UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

9648538625

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/02**

Paper 2 (Extended) **October/November 2010**

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, highlighters, glue or correction fluid.
You may use a 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.

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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. $\quad A = \pi rl$

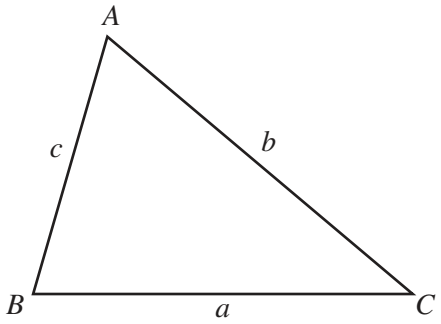
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

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



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

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

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

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Answer **all** the questions.

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1 **(a)** Simplify $\sqrt{75}$.

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

(b) Find the value of $\log_{10}1000$.

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

---

2 Factorise completely.

$2ac - 5bc + 6a - 15b$

Answer ..... [2]

---

3 The gradient of the line joining the points (2, 1) and (6, a) is $\frac{3}{2}$.

Find the value of a.

Answer a = ... [3]

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4 The cumulative frequency curve shows the heights of 200 plants measured correct to the nearest centimetre.

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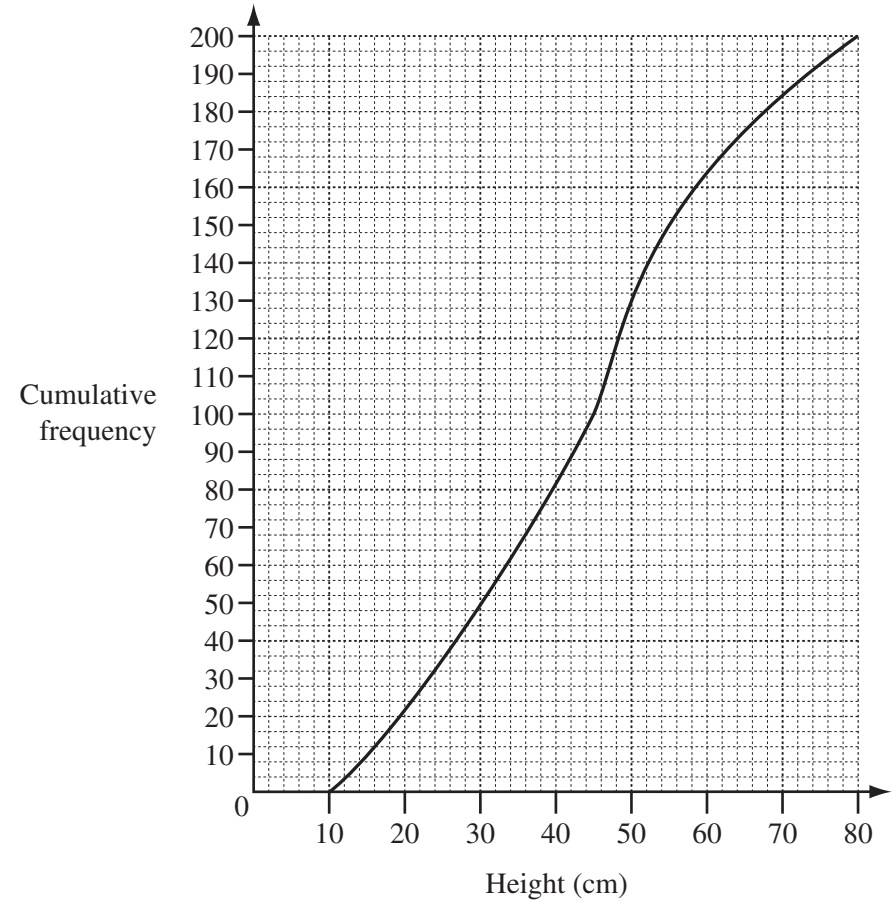

(a) Use the graph to find

(i) the median,

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

(ii) the interquartile range.

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

(b) Find the percentage of plants with heights greater than 50 cm.

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

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5 A cuboid has a square base of side x cm and a height of y cm.

Find, in terms of x and y,

(a) the volume of the cuboid,

Answer(a) ..... cm^3 [1]

(b) the total surface area of the cuboid.

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

---

6 The distance between towns A and B is 50 km.
The bearing of A from B is 210°.

(a) Sketch the positions of A and B showing clearly the angle of 210°.

[1]

(b) Calculate how far west A is from B.

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

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7 $\mathbf{a} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} -2 \\ 5 \end{pmatrix}$

When $2\mathbf{a} + k\mathbf{b} = \begin{pmatrix} -2 \\ 16 \end{pmatrix}$ find the value of k.

Answer ..... [3]

---

8 $f(x) = 2x - 1$ $g(x) = 3x^2 + 1$

Find

(a) g(2),

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

(b) g(f(x)),

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

(c) the inverse function $f^{-1}(x)$.

Answer(c) ..... [2]

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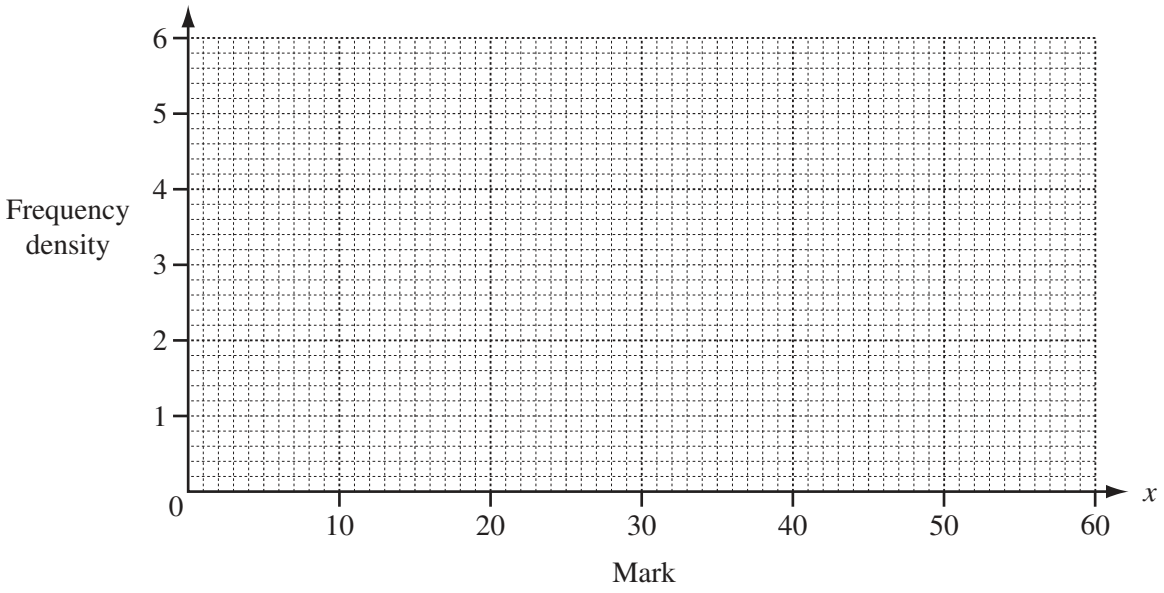
9 The table shows the marks (x) gained by 100 students in an examination.

Mark (x)	$0 \leqslant x < 10$	$10 \leqslant x < 20$	$20 \leqslant x < 40$	$40 \leqslant x < 45$	$45 \leqslant x < 60$
Frequency	20	10	10	30	30

Use this information to draw a histogram on the grid below.



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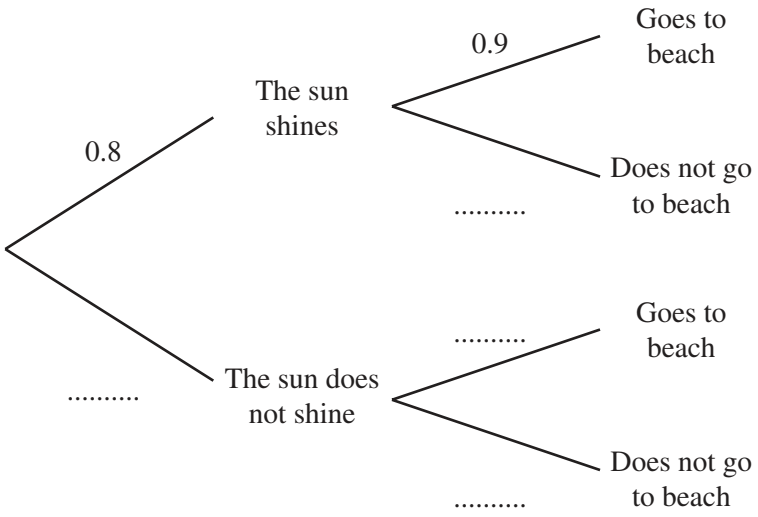
10 In Hurghada the probability that the sun will shine on any day is 0.8.
If the sun shines, the probability Ahmed will go to the beach is 0.9.
If the sun does not shine, the probability he will go to the beach is 0.5.

(a) Complete the tree diagram.



[2]

(b) Find the probability that Ahmed will go to the beach on a given day.

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

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11 The diagram shows part of the graph of $y = f(x)$, where $f(x) = ax^2 + bx - 6$.

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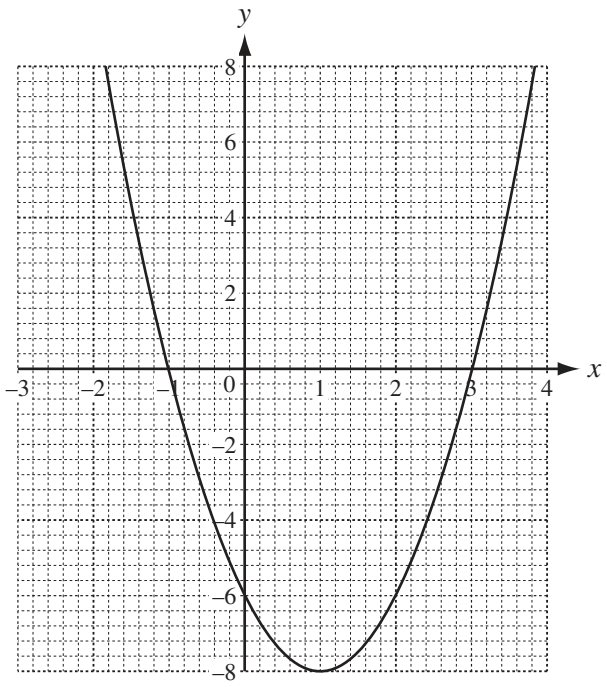

Find the values of a and b.

Answer $a =$ .....

$b =$ ..... [3]

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12 Which of the following functions are shown by the graphs below?
In each case $k > 1$.

Write the correct letter under each graph.

A $y = \dfrac{k}{x}$

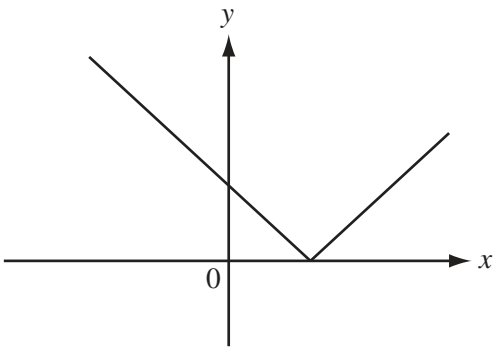
B $y = |x + k|$

C $y = k^x$

D $y = |x - k|$

E $y = k^{-x}$

F $y = \dfrac{x}{k}$



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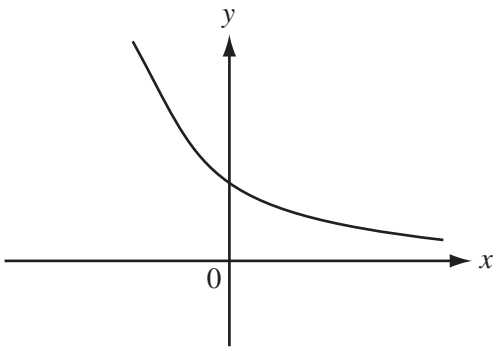

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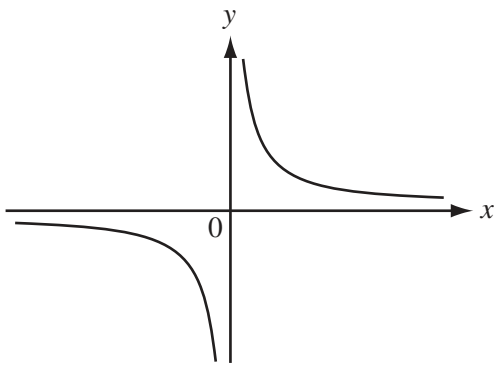

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