Write your name and class in the boxes below before you start.

Candidate surname	Other names

Class	Teacher	Date

DNEP Education

GCSE Resit · Predicted Paper 4 (Higher Paper 1) · November 2026

Time: **90 minutes**

Paper reference

DNEP/OCR1HN26

Mathematics

PREDICTED PAPER 1 — NOVEMBER 2026

Higher Tier · OCR J560 style · Calculator

Questions written for DNEP Education in the style of OCR GCSE (9–1) Mathematics J560 papers.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

/ 100

Topics in this paper

Topic (lesson)	Questions	Marks
Ratio, proportion and rates of change	1, 5, 6, 10, 16	21
Statistics	2, 14	8
Number	3, 4, 17	12
Geometry and measures	7, 11, 12, 19, 22, 23	27
Algebra	8, 9, 13, 18, 20, 21	27
Probability	15	5
		Total 100

Instructions

- Use black ink or ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page with your name, class, teacher and the date.
- Answer all questions in the spaces provided — there may be more space than you need.
- You must show all your working.
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You may use a calculator.

Information

- The total mark for this paper is 100.
- The marks for each question are shown in brackets — use this as a guide to how much time to spend on each question.
- When you have finished, mark your answers with your teacher and complete the RAG feedback page at the back.
- This is a predicted paper. No-one can know what will be on the real paper, so revise the whole course, not just these topics.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

1 Kim wants to buy a lawnmower.

Garden centre	Online shop
£240 **plus** VAT at 20% Sale: 15% off the price including VAT Kim also has a £25 voucher for the garden centre	£215 including VAT Delivery £6.99

Where should Kim buy the lawnmower to pay the least?
Show how you decide.

[4]

2 A group of 24 adults and 18 children take the same quiz.
The mean score of the adults is 62.
The mean score of the children is 55.

Work out the mean score of all 42 people.

..... **[3]**

3 **(a)** Write 756 as a product of its prime factors.
Give your answer in index form.

..... **[2]**

(b) Find the smallest positive integer k so that $756k$ is a square number.

..... **[1]**

(c) $360 = 2^3 \times 3^2 \times 5$
Find the highest common factor (HCF) of 756 and 360.

..... **[1]**

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4 One grain of a type of sand has a mass of 6.4×10^{-7} kg.
A bag contains 2.5 kg of this sand.

Work out an estimate of the number of grains of sand in the bag.
Give your answer in standard form, correct to 3 significant figures.

..... **[3]**

5 Amir, Beth and Chloe share some prize money.

Amir : Beth = 2 : 3
Beth : Chloe = 4 : 5

Chloe gets £42 more than Amir.

How much does Beth get?

£ ..... **[4]**

6 A metal block is made by melting together 450 cm^3 of copper and 150 cm^3 of zinc.

- The density of copper is 8.96 g/cm^3.
- The density of zinc is 7.13 g/cm^3.

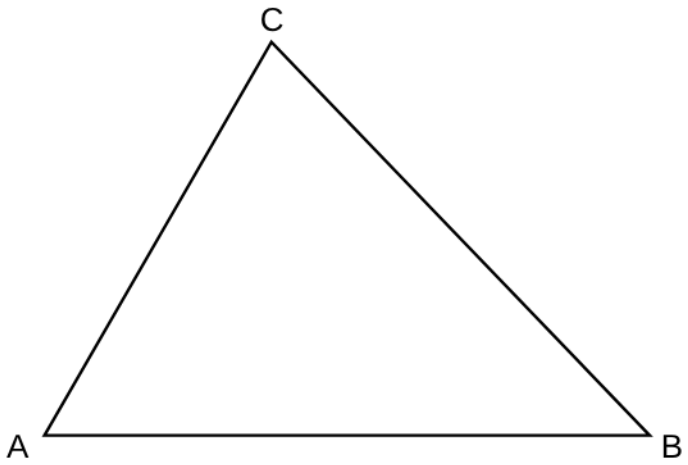
The volume of the block is 600 cm^3.

Work out the density of the block.
Give your answer correct to 3 significant figures.

..... g/cm^3 **[4]**

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7 Here is triangle ABC.



A point P is inside the triangle.
P is closer to B than to A.

Using a ruler and compasses only, construct and shade the region where P can be.
Leave in all your construction lines.

[3]

8 A taxi company charges a fixed amount plus a cost for each mile travelled.

- A 6-mile journey costs £14.10
- An 11-mile journey costs £22.60

Work out the cost of a 15-mile journey.

£ ..... **[5]**

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9 **(a)** Factorise fully $2x^2 + 7x - 15$

..... **[2]**

(b) Expand and simplify $(x + 3)(x - 2)(2x + 1)$

..... **[3]**

10 **(a)** Priya invests £3500 in an account that pays 2.8% compound interest per year.
Work out the value of her investment after 5 years.

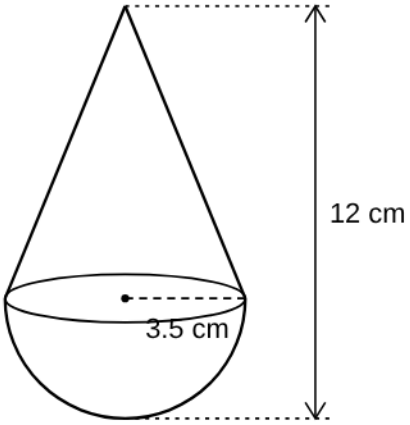
£ ..... **[3]**

(b) The value of a flat increased from £185 000 to £212 000 in 4 years.
The value increased by the same percentage each year.
Work out this percentage.
Give your answer correct to 1 decimal place.

..... % **[2]**

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11 A solid toy is made from a cone joined to a hemisphere.
The cone and the hemisphere both have radius 3.5 cm.
The total height of the toy is 12 cm.



Not to scale

Work out the volume of the toy.
Give your answer correct to 3 significant figures.

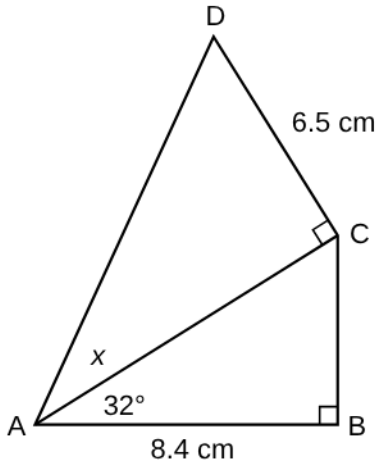
[The volume V of a cone with radius r and height h is $V = \frac{1}{3}\pi r^2 h$.

The volume V of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

..... cm^3 **[4]**

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12 ABC and ACD are right-angled triangles.



Not to scale

Work out angle *x*.

..... ° **[5]**

13 Here are the first five terms of a quadratic sequence.

4 11 22 37 56

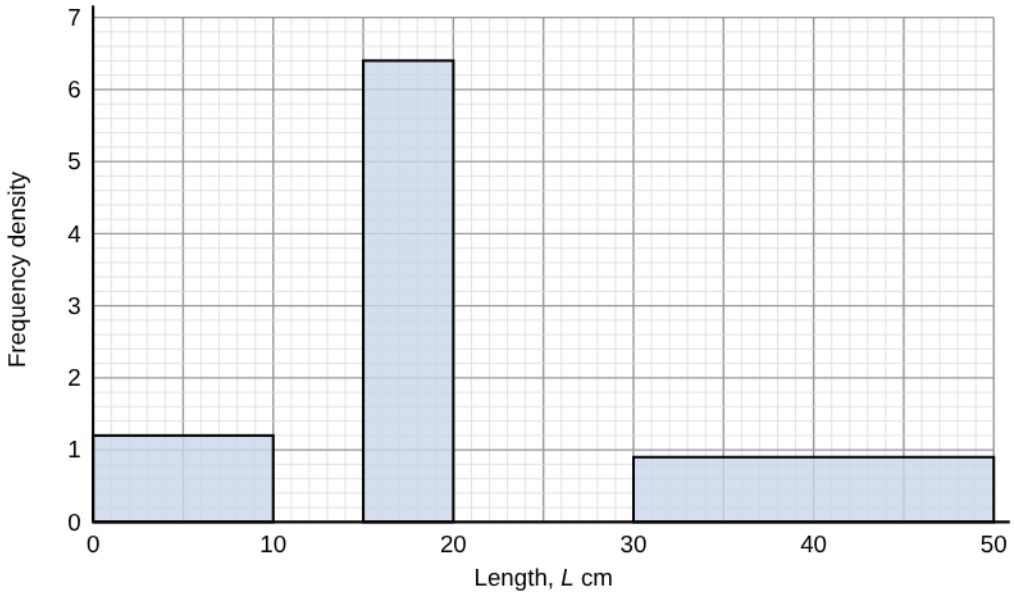
Find an expression for the *n*th term of this sequence.

..... **[3]**

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14 The table and the histogram show information about the lengths, L cm, of some fish in a pond.

Length, L cm	Frequency
$0 < L \leq 10$	12
$10 < L \leq 15$	18
$15 < L \leq 20$	
$20 < L \leq 30$	26
$30 < L \leq 50$	



(a) Use the histogram to complete the table.

[2]

(b) Use the table to complete the histogram.

[2]

(c) Work out an estimate of the number of fish longer than 25 cm.

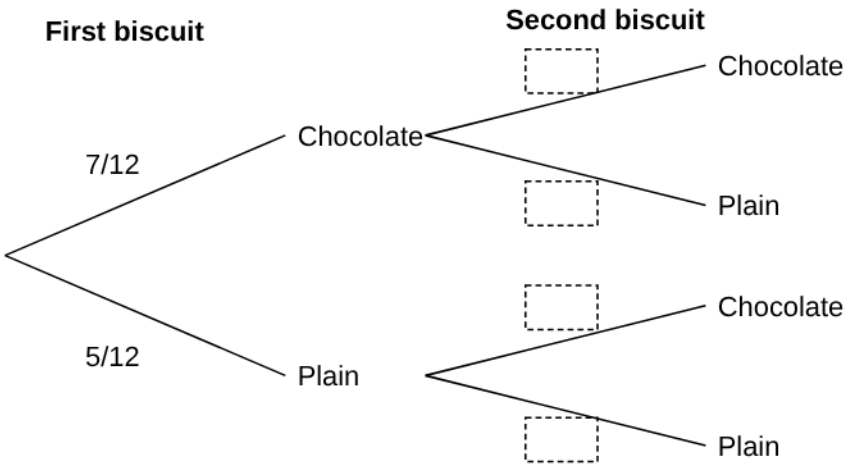
.....

[1]

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15 A tin contains 7 chocolate biscuits and 5 plain biscuits.
Leo takes a biscuit at random and eats it.
He then takes another biscuit at random and eats it.

(a) Complete the tree diagram.



[2]

(b) Work out the probability that Leo eats one chocolate biscuit and one plain biscuit.

.....

[3]

16 The distance, d metres, a sledge slides is directly proportional to the square of its speed, v m/s, at the start.
When $v = 8$, $d = 19.2$

(a) Find a formula for d in terms of v.

.....

[2]

(b) Find the value of v when $d = 67.5$

$v =$ .....

[2]

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17 Sam runs a distance of 400 m, measured correct to the nearest metre.
Her time is 52.8 seconds, measured correct to 1 decimal place.

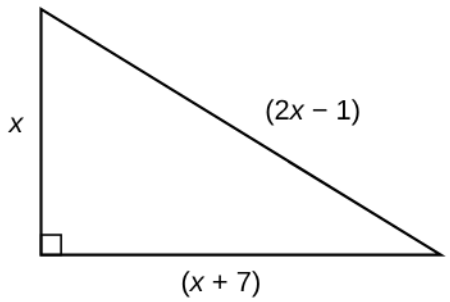
(a) Work out the upper bound for Sam's average speed.
Give your answer correct to 3 significant figures.

..... m/s **[3]**

(b) By considering bounds, write down Sam's average speed to a suitable degree of accuracy.
Give a reason for your answer.

..... m/s **[2]**

18 The diagram shows a right-angled triangle.
All lengths are in centimetres.



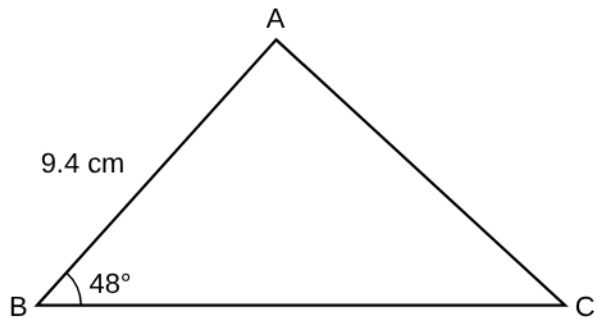
Not to scale

Work out the perimeter of the triangle.
Give your answer correct to 3 significant figures.

..... cm **[5]**

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19 The area of triangle ABC is 48.5 cm^2.



Not to scale

Work out the length AC.
Give your answer correct to 3 significant figures.

..... cm **[6]**

20 **(a)** Show that the equation $x^3 - 5x + 1 = 0$ has a solution between $x = 2$ and $x = 3$.

[2]

(b) Use the iteration formula $x_{n+1} = \sqrt[3]{(5x_n - 1)}$ with $x_0 = 2$ to find x_1, x_2 and x_3.
Give each answer correct to 4 decimal places.

x_1 = ...

x_2 = ...

x_3 = ... **[2]**

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21 A circle has equation $x^2 + y^2 = 45$
The point P has coordinates (3, 6).

(a) Show that P lies on the circle.

[1]

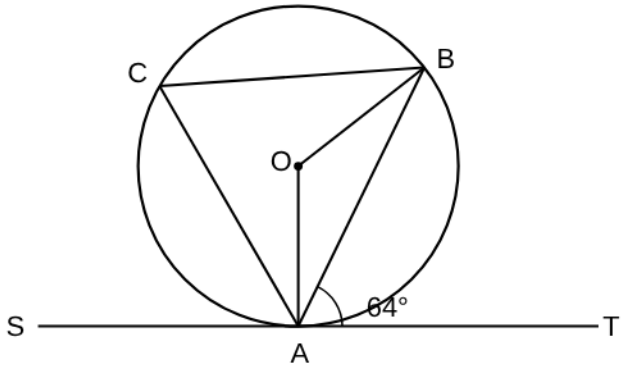
(b) Find the equation of the tangent to the circle at P.
Give your answer in the form $y = mx + c$.

.....

[4]

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22 A, B and C are points on a circle, centre O.
SAT is the tangent to the circle at A.
Angle BAT = 64°.



Not to scale

(a) Find angle ACB.
Give a reason for your answer.

..... °

Reason .....

[2]

(b) Find angle OBA.
Give reasons for your answer.

..... °

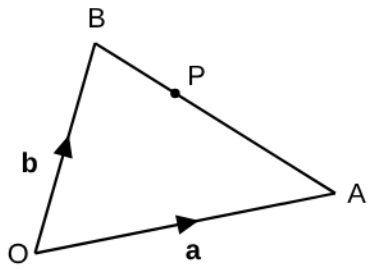
Reasons .....

.....

[2]

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23 OAB is a triangle.
OA = **a** and **OB** = **b**.
P is the point on AB such that AP : PB = 2 : 1.



Not to scale

(a) Write **AB** in terms of **a** and **b**.

.....

[1]

(b) Show that **OP** = $\frac{1}{3}$**a** + $\frac{2}{3}$**b**.

[2]

(c) Q is the point such that **OQ** = **a** + 2**b**.
Prove that O, P and Q lie on a straight line.

[2]

TOTAL FOR PAPER IS 100 MARKS

Now mark your paper and complete the RAG feedback page overleaf.

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Your results and next steps (RAG feedback)

Mark your paper with the mark scheme. Write your mark for each question, then colour one circle: GREEN = full marks · AMBER = some marks · RED = no marks. Use the topic table to decide which lessons to revisit.

Q	Topic (lesson)	Calc?	Marks	My mark	R A G
1	Ratio, proportion and rates of change	Yes	4		
2	Statistics	Yes	3		
3	Number	Yes	4		
4	Number	Yes	3		
5	Ratio, proportion and rates of change	Yes	4		
6	Ratio, proportion and rates of change	Yes	4		
7	Geometry and measures	Yes	3		
8	Algebra	Yes	5		
9	Algebra	Yes	5		
10	Ratio, proportion and rates of change	Yes	5		
11	Geometry and measures	Yes	4		
12	Geometry and measures	Yes	5		
13	Algebra	Yes	3		
14	Statistics	Yes	5		
15	Probability	Yes	5		
16	Ratio, proportion and rates of change	Yes	4		
17	Number	Yes	5		
18	Algebra	Yes	5		
19	Geometry and measures	Yes	6		
20	Algebra	Yes	4		
21	Algebra	Yes	5		
22	Geometry and measures	Yes	4		
23	Geometry and measures	Yes	5		
			Total 100		= _____ %

Your results and next steps (continued)

By topic

Topic (lesson)	Questions	My marks	R	A	G
Ratio, proportion and rates of change	1, 5, 6, 10, 16	____ / 21	○	○	○
Statistics	2, 14	____ / 8	○	○	○
Number	3, 4, 17	____ / 12	○	○	○
Geometry and measures	7, 11, 12, 19, 22, 23	____ / 27	○	○	○
Algebra	8, 9, 13, 18, 20, 21	____ / 27	○	○	○
Probability	15	____ / 5	○	○	○

What went well (my GREEN topics)

Even better if (my RED / AMBER topics)

Lessons I will revisit (lesson numbers) and how:

Teacher comment

Signed: _____

How likely is each topic on November Paper 1?

Based on the 7 November OCR J560 Higher Paper 1s we analysed (Nov18–Nov24). Chance = how many of those November papers tested the topic. The real paper can test anything on the specification, so use this to decide what to revise first, not what to leave out. The November 2025 paper is not included.

Very likely (75%+) Likely (50%+) Possible (25%+) Unlikely (under 25%)

Topic	Nov papers	Chance	Last Nov	This paper
Simplify, expand, factorise, substitute	7 of 7	100%	Nov24	Q9, Q18
Percentages	6 of 7	86%	Nov23	Q1
Sine and cosine rules (incl. ½ab sin C)	6 of 7	86%	Nov24	Q19
Compound measures and unit conversions	6 of 7	86%	Nov24	Q6
Prime factors, HCF and LCM	6 of 7	86%	Nov24	Q3
Probability	5 of 7	71%	Nov24	—
Quadratics	5 of 7	71%	Nov24	Q9, Q18
Averages, charts and data displays	5 of 7	71%	Nov24	Q2
Compound interest and depreciation	5 of 7	71%	Nov24	Q10
Pythagoras and trigonometry	5 of 7	71%	Nov23	Q12, Q18
Circles and π	4 of 7	57%	Nov24	Q11
Direct and inverse proportion (algebraic)	4 of 7	57%	Nov24	Q16
Simultaneous equations	4 of 7	57%	Nov23	Q8
Perimeter, area, volume	4 of 7	57%	Nov23	Q11
Constructions and loci	4 of 7	57%	Nov24	Q7
Coordinates and straight-line graphs	4 of 7	57%	Nov23	Q21
Quadratic sequences	4 of 7	57%	Nov23	Q13
Histograms	4 of 7	57%	Nov23	Q14
Ratio	3 of 7	43%	Nov24	Q5
Rates of change and area under a graph ★	3 of 7	43%	Nov22	—
Cumulative frequency and box plots ★	3 of 7	43%	Nov22	—
Graph shapes and transforming graphs	3 of 7	43%	Nov23	—
Linear equations, function machines ★	3 of 7	43%	Nov21	—
Standard form ★	3 of 7	43%	Nov22	Q4
Transformations	3 of 7	43%	Nov23	—
Equation of a circle and tangents	3 of 7	43%	Nov23	Q21
Similarity & congruence	3 of 7	43%	Nov23	—
Rounding, estimation, error intervals ★	2 of 7	29%	Nov21	Q4
Bounds	2 of 7	29%	Nov24	Q17
Frequency trees and tree diagrams	2 of 7	29%	Nov23	Q15
Scatter graphs	2 of 7	29%	Nov24	—
Sequences and nth term	2 of 7	29%	Nov24	—
Functions (composite and inverse) ★	2 of 7	29%	Nov19	—
Inequalities	2 of 7	29%	Nov23	—
Linear–quadratic simultaneous equations ★	2 of 7	29%	Nov21	—
Reverse percentages ★	2 of 7	29%	Nov22	—
Similar shapes (area and volume)	2 of 7	29%	Nov24	—
Completing the square ★	1 of 7	14%	Nov21	—
Fractional and negative indices	1 of 7	14%	Nov23	—
Surds	1 of 7	14%	Nov23	—
Venn diagrams and conditional probability ★	1 of 7	14%	Nov18	Q15
Iteration	1 of 7	14%	Nov24	Q20
Angles, parallel lines, polygons ★	0 of 7	0%	—	—
Circle theorems ★	0 of 7	0%	—	Q22
Vectors (proof) ★	0 of 7	0%	—	Q23

★ = not on recent November papers, so it may be due. — in the last column = not in this paper: revise it separately.