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4095175893

MATHEMATICS **0580/32**

Paper 3 Calculator (Core) **May/June 2025**

1 hour 30 minutes

You must answer on the question paper.

You will need: Geometrical instruments

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should use a scientific calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.
- For π, use either your calculator value or 3.142.

INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **16** pages.

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List of formulas

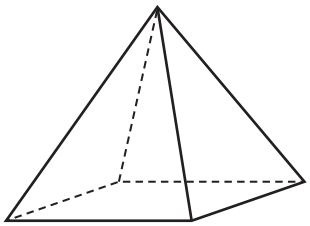
Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$

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1 Write 3.45 pm using the 24-hour clock.

..... [1]

2



The diagram shows a square-based pyramid.

Complete this statement.

The pyramid has ..... edges and ..... vertices. [2]

3 Convert 3 m into mm.

..... mm [1]

4 Apples cost $1.20 per kilogram and one banana costs 35 cents.

(a) Work out the total cost, in dollars, of 3 kg of apples and 7 bananas.

$ ..... [3]

(b) Work out the change from $20.

$ ..... [1]

5 A student scores 58 out of 80 in a test.

Calculate their percentage score.

..... % [1]

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6 Calculate 57% of 45.

..... [2]

7 A train leaves station *A* at 13 44.
The train arrives at station *B* after 3 hours and 30 minutes.

(a) Work out the time the train arrives at station *B*.

..... [1]

(b) The distance between station *A* and station *B* is 210 km.

Calculate the average speed of the train in km/h.

..... km/h [1]

8 The exchange rate is \$1 = 0.923 euros.

Calculate the difference between 750 euros and \$846.
Give your answer in euros correct to 2 decimal places.

..... euros [3]

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9 Flo has a bag of counters.
She picks a counter at random from the bag.
The probability that she picks a green counter is 0.52 .

(a) Work out the probability that she does **not** pick a green counter.

..... [1]

(b) The bag contains three colours of counters, green, pink and red.

Colour of counter	Green	Pink	Red
Probability	0.52		

There are three times as many pink counters as red counters.

Complete the table.

[2]

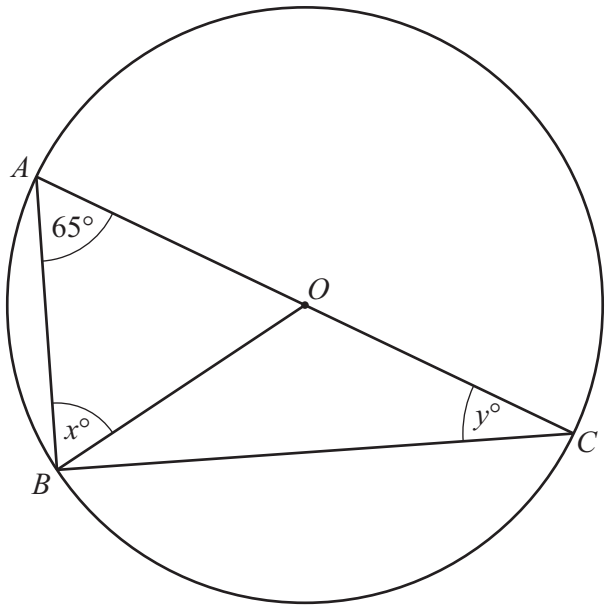
(c) Flo picks one counter from the bag at random, records the colour and replaces it in the bag.
She does this 200 times.

Calculate the expected number of times she picks a green counter.

..... [1]

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10



NOT TO SCALE

A, B and C are points on a circle, centre O, diameter AC.

Complete these statements, giving geometrical reasons.

(a) The value of x is ..... because .....

..... [2]

(b) Angle $ABC = 90°$ because .....

..... [1]

(c) The value of y is ..... because .....

..... [2]

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11 The scale drawing shows the position of a hospital, H.
The scale is 1 centimetre represents 6 kilometres.



Scale: 1 cm to 6 km

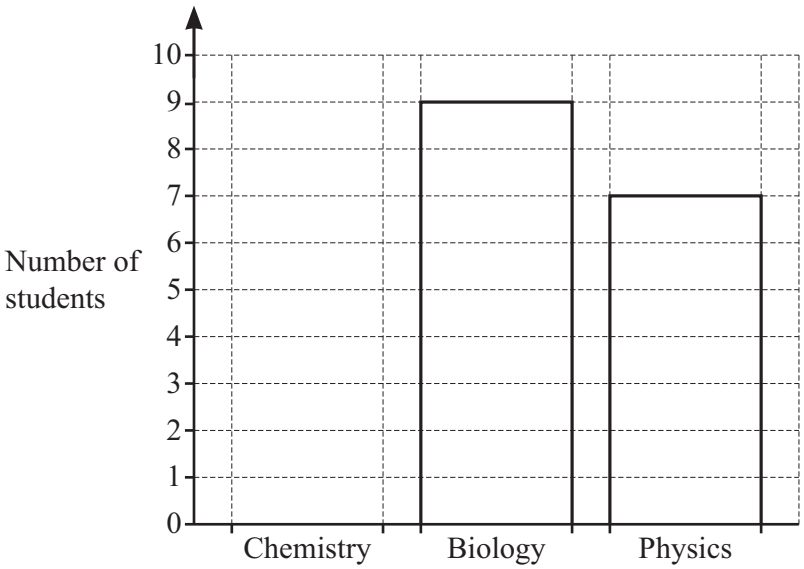
A school, S, is 33 km from H on a bearing of 155°.

Mark the position of S on the scale drawing. [2]

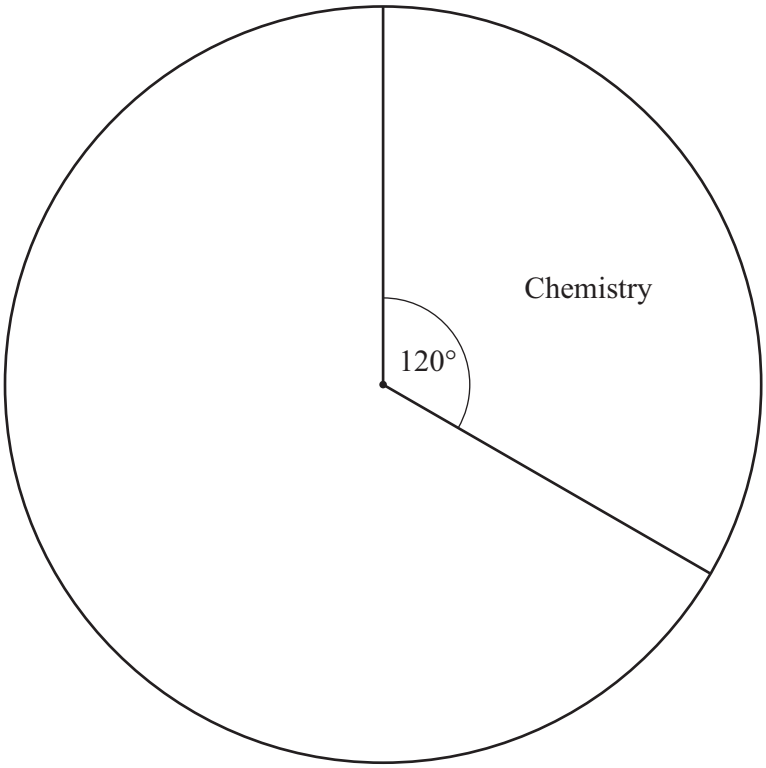
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12 (a) Kim and Tom ask some students if they prefer Chemistry, Biology or Physics.

Kim draws the bars for Biology and Physics on a bar chart.



Tom draws the sector for Chemistry on a pie chart.



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Use the information from both diagrams to complete

(i) the bar chart

[2]

(ii) the pie chart.

[4]

(b) Give one advantage of reading results from a bar chart compared to from a pie chart.

..... [1]

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13 (a) 2, e, f, 20, …

A linear sequence has a first term of 2 and a fourth term of 20.
The term-to-term rule for this sequence is add k.

Work out the values of e, f and k.

$e =$ .....

$f =$ .....

$k =$ .....
[3]

(b) These are the first four terms of another sequence.

9 7 5 3

Find the nth term.

..... [2]

14 (a) $P = 6a + 5b$

Find the value of b when $P = 25$ and $a = 3$.

$b =$ ..... [2]

(b) Make T the subject of the formula $W = kT + y$.

$T =$ ..... [2]

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15 The equation of a line is $y = -5x + 7$.

(a) Write down the gradient of this line.

..... [1]

(b) Find the coordinates of the point where this line crosses the y-axis.

(..... , ...) [1]

16 **(a)** Sam spends \$187 on electricity and gas.
The ratio electricity : gas = 8 : 3 .

Work out how much Sam spends on electricity.

\$ ..... [2]

(b) Jai spends \$180 on electricity and \$150 on gas.

Write down the ratio electricity : gas in its simplest form.

..... : ..... [1]

(c) Kat spends money on electricity and gas in the ratio

electricity : gas = E : G.

Write down an expression, in terms of E and G, for the fraction she spends on gas.

..... [1]

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17 Rick invests $6000 for 5 years at a rate of 9% per year compound interest.

Calculate the total interest earned during the 5 years.

$ ..... [3]

18 A factory produces brass at a rate of 172 kilograms per hour.

(a) Convert this rate into grams per second.

.....g/s [2]

(b) The rate is increased to 176 kilograms per hour.

Calculate the percentage increase in the rate.

..... % [2]

19 **(a)** Write 0.000 000 0347 in standard form.

..... [1]

(b) Calculate $3 \times 10^4 \times 5 \times 10^6$.
Give your answer in standard form.

..... [1]

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20 Solve.

(a) $x + 3 = 3$

$x =$ ..... [1]

(b) $\frac{5y}{3} = 8$

$y =$ ..... [2]

21 Simplify.

(a) $(w^3)^{10}$

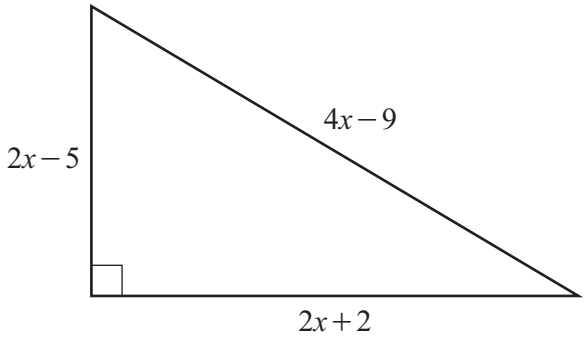
..... [1]

(b) $t^6v^7 \times t^3v^{-2}$

..... [2]

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22 In this question, all lengths are in centimetres.



NOT TO SCALE

The diagram shows a right-angled triangle.

(a) Write down an expression, in terms of x, for the perimeter of the triangle.
Give your answer in its simplest form.

..... [2]

(b) The perimeter of the triangle is 40 cm.
Work out the value of x.

$x =$ ..... [2]

(c) Work out the area of the triangle.

..... cm^2 [3]

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23 A sphere has radius 8 cm.
A cone has radius 8 cm and height h.
The sphere and the cone have the same volume.

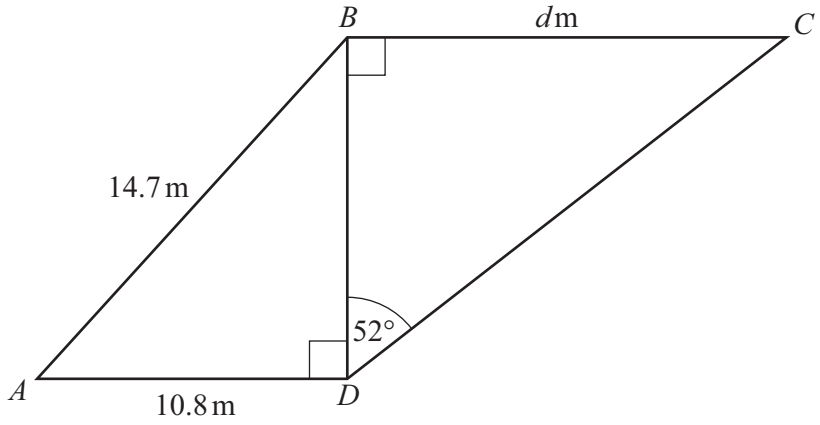
Work out the height, h, of the cone.

$h =$ .....cm [4]

Question 24 is printed on the next page.

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24 The diagram shows two right-angled triangles.



NOT TO SCALE

Calculate the value of d.

$d =$ ..... [5]

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