

Percentage change

Pearson Edexcel GCSE Mathematics 1MA1 • L011
Foundation and Higher • 60 minutes • Lesson resources

REACH FOR THE STAR | GCSE MATHEMATICS

Use multipliers for percentage change, recover an original value and distinguish simple interest from repeated growth.

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

Multiplier: scale factor for a change. Increase: add to the original. Decrease: subtract from the original. Reverse percentage: recover the original. Simple interest: interest calculated on the original principal each year.

R1

Find 20% of 60 and write 20% as a decimal.

R2

Recover a whole if $\frac{3}{4}$ of it is 30.

R3

Convert 125% to a decimal.

Share | In pairs, predict the first step for this problem: A 20% increase leaves 120% of the original, so multiply by 1.20. A 20% decrease leaves 80%, so multiply by 0.80. If a sale price is £72 after a 20% reduction, £72 is 80% of the original. Compare your reasons before using the worked model.

Present through worked examples

A 20% increase leaves 120% of the original, so multiply by 1.20. A 20% decrease leaves 80%, so multiply by 0.80. If a sale price is £72 after a 20% reduction, £72 is 80% of the original: divide 72 by 0.8 to recover £90.

D1

Model: increase £60 by 20%: $60 \times 1.2 = £72$. Decrease £80 by 15%.

D2

Model: £72 after a 20% reduction means $72 \div 0.8 = £90$ originally. Find the original if a 10% increase gives £66.

D3

Model: a rise from 40 to 50 is $10/40 \times 100\% = 25\%$. Find the percentage rise from 60 to 72.

D4

Model: £200 at 5% simple interest for 3 years earns £10 each year, £30 total; final £230. Find final amount for £300 at 4% simple interest for 2 years.

Apply with less support

Identify which value represents 100%. Write $\text{new} = \text{original} \times \text{multiplier}$, then multiply forwards or divide backwards. $\text{Percentage change} = \text{change} \div \text{original} \times 100\%$. Simple interest uses the same original principal each year; add the accumulated interest at the end.

A1

Write multipliers for a 5% rise, 5% fall, 50% rise and 50% fall. Apply each to 80.

A2

Find (a) £90 after a 10% reduction (b) original if a 25% reduction gives £60 (c) percentage increase from 80 to 100.

A3

A £100 price rises 20%, then the new price falls 20%. Find the final price and explain why it is not £100.

Optional support: Write the new percentage first.

Core examples are non-calculator friendly. Optional check after A3: $100 \times 1.2 \times 0.8 = 96$. Keep intermediate values unrounded; use ordinary multipliers rather than a calculator-specific % key.

Apply and extend reasoning

C1

A price falls from £80 to £60. What percentage increase returns it to £80? Explain the changed base.

C2

Compare £100 at 10% simple interest for 2 years with a 10% increase applied twice. Explain the difference.

Intentional practice feedback — read after attempting

A1: $1.05 \rightarrow 84$; $0.95 \rightarrow 76$; $1.5 \rightarrow 120$; $0.5 \rightarrow 40$.

A2: £81; £80; 25%.

A3: £96: $100 \times 1.2 \times 0.8$.

C1: $33 \frac{1}{3}\%$: the rise is $\frac{20}{60} = \frac{1}{3}$ of the reduced price.

C2: Simple: £120. Repeated growth: £121.

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 Multiplier for a 20% increase

Q2 £80 decreased by 25% (number only)

Q3 Original if 10% increase gives 55

Q4 Percentage rise 40 to 50 (omit %)

Q5 Interest on 200 at 5% simple for 2 years

Q6 $\frac{3}{4}$ of 28

Intentional retrieval feedback

Q1 1.2; Q2 60; Q3 50; Q4 25; Q5 20; Q6 21. 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

Decrease £120 by 15%. Show a multiplier. [2]

P2

A price after a 20% rise is £96. Find the original and check. [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

L012: Number checkpoint and feedback

F1

Tomorrow recover an original price if a 25% discount gives £45.

F2

Before L012, write one fraction or percentage mistake and an independent check that would expose it.

Read and prepare

A checkpoint identifies what to practise next. Work without notes first, mark the first decision that failed, repair it, and test with a fresh question after a delay. A score is evidence, not a grade or proof of mastery.

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

A coat costs £68 after a 15% reduction. Find its original price.

Deep challenge

A price rises 20% and then falls 20%. Explain the net change using multipliers.

Recall & Review: feedback and extension integration

Source-integrated WWW/EBI and extension page

Lesson L011: Percentage change and reverse percentages

Objective: Use multipliers for percentage change, recover an original value and distinguish simple interest from repeated growth.

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: A coat costs £68 after a 15% reduction. Find its original price.

Deep challenge: A price rises 20% and then falls 20%. Explain the net change using multipliers.

My next-step response
