UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
Cambridge Checkpoint

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

MATHEMATICS

1112/02

Paper 2

April/May 2009

1 hour

Candidates answer on the Question Paper

Additional Materials: Calculator
Protractor
Ruler

READ THESE INSTRUCTIONS FIRST

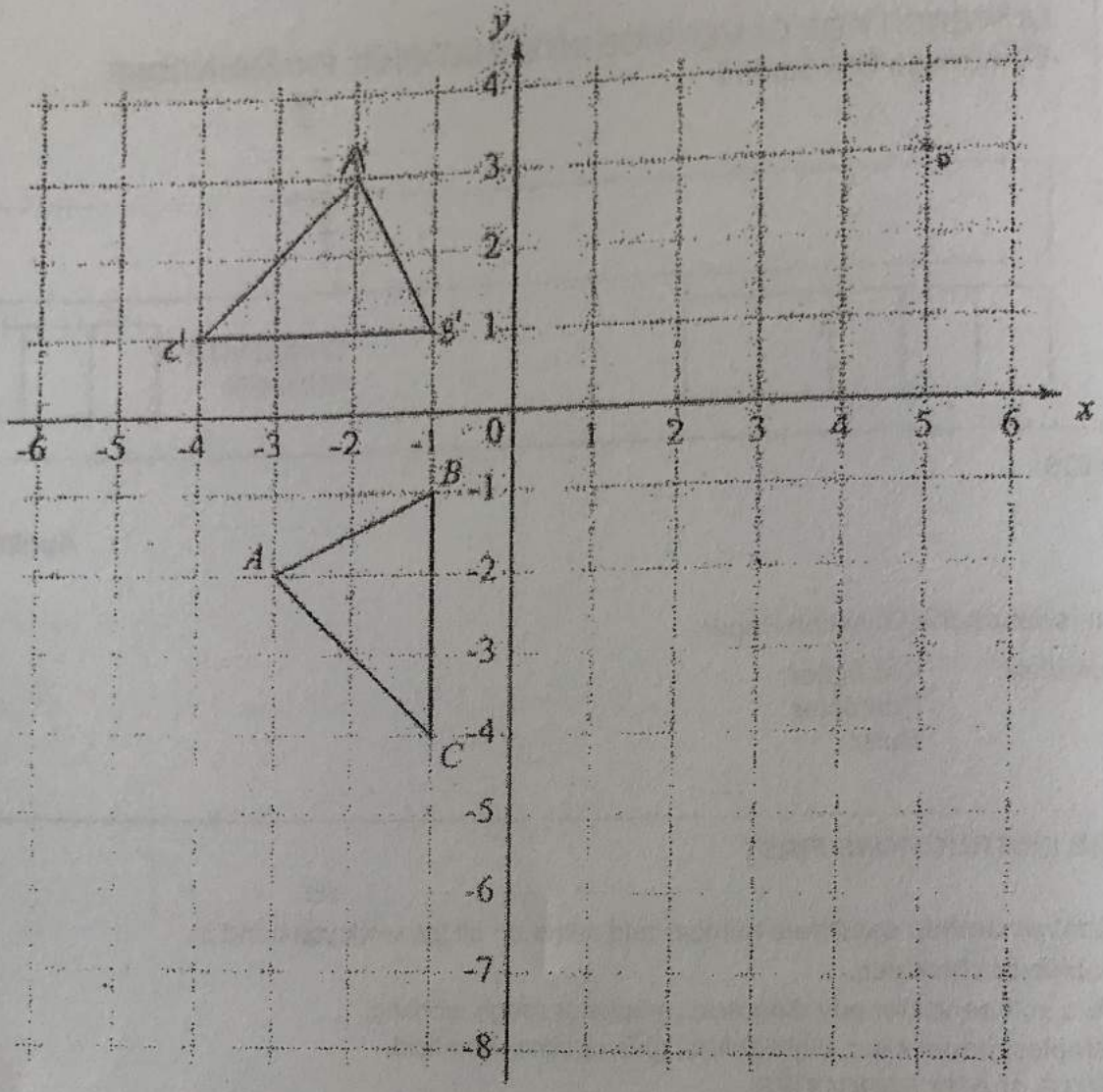
Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO NOT WRITE IN ANY BARCODES.

Answer **all** questions.

You should show all your working in the booklet.
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 50.

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

1



(a) On the grid mark the point D at $(5, 3)$. [1]

(b) Write down the co-ordinates of the point C.

(....., ...) [1]

(c) Triangle ABC is reflected in the y axis.

Write down the new co-ordinates of A.

(....., ...) [1]

(d) Triangle ABC is rotated 90° clockwise about (0, 0).

Draw the new position of the triangle. [2]

2 A group of 30 students visit the zoo.
They each estimate the mass of a polar bear to the nearest whole number.
Some of their results are shown in the table below.

Mass (kg)	Number of students
less than 100	3
100 to 200	
201 to 300	11
301 to 400	8
more than 400	2

(a) Complete the table. [1]

(b) How many students estimated the mass as more than 300 kg?

..... [1]

(c) A pie chart is to be drawn using the results above.
Work out the size of the angle which would represent the sector 'more than 400'.

..... [2]

3 Write 184.569

(a) correct to the nearest whole number, ... [1]

(b) correct to 1 decimal place, ... [1]

(c) correct to 2 significant figures, ... [1]

(d) in standard index form. ..... [2]

[Turn over

4 Part of a train timetable is shown below.
All these trains run on time.

King's Cross	1105	1130	1205	1230
Stevenage	1124	1150	1224	1250
Peterborough	1155	1221	1255	1316
Doncaster	1242	1314	1353	1409
York		1339		1434
Newcastle		1449		1552

(a) At what time does the 1130 train from King's Cross arrive in York?

..... [1]

(b) A train arrives at Peterborough at 13 16.
Write this time using the 12-hour clock.

..... [1]

(c) How long does it take the 1155 train from Peterborough to get to Doncaster?

..... minutes [1]

(d) Which train from King's Cross to Newcastle takes the shortest time?

..... [1]

(e) Olivia arrives at Doncaster station at 12 50.
She catches the 13 14 train to York.
How long does she wait for her train?

..... minutes [1]

(f) One day the 1205 train from King's Cross arrives at Peterborough 25 minutes late. When does it get to Peterborough?

..... [1]

5 Work out the value of the following expressions when $x = 5$.

(a) $3x^2 + 1$

..... [2]

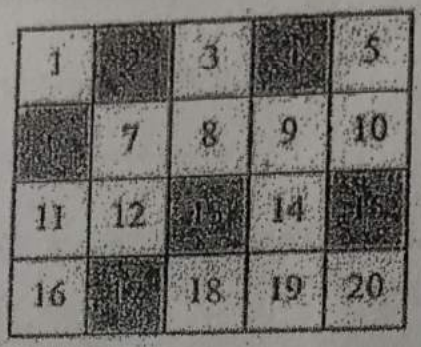
(b) $3(2x + 1)$

..... [2]

(c) $(2x + 1)^2$

..... [2]

6 An outdoor game is played on the paved area shown below.



A small stone is thrown so that it lands on a square at random.

Work out the probability that the stone

(a) lands on the square numbered 8,

..... [1]

(b) lands on a square that is a multiple of 3,

..... [1]

(c) does not land on a shaded square,

..... [1]

(d) lands on the square numbered 25.

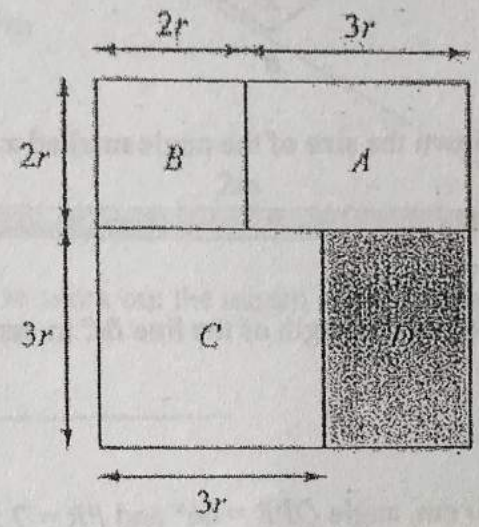
..... [1]

7 Jasmine has four tiles.

Tile A is a rectangle $2r$ by $3r$.

Tile B is a square $2r$ by $2r$.

Tile C is a square $3r$ by $3r$.



(a) The perimeter of tile B is $8r$.

Work out the perimeter of tile A.
Give your answer in its simplest form.

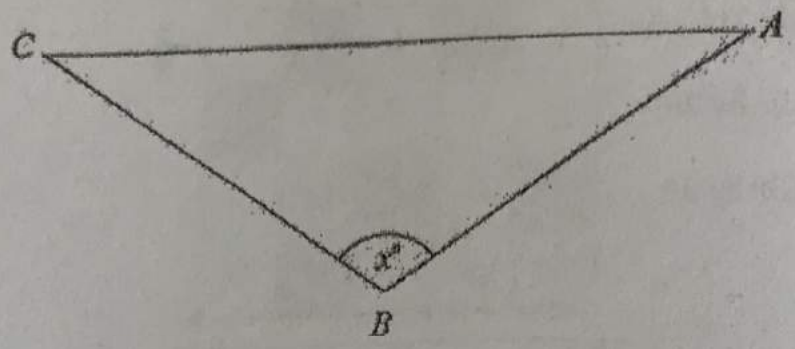
..... [2]

(b) Work out the perimeter of tile C when $r = 4$ cm.

..... cm [2]

[Turn over

8 The diagram shows a triangle ABC, which is drawn accurately.



(a) (i) Measure and write down the size of the angle marked x.

$x =$ ..... [1]

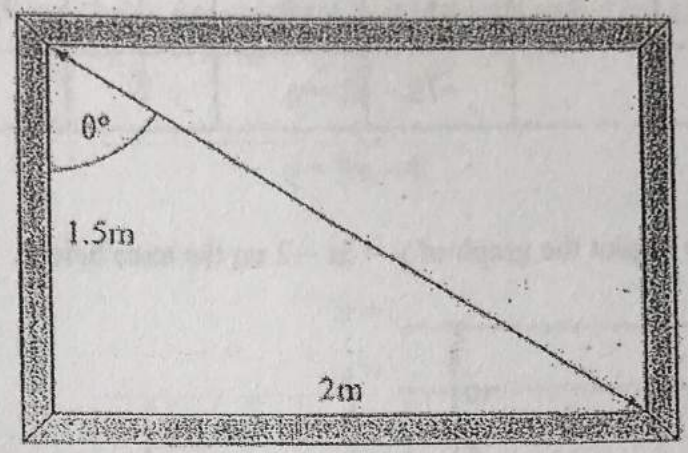
(ii) Measure and write down the length of the line BC in centimetres.

..... cm [1]

(b) In triangle PQR, $PQ = 10$ cm, angle $QPR = 66°$ and $PR = 7.5$ cm.
Construct triangle PQR accurately.
The line PQ has been drawn for you.

[2]

9 Adanya is building a window frame.
The internal measurements of the frame are 1.5m by 2m.



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

..... m [3]

(b) Use trigonometry to work out the size of the angle marked 0.

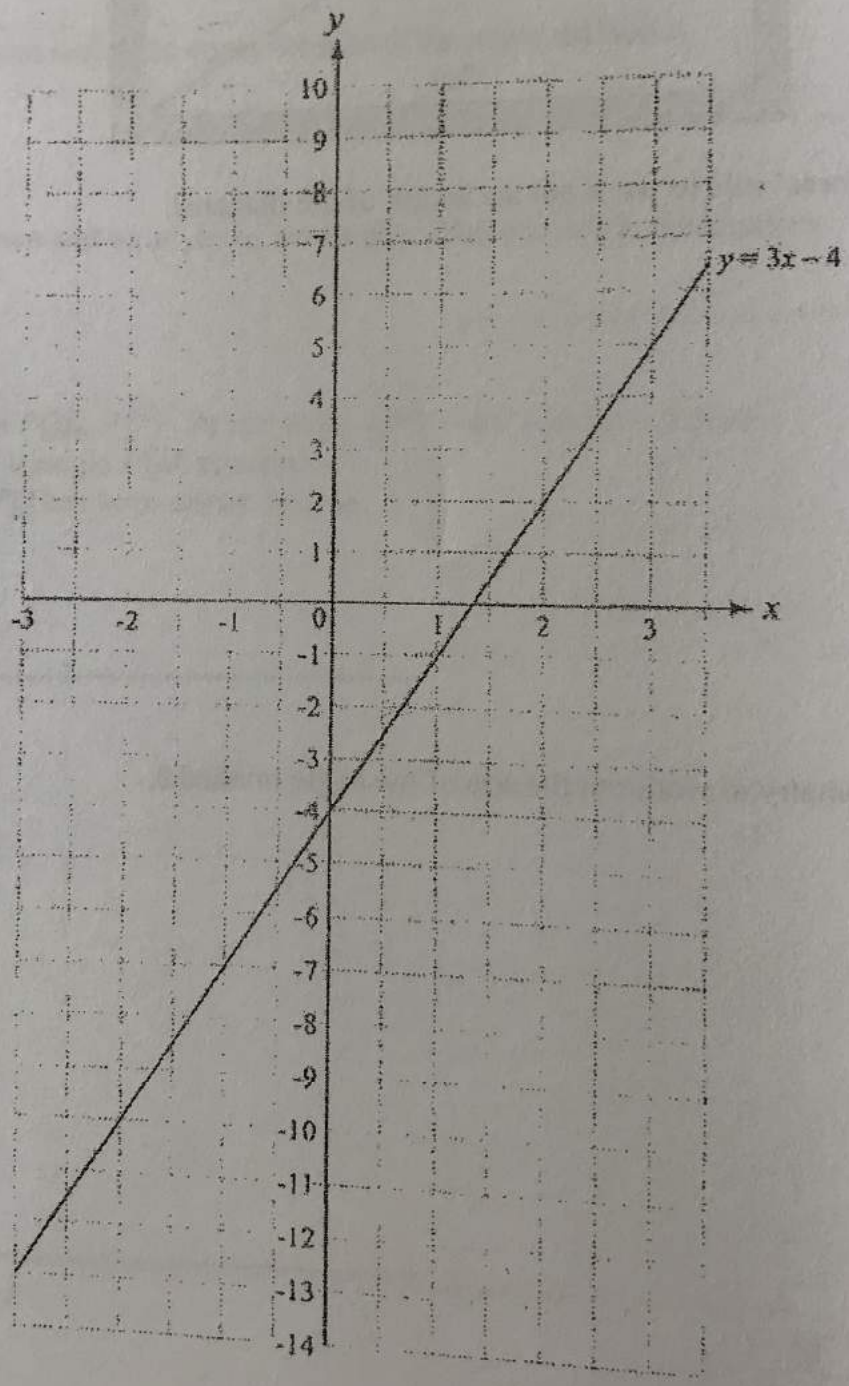
..... [3]

10 (a) Complete the table of values for $y = 5x - 2$.

x	-2	-1	0	1	2
y		-7		3	

[2]

(b) Use your results to plot the graph of $y = 5x - 2$ on the axes below.



[2]

(c) The graph of $y = 3x - 4$ has already been drawn on the grid above.

Use the graph you have drawn to solve the simultaneous equations

$$y = 5x - 2$$

$$y = 3x - 4.$$

$x =$ .....

$y =$ ..... [2]