UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
Cambridge Checkpoint

MATHEMATICS   **1112/02**

Paper 2

May 2006

1 hour

Candidates answer on the Question Paper.
Additional Materials: Calculator
                          Protractor
                          Ruler

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.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.
You should show all your working in the booklet.
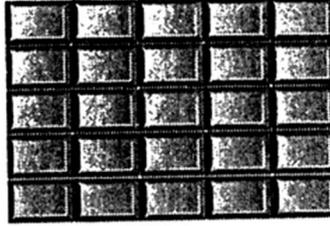The total number of marks for this paper is 50.
At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of **11** printed pages and **1** blank page.

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UNIVERSITY *of* CAMBRIDGE
International Examinations

[Turn over

1   John has a large bar of chocolate. There are 25 blocks in the bar.

John gives 4 blocks to Sam, 5 blocks to Mary, 6 blocks to Jo and he keeps the rest for himself.

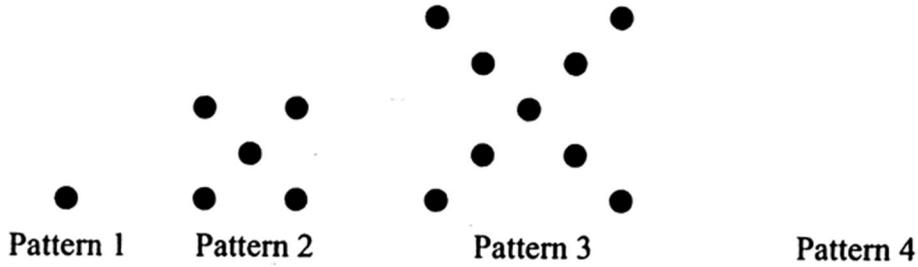**(a)** What **fraction** of the bar does he give to Sam?

.... [1]

(b) What percentage of the bar does he keep for himself?

....% [2]

(c) John eats some of his chocolate.
He now has 12% of the original bar left.
Work out how many blocks of chocolate he has eaten.

.... [2]

2 The diagram shows the first three Patterns in a series.

Pattern 1   Pattern 2   Pattern 3   Pattern 4

(a) Draw Pattern 4 in the space above.

[1]

(b) Complete the table below.

Pattern number (p)	1	2	3	4	5
Number of dots (d)	1	5	9		

[1]

(c) How many dots will be needed for Pattern 7?

.... [1]

(d) Which Pattern needs 33 dots?

.... [1]

(e) Put a ring around the equation which describes this series of patterns.

$$p = \frac{d}{3} \qquad d = 3p - 1 \qquad d = 3p + 1 \qquad d = 4p - 3$$

[1]

3 Here is a net of a cube.

```
        ┌───┐
        │ E │
    ┌───┼───┼───┬───┐
    │ A │ B │ C │ D ┊
    └───┼───┼───┴───┘
        │ F │
        └───┘
```
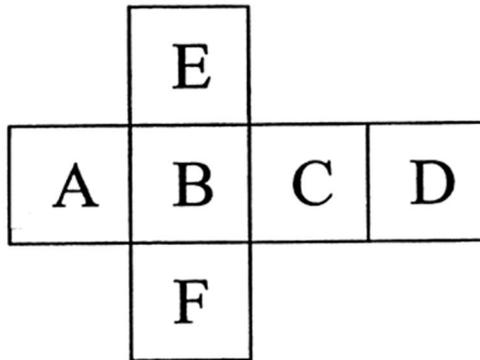
The net is made into a cube.

(a) Which edge joins to the dotted line?
   Mark this edge on the diagram.   [1

(b) Which letter is opposite E?

   .... [1

(c) Complete accurately the net of a tetrahedron below.
   The base has been drawn for you.

                                                                        [2]
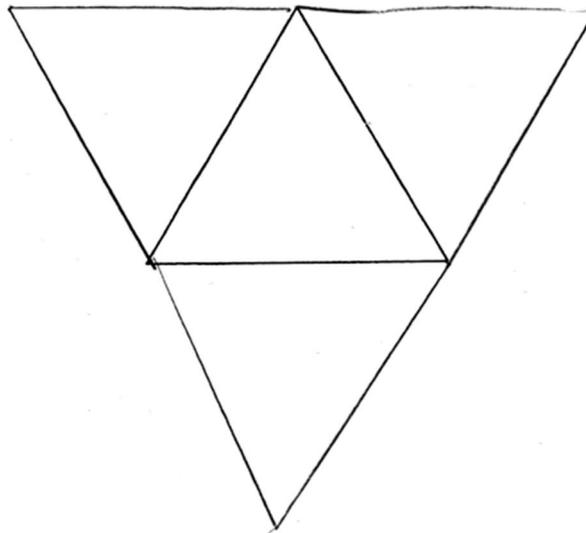
4 (a) Use one of the symbols $=$ $<$ $>$ to complete each of the statements.

    (i) 0.6 .... $\dfrac{1}{2}$ [1]

    (ii) 4.01 .... 4.10   [1]

    (iii) 40% .... 0.4   [1]

(b) Find **one** possible value of p when

$$p - 4 \leqslant 7.$$

possible value of p is .... [1]

5   Twenty five cards numbered 1 to 25 are placed in a box.

A card is chosen at random.

What is the probability that it is

(a) 12,

.... [1]

(b) 27,

.... [1]

(c) less than 5,

.... [1]

(d) an even number,

.... [1]

(e) a multiple of 4?

.... [1]

6   Twenty students are asked which subject they prefer at school.
    Some of the results are shown in the table below.

Subject	Frequency
Art	5
English	4
Mathematics	8
Sport	

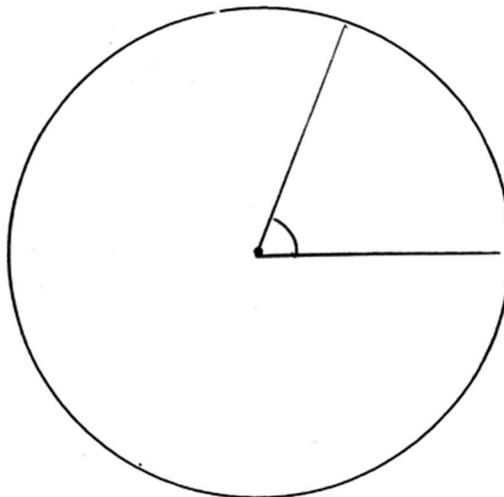(a) Complete the table to show how many students preferred Sport.

[1]

(b) A pie chart is drawn to show these results.

(i) Calculate the size of the sector which represents Mathematics.

.... [2]

(ii) The size of the sector which represents English is 72 degrees.
Draw this sector on the pie chart below.

[1]

(c) A student is chosen at random from the group.
Write down the probability that she prefers Art.

.... [1]

7 **(a)** A rectangle has a length 2 cm longer than its width.
The width of the rectangle is w cm.

Write a statement, in terms of w, for the length of the rectangle.

length = ... cm   [1]

(b) Another rectangle has an area of 36 cm^2.
The length of the rectangle is p cm.

Write a statement, in terms of p, for the width of the rectangle.

width = ... cm   [1]

(c) A rectangle has a length $(x + 6)$ cm and width y cm.
Write an expression for the area of the rectangle.

area = ... cm^2 [1]

(d)

$$I = \frac{PRT}{100}$$

Find the value of I when $P = 350$, $R = 5$ and $T = 4$.

.... [2]

8 Look at the diagram below, which is **not** drawn to scale.
   PQ is parallel to RS and RP is parallel to TQ.
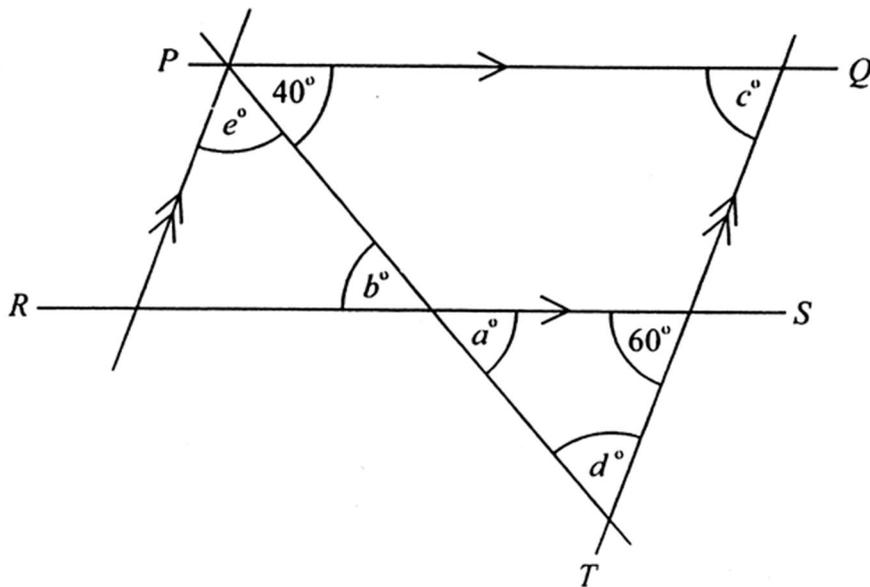
NOT TO SCALE

Work out the size of the angles marked a to e.

a = ... [1]

b = ... [1]

c = ... [1]

d = ... [1]

e = ... [1]

9 **(a)** Complete the following table of values for the equation $y = x - 4$.

x	-1	0	1	2	3	4
y	-5		-3			0

[2]

(b) Use your results to plot the graph of $y = x - 4$ on the grid below.
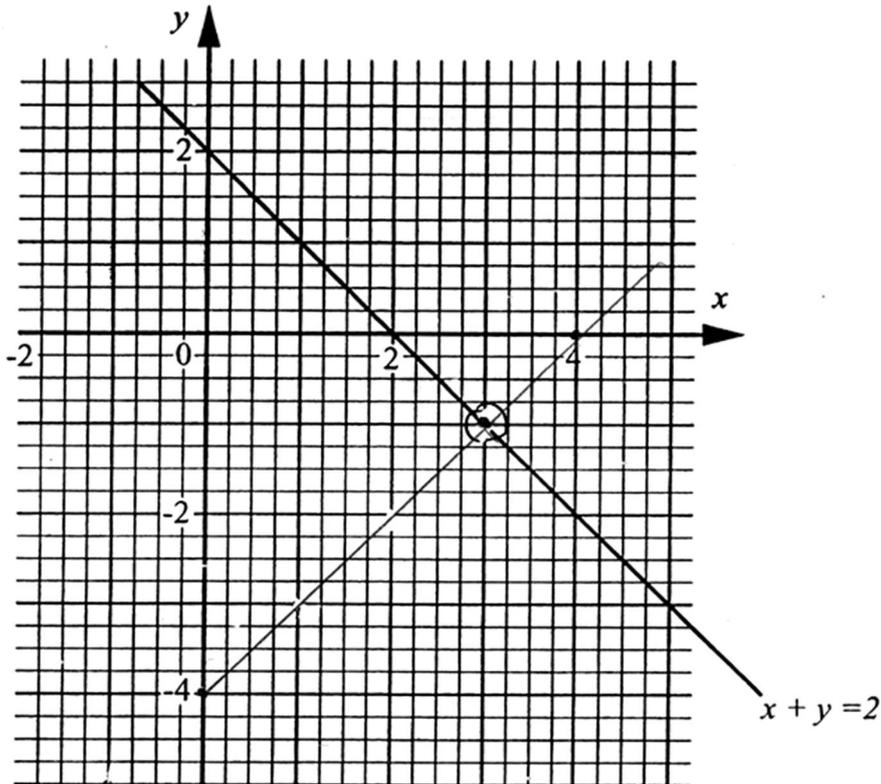
[2]

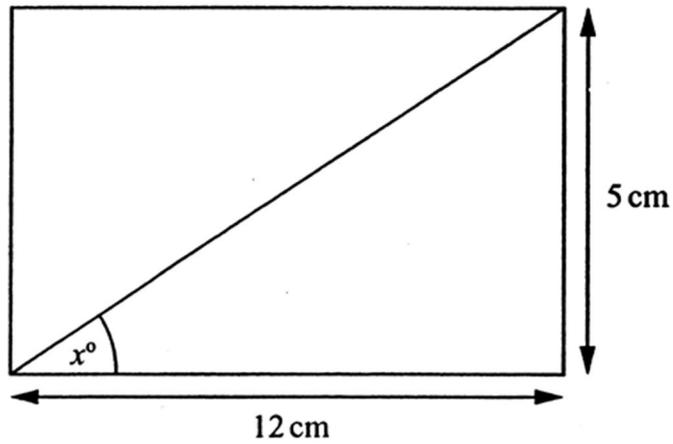The graph of $x + y = 2$ has been drawn on the grid above.

(c) **Use your graph** to write down the solution of the simultaneous equations

$x + y = 2$ and $y = x - 4$.

$x =$ ....

$y =$ .... [2]

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10 The diagram shows a rectangle, length 12 cm and width 5 cm.

NOT TO
SCALE

(a) Use Pythagoras' rule to find the length of the diagonal.

.... cm   [3]

(b) Use trigonometry to calculate the size of the angle marked $x°$.

.... [3]