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0607/22

May/June 2019

45 minutes

Additional Materials: Geometrical Instruments

The total number of marks for this paper is 40.

[Turn over

Formula List

For the equation $ax^2 + bx + c = 0$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

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 . $A = \pi rl$

Curved surface area, A , of sphere of radius r . $A = 4\pi r^2$

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 . $V = \frac{4}{3}\pi r^3$



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

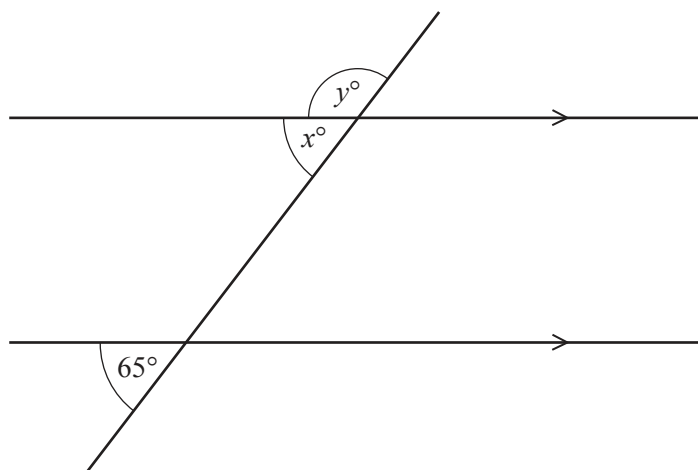
$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$\text{Area} = \frac{1}{2}bc \sin A$$

3

Answer **all** the questions.

1

NOT TO
SCALEFind the value of x and the value of y . $x =$ $y =$ [2]

2 A regular polygon has 40 sides.

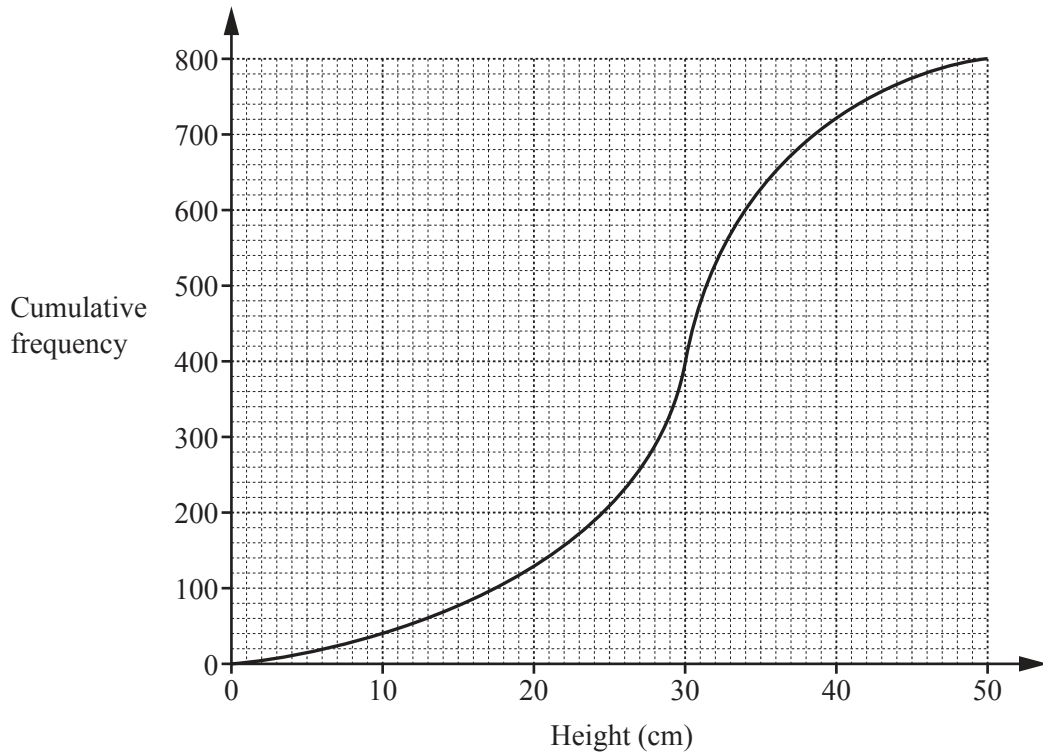
Find the size of one exterior angle.

..... [2]

3 A is the point $(1, 5)$ and B is the point $(6, 2)$.Find the column vector $\overrightarrow{AB}$.
$$\begin{pmatrix} \\ \end{pmatrix}$$
 [2]
4 $t = 3p^2$ (a) Find the value of t when $p = 4$. $t =$ [1](b) Re-arrange the formula to write p in terms of t . $p =$ [2]

4

5



The cumulative frequency curve shows some information about the heights of 800 plants.

Find

(a) the median,

..... cm [1]

(b) the upper quartile.

..... cm [1]

6 Work out $\frac{4}{5} \div 1\frac{1}{2}$.

..... [2]

7 A car travels 85 km in 50 minutes.

Find the average speed of the car, giving your answer in km/h.

..... km/h [2]

5

- 8**
- Solve the simultaneous equations.

$$a + b = 16$$

$$2a - b = 17$$

$$a = \dots\dots\dots$$

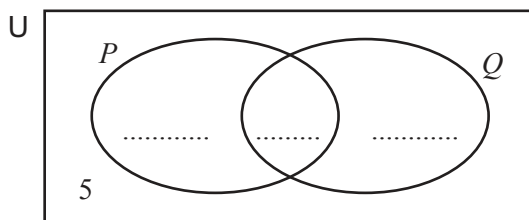
$$b = \dots\dots\dots [2]$$

- 9**
- Find the equation of the line parallel to the line
- $y = 3 - x$
- that passes through the point
- $(0, 7)$
- .

$$\dots\dots\dots [2]$$

- 10**
- Work out the value of
- $\left(\frac{1}{27}\right)^{-\frac{1}{3}}$
- .

$$\dots\dots\dots [1]$$

11

$$n(U) = 25 \quad n(P) = 10 \quad n(Q) = 17 \quad n(P \cup Q)' = 5$$

Complete the Venn diagram.

[2]

- 12**
- Factorise completely.

$$ab - a - b + 1$$

$$\dots\dots\dots [2]$$

6

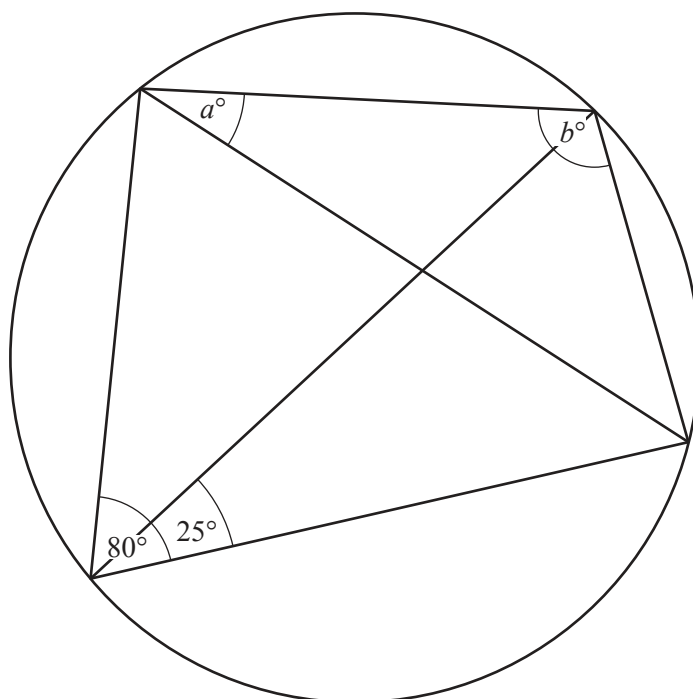
- 13 Work out $1.1 \times 10^{30} + 1.1 \times 10^{29}$, giving your answer in standard form.

..... [2]

- 14 Find the highest common factor (HCF) of $8p^4q^8$ and $4p^3q^{10}$.

..... [2]

15



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The diagram shows a cyclic quadrilateral.

Find the value of a and the value of b .

$a =$

$b =$ [2]

7

- 16 Rationalise the denominator.

$$\frac{1}{\sqrt{5}-1}$$

..... [2]

- 17 y is inversely proportional to $\sqrt{x+4}$.
When $x = 5$, $y = 12$.

Find y in terms of x .

$y =$ [2]

- 18 Simplify.

$$\frac{y^2-9}{xy+3x}$$

..... [3]

Question 19 is printed on the next page.

19 (a) $2 \log x = 3 \log 4$

Find the value of x .

$$x = \dots\dots\dots [2]$$

(b) $\log x + \log u - \log v = \log p$

Find p in terms of x , u and v .

$$p = \dots\dots\dots [1]$$

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