7/20$ as a decimal and percentage.

D2

Model: $0.08 = 8/100 = 2/25 = 8\%$. Convert 0.375 to a fraction and percentage.

D3

Model: $125\% = 125/100 = 5/4 = 1.25$. Convert 150% to a fraction and decimal.

D4

Model: 3 out of 8 is $3/8 = 0.375 = 37.5\%$. Express 7 out of 10 as a percentage.

Apply with less support

Choose a useful route: common denominator 100 for simple fractions, numerator $\div$ denominator otherwise. Keep recurring values exact; $1/3$ is 0.333... recurring, not exactly 0.33. Compare by changing all values into one form.

A1

Convert to percentages: 0.4, 0.04, 0.004 and 1.4. Explain the place-value pattern.

A2

Write $3/8$ as a decimal and percentage. Write 65% as a simplified fraction. Order 0.62, $3/5$ and 61% from least to greatest.

A3

Team A scores 18 out of 24; team B scores 14 out of 20. Which has the greater success proportion?

Optional support: Write each over 100.

Optional check after A3: $(18 \div 24) \times 100 = 75$ and $(14 \div 20) \times 100 = 70$. Enter the part divided by the whole. A decimal display of $1 \div 3$ is rounded; it does not make 0.33 exact.

Apply and extend reasoning

C1

Is $\frac{1}{3}$ exactly 33%? Explain without relying on a rounded calculator display.

C2

Give three different forms of a proportion greater than 100%, and explain what it means relative to one whole.

Intentional practice feedback — read after attempting

A1: 40%; 4%; 0.4%; 140%.

A2: 0.375; 37.5%; $\frac{13}{20}$; $\frac{3}{5}$, 61%, 0.62.

A3: A: 75%, compared with B: 70%.

C1: No: $33\% = \frac{33}{100}$; $\frac{1}{3} - \frac{33}{100} = \frac{1}{300}$.

C2: For example $150\% = 1.5 = \frac{3}{2}$, one and a half of the reference whole.

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 $\frac{3}{4}$ as a decimal

Q2 0.6 as a fraction

Q3 Percentage number for $\frac{7}{20}$ (omit %)

Q4 125% as a decimal

Q5 Percentage number for 0.08 (omit %)

Q6 $\frac{1}{2} + \frac{1}{4}$

Intentional retrieval feedback

Q1 0.75; Q2 $\frac{3}{5}$; Q3 35; Q4 1.25; Q5 8; Q6 $\frac{3}{4}$. 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

Convert 0.45 to a simplified fraction and a percentage. [2]

P2

Compare $\frac{7}{10}$ and 68%. Show them in the same form. [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

L010: Fractions and percentages of amounts

F1

Tomorrow convert 0.125 to a fraction and percentage.

F2

Before L010, find one fifth of 60 and explain the operation.

Read and prepare

To find a fraction of an amount, divide by the denominator then multiply by the numerator. A percentage is the same kind of operator: 35% of an amount means multiply it by 35/100.

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

Convert $\frac{7}{20}$ into a decimal and percentage, then order it with 0.3 and 32%.

Deep challenge

A learner claims $0.125 = 12.5/10$ percent. Correct the conversion.

Recall & Review: feedback and extension integration

Source-integrated WWW/EBI and extension page

Lesson L009: Fractions decimals and percentages

Objective: Convert between fractions, decimals and percentages, and compare proportions on a consistent basis.

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: Convert $\frac{7}{20}$ into a decimal and percentage, then order it with 0.3 and 32%.

Deep challenge: A learner claims $0.125=12.5/10$ percent. Correct the conversion.

My next-step response
