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MATHEMATICS **1112/02**

Paper 2 **For Examination from 2012**

SPECIMEN PAPER

1 hour

Candidates answer on the Question Paper.

Additional Materials: Geometrical Instruments
Calculator
Tracing Paper

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on the work you hand in.
Write in dark blue or black pen.
You may use a 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 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.

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1	
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Total	

This document consists of **13** printed pages and **1** blank page.

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[Turn over

1 Here are the ages of a group of office workers.

45 18 27 26 32 28 47 30 35

Work out

(a) the median age

..... [1]

(b) the mean age.

..... [2]

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2 **(a)** Ken makes a fruit drink.
He mixes apple juice **:** mango juice in the ratio 3 : 1

Work out

(i) how much apple juice he mixes with 3 litres of mango juice

..... litres [1]

(ii) how much mango juice he mixes with 1.5 litres of apple juice.

..... litres [1]

(b) Ivana uses 1.5 kg carrots, 500 g potatoes and 1 kg onions to make vegetable soup.

Write the ratio carrots : potatoes : onions in its simplest form.

..... : ..... : ..... [2]

(c) In a school the student ratio of girls : boys is 3 : 5

There are 450 boys.

Work out the **total** number of students in the school.

..... [2]

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3 **(a)** The cost of a computer repair is worked out using the formula

$$C = 35 + 15h$$

where C is the cost in dollars
and h is the time taken in hours.

Use the formula to find

(i) the cost of a repair that takes 3 hours

$ ..... [1]

(ii) the time taken for a repair that costs $110

..... hours [2]

(b) Rearrange the formula $k = 3m - 2$ to make m the subject.

$m =$ ..... [2]

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4 Here is part of a bus timetable.
All of the buses are on time.

Business Park	14 03	14 33	15 03	15 33
South Hill	14 18	14 48	15 18	15 48
Hospital	14 28	14 58	15 28	15 58
Clock Tower	14 42	15 12	15 42	16 12
Bus Station	14 47	15 17	15 47	16 17

(a) Nihal gets to the bus stop at South Hill at 14 50

(i) At what time does the next bus arrive?

..... [1]

(ii) Write your answer to part **(i)** using the 12-hour clock.

..... [1]

(b) Meera catches the 14 58 bus from the Hospital.

Work out how long it takes to get to the Bus Station.

..... minutes [1]

(c) The distance from the Business Park to South Hill is 10 kilometres.

Work out the average speed of a bus from the Business Park to South Hill.
Give your answer in kilometres per hour.

..... km/hour [2]

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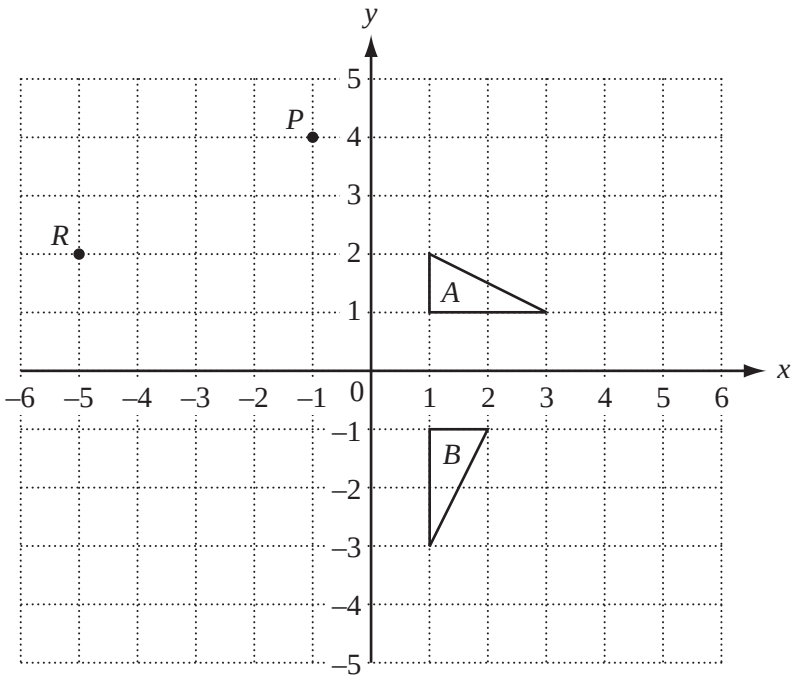
5 The diagram shows triangles *A* and *B* and point *P* and *R* on a grid.



(a) Mark the point (3, 2). Label it *Q*. [1]

(b) Point *M* is the midpoint of the line *PR*.
Write down the coordinates of *M*.

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

(c) Reflect triangle *A* in the *y*-axis.
Label the image *C*. [1]

(d) Describe in full the rotation that maps triangle *A* onto triangle *B*.

..... [2]

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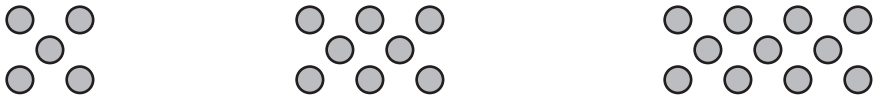
6 Ameera makes a sequence of patterns using counters.
The first three patterns are shown.



Pattern 1 Pattern 2 Pattern 3

Pattern number (p)	1	2	3	4	5
Number of counters (c)	5	8	11		

(a) Complete the table. [1]

(b) Work out the number of counters in Pattern 10.

..... [1]

(c) Find the formula for the number of counters, c, in pattern p.

$c =$ ..... [2]

(d) Ameera thinks that she can make one of these patterns with exactly 60 counters.

Explain why she is wrong.

..... [1]

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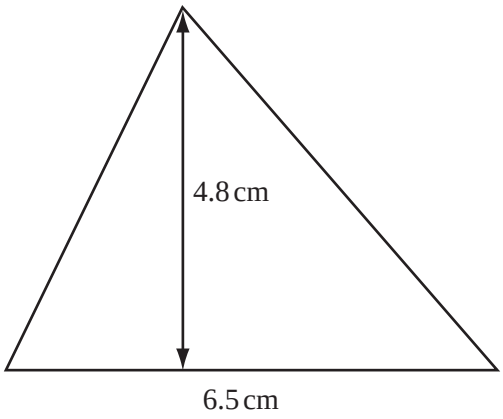
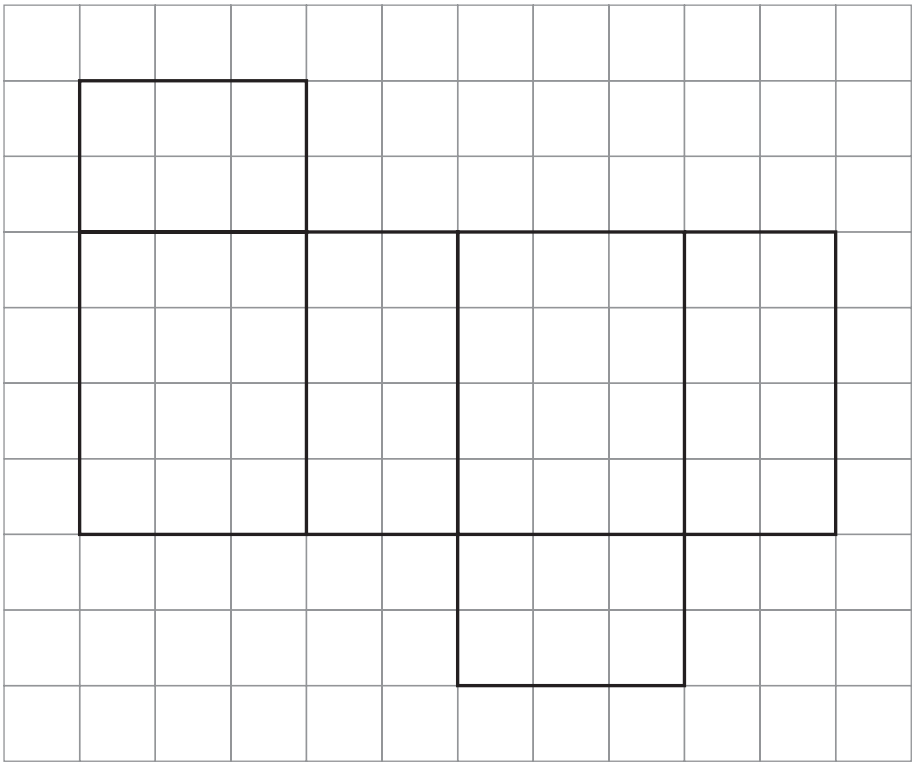
7 **(a)** Calculate the area of this triangle.



..... cm^2 [1]

(b) The diagram shows the full-size net of a cuboid drawn on a cm^2 grid.



Work out the volume of the cuboid in cm^3.
Show your measurements and working clearly.

..... cm^3 [2]

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(c) Calculate the area of the semicircle with radius 5 cm.

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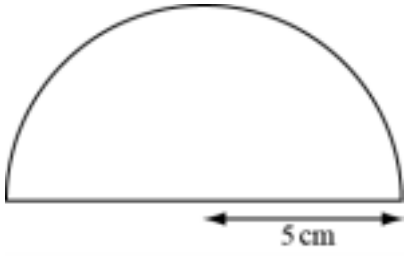

..... cm^2 [2]

8 **(a)** Lola buys a new car on credit.

The total cost of the car is $6900

She pays a 20% deposit.

How much is the deposit?

$ ..... [1]

(b) Lola wins $240

She spends $48 on a dress.

What percentage of the $240 has she spent?

..... % [2]

(c) Lola puts $150 into a bank account.

The account pays 4% per annum simple interest.

Work out the **total** amount of money in her account at the end of the year.

$ ..... [2]

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9 The diagram shows a triangular plot of land drawn to a scale of 1 cm to 10 m.

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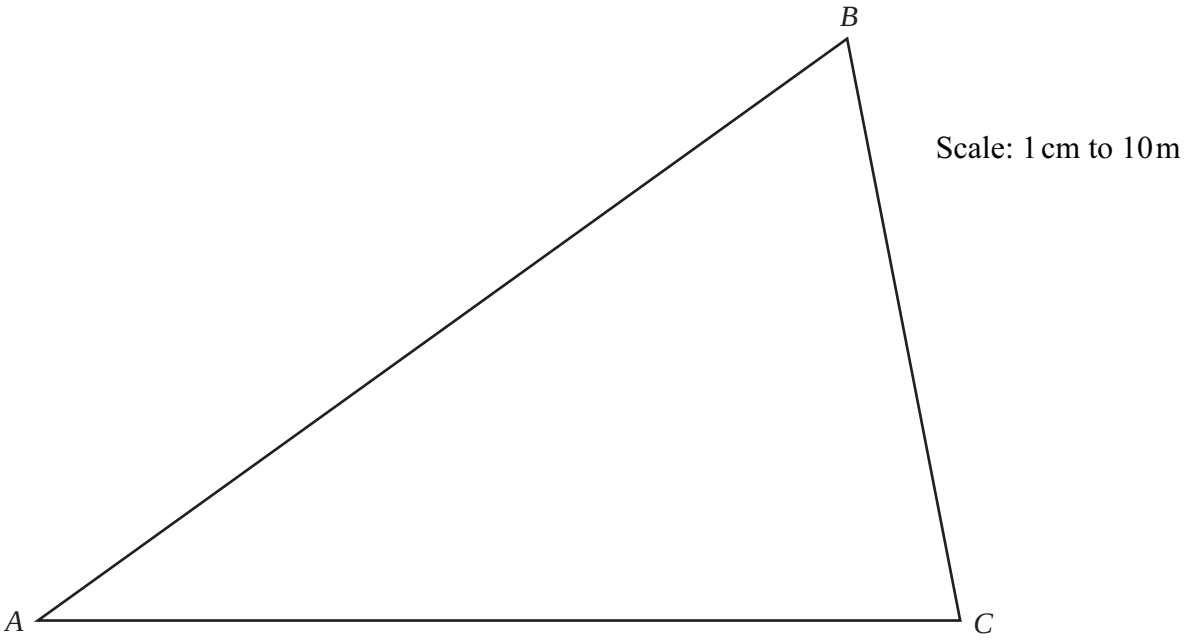

A tree is planted in the plot at point T such that

- T is 70 metres from point A
- T is 20 metres from side AB

Using a ruler and compasses mark the point T.
Leave all your construction lines. [3]

10 Jamal uses two fair five-sided spinners in a game.
His score is the total of the two numbers shown on the spinners.

(a) Complete the table to show all his possible scores.

	1	2	3	4	5
1	2	3	4	5	6
2		4	5	6	7
3			6	7	8
4				8	9
5					10

[1]

(b) Find the probability that Jamal gets

(i) a score of 10

..... [1]

(ii) a score of 1

..... [1]

(c) Find the probability that Jamal gets a score less than 6.
Give your answer as a fraction in its lowest terms.

..... [2]

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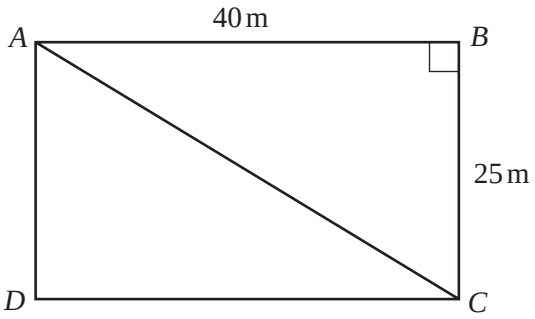
11 The diagram shows a rectangular field $ABCD$.
$AB = 40$ m, $BC = 25$ m.



A path crosses the field from A to C.
Use Pythagoras' theorem to work out the length of the path.

..... m [3]

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