Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

5669966743

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/21**

Paper 2 (Extended) **October/November 2014**

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.

© UCLES 2014

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. $\quad A = \pi rl$

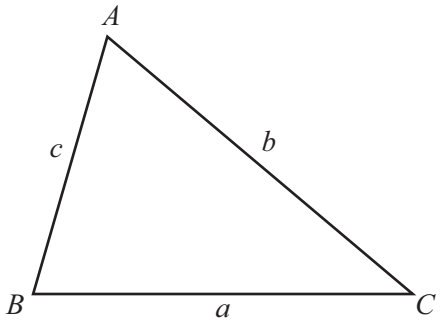
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

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

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

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

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



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

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

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

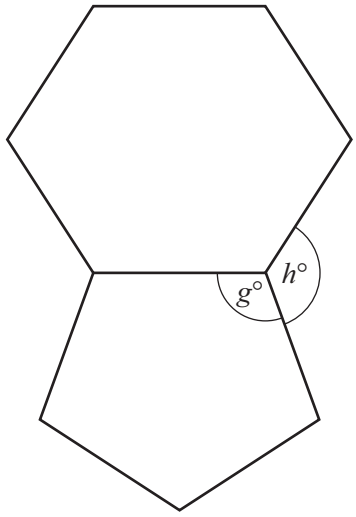
Answer **all** the questions.

1 Insert brackets in these calculations so that the answers are correct.

(a) $10 - 4 + 3 + 2 = 5$ [1]

(b) $10 - 5 \times 7 + 2 = 45$ [1]

2



NOT TO SCALE

The diagram shows a regular hexagon and a regular pentagon.

(a) Find g.

Answer(a) $g =$ ..... [3]

(b) Find h.

Answer(b) $h =$ ..... [2]

---

3 Find the value of

(a) 5^0,

Answer(a) ..... [1]

(b) $8^{-\frac{2}{3}}$.

Answer(b) ..... [2]

---

4 **(a)** 3023 is a prime number.

Write down the factors of 3023.

Answer(a) ..... [1]

(b) p and q are prime numbers.

(i) Write down the highest common factor (HCF) of p and q.

Answer(b)(i) ..... [1]

(ii) Write down an expression, in terms of p and q, for the lowest common multiple (LCM) of p and q.

Answer(b)(ii) ..... [1]

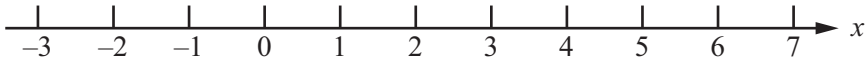
© UCLES 2014

5 **(a)** Solve this inequality.

$$3(x + 2) > 5x - 2$$

Answer(a) ..... [3]

(b) Show your answer to **part (a)** on this number line.



[2]

---

6 Sanjay asks a random sample of 200 students how they travel to school.
These are his results.

Method of travel	Walk	Cycle	Bus	Car	Train
Frequency	52	47	62	27	12

(a) Find the relative frequency of a student travelling by bus.

Answer(a) ..... [1]

(b) The school has 1200 students.

(i) Explain why it is reasonable to use your answer to **part (a)** as the probability that a student chosen at random from the school travels by bus.

Answer(b)(i) ..... [1]

(ii) Estimate the number of students in the school who travel by bus.

Answer(b)(ii) ..... [1]

---

7 31 students took a test which was marked out of 70.
The stem and leaf diagram shows their results.

1	3 3 4 7
2	4 4 7 8 9
3	3 3 4 6 7 8
4	0 2 5 5 8 9 9
5	3 4 6 7 8
6	2 5 5 7

Key 2 | 4 = 24 marks

(a) Find the median.

Answer(a) ..... [1]

(b) Another student took the test later.

What mark did this student get if

(i) the median and range do not change,

Answer(b)(i) ..... [1]

(ii) the median and range both increase by 1?

Answer(b)(ii) ..... [1]

---

8 In standard form, $x = a \times 10^5$ and $y = b \times 10^7$ where $a < b$.

In standard form, $\frac{x}{y} = c \times 10^d$ where $1 \leqslant c < 10$.

(a) Find the value of d.

Answer(a) ..... [1]

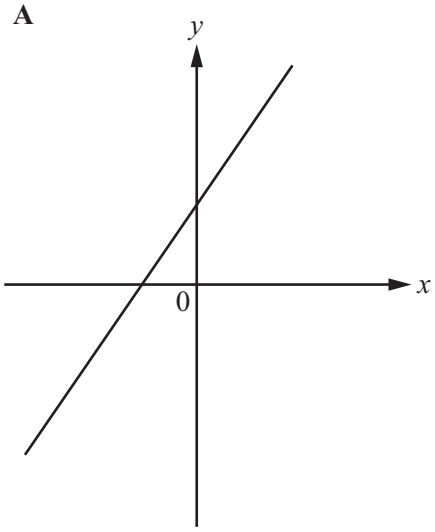
(b) Find c in terms of a and b.

Answer(b) $c =$ ..... [2]

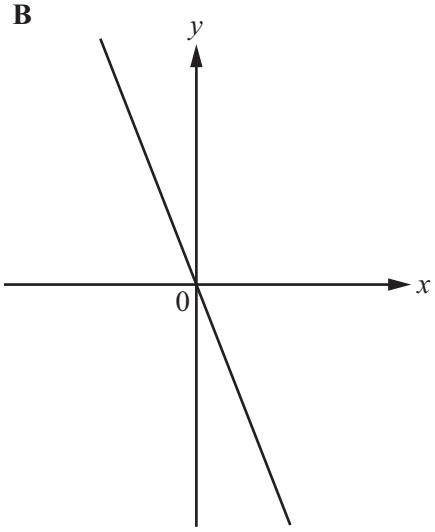
© UCLES 2014

9 Here are the sketches of four graphs.

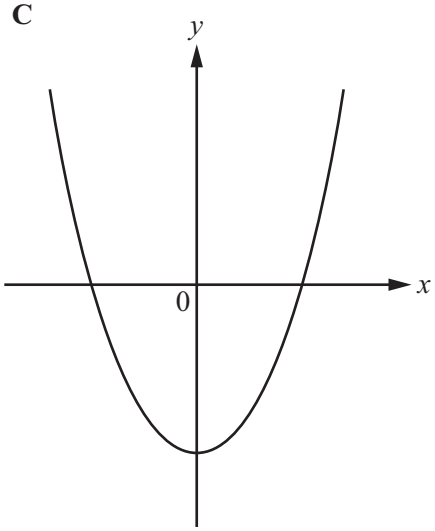
A



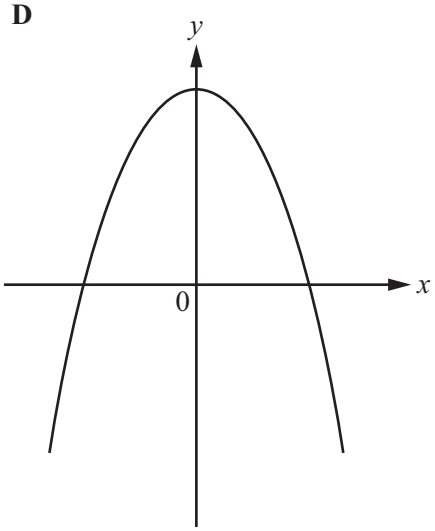
B



C



D



Each of the graphs represents one of these equations.

$y = x^2 + 3x$	$y = 3 - 2x$	$y = 3 - x^2$	$y = 2x + 3$
$y = x^2$	$y = -3x$	$y = x^2 - 3$	$y = 3x$

From the equations above, write down which one represents each graph.

Answer Graph A $y =$ .....

Graph B $y =$ .....

Graph C $y =$ .....

Graph D $y =$ ..... [4]

Questions 10 and 11 are printed on the next page.

10 **(a)** Factorise completely.

$$8a^2 - 50b^2$$

Answer(a) ..... [3]

(b) Write as a single fraction, simplifying your answer.

$$\frac{2}{2x-3} + \frac{3}{x-5}$$

Answer(b) ..... [3]

---

11 **(a)** Find $\log_2 8$.

Answer(a) ..... [1]

(b) Find p when $\log 3 + 2\log 5 = \log p$.

Answer(b) $p =$ ..... [2]

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.

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.