

SIGNED NUMBERS

Calculate, explain and check

GCSE Mathematics 1MA1 • L001

What this lesson prepares you to do

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

CALCULATE

Add and subtract
positive and negative
numbers.

EXPLAIN AND CHECK

Use a number line and
an inverse operation.

Starting-point diagnostic

R1–R3 • Work independently

Ascending order: 2, –5, 0, –1

Work out $8 - 3$. Check with addition.

Which is greater: –2 or –7? Why?

A sign and an operation

Read each symbol before calculating.

NEGATIVE NUMBER

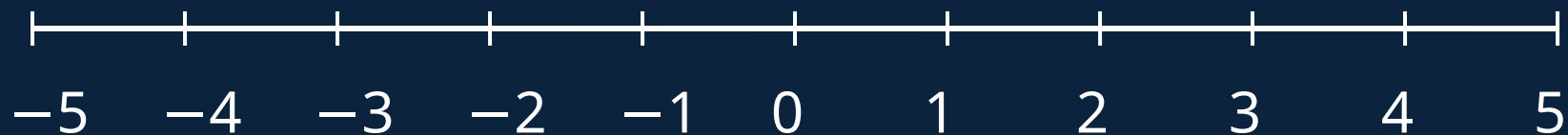
-5 is five units below zero.

SUBTRACTION

$8 - 5$ asks for the difference.

The number line

Numbers increase to the right

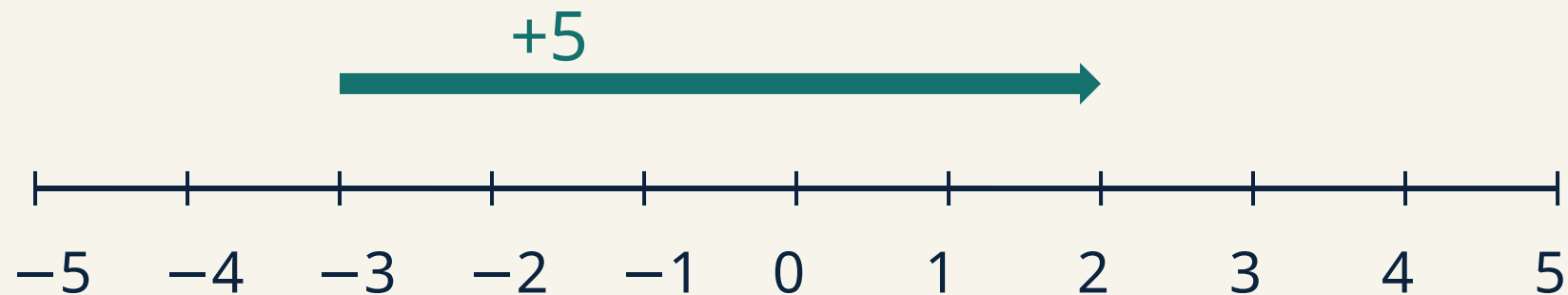


$$-5 < -1 < 2$$

Adding a positive number

D1 • Worked example

$$-3 + 5 = 2$$



$$\text{Check: } 2 - 5 = -3$$

Your turn, then less support

Attempt before revealing practice feedback.

D1 • YOUR TURN

$$-4 + 6 = ?$$

Explain your move.

D2 • COMPLETE

$$2 + (-5) = \underline{\quad}$$

Move units .

Adding a negative number

D2 • Intentional practice feedback

$$2 + (-5) = -3$$

Check: $-3 + 5 = 2$

Subtracting a positive number

D3 • Worked-example and problem pair

WORKED EXAMPLE

$$-2 - 4 = -6$$

Check: $-6 + 4 = -2$

YOUR TURN

$$-3 - 5 = ?$$

Check with addition.

SUBTRACTION ADDS THE OPPOSITE

$$a - b = a + (-b)$$

Adding b afterwards gets you back to a.

Subtracting a negative number

D4 • Worked-example and problem pair

WORKED EXAMPLE

$$-2 - (-4) = 2$$

$$\text{Check: } 2 + (-4) = -2$$

COMPLETE

$$-3 - (-5)$$

$$= -3 + \underline{\quad} = \underline{\quad}$$

Diagnostic pause

Show an answer and explain the operation.

$$-5 - (-2) = ?$$

A -7 **B** -3 **C** 3

Careful variation

A1 • What changes? What stays the same?

FIRST PAIR

$$4 + 7$$

$$4 + (-7)$$

SECOND PAIR

$$4 - 7$$

$$4 - (-7)$$

Independent calculation

A2 • Try without prompts

(a) $-6 + 9$

(b) $-6 - 9$

(c) $-6 - (-9)$

Changes in temperature

A3 • Show the changes in order

Start -4°C . Rise 9°C . Then fall 3°C .

Find the final temperature and check it.

Practice feedback and calculator check

Estimate the sign before entering the calculation.

A3 • SOLUTION

$$-4 + 9 - 3 = 2^{\circ}\text{C}$$

$$2 + 3 - 9 = -4$$

CALCULATOR

Use the negative-number key for -4 .
Then $+ 9 - 3$.

A claim to test

“Subtracting always makes a number smaller.”

C1 • Is the claim true?

**Give a counterexample.
Explain how it disproves
“always”.**

Stretch the reasoning

C2 • For a fixed integer a

When is $a - b$ greater than a ?

Consider positive, zero and negative b .

Retrieval without notes

Q1–Q6 • Check, correct and retry later

Q1–Q3

$$-8 + 5$$

$$3 + (-8)$$

$$-4 - 6$$

Q4–Q6

$$-4 - (-6)$$

$$0 - (-7)$$

$$-2.5 + 4$$

Independent exit evidence

P1–P2 • Teacher review • 4 marks

P1 • 2 MARKS

$$-7 - (-3) = ?$$

Explain an inverse check.

P2 • 2 MARKS

Lift: start -2 , down 3, up 8.

Final level? Show working.

Feedback and next steps

P3 • Completion is not mastery.

Name an error you corrected.

Explain what changed in your method.

Choose a question to retry tomorrow.

Before Lesson 2

F1–F2 • About 10 minutes

Tomorrow: $-5 + 8$ and $2 - (-6)$. Check one.

Prepare: 3×4 , $12 \div 3$ and $2 + 3 \times 4$.

Next: multiplication, division and order.

Optional stretch

Calculate $-18+27-35$ and check by grouping in a second way.

Show a method. Explain a check or counterexample.

Optional deep challenge

A learner claims subtracting a negative always gives a positive answer. Test the claim with a counterexample.

Show a method. Explain a check or counterexample.

L001 Recall & Review

Signed numbers



Fresh evidence: prove the objective

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

Objective: Order integers; signed addition/subtraction; explain and check.

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

Identify the mathematical method, representation, reasoning or check that improved.

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.

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 $-18+27-35$ and check by grouping in a second way.

Deep challenge

A learner claims subtracting a negative always gives a positive answer. Test the claim with a counterexample.

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