Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
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9162960159

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/22**

Paper 2 (Extended) **October/November 2018**

45 minutes

Candidates answer on the Question Paper.

Additional Materials: Geometrical Instruments

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
Do not use staples, paper clips, glue or correction fluid.
You may use an HB pencil for any diagrams or graphs.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** the questions.
CALCULATORS MUST NOT BE USED IN THIS PAPER.
All answers should be given in their simplest form.
You must show all the relevant working to gain full marks and you will be given marks for correct methods even if your answer is incorrect.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 40.

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

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[Turn over

Formula List

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

Curved surface area, A, of cylinder of radius r, height h. $\quad A = 2\pi rh$

Curved surface area, A, of cone of radius r, sloping edge l. $\quad A = \pi rl$

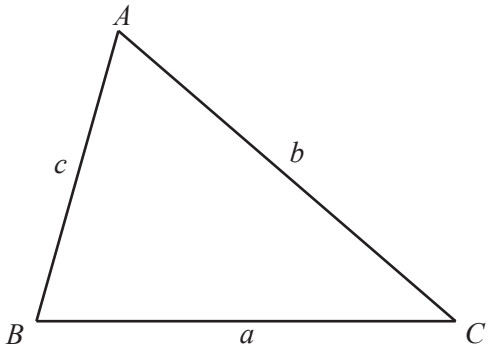
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

Volume, V, of pyramid, base area A, height h. $\quad V = \frac{1}{3}Ah$

Volume, V, of cylinder of radius r, height h. $\quad V = \pi r^2 h$

Volume, V, of cone of radius r, height h. $\quad V = \frac{1}{3}\pi r^2 h$

Volume, V, of sphere of radius r. $\quad V = \frac{4}{3}\pi r^3$



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

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

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

Answer **all** the questions.

1 **(a)** Write 49 059 300 correct to 3 significant figures.

..... [1]

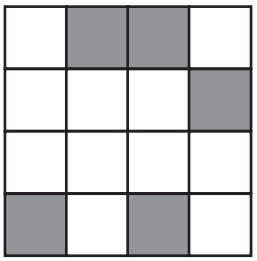
(b) Write your answer to **part (a)** in standard form.

..... [1]

2 Find $\sqrt[3]{3\frac{3}{8}}$.

..... [2]

3 Shade **two** small squares so that the shape has exactly one line of symmetry.



[1]

4 $\mathbf{p} = \begin{pmatrix} -3 \\ 5 \end{pmatrix}$

(a) Find the column vector $3\mathbf{p}$.

$\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

(b) Find $|\mathbf{p}|$, giving your answer in surd form.

..... [2]

5 $f(x) = |2x - 7|$ for all real x.

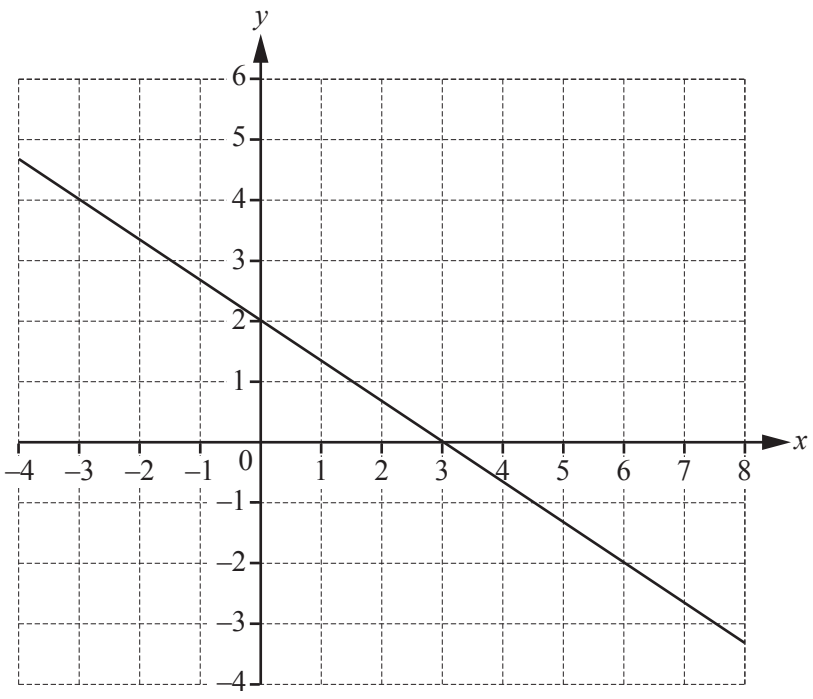
(a) Find $f(2)$.

..... [1]

(b) Write down the range of $f(x)$.

..... [1]

6 The line with equation $2x + 3y = 6$ is drawn on the grid.



On the grid, show clearly the **single** region defined by these three inequalities.

$2x + 3y \leqslant 6$ $x \geqslant -3$ $y \leqslant -1$ [3]

7 Factorise.

(a) $64x^2 - 1$

..... [1]

(b) $2y^2 - y - 6$

..... [2]

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8 **(a)** $2^3 \div 2^7 = 2^p$

Find the value of p.

..... [1]

(b) $\sqrt{2^5} = 2^q$

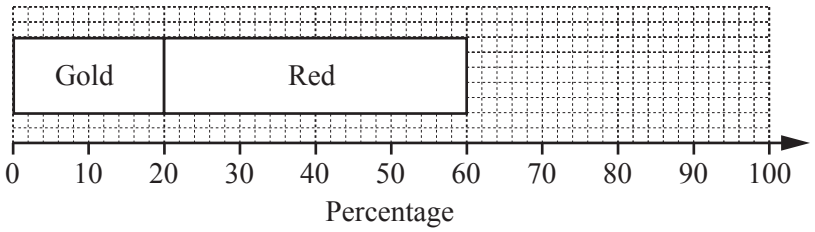
Find the value of q.

..... [1]

9 An archer shoots 150 arrows at a target with sections coloured gold, red, blue, black and white. The table shows her results.

Colour	Gold	Red	Blue	Black	White
Frequency	30	60	36	15	9

Complete the **compound** bar chart to show these results as percentages.



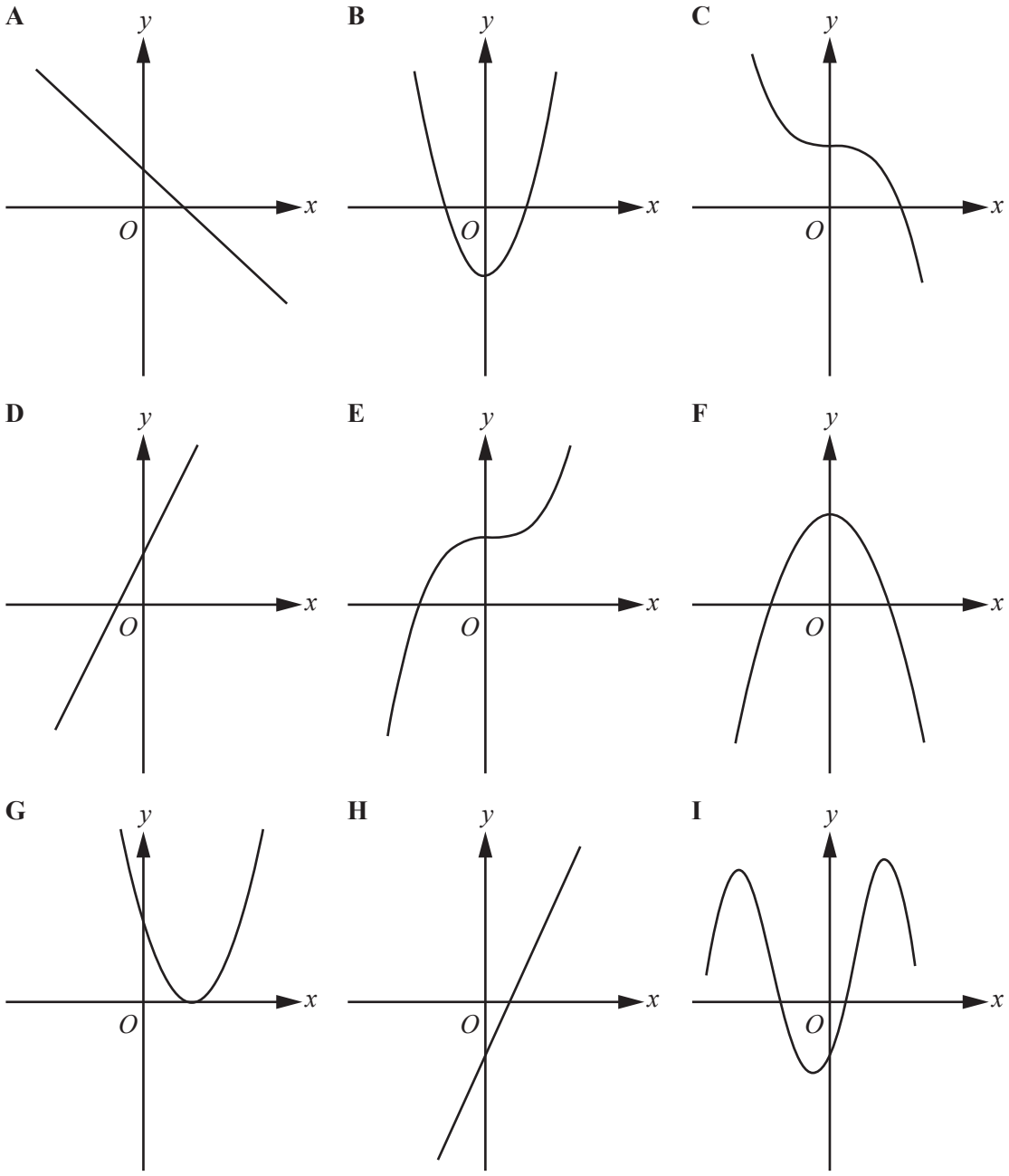
[3]

10 Solve.

$4x + 9 \leqslant 3(2x - 1)$

..... [3]

11 The diagram shows nine sketch graphs.



Write the letter of the graph which shows each of these functions.

$f(x) = 2x - 3$ Graph .....

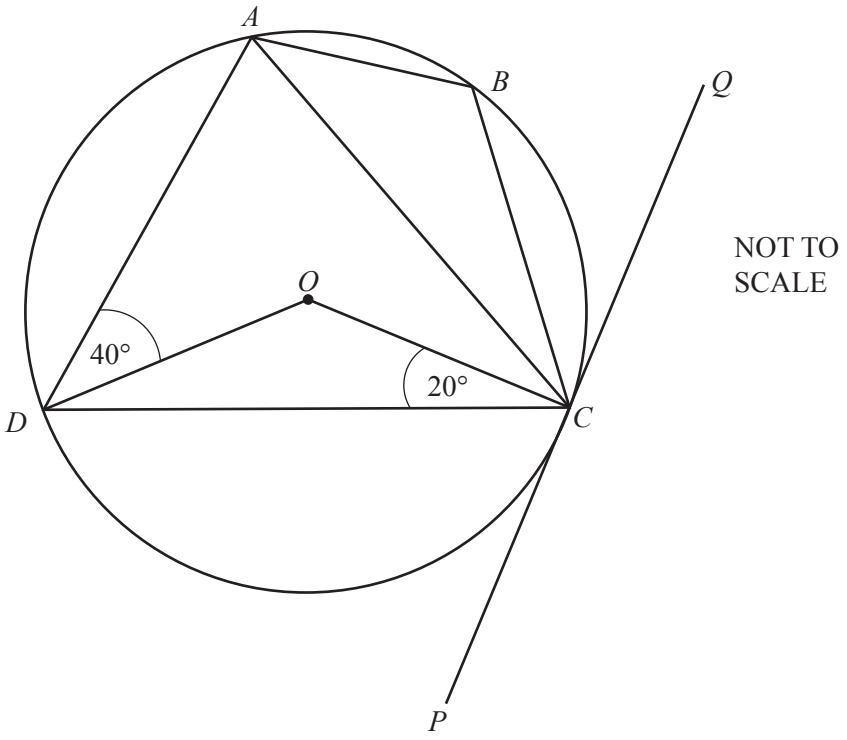
$f(x) = x^2 - 3$ Graph .....

$f(x) = 3 - x^3$ Graph .....

$f(x) = (x - 3)^2$ Graph ..... [4]

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12



A, B, C and D are points on the circle centre O.
PQ is a tangent to the circle at C.

Find these angles.

(a) Angle DAC

Angle DAC = ... [2]

(b) Angle ABC

Angle ABC = ... [1]

(c) Angle ACQ

Angle ACQ = ... [2]

Question 13, 14 and 15 are printed on the next page.

13 Simplify.

$(5+2\sqrt{3})^2$

..... [3]

14 **(a)** Find the value of n when $\log 5 + \log 3 - \log 2 = \log n$.

..... [1]

(b) Find $\log_3(3^{1.4})$.

..... [1]

15 $f(x) = 3\sin 2x°$

(a) Write down the amplitude of the graph of $f(x)$.

..... [1]

(b) The graph of $y = f(x)$ goes through the points $(75, 1.5)$ and $(a, 1.5)$.

Find a possible value of a, greater than 75.

..... [1]

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