Centre Number	Candidate Number	Name

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
Cambridge Checkpoint

MATHEMATICS **1112/02**

Paper 2

November 2005

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 in the spaces provided on the Question Paper.

Answer **all** questions.
You may use a soft pencil for any diagrams or graphs.
You should show all your working in the booklet.
The total number of marks for this paper is 50.
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.

UNIVERSITY *of* CAMBRIDGE
International Examinations

[Turn over

1 Link the measurement to the most **appropriate** unit.

The first one has been done for you.

grams	litres	millilitres
kilometres	kilograms	metres
cubic centimetres	square centimetres	square metres

(a) The height of a house is measured in   metres.

(b) A large jug of water is measured in   .... [1]

(c) The area of a garden is measured in   .... [1]

(d) The distance between Tokyo and Kyoto is measured in   .... [1]

(e) The mass of an elephant is measured in   .... [1]

(f) The volume of a box is measured in   .... [1]

(g) The capacity of a teaspoon is measured in   .... [1]

2 (a) Juan drives 177 kilometres in three hours.

Work out his speed in km/h.

.... km/h   [1]

(b) Paula buys 5 litres of milk for $8.50.

How much does 2 litres of milk cost?
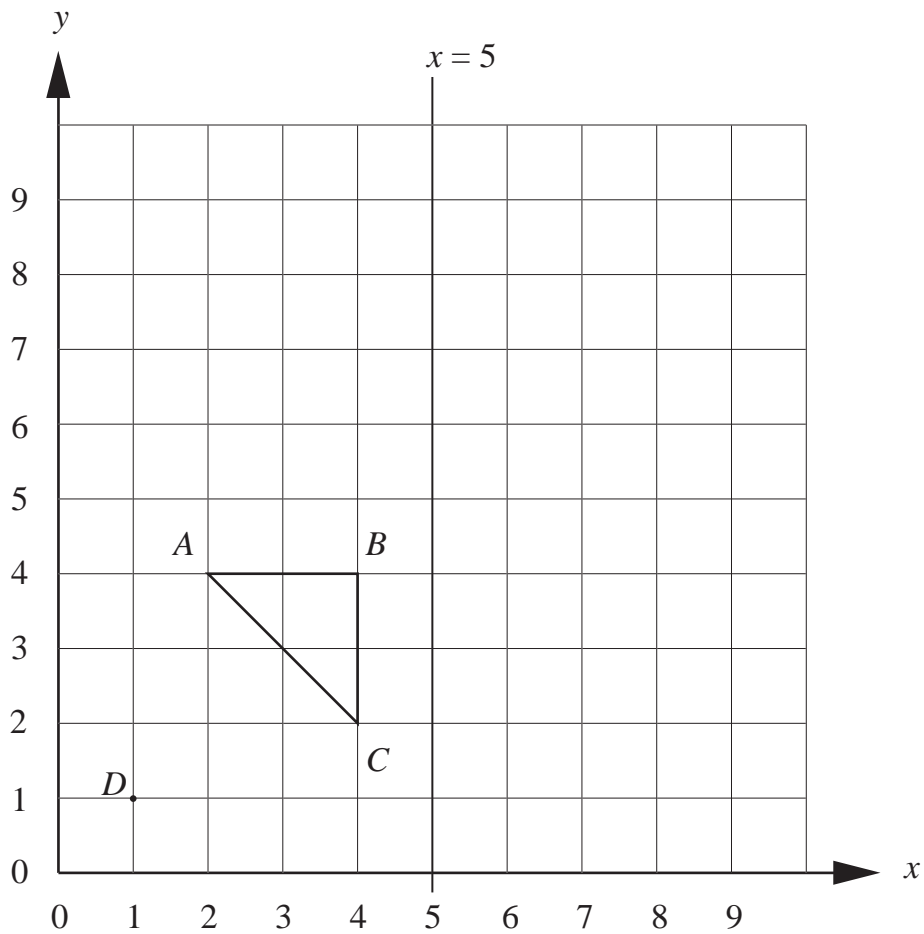
$ .... [2]

(c) Karlos needs five litres of paint.
A one litre tin of paint costs $1.45.
A five litre tin costs $6.00.

How much does Karlos save when he buys a five litre tin of paint?

$ .... [2]

3 Look at the diagram which is drawn on a 1 cm² grid.

The points A (2, 4), B (4, 4) and C (4, 2) are marked.

(a) Draw the reflection of the triangle ABC in the line x = 5.
Label your triangle R.

[2]

(b) (i) The point D is at (1, 1).
Underline the correct name for the shape ABCD.

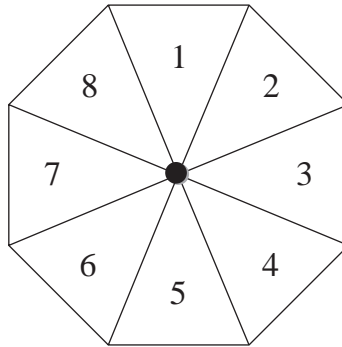**Diamond**   **Kite**   **Parallelogram**   **Square**   **Trapezium**

[1]

(ii) Work out the area of shape ABCD.

.... cm² [2]

4 A spinner is made in the shape of a regular octagon.

The sections are numbered 1 to 8.

(a) Calculate the probability that the spinner will land on

(i) 7,

.... [1]

(ii) a number smaller than 4,

.... [1]

(iii) an odd number,

.... [1]

(iv) a multiple of 4.

.... [1]

(b) What is the probability that the spinner will not land on 4?

.... [1]

5 Claudio is going on holiday.
He flies from Paris to Rabat.

(a) The flight takes 2 hours 10 minutes.
The plane arrives in Rabat at 15 05.

Work out the departure time from Paris.

.... [1]

(b) A bus leaves Rabat bus station at 18 03.
Claudio arrives at the bus station at 17 15.

How long does Claudio have to wait for the bus?

.... minutes   [1]

(c) The last bus leaves Rabat at 21 48.
Write this time using the **12 hour clock**.

.... [1]

6
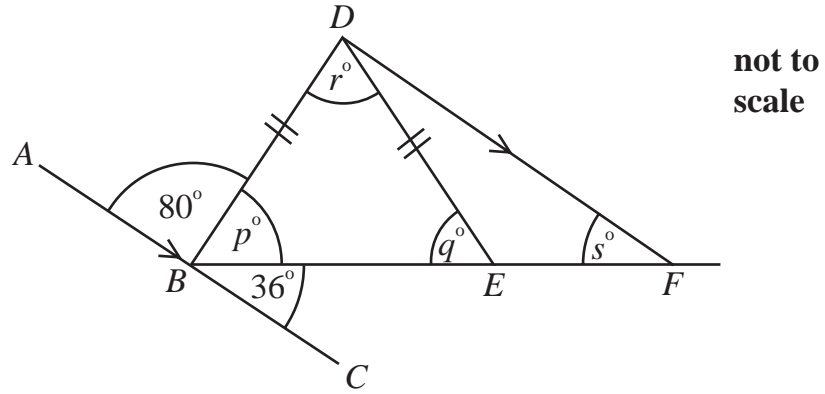
In the diagram, which is not drawn accurately, *ABC* is a straight line parallel to *DF*.
BD = DE.

Work out the size of the angles marked *p*, *q*, *r*, and *s*.

    (a) *p* = ... [1]

    (b) *q* = ... [1]

    (c) *r* = ... [1]

    (d) *s* = ... [1]

7 Simplify

   (a) $r^6 \times r^3$,

   .... [1]

   (b) $g^6 \div g^3$,

   .... [1]

   (c) $(h^6)^3$,

   .... [1]

   (d) $\sqrt{16c^6}$.

   .... [2]

8 Look at this sequence of patterns made by overlapping circles.
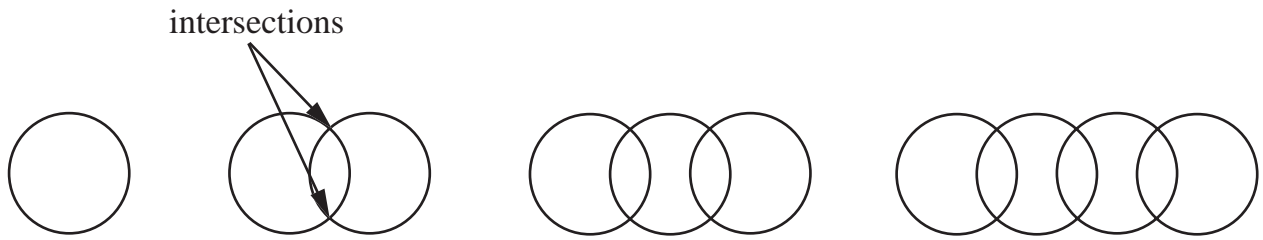
intersections

Number of circles (c)	1	2	3	4	5
Number of intersections (n)	0	2	4	6	

(a) (i) Complete the table. [1]

(ii) How many circles are there for a pattern with 12 intersections?

.... [1]

(iii) Underline the formula which describes this sequence.

$n = c - 1$ $\qquad$ $n = 2c - 2$ $\qquad$ $n = 3c - 5$ $\qquad$ $n = 4c - 6$ [1]

(b) A different sequence uses the formula $m = 3d - 2$.

Use this formula to work out the value of

(i) m when $d = 5$,

.... [1]

(ii) d when $m = 43$.

.... [1]

9 **(a)** Remove the brackets and simplify

   (i) $3(4x + 5)$,

   .... [1]

   (ii) $12 - 2(3y - 2)$.

   .... [2]

(b) Factorise

   (i) $3x^2 - 15$,

   .... [1]

   (ii) $4ab^2 + 6ab$.

   .... [2]

10 The diagram shows a weather balloon tied to the ground.
The balloon is flying 35 m above the ground.
AB = 50 metres.

**NOT TO
SCALE**

weather balloon

B

50 metres

35 metres

A

C
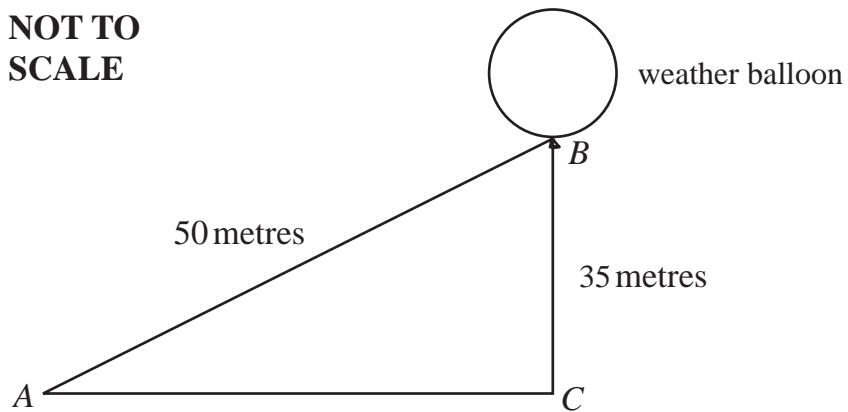
(a) Use Pythagoras' Rule to calculate the distance *AC*.

.... m   [3]

(b) Calculate the angle *CAB*.

.... [3]

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