

19 The diagram shows a sector $OAPB$ of a circle, centre O .

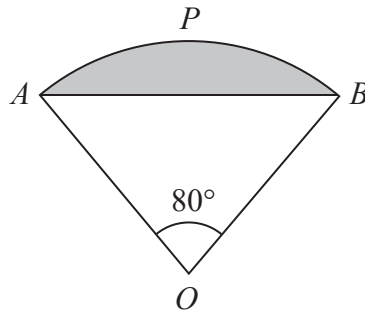


Diagram **NOT** accurately drawn

AB is a chord of the circle.
Angle $AOB = 80^\circ$

The area of sector $OAPB$ is $\frac{25}{2}\pi \text{ cm}^2$

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

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..... cm

(Total for Question 19 is 6 marks)



20

$$x = \frac{6a}{b - a}$$

$a = 3.46$ correct to 3 significant figures.

$b = 6.3$ correct to 1 decimal place.

Work out the upper bound for the value of x .

Give your answer as a decimal correct to 3 significant figures.

Show your working clearly.

.....
(Total for Question 20 is 3 marks)

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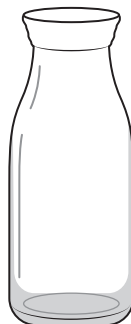
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21 The diagram shows two similar bottles, A and B.



A



B

Diagram **NOT** accurately drawn

Bottle A has surface area 240 cm^2

Bottle B has surface area 540 cm^2 and volume 2025 cm^3

Work out the volume of bottle A.

..... cm^3

(Total for Question 21 is 3 marks)

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22 Write $5 + 12x - 2x^2$ in the form $a + b(x + c)^2$ where a , b and c are integers.

.....
(Total for Question 22 is 4 marks)



23 The diagram shows a solid pyramid $ABCDE$ with a horizontal base.

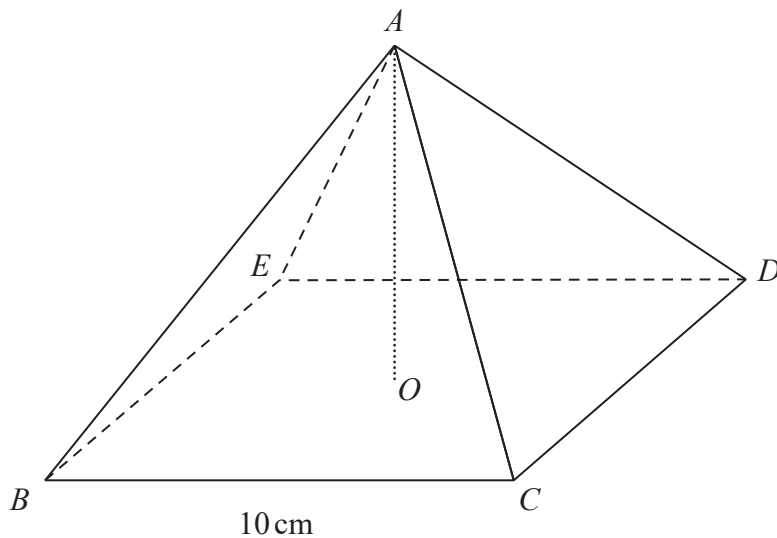


Diagram **NOT** accurately drawn

The base, $BCDE$, of the pyramid is a square of side 10 cm .

The vertex A of the pyramid is vertically above the centre O of the base so that $AB = AC = AD = AE$

The **total** surface area of the pyramid is 360 cm^2

Work out the size of the angle between AC and the base $BCDE$.
Give your answer correct to 3 significant figures.

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o

(Total for Question 23 is 6 marks)

Turn over for Question 24



P 6 0 2 6 1 A 0 2 3 2 4

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DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

24 A box contains marbles.

4 of the marbles are red.

The rest of the marbles are yellow.

Antonia takes at random a marble from the box and does not replace it.

Sergio then takes at random a marble from the box.

The probability that Antonia and Sergio both take a yellow marble is 0.7

Work out how many marbles were originally in the box.

Show your working clearly.

.....
(Total for Question 24 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

