

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS**  
**General Certificate of Secondary Education**

**MATHEMATICS C**  
**(Graduated Assessment)**

**1966/2343A**

**HIGHER TERMINAL PAPER – SECTION A**

Tuesday                      **7 JUNE 2005**                      Afternoon                      1 hour

Candidates answer on the question paper.

Additional materials:

Geometrical instruments

Tracing paper (optional)

Candidate Name	Centre Number	Candidate Number										
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**TIME**    1 hour

**INSTRUCTIONS TO CANDIDATES**

- Write your name, Centre number and candidate number in the boxes above.
- Answer **all** the questions.
- Write your answers, in blue or black ink, on the dotted lines unless the question says otherwise.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- There is a space after most questions. Use it to do your working. In many questions marks will be given for a correct method even if the answer is incorrect.

**INFORMATION FOR CANDIDATES**

- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this Section is 50.

**WARNING**

You are not allowed to use a  
calculator in Section A of this paper.

FOR EXAMINER'S USE	
Section A	
Section B	
<b>TOTAL</b>	

**This question paper consists of 13 printed pages and 3 blank pages.**

- 1 The cost of renting a holiday villa has increased from £1600 in 2004 to £1800 in 2005.



- (a) Calculate the percentage increase in the cost of renting the villa.

(a) .....% [3]

- (b) Two families, the Browns and the Greens, decide to share the villa at a cost of £1800.  
There are five people in the Brown family and three in the Green family.  
They share the rent in the ratio 5 : 3.

How much should the Browns pay?

(b) £ ..... [3]

6	
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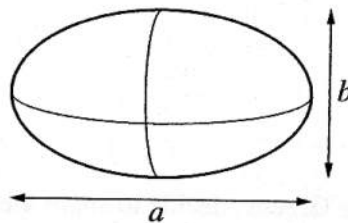
2 Solve.

$$x - 6 = 3(x + 7)$$

.....[3]

3	
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3



One of these formulae gives the volume of this solid.

$$\frac{\pi(a+b)}{6}$$

$$\frac{\pi ab}{6}$$

$$\frac{\pi(ab)^2}{6}$$

$$\frac{\pi ab^2}{6}$$

$$\frac{\pi(a^2+b)}{6}$$

Which is the correct formula?  
Give a reason for your answer.

..... because .....

.....[2]

2	
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- 4 (a) Solve, algebraically, these simultaneous equations.

$$5x - 2y = 13$$

$$7x + 8y = 2$$

(a)  $x = \dots\dots\dots$

$y = \dots\dots\dots$ [3]

- (b) (i) Factorise.

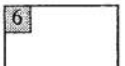
$$x^2 - 7x + 10$$

(b)(i)  $\dots\dots\dots$ [2]

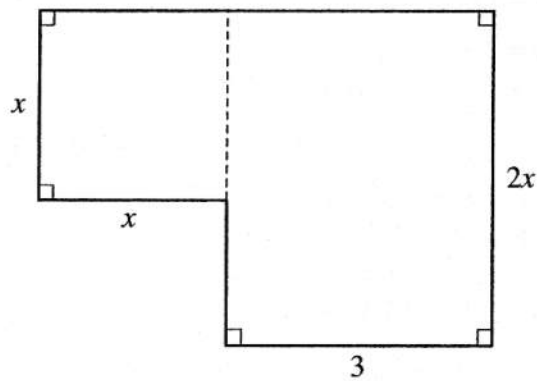
- (ii) Hence solve.

$$x^2 - 7x + 10 = 0$$

(ii)  $\dots\dots\dots$ [1]



- 5 All the lengths in this question are in metres.



The diagram shows the plan of a room.

- (a) Show that the area,  $A$ , of the room is given by

$$A = x^2 + 6x.$$

.....

.....

.....

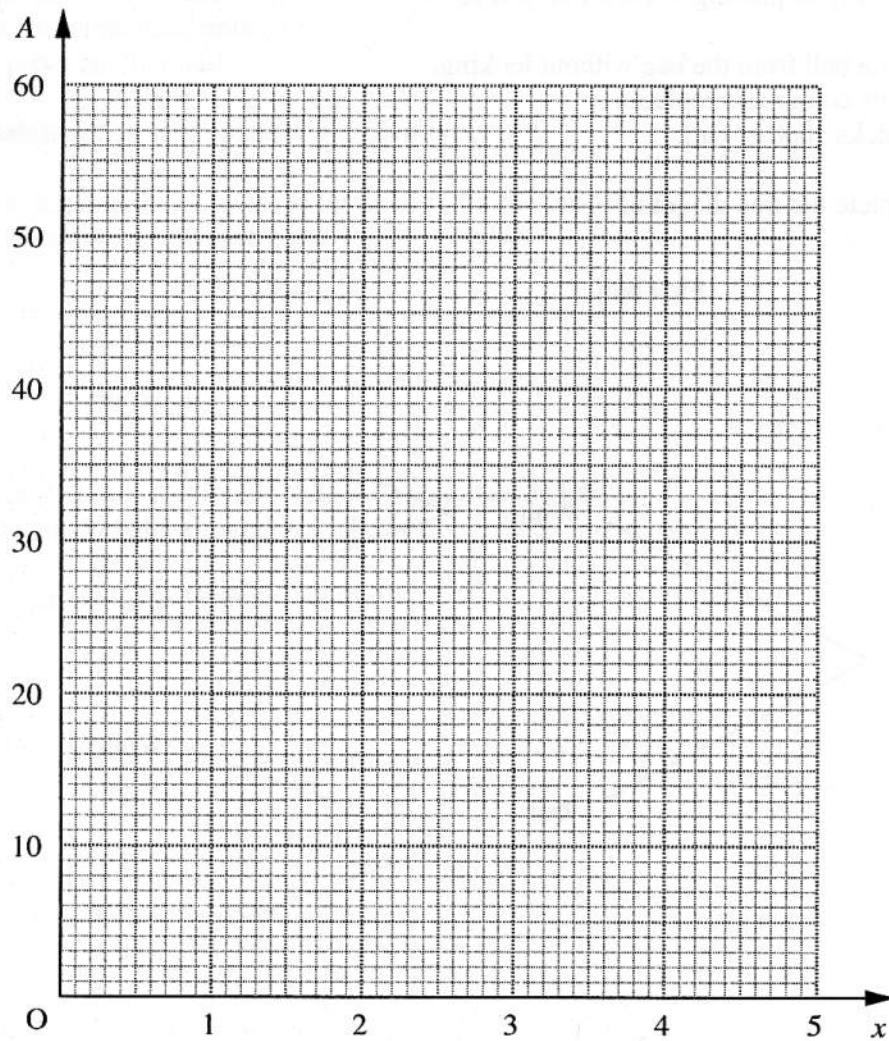
.....[2]

- (b) Complete the table for  $A = x^2 + 6x$ .

$x$	0	1	2	3	4	5
$A$	0		16	27	40	

[2]

- (c) Draw the graph of  $A = x^2 + 6x$  on the grid below.

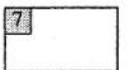


[2]

- (d) The area of the room is  $35 \text{ m}^2$ .

Use your graph to find the length of the side  $x$ .

(d) .....m [1]

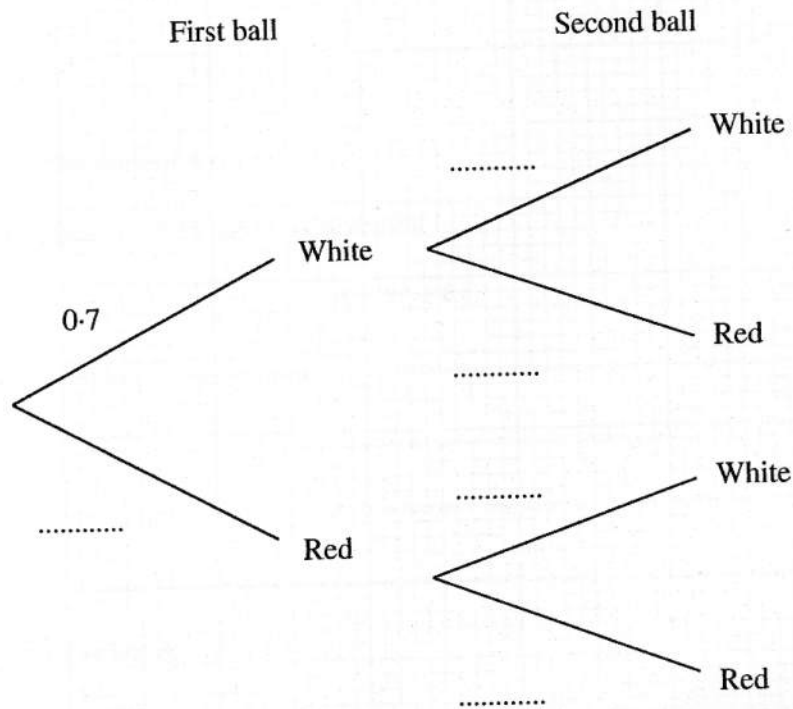


- 6 (a) A bag contains only white balls and red balls.

The probability of picking a white ball is 0.7.

Janet picks a ball from the bag without looking.  
She notes its colour and replaces it.  
She then picks another ball.

- (i) Complete the tree diagram.



[2]

- (ii) What is the probability that Janet picks one ball of each colour?

(ii) .....[3]

- (b) Sarah has a different bag containing only blue balls and green balls.

Sarah picks a ball from the bag without looking.  
She notes its colour and replaces it.  
She then picks another ball.

The probability that Sarah picks a blue ball is  $p$ .

- (i) Write down an expression, in terms of  $p$ , for the probability that Sarah picks two blue balls.

(b)(i) .....[1]

- (ii) The probability that Sarah picks two blue balls is 0.64.  
There are 50 balls altogether in the bag.

How many blue balls are in the bag?

(ii) .....[2]

8	
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- 7 Decide if each statement in the table is

**always true** or **sometimes true** or **never true**.

Give a reason for each answer.

The first statement has been completed for you.

Statement	Decision	Reason
$3n$ is even	Sometimes true	$3 \times 4 = 12$ even, $3 \times 5 = 15$ odd
$7^n \times 7^{-n} = 7$		
$\frac{n^3}{n^2 \times n^2} < 0$		

[4]

4	
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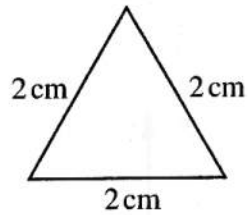
- 8 Rearrange this formula to make  $d$  the subject.

$$c = \sqrt{t - 2d}$$

.....[3]

3	
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- 9 An equilateral triangle has side 2 cm.



- (a) Use the triangle to find the value of

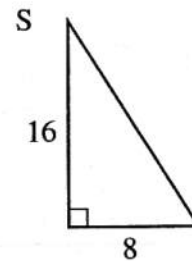
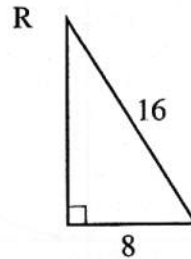
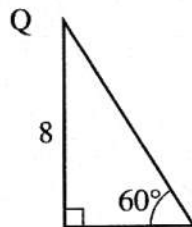
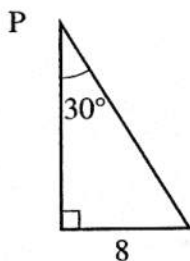
(i)  $\cos 60^\circ$ ,

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

- (ii)  $\sin 60^\circ$ .  
Leave your answer in surd form.

(ii) .....[2]

- (b) Two of the triangles below are congruent.



Not to scale

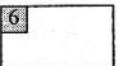
Identify the two congruent triangles and justify your answer.

..... and ..... because .....

.....

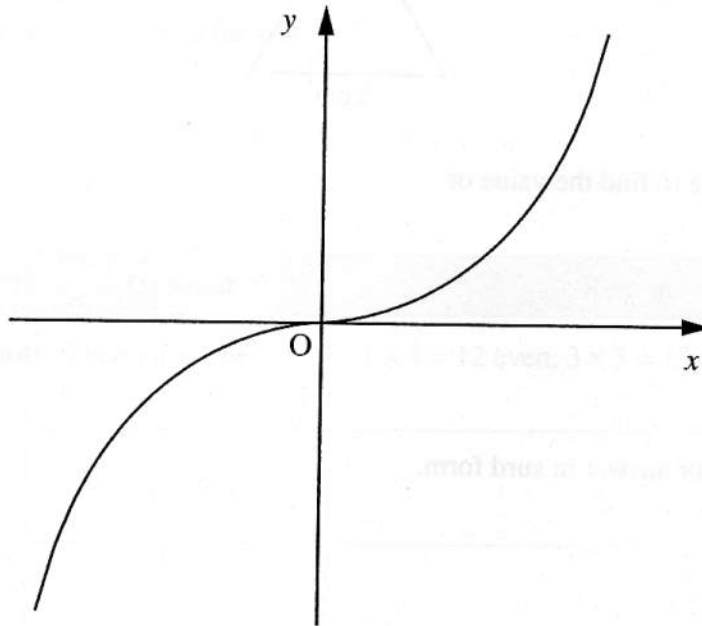
.....

.....[3]



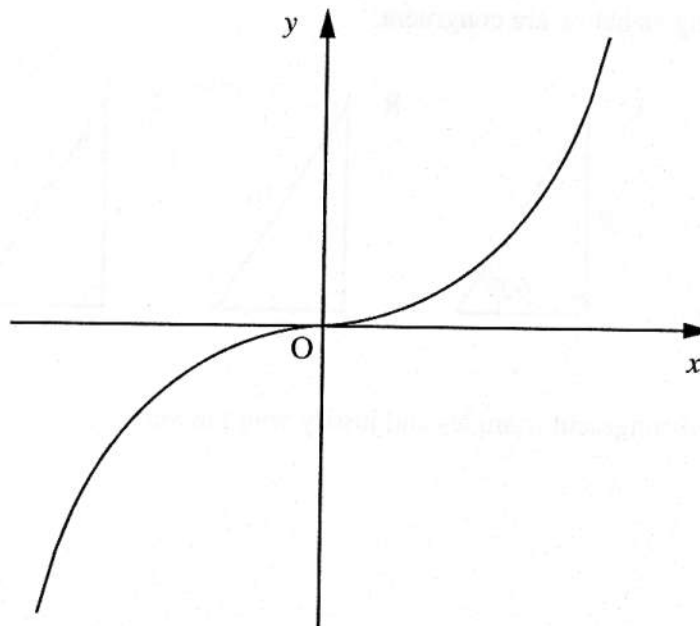
- 10 Sketch the following graphs on the axes below.  
In each case the graph of  $y = x^3$  is given to help you.

(a)  $y = 2x^3$

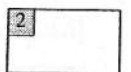


[1]

(b)  $y = (x - 2)^3$



[1]



11 Work out as surds in their simplest form.

(a)  $\sqrt{3} \times \sqrt{6}$

(a) .....[1]

(b)  $(\sqrt{3} - \sqrt{6})^2$

(b) .....[2]

