

--

--	--	--	--	--

--	--	--	--

0607/22

October/November 2018

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



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

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

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

3

Answer **all** the questions.

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

..... [1]

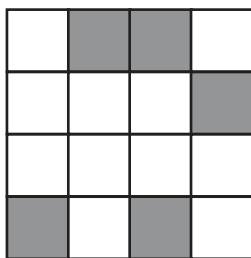
- (b) Write your answer to **part (a)** in standard form.

..... [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 $3\mathbf{p}$.

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

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

..... [2]

4

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

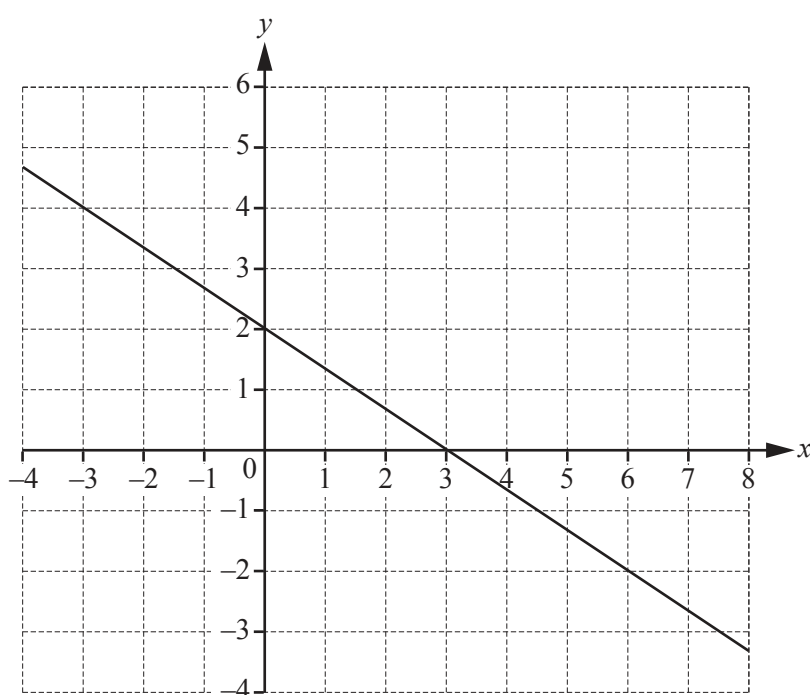
(a) Find $f(2)$.

..... [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.

$$2x + 3y \leq 6$$

$$x \geq -3$$

$$y \leq -1$$

[3]

7 Factorise.

(a) $64x^2 - 1$

..... [1]

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

..... [2]

5

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

Find the value of p .

..... [1]

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

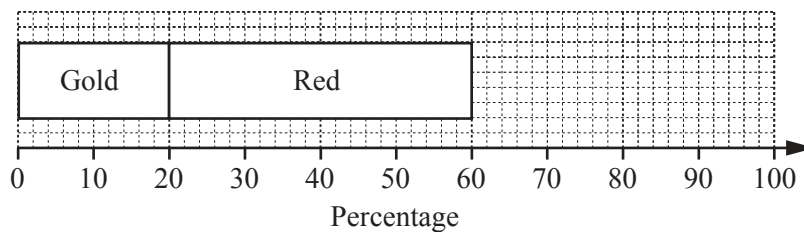
Find the value of q .

..... [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.



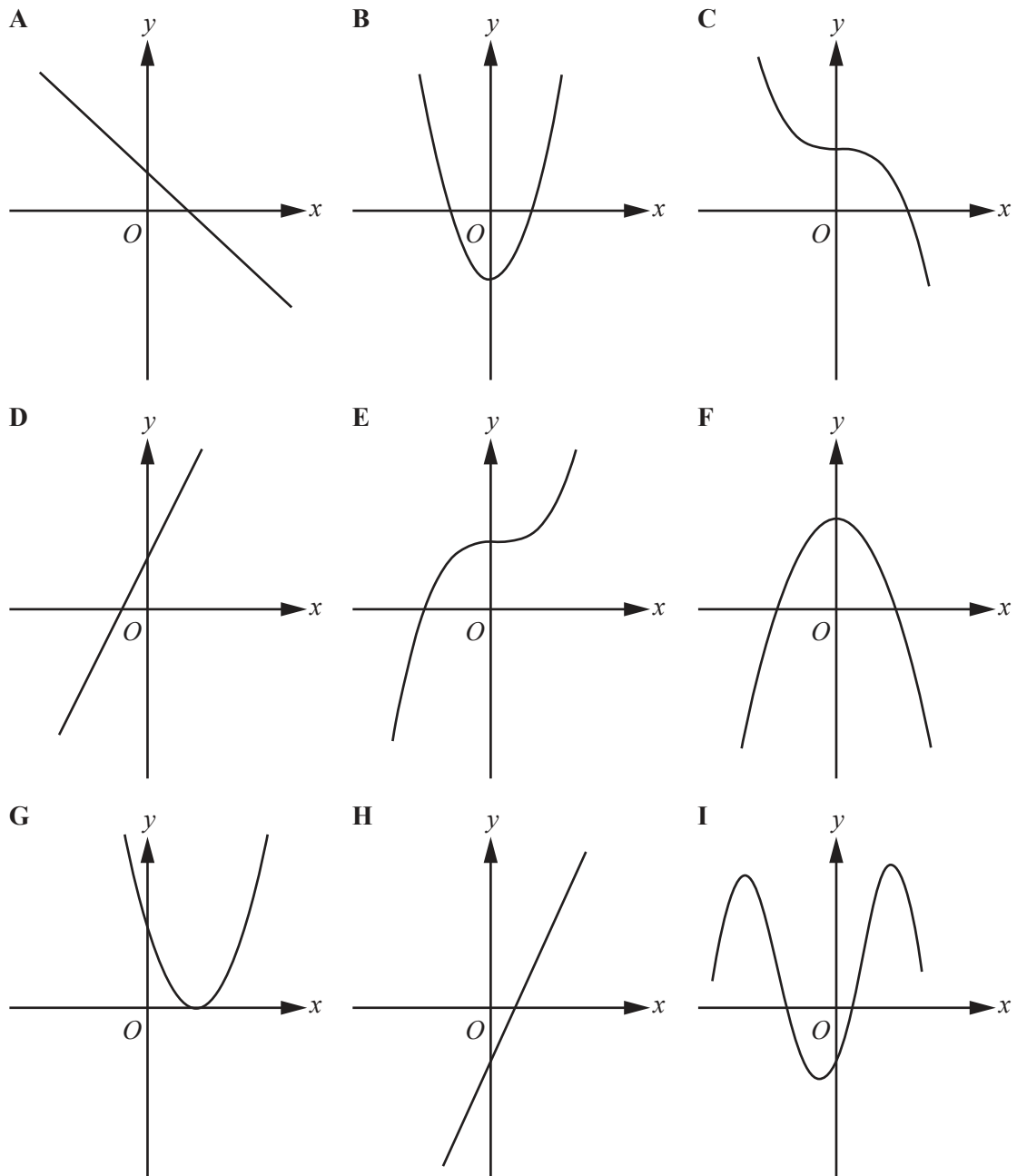
[3]

- 10 Solve.

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

..... [3]

11 The diagram shows nine sketch graphs.



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

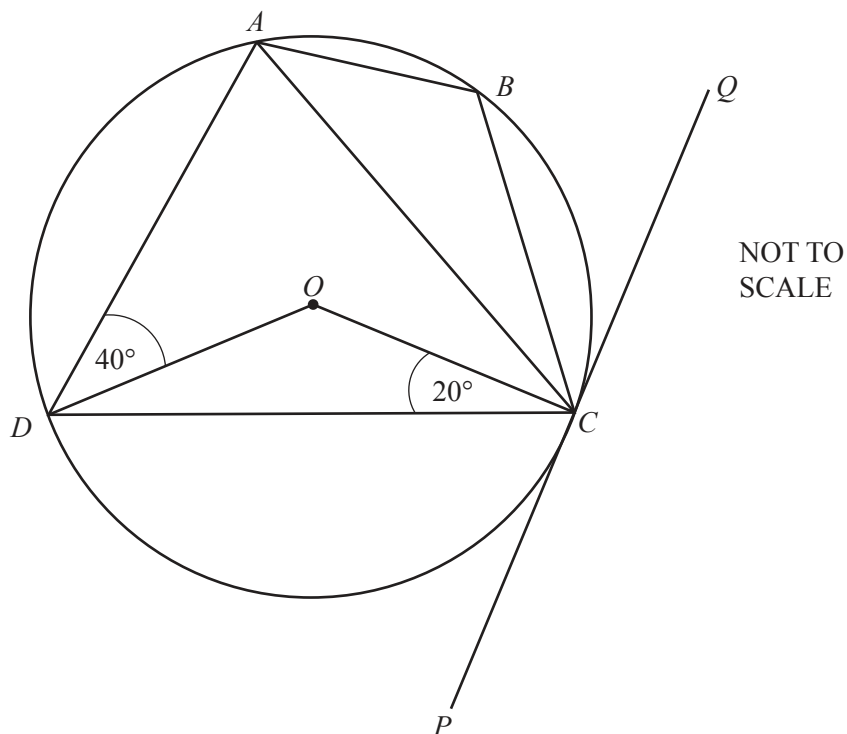
$f(x) = 2x - 3$ Graph

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

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

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

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 $f(x) = 3 \sin 2x^\circ$

(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]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge International Examinations Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cie.org.uk after the live examination series.

Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.