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0607/23

October/November 2016

45 minutes

Additional Materials: Geometrical Instruments

READ THESE INSTRUCTIONS FIRST

DO **NOT** WRITE IN ANY BARCODES.

The total number of marks for this paper is 40.

This document consists of **8** printed pages.

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 . $A = \pi rl$

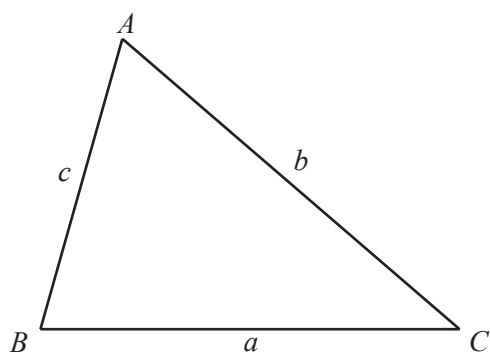
Curved surface area, A , of sphere of radius r . $A = 4\pi r^2$

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 Here are the first four terms of a sequence.

11 8 5 2

Write down the next term of the sequence.

..... [1]

- 2 Use the formula $A = \frac{h}{2}(x + y)$ to find the value of A when $x = 7$, $y = 13$ and $h = 6.4$.

$A =$ [2]

- 3 Work out.

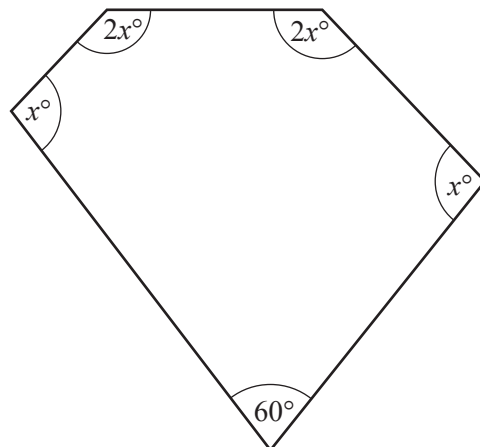
(a) $(0.2)^3$

..... [1]

(b) $\frac{3}{7} \div \frac{4}{5}$

..... [2]

4



NOT TO
SCALE

The diagram shows a pentagon.

Find the value of x .

$x =$ [3]

- 5** Triangle B is the image of triangle A after a reflection.
 Triangle C is the image of triangle B after an enlargement, scale factor 2.
 Triangle D is the image of triangle C after a rotation.
 Triangle E is the image of triangle D after a stretch, factor 3.

Complete this table.

Write C if the triangles are congruent.

Write S if the triangles are similar.

Write N if the triangles are neither congruent nor similar.

Triangles	C, S or N
A and B	
A and C	
B and D	
D and E	

[3]

- 6** The table shows the numbers of pets owned by each of 100 families.

Number of pets	Frequency
0	23
1	37
2	25
3	10
4	5

- (a)** Write down the range.

..... [1]

- (b)** Find the median.

..... [1]

- (c)** Work out the mean.

..... [2]

- 7 Solve the simultaneous equations.

$$\begin{aligned} 4x - 3y &= 12 \\ 6x - y &= 11 \end{aligned}$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots [3]$$

- 8 Jakob draws a scatter diagram which shows that two quantities, x and y , are correlated. He calculates the equation of the regression line as $y = 32 - 1.5x$.

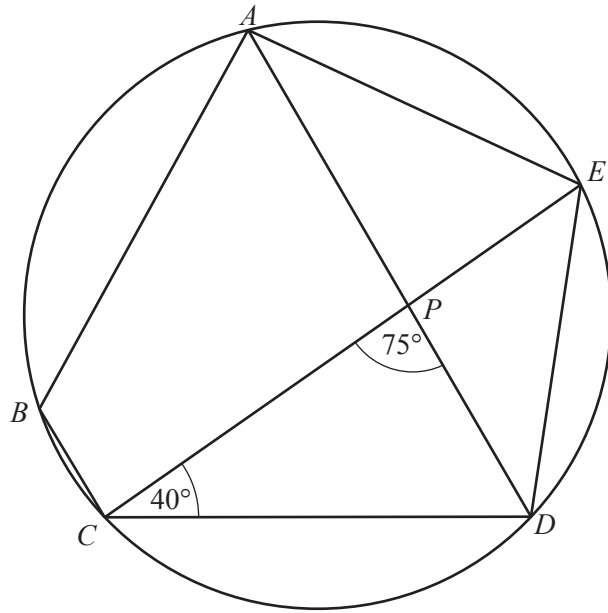
- (a) What type of correlation is there between x and y ?

..... [1]

- (b) The mean of the y values is 14.

Find the mean of the x values.

..... [2]



NOT TO
SCALE

A, B, C, D and E are points on a circle.
 CE and AD intersect at P .
 Angle $DCP = 40^\circ$ and angle $CPD = 75^\circ$.

Find

(a) angle DAE ,

Angle $DAE = \dots\dots\dots$ [1]

(b) angle ABC .

Angle $ABC = \dots\dots\dots$ [2]

10 (a) Find $\log_5 25$.

$\dots\dots\dots$ [1]

(b) $2 \log 3 - \log 5 = \log p$

Find p .

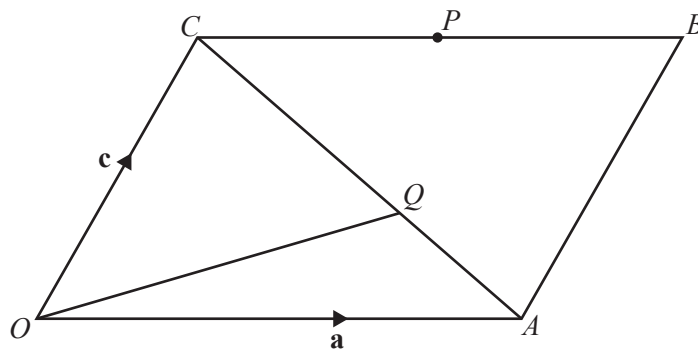
$p = \dots\dots\dots$ [2]

11 Solve.

$$4x + 2 > 3(2x - 4)$$

..... [3]

12



NOT TO
SCALE

$OACB$ is a parallelogram.

P is the midpoint of CB .

$CQ : QA = 5 : 3$.

$\overrightarrow{OA} = \mathbf{a}$ and $\overrightarrow{OC} = \mathbf{c}$.

Find these vectors in terms of $\mathbf{a}$ and/or $\mathbf{c}$, giving your answers in their simplest form.

(a) $\overrightarrow{CP}$

..... [1]

(b) $\overrightarrow{OQ}$

..... [3]

Question 13 is printed on the next page.

13 Simplify.

(a) $\frac{12}{\sqrt{2}}$

..... [2]

(b) $(5 - 2\sqrt{3})^2$

..... [3]

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