

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 . $A = \pi rl$

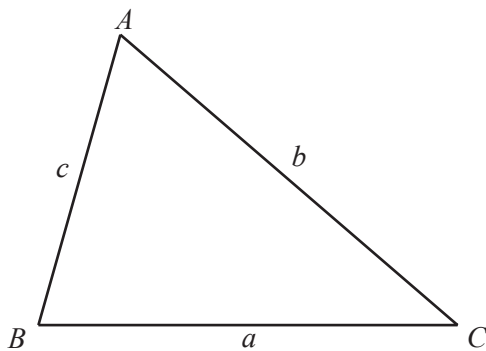
Curved surface area, A , of sphere of radius r . $A = 4\pi r^2$

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



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

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

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

Answer **all** the questions.

- 1 These are the scores of 10 students in a test.

7 15 9 4 16 6 8 11 12 10

Find

- (a) the median,

..... [2]

- (b) the mean.

..... [2]

- 2 A regular polygon has 24 sides.

Find the size of each interior angle of the polygon.

..... [3]

3 $P = 2a + b^2 - 3c$

Find P when $a = 5$, $b = -4$ and $c = -3$.

$P =$ [2]

4

4 You are given that $\sqrt{7} = 2.65$ and $\sqrt{70} = 8.37$, each correct to 2 decimal places.

Use this information to find the value of

(a) $\sqrt{700}$,

..... [1]

(b) $\sqrt{280}$.

..... [1]

5 A biased 5-sided spinner is spun 200 times.
The results are shown in the table.

Number	1	2	3	4	5
Frequency	24	48	63	38	27

(a) Find the relative frequency of the spinner landing on 2.

..... [1]

(b) The spinner is spun 1000 times.

Find the expected number of times that the spinner lands on 2.

..... [1]

6 Solve $2x + 6 > 5x - 10$.

..... [2]

7 Describe **fully** the inverse of each transformation.

(a) Translation by $\begin{pmatrix} -2 \\ 5 \end{pmatrix}$.

..... [2]

(b) Enlargement with centre (2, 3) and scale factor 2.

.....

..... [2]

8 Find the value of $125^{-\frac{1}{3}}$.

..... [1]

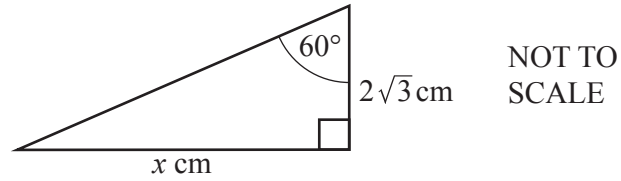
9 y is inversely proportional to x^3 .
When $x = 5$, $y = 2$.

Find y when $x = 10$.

$y =$ [3]

6

10



Find the value of x .

$x = \dots\dots\dots$ [3]

11 Simplify.

$$\frac{ax^2 + 5ax + bx + 5b}{x^2 - 25}$$

$\dots\dots\dots$ [3]

12 $f(x) = 11x + 2$

$g(x) = \sin x^\circ$

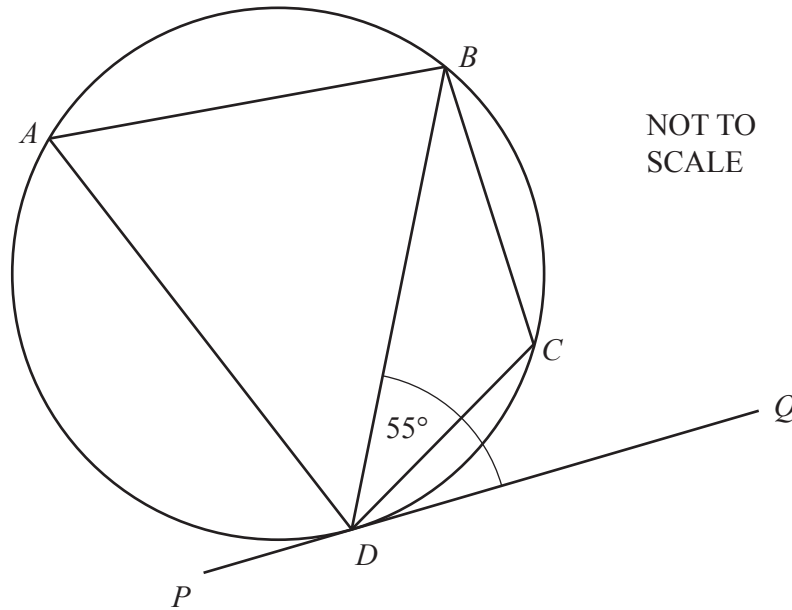
(a) Find $f^{-1}(x)$.

$f^{-1}(x) = \dots\dots\dots$ [2]

(b) Find $g(f(8))$.

$\dots\dots\dots$ [2]

13



A, B, C and D are points on the circle.
 PQ is a tangent to the circle at D .
 Angle $BDQ = 55^\circ$.

Complete these statements giving a reason for each answer.

(a) Angle $BAD = \dots\dots\dots$ because $\dots\dots\dots$
 $\dots\dots\dots$ [2]

(b) Angle $BCD = \dots\dots\dots$ because $\dots\dots\dots$
 $\dots\dots\dots$ [2]

14 $4 \log y + 3 \log x = 2$

Find y in terms of x .

$\dots\dots\dots$ [3]

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