Clelland Maths

FREE · PRINTABLE · REUSABLE

National 5 Maths
Prelim Revision Pack

Plan your revision, track every topic, and stop losing the marks that markers see lost every year.

1	**Your plan**	Countdown and weekly timetable
2	**Topic tracker**	All 60 topics rated red, amber or green, each with its notes and video
3	**Mark-savers**	17 mistakes from the 2023 to 2026 course reports, and the fix
4	**Paper 1 essentials**	What you need without a calculator that isn't on the formula sheet
5	**Exam checklist**	The night before and on the day

YOUR PLAN

Countdown to the prelim

PAPER 1 (NON-CALCULATOR)

PAPER 2 (CALCULATOR)

WEEKS TO GO	TOPICS TO REVISE (FROM YOUR TRACKER: REDS FIRST)	PAST PAPER QUESTIONS	DONE
6			
5			
4			
3			
2			
1			

My week

Fill in school, clubs and work first, then put revision in the gaps. Short, regular sessions beat one long one.

	MON	TUE	WED	THU	FRI	SAT	SUN
BEFORE SCHOOL							
AFTER SCHOOL							
EVENING							

TOPIC TRACKER

Every topic, with its notes and video

Rate each topic: **red** I can't do it yet, **amber** I can with help, **green** I can do it on my own. Scan the code for the Clelland Maths notes and video on that topic. Revise reds first.

Numeracy

- Rounding
- Fractions and mixed numbers
  in 11 of 11 papers
- Appreciation and depreciation
  in 11 of 11 papers
- Reversing a percentage change
  in 10 of 11 papers
- Simplifying surds
  in 6 of 11 papers
- Rationalising the denominator
  in 6 of 11 papers
- Laws of indices
  in 9 of 11 papers
- Negative and fractional indices: write as ax^n
  in 4 of 11 papers
- Evaluate a negative or fractional index
  in 1 of 11 papers
- Scientific notation
  in 7 of 11 papers

Algebra

- Expanding brackets
  in 10 of 11 papers
- Factorising
  in 4 of 11 papers
- Solving equations
  in 4 of 11 papers
- Solving inequations
  in 6 of 11 papers
- Simultaneous equations
  in 11 of 11 papers
- Changing the subject of a formula
  in 10 of 11 papers
- Function notation
  in 8 of 11 papers
- Simplifying algebraic fractions
  in 6 of 11 papers
- Adding and subtracting algebraic fractions
  in 7 of 11 papers
- Multiplying and dividing algebraic fractions
  in 4 of 11 papers
- Gradient
- Equation of a straight line (and its gradient)
  in 11 of 11 papers
- Straight line problems (intersections, coordinates)
  in 2 of 11 papers
- Completing the square
  in 7 of 11 papers

TOPIC TRACKER

Every topic, with its notes and video

- Turning point and axis of symmetry — in 6 of 11 papers
- Equation of a parabola from its graph — in 7 of 11 papers
- Sketching a parabola from its equation — in 4 of 11 papers

- Solving a quadratic by factorising — in 6 of 11 papers
- Solving a quadratic with the formula — in 8 of 11 papers
- Discriminant — in 4 of 11 papers
- Forming a quadratic equation in context — in 5 of 11 papers

Geometry

- Arc length — in 6 of 11 papers
- Sector area — in 7 of 11 papers

- Volume of a solid — in 5 of 11 papers
- Volume of a composite solid — in 7 of 11 papers

- Pythagoras in circle diagrams — in 10 of 11 papers
- Pythagoras in 3D — in 4 of 11 papers
- Pythagoras converse — in 5 of 11 papers

- Angles in regular polygons — in 4 of 11 papers
- Angles in circles — in 7 of 11 papers

- Similar lengths — in 3 of 11 papers
- Similar areas and volumes — in 7 of 11 papers

- Adding and subtracting vectors — in 7 of 11 papers
- Vector pathways — in 6 of 11 papers
- Magnitude of a vector — in 6 of 11 papers

- 3D coordinates — in 7 of 11 papers

Trigonometry

- Area of a triangle — in 9 of 11 papers

Sine rule

- Calculate a length — in 7 of 11 papers
- Calculate an angle — in 3 of 11 papers

Cosine rule

- Calculate a length — in 6 of 11 papers
- Calculate an angle — in 5 of 11 papers

- Bearings — in 5 of 11 papers

TOPIC TRACKER

Every topic, with its notes and video

	Equation of a trig graph in 8 of 11 papers	○ ○ ○
	Sin, cos and tan of angles up to 360° in 4 of 11 papers	○ ○ ○
	Solving trig equations in 10 of 11 papers	○ ○ ○
	Trig identities in 7 of 11 papers	○ ○ ○

Statistics

	Median, quartiles and interquartile range in 7 of 11 papers	○ ○ ○
	Standard deviation in 7 of 11 papers	○ ○ ○
	Comparing data sets in 10 of 11 papers	○ ○ ○
	Line of best fit in 6 of 11 papers	○ ○ ○

MARK-SAVERS

Marks lost every year

Every year Qualifications Scotland publishes a course report on where candidates lost marks. These are the ones that keep coming back.

1 **Comparing two data sets with numbers, not words**

Write two sentences in the question's context. The median or mean: "On average, the café's waiting times were lower." The IQR or standard deviation: "The restaurant's waiting times were more consistent." Never put "on average" in the consistency sentence.

COURSE REPORTS 2023, 2024, 2025, 2026

2 **Using the semi-interquartile range or the range**

The interquartile range is Q3 − Q1. Order the data first, then find the quartiles.

COURSE REPORTS 2023, 2024, 2025, 2026

3 **Starting the converse of Pythagoras with $a^2 + b^2 = c^2$**

Work out the longest side squared, and the other two squared and added, separately. Only then say they are equal, so the triangle is right-angled. The conclusion must mention the right angle.

COURSE REPORTS 2023, 2026

4 **Forgetting to reverse the inequality sign**

Keep the x-term positive by moving it to the side where it stays positive. If you divide or multiply by a negative, flip the sign.

COURSE REPORTS 2024, 2026

5 **Giving one angle when a trig equation has two**

Between 0° and 360° there are usually two answers. Sketch the graph, or use the quadrant diagram, and find both. If you get cos x or sin x bigger than 1 or less than −1, your rearranging has gone wrong: go back and check it.

COURSE REPORTS 2023, 2025, 2026

6 **Stopping one step short**

Read the question again before you move on. Solving the simultaneous equations is often not the last step, so check what was actually asked. And 5 cos 180° is not an answer: cos 180° = −1, so it is −5.

COURSE REPORTS 2025, 2026

Marks lost every year

7 **Rounding too early, or to the wrong accuracy**

Keep the full number on your calculator until the end. Then round to what the question asks, such as 3 significant figures, and money to 2 decimal places.

COURSE REPORTS 2024, 2025, 2026

8 **Working out angles away from the diagram**

Write every angle you find on the diagram, in the right place. Markers are unlikely to give marks for angles worked out elsewhere on the page.

COURSE REPORTS 2024, 2025, 2026

9 **Half-describing the roots from the discriminant**

Use the full words: “two real and distinct roots”, “two equal real roots”, or “no real roots”. Show the calculation of $b^2 - 4ac$ first.

COURSE REPORTS 2023, 2025

10 **Taking a percentage of the new price**

For the original price, divide. If a price after an 8% rise is £540, the original is £540 ÷ 1.08 = £500. Taking 8% off £540 gives the wrong answer.

COURSE REPORTS 2023, 2024, 2025

11 **Keeping both answers to a quadratic in context**

A length or a time can’t be negative. Say which root you reject, and why, then answer the question.

COURSE REPORTS 2023, 2025, 2026

12 **Reading the gradient without rearranging**

Get y on its own first: $3y + 2x = 12$ becomes $y = -\frac{2}{3}x + 4$, so the gradient is $-\frac{2}{3}$. For a line of best fit, write the final equation in the question’s letters, such as F and P.

COURSE REPORTS 2023, 2024, 2026

13 **Proving a trig identity without a plan**

Start from the more complicated side. Factorise first if you can, then use $\sin^2 x + \cos^2 x = 1$ or $\tan x = \sin x \div \cos x$. Write one step a line until you reach the other side.

COURSE REPORTS 2023, 2024, 2026

MARK-SAVERS

Marks lost every year

14 **Not forming the quadratic equation in context**

Write the expression the question describes, set it equal to the number it gives you, then expand and rearrange until it matches the form asked for exactly. Then solve that equation in the next part.

COURSE REPORTS 2023, 2025, 2026

15 **Leaving fractions in an equation**

Multiply every term on both sides by the lowest common denominator first, then solve as usual.

COURSE REPORTS 2023, 2025

16 **Sketching a right-angled triangle without the right angle**

Mark the right angle with a small square, so the marker can see which angle it is.

COURSE REPORTS 2024, 2026

17 **Lines of working that don’t follow on**

Each line must equal the line before. When you factorise, multiply your brackets back out to check before you move on.

COURSE REPORTS 2026

PAPER 1 ESSENTIALS

Know these without a calculator

Paper 1 is non-calculator, and none of these is on the formula sheet.

PYTHAGORAS

$$a^2 + b^2 = c^2$$

RIGHT-ANGLED TRIANGLES

$$\sin x = \frac{\text{opp}}{\text{hyp}}, \quad \cos x = \frac{\text{adj}}{\text{hyp}}, \quad \tan x = \frac{\text{opp}}{\text{adj}}$$

GRADIENT

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

EQUATION OF A LINE

$$y - b = m(x - a) \quad \text{or} \quad y = mx + c$$

CIRCLE

$$C = \pi d, \quad A = \pi r^2$$

PRISM AND CYLINDER

$$V = Ah, \quad V = \pi r^2 h$$

ARC AND SECTOR

$$\text{arc} = \frac{\text{angle}}{360} \times \pi d, \quad \text{sector} = \frac{\text{angle}}{360} \times \pi r^2$$

DISCRIMINANT

$b^2 - 4ac > 0$: two real and distinct roots

$b^2 - 4ac = 0$: two equal real roots

$b^2 - 4ac < 0$: no real roots

TRIG IDENTITIES

$$\sin^2 x + \cos^2 x = 1, \quad \tan x = \frac{\sin x}{\cos x}$$

KEY ANGLES

$$\cos 0^\circ = 1, \ \cos 90^\circ = 0, \ \cos 180^\circ = -1, \ \sin 90^\circ = 1, \ \sin 270^\circ = -1$$

On the formula sheet, so you don't need to learn them

Quadratic Formula · Trigonometry (sine rule, cosine rule, area of a triangle) · Volume (sphere, cone, pyramid) · Standard deviation

EXAM CHECKLIST

The night before and on the day

The night before

- [ ] Pack two black pens, a pencil, a ruler and a rubber.
- [ ] Check your calculator works and is in degrees (Paper 2).
- [ ] Read your mark-savers page once. Then stop and sleep.

In the exam

- [ ] Show every step: marks are given for working.
- [ ] Write angles on the diagram.
- [ ] Keep full numbers until the end, then round as the question asks.
- [ ] Units on every answer that has them.
- [ ] Reread the question before you move on: have you answered it?
- [ ] Stuck? Leave a space, move on, come back at the end.

My reminders

The things you keep getting wrong, in your own words. Read them before you go in.

Free on clellandmaths.com: every National 5 Maths past paper since 2014, every question with a video of me working through it, notes and practice.

For parents: I also run a live weekly class for each course in the Clelland Maths Academy. Details at clellandmaths.com/academy.

Mark-savers summarise the Qualifications Scotland National 5 Mathematics course reports 2023 to 2026. Qualifications Scotland does not endorse this material.