Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/21**

Paper 2 (Extended) **May/June 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.

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. $\quad A = \pi rl$

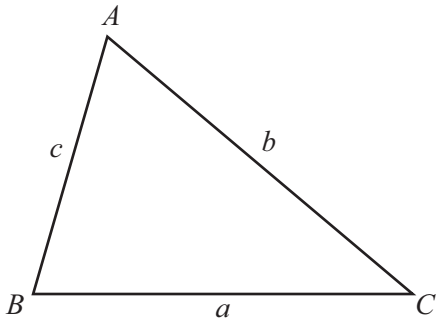
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

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 **(a)** Factorise.

$x^2 - y^2$

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

(b) Work out.

$164^2 - 36^2$

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

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2 **(a)** Simplify.

$\sqrt{12}$

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

(b) Solve the equation.

$$\cos x = \frac{\sqrt{3}}{2} \quad \text{for} \quad 0° \leqslant x \leqslant 90°$$

Answer(b) $x =$ ..... [1]

(c) Solve the equation.

$$\cos x = -\frac{\sqrt{12}}{4} \quad \text{for} \quad -180° \leqslant x \leqslant 180°$$

Answer(c) $x =$ ..... or $x =$ ..... [2]

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3 Find the highest common factor (HCF) in each list.

(a) 24 56 72

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

(b) x^3y^4 x^2y^5 x^4y^2

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

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4 A manufacturer made a profit of 60% when he sold a chair for \$20.
Find the cost of making the chair.

Answer \$ ..... [3]

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5 A travel agent displays the following exchange rates.

£1 = \$1.55
£1 = ¥ 9.3

(a) Change £200 into dollars (\$).

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

(b) Find the number of Chinese yuan (¥) received in exchange for \$1.

Answer(b) ¥ ..... [2]

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6 **(a)** Simplify.

$$\sqrt{75} - \sqrt{27}$$

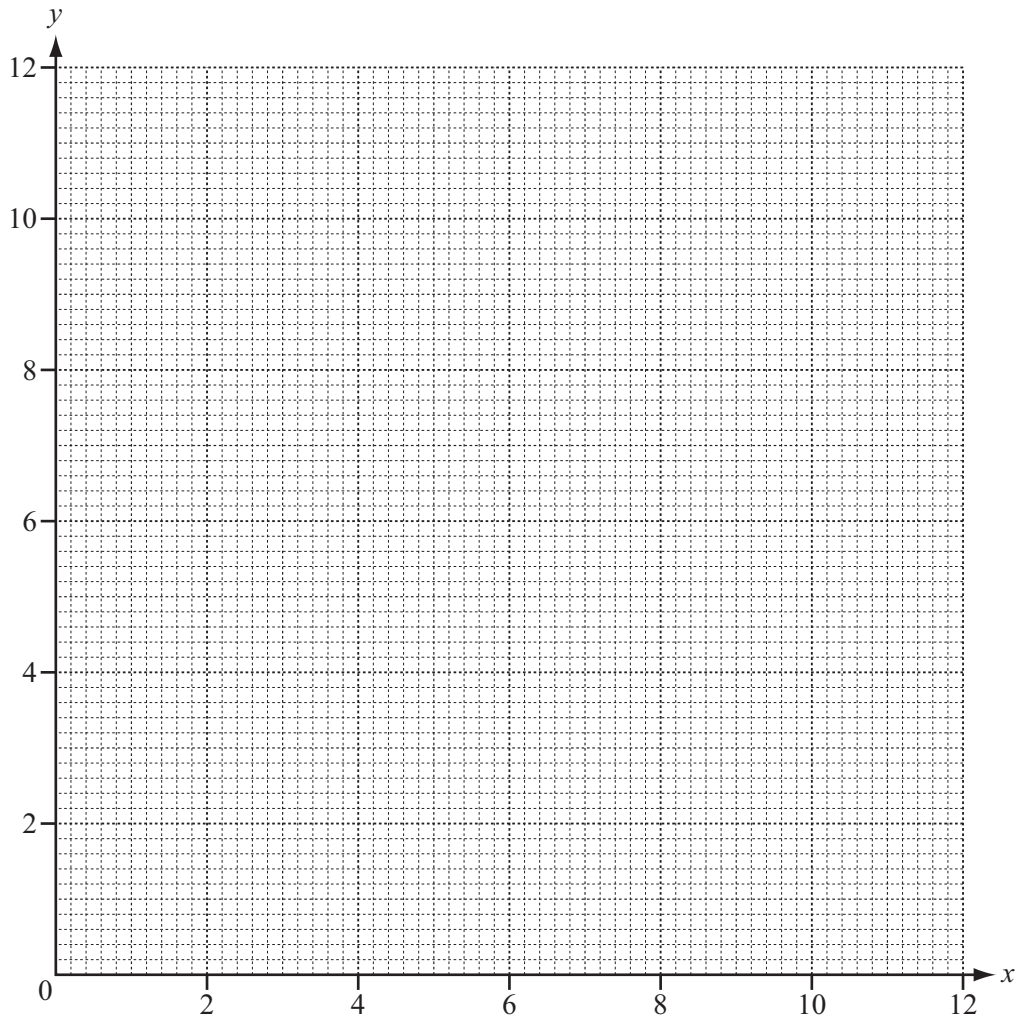
Answer(a) ..... [2]

(b) Rationalise the denominator.

$$\frac{7}{5 - \sqrt{2}}$$

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

7



(a) On the grid, draw the following lines.

$$x = 1$$
$$y = 12 - 2x \quad \text{for} \quad 0 \leqslant x \leqslant 6$$
$$4y + 3x = 36 \quad \text{for} \quad 0 \leqslant x \leqslant 12$$

[5]

(b) On the grid, label the region R containing the points which satisfy these three inequalities.

$$x \geqslant 1 \qquad y \leqslant 12 - 2x \qquad 4y + 3x \geqslant 36$$

[1]

(c) (i) Find the minimum value of $x + y$ in the region R.

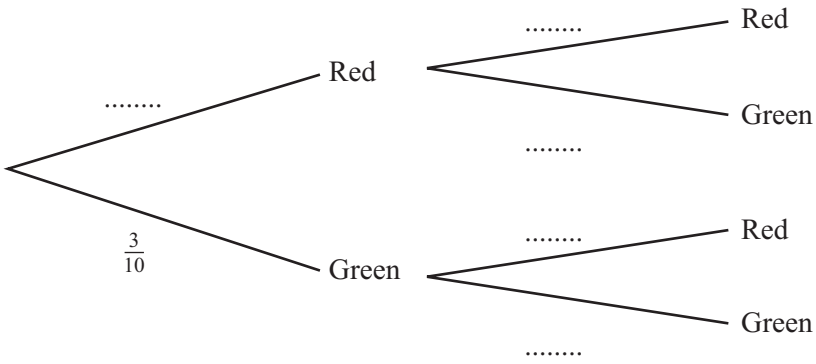
Answer(c)(i) ..... [1]

(ii) Find the co-ordinates of the point corresponding to this minimum value.

Answer(c)(ii) (..... , ...) [1]

8 A bag contains 10 discs, 7 are red and 3 are green.
A disc is picked at random and not replaced.
A second disc is then picked at random.

(a) Complete the tree diagram.
One probability is shown on the diagram.



[2]

(b) Find the probability that

(i) both discs are red,

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

(ii) at least one disc is red.

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

Questions 9 and 10 are printed on the next page.

9 In one month there were 120 new cars sold in a town.

The table shows how many cars of each colour were sold.

Colour	Red	Blue	White	Green	Silver	Black	Yellow
Number	17	20	24	x	28	17	x

(a) Find the value of x.

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

(b) Find the relative frequency of white cars, giving your answer as a fraction in its lowest terms.

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

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10 Solve the equation.

$$\frac{(4x+3)}{7} = \frac{7}{(4x+3)}$$

Answer ..... [3]