

Centre No.						Paper Reference						Surname	Initial(s)			
Candidate No.						5	3	8	4	H	/	1	3	H	Signature	

Paper Reference(s)

5384H/13H

Edexcel GCSE

Mathematics (Modular) – 2381

Paper 13 (Non-Calculator)

Higher Tier

Unit 3

Monday 6 June 2011 – Afternoon

Time: 1 hour 10 minutes

Examiner's use only

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Team Leader's use only

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Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.
Tracing paper may be used.

Items included with question papers

Nil

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initials and signature.

Check that you have the correct question paper.

Answer ALL the questions. Write your answers in the spaces provided in this question paper.

You must NOT write on the formulae page.

Anything you write on the formulae page will gain NO credit.

If you need more space to complete your answer to any question, use additional answer sheets.

Information for Candidates

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2).

There are 18 questions in this question paper. The total mark for this paper is 60.

There are 16 pages in this question paper. Any blank pages are indicated.

Calculators must not be used.

Advice to Candidates

Show all stages in any calculations.

Work steadily through the paper. Do not spend too long on one question.

If you cannot answer a question, leave it and attempt the next one.

Return at the end to those you have left out.

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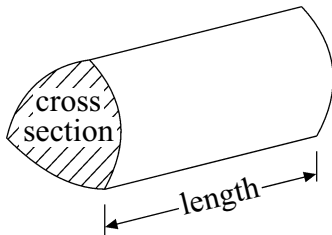
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GCSE Mathematics

Formulae: Higher Tier

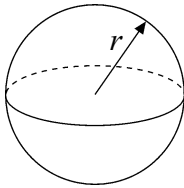
**You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.**

Volume of a prism = area of cross section \times length



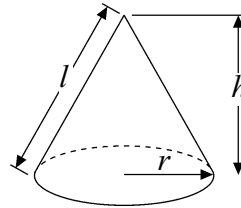
Volume of sphere = $\frac{4}{3}\pi r^3$

Surface area of sphere = $4\pi r^2$

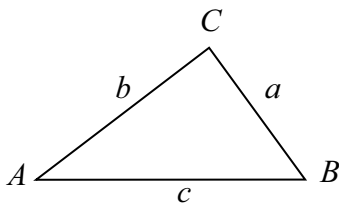


Volume of cone = $\frac{1}{3}\pi r^2 h$

Curved surface area of cone = $\pi r l$



In any triangle ABC



The Quadratic Equation

The solutions of $ax^2 + bx + c = 0$

where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc \cos A$

Area of triangle = $\frac{1}{2}ab \sin C$



Answer ALL EIGHTEEN questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

You must NOT use a calculator.

1. Here is a list of ingredients for making 10 Flapjacks.

<p>Ingredients for 10 Flapjacks</p> <p>80 g rolled oats</p> <p>60 g butter</p> <p>30 m/ golden syrup</p> <p>36 g light brown sugar</p>

Work out the amount of each ingredient needed to make 15 Flapjacks.

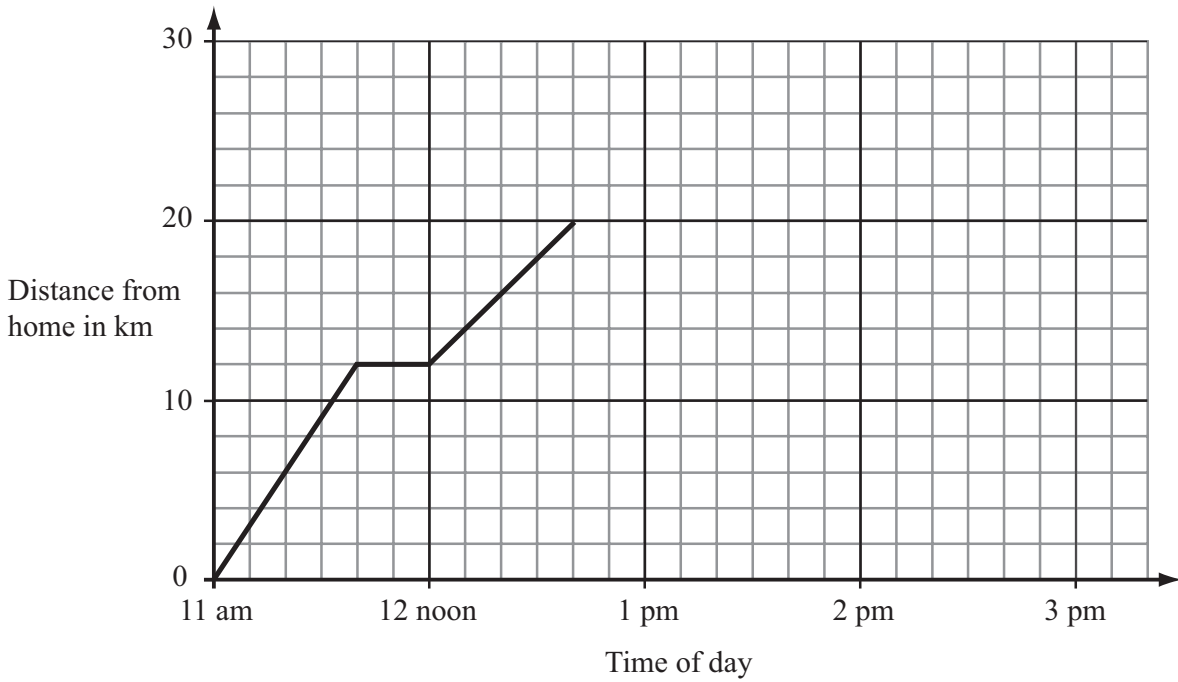
- g rolled oats
- g butter
- m/ golden syrup
- g light brown sugar

(Total 3 marks)

Q1



2. Steve went for a cycle ride.
 He left home at 11 am.
 The travel graph shows part of Steve's journey.



At 11.40 am Steve stopped to have a drink.

- (a) For how many minutes did he stop?

..... minutes
(1)

- (b) What was Steve's distance from home at 12.30 pm?

..... km
(1)

At 12.40 pm Steve stopped to have lunch for 40 minutes.
 He then cycled home at a steady speed.
 It took him 1 hour 30 minutes to cycle home.

- (c) Complete the travel graph.

(2)

(Total 4 marks)

Q2



3. $H = 2a + 3b$
 $a = 5$
 $b = -1$

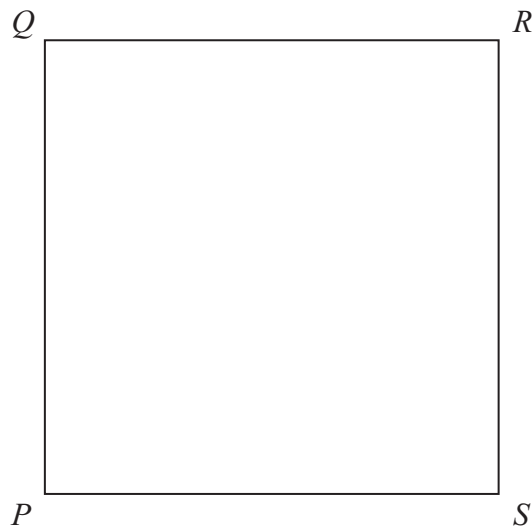
Work out the value of H .

.....

(Total 2 marks)

Q3

4.



$PQRS$ is a square.

Shade the set of points inside the square which are **both**

more than 3 centimetres from the point P
and less than 2 centimetres from the line PS .

(Total 3 marks)

Q4

5. Write down the reciprocal of 8

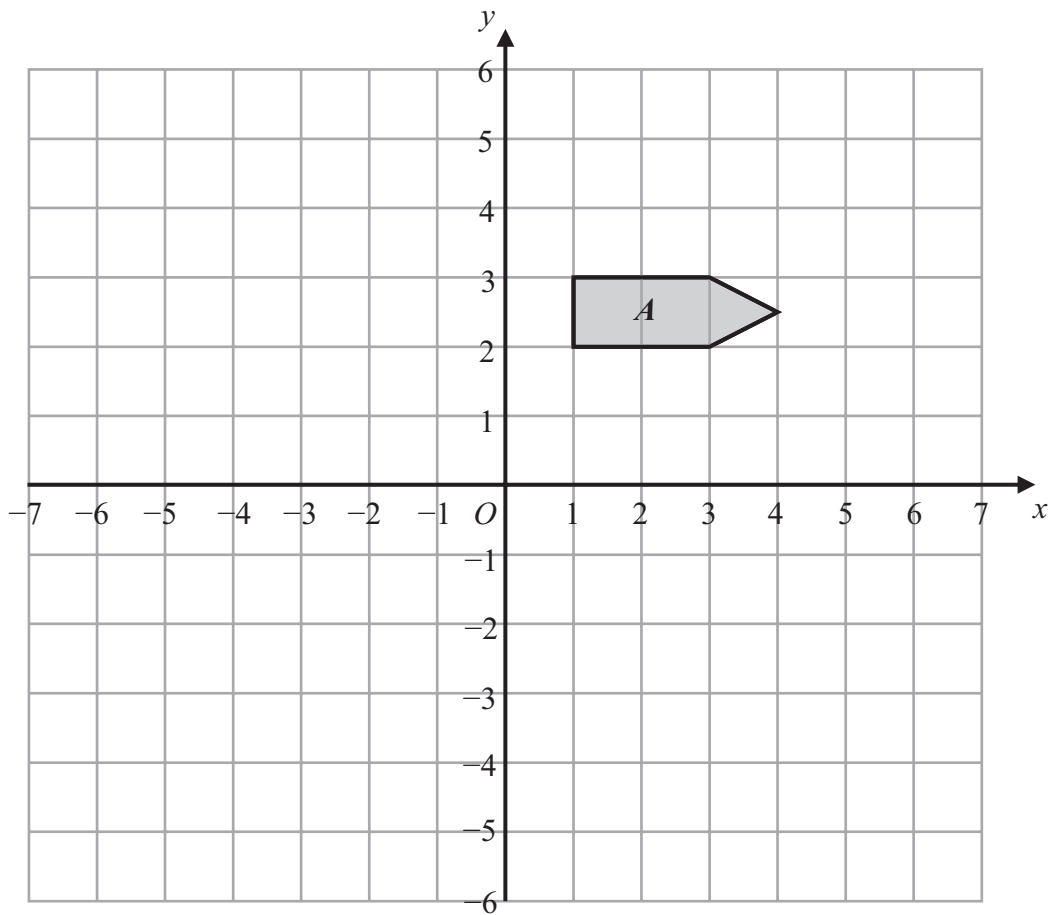
.....

(Total 1 mark)

Q5

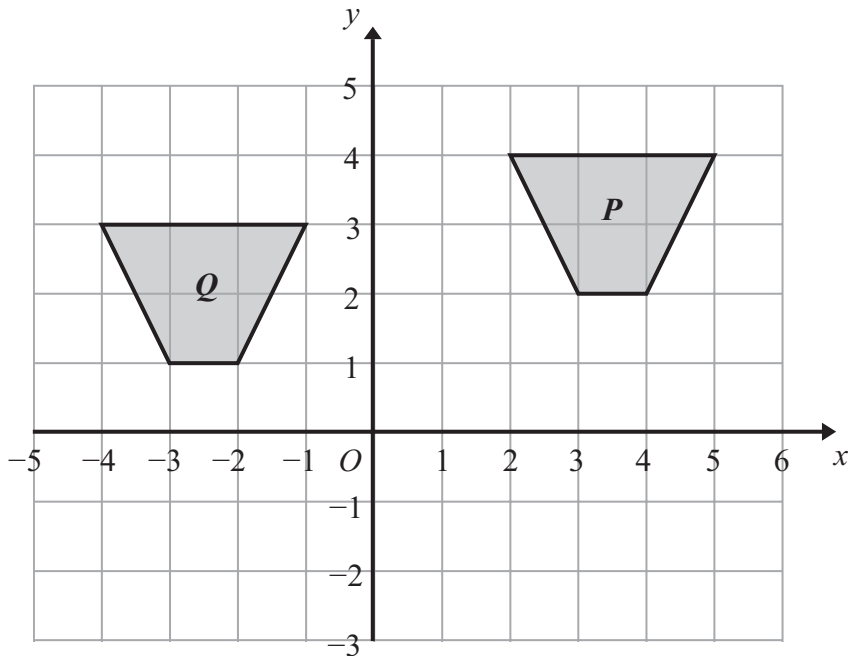


6.



(a) On the grid above, reflect shape *A* in the line $x = -1$

(2)



(b) Describe fully the single transformation that will map shape *P* onto shape *Q*.

.....

(2)
 (Total 4 marks)

Q6



7. Callum says

“4 m² is equivalent to 400 cm².”

Is Callum correct?

Give reasons for your answer.

.....
.....
.....

Q7

(Total 2 marks)

8. Peter, Tarish and Ben share £54

Tarish gets three times as much money as Peter.

Ben gets twice as much money as Tarish.

How much money does Ben get?

£

Q8

(Total 3 marks)



9. In the year 1958 a school had 250 students.
In the year 2008 the school had 1500 students.

Work out the percentage increase in the number of students between the year 1958 and the year 2008

..... %

(Total 3 marks)

Q9

- 10.

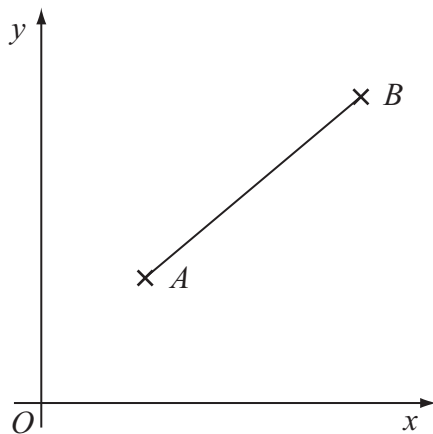


Diagram **NOT**
accurately drawn

A is the point (2, 3).
B is the point (6, 6).

Work out the length of *AB*.

.....

(Total 3 marks)

Q10



11. (a) Work out $\frac{1}{5} \times \frac{2}{3}$

.....
(1)

(b) Work out $2\frac{1}{3} - 1\frac{2}{5}$

.....
(3)

(Total 4 marks)

Q11



12. (a) Work out the value of $\frac{3^7}{3^5}$

.....
(1)

(b) Find the value of 2^{-3}

.....
(1)

(c) Simplify $(t^3)^2$

.....
(1)

(d) Simplify $\frac{n^4}{n^3 \times n^2}$

.....
(2)

(Total 5 marks)

Q12



13. Solve the simultaneous equations

$$4x + y = 10$$

$$2x - 3y = 19$$

$x = \dots\dots\dots$

$y = \dots\dots\dots$

(Total 3 marks)

Q13

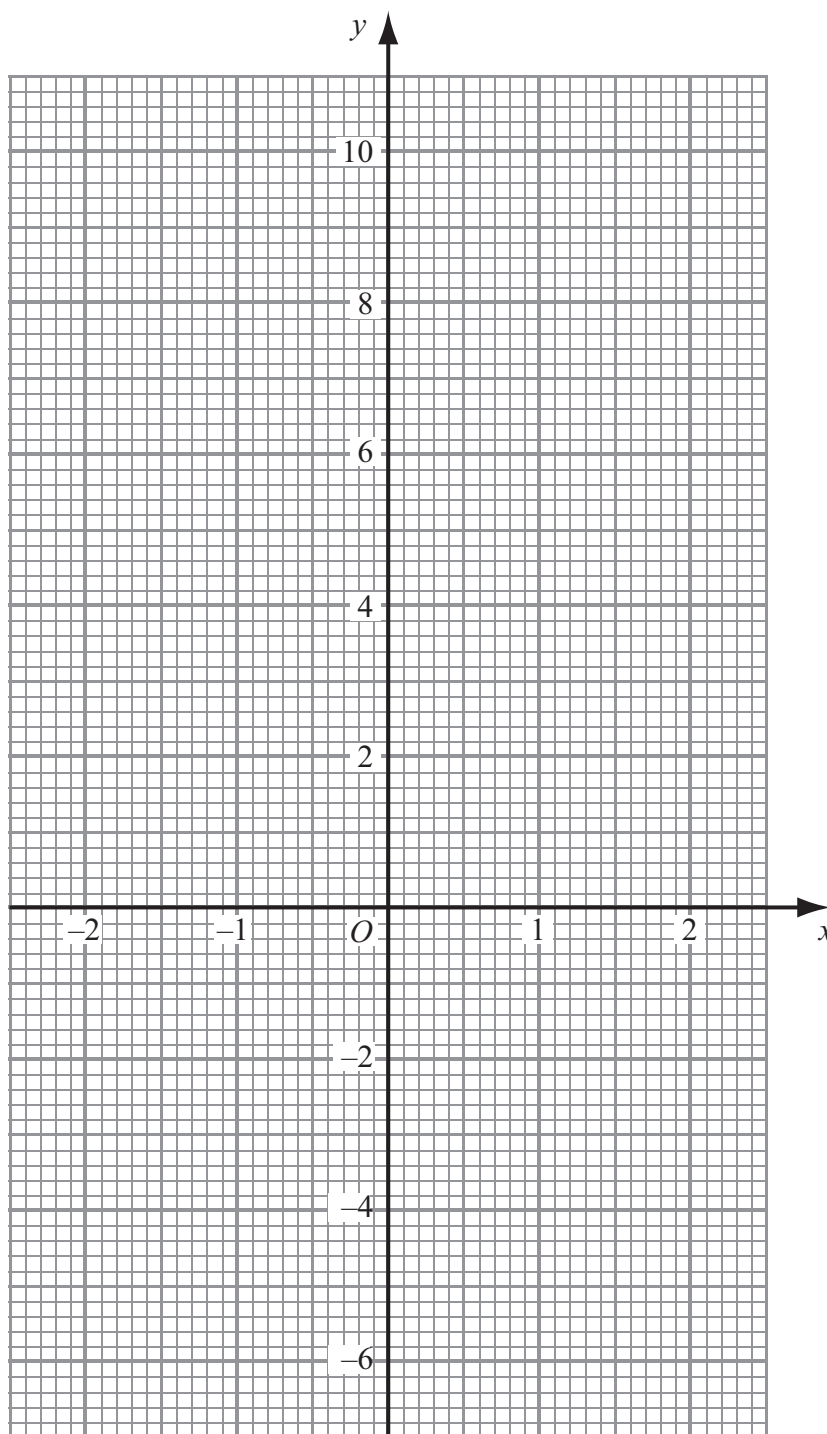


14. (a) Complete the table of values for $y = 2 - x^3$

x	-2	-1	0	1	2
y	10			1	

(2)

(b) On the grid, draw the graph of $y = 2 - x^3$



(2)

Q14

(Total 4 marks)



15. Make k the subject of the formula $t = \frac{k}{k-2}$

.....
Q15

(Total 4 marks)



16.

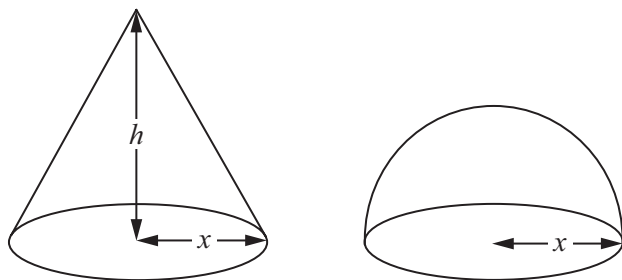


Diagram **NOT** accurately drawn

The diagram shows a solid cone and a solid hemisphere.

The cone has a base of radius x cm and a height of h cm.

The hemisphere has a base of radius x cm.

The surface area of the cone is equal to the surface area of the hemisphere.

Find an expression for h in terms of x .

.....

(Total 4 marks)

Q16



17.

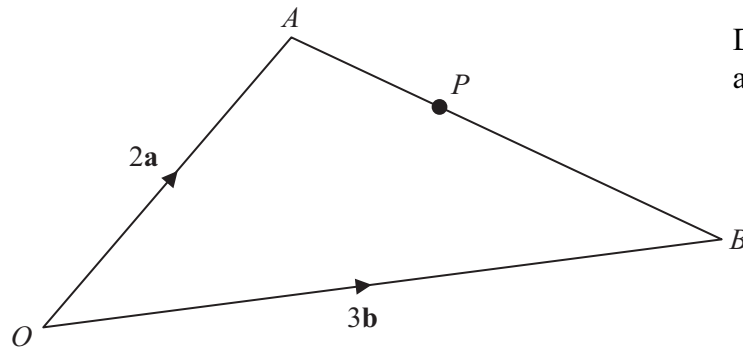


Diagram **NOT** accurately drawn

OAB is a triangle.

$$\vec{OA} = 2\mathbf{a}$$

$$\vec{OB} = 3\mathbf{b}$$

(a) Find \vec{AB} in terms of \mathbf{a} and \mathbf{b} .

$$\vec{AB} = \dots\dots\dots \quad (1)$$

P is the point on AB such that $AP : PB = 2 : 3$

(b) Show that \vec{OP} is parallel to the vector $\mathbf{a} + \mathbf{b}$.

(3) Q17

(Total 4 marks)



18. Solve the equation $\frac{x}{2} - \frac{2}{x+1} = 1$

.....
Q18

(Total 4 marks)

TOTAL FOR PAPER: 60 MARKS

END

