

Multiplication and order

Pearson Edexcel GCSE Mathematics 1MA1 • L002
Foundation and Higher • 60 minutes • Lesson resources

REACH FOR THE STAR | GCSE MATHEMATICS

Calculate with signed products, quotients and mixed operations; justify the order and check with an inverse.

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

Product: result of multiplication. Quotient: result of division. Factor: a number being multiplied. Brackets group a calculation. A square multiplies a number by itself.

R1

Calculate $-6 + 9$ and $-4 - (-7)$.

R2

Find 6×4 and $24 \div 6$. Explain the connection.

R3

Write 3^2 as a multiplication, then calculate it.

Share | In pairs, predict the first step for this problem: Three lots of -4 give -12 . To keep distribution valid, $(-3) \times (4 + (-4))$ must be zero. Since $(-3) \times 4 = -12$, $(-3) \times (-4)$ must be $+12$. Division reverses multiplication: $-24 \div 6 = -4$ Compare your reasons before using the worked model.

Present through worked examples

Three lots of -4 give -12 . To keep distribution valid, $(-3) \times (4 + (-4))$ must be zero. Since $(-3) \times 4 = -12$, $(-3) \times (-4)$ must be $+12$. Division reverses multiplication: $-24 \div 6 = -4$ because $6 \times (-4) = -24$. Division by zero is undefined.

D1

Worked example: $3 \times (-4) = -4 + (-4) + (-4) = -12$. Now calculate $4 \times (-3)$.

D2

Complete: $(-3) \times 4 = -12$, so $(-3) \times (-4) = \underline{\hspace{1cm}}$ because the two products sum to $\underline{\hspace{1cm}}$. Now find $(-5) \times (-2)$.

D3

Worked example: $-24 \div 6 = -4$ since $6 \times (-4) = -24$. Complete $-24 \div (-6) = \underline{\hspace{1cm}}$ and give the multiplication check.

D4

Worked example: $5 + 2 \times (-3) = 5 + (-6) = -1$. Complete $7 + 3 \times (-2) = 7 + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$.

Apply with less support

Brackets first; then powers; then multiplication and division from left to right; then addition and subtraction from left to right. Equal-priority operations are not separate alphabetical steps.

A1

Calculate (a) 4×3 (b) $4 \times (-3)$ (c) $(-4) \times 3$ (d) $(-4) \times (-3)$. What changes?

A2

Without prompts, calculate (a) $18 \div 3 \times 2$ (b) $18 \div (3 \times 2)$ (c) $20 - 8 + 3$.

A3

A balance is $-\text{£}7$. Three payments of $\text{£}4$ arrive, then $\text{£}9$ is spent. Write one expression and find the new balance.

Optional support: Keep the magnitude 12; justify the sign.

Optional check only: estimate the sign, then enter $(-18) \div (-3) + 2 \times 4$ using brackets and the negative-number key. Expect 14. Calculator models differ; demonstrate your own.

Apply and extend reasoning

C1

Alex says “Two negatives always make a positive.” Compare $-3 + (-2)$ and $(-3) \times (-2)$. Improve the claim.

C2

Compare $(-3)^2$ and -3^2 . Explain the role of brackets.

Intentional practice feedback — read after attempting

A1: 12, -12 , -12 , 12.

A2: 12; 3; 15.

A3: $-7 + 3 \times 4 - 9 = -4$, so $-\pounds 4$.

C1: -5 and 6. The claim works for a product of two negative numbers, not every operation.

C2: 9 and -9 . $(-3)^2 = (-3) \times (-3)$; -3^2 means $-(3 \times 3)$.

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 -5×4

Q2 $(-6) \times (-3)$

Q3 $-28 \div 7$

Q4 $20 \div 5 \times 2$

Q5 $3 + 4 \times 2$

Q6 $(3 + 4) \times 2$

Intentional retrieval feedback

Q1 -20 ; Q2 18 ; Q3 -4 ; Q4 8 ; Q5 11 ; Q6 14 . 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

Without notes, calculate $6 + 3 \times (-4)$. Show which operation comes first. [2]

P2

Calculate $-42 \div (-6)$, then give a multiplication check. [2]

P3

Name an operation-order error you corrected and a fresh question to retry tomorrow.

Teacher feedback: _____

Fresh question and retry date: _____

Delayed independent evidence: _____

Prepare for the next lesson

L003: place value, decimals and estimation

F1

Tomorrow calculate $-4 \times (-6)$ and $24 \div 4 \times 2$. Explain one answer.

F2

Before L003, find 3.7×10 and $48 \div 100$. State the value of 6 in 4.063.

Read and prepare

Each place to the left is ten times the value. For example, $2.47 \times 10 = 24.7$: the digits take places worth ten times as much. Estimate an answer before using a calculator.

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

Calculate $48 \div (-6) \times (-2) + 5$, showing equal-priority operations left to right.

Deep challenge

Insert brackets in $6 + 2 \times 5 - 4$ to make 36 and explain your choice.

Recall & Review: feedback and extension integration

Lesson L002: Multiplication, division and order

Objective: Calculate with signed products, quotients and mixed operations; justify the order and check with an inverse.

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: Calculate $48 \div (-6) \times (-2) + 5$, showing equal-priority operations left to right.

Deep challenge: Insert brackets in $6 + 2 \times 5 - 4$ to make 36 and explain your choice.

My next-step response
