Name	Date started	Target end date

WJEC GCSE Mathematics and Numeracy (Double Award) — Question Pack

Foundation rearranging simple formulae: using inverse operations on both sides to change the subject of a one- or two-step formula, keeping the equati

REVISE
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F2.09 — Rearranging simple formulae

Spec 2.1.16 — Unit 2 (no calculator)

Foundation rearranging simple formulae: using inverse operations on both sides to change the subject of a one- or two-step formula, keeping the equation balanced throughout. Sourced from legacy WJEC GCSE Mathematics-Numeracy Foundation papers (3300U10/U20) and accessible content from Intermediate papers (3300U30/U40), organised for revision under the 2025 spec.

2025 SPECIFICATION

Estimated time for entire question pack: ~27 minutes

*Derived from the GCSE Higher pace of **~1.5 min/mark** (18 marks across 9 questions).*

*You are advised to **not** attempt to complete all of this in one sitting.*

ABOUT THIS QUESTION PACK

This is a **focused single-topic practice pack**, not a single mock paper. Questions are organised against the 2025 specification.

Questions are ordered chronologically by sitting, with custom-written and SAM questions at the end.

INSTRUCTIONS

Use black ink or black ball-point pen. Show all working — method marks are awarded for clear setup.

*A calculator is **not** permitted on any question in this pack (Unit 2 is the non-calculator paper).*

Rearranging simple formulae — what the new spec asks

WJEC GCSE Mathematics (first teaching 2025) · Unit 2: non-calculator.

Inverse operations 2.1.16

- Identify the inverse of +, −, ×, ÷.
- Apply inverse operations to both sides of a formula.
- Keep the equation balanced at every step.

Changing the subject 2.1.16

- Make a stated letter the subject of a one-step formula.
- Make a stated letter the subject of a two-step formula.
- Use brackets where dividing a sum or difference.

Checking 2.1.16

- Substitute a value pair back into the original to verify.
- Spot when the rearranged form has been multiplied out incorrectly.
- Re-read the question for the required subject.

Exam strategy 2.1

- Non-calculator — write each balancing step on its own line.
- Label the inverse operation in the margin.
- Underline the new subject in the final answer.

Crib sheet »

Rearranging simple formulae in one page

Quick-reference notes — revisit before each question. Don’t use during the questions.

What ‘change the subject’ means

Re-write the formula so a *different* letter is on its own on one side.

From $v = u + at$, make t the subject.

Inverse operations

$+ \leftrightarrow -$ $\quad \times \leftrightarrow \div$

Undo each operation, applying it to *both* sides.

One-step rearranging

$y = x + 5 \Rightarrow x = y - 5$.

$P = 4s \Rightarrow s = P \div 4 = P/4$.

Two-step rearranging

Undo + or − first, then × or ÷.

$y = 3x + 1 \Rightarrow y - 1 = 3x \Rightarrow x = (y - 1)/3$.

Balance principle

Whatever you do to one side, do to the **other**. Treat the ‘=’ like the pivot of a balance.

Common traps

- Subtracting from only one side.
- Dividing only one term instead of the whole side.
- Forgetting brackets around a sum when dividing.

Examiner only

8.

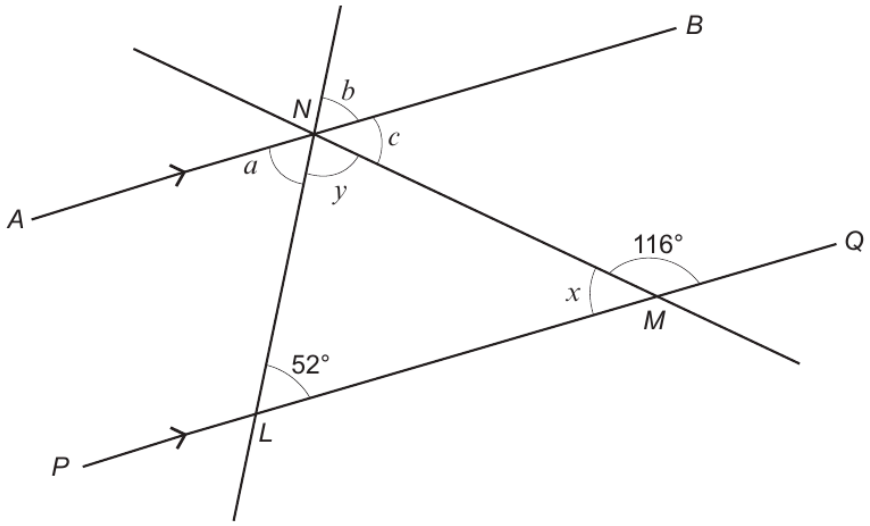

Diagram not drawn to scale

Line *AB* is parallel to line *PQ*.

(a) Find the size of each of the angles a, b and c. [3]

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a = ... ° b = ... ° c = ... °

Examiner only

(b) Find the size of each of the angles x and y.
Hence give the special name for triangle *LMN*. [3]

.....

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.....

x = ... ° y = ... °

The special name for triangle *LMN* is .....

Examiner only

10. *(a)* Expand $3x(x^2 - 2)$. [2]

(b) Make g the subject of the formula $f = 2 - 3g$. [2]

(c) (i) Solve $7x - 3 < 29$. [2]

(ii) What is the greatest integer value of x that satisfies the above inequality? [1]

Examiner only

8. Alison and Sarfraz play a game. They each have a different bag of cards.

Alison has the following cards in her bag.

Sarfraz has the following cards in his bag.

They each take a card at random from their own bag. They make a note of the letter, and return the card to the bag.

They each do this 100 times.

Who do you think is likely to choose the letter R more often?

Alison ☐ Sarfraz ☐

You must explain your decision and show all your working. [4]

Examiner only

9. *(a)* Write down the nth term of the following sequence. [2]

8, 11, 14, 17, ...

(b) Make t the subject of the formula $r = 3t - 8$. [2]

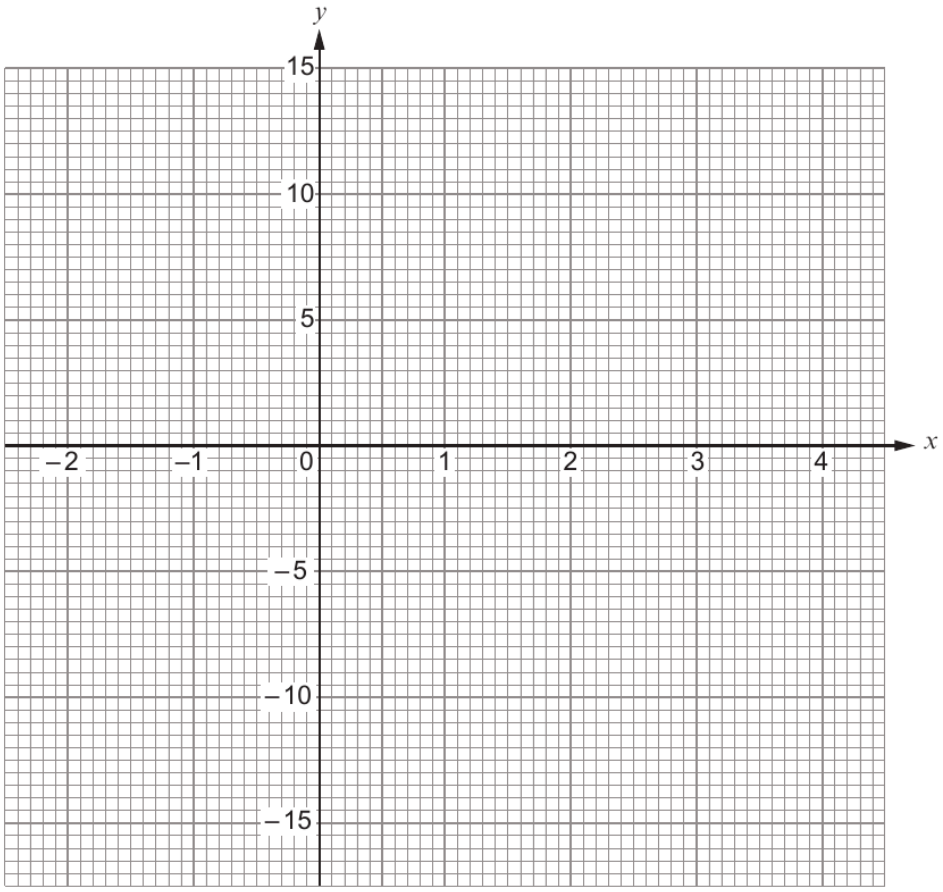
(c) A rectangle has a length of $(x + 5)$ cm and a width of $(2x - 3)$ cm.
Its perimeter is 46 cm.

Calculate the value of x. [4]

Examiner only

12. Complete the table below.
Draw the graph of $y = 7 - x^2$ for values of x between −2 and 4.
Use the graph paper below. [4]

x	−2	−1	0	1	2	3	4
$y = 7 - x^2$	3		7	6	3		−9



Examiner only

14. *(a)* Rearrange the following formula to make k the subject.

$$p = 3k + 2$$ [2]

(b) Does the midpoint of the straight line joining points (3, 15) and (7, 19) lie on the line $y = 3x + 2$?
You must show all your working. [3]

15. *(a)* Express 0·0058 in standard form. [1]

(b) Calculate the value of $\dfrac{1{\cdot}4 \times 10^9}{2 \times 10^3}$.
Give your answer in standard form. [2]

Examiner only

5. The length of a rectangle is double its width.
The area of the rectangle is greater than 60 cm^2.
The perimeter of the rectangle is less than 40 cm.

Give a possible width and length of the rectangle.
Calculate the area and the perimeter of this rectangle.
You must show all your working.

Use the answer spaces to clearly identify which is the area and which is the perimeter. [5]

Width = ... cm Length = ... cm

Area = ... cm^2 Perimeter = ... cm

Examiner only

7. (a) Expand $4(3p-5)$. [1]

(b) Make m the subject of the formula $w = 8m - 3$. [2]

(c) Expand and simplify $(y+5)(y-4)$. [2]

Examiner only

11. (a) Solve the equation $7+5(x-2)=3x+8$. [3]

(b) Make f the subject of the formula $h=13-2f$. [2]

(c) Factorise $15x-35y$. [1]