

Centre No.						Paper Reference						Surname	Initial(s)	
Candidate No.						4	4	0	0	/	2	F	Signature	

Paper Reference(s)

**4400/2F**

**London Examinations IGCSE**

**Mathematics**

Paper 2F

**Foundation Tier**

Wednesday 12 November 2008 – Morning

Time: 2 hours

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, calculator. 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.

Without sufficient working, correct answers may be awarded no marks.

**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 22 questions in this question paper. The total mark for this paper is 100.

There are 20 pages in this question paper. Any blank pages are indicated.

You may use a calculator.

**Advice to Candidates**

Write your answers neatly and in good English.

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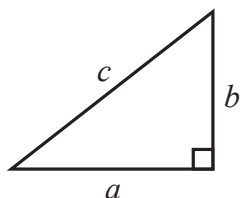
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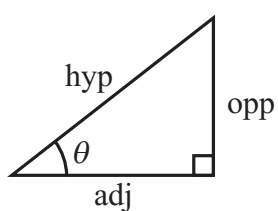
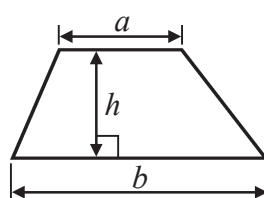
IGCSE MATHEMATICS 4400

FORMULA SHEET – FOUNDATION TIER

Pythagoras' Theorem  
 $a^2 + b^2 = c^2$



Area of a trapezium =  $\frac{1}{2}(a + b)h$



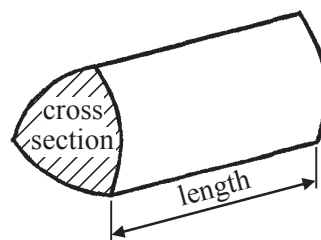
adj = hyp  $\times$  cos  $\theta$   
 opp = hyp  $\times$  sin  $\theta$   
 opp = adj  $\times$  tan  $\theta$

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

or  $\sin \theta = \frac{\text{opp}}{\text{hyp}}$

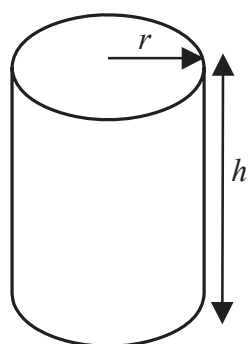
$\cos \theta = \frac{\text{adj}}{\text{hyp}}$

$\tan \theta = \frac{\text{opp}}{\text{adj}}$



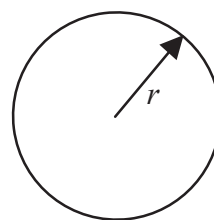
Circumference of circle =  $2\pi r$

Area of circle =  $\pi r^2$



Volume of cylinder =  $\pi r^2 h$

Curved surface area of cylinder =  $2\pi r h$



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**Answer ALL TWENTY TWO questions.**

**Write your answers in the spaces provided.**

**You must write down all the stages in your working.**

1. (a) Write these numbers in order of size.  
Start with the smallest number.

3099      3999      3990      3909

.....  
(1)

- (b) Which of these numbers is the highest?

3      -1      5      -7      2

.....  
(1)

- (c) Which two of these numbers are even numbers?

3      5      8      11      12      15

.....  
(1)

- (d) Write down all the factors of 27

.....  
(2)

- (e) Which two of these numbers are prime numbers?

19      25      29      34      35      39

.....  
(2)

**(Total 7 marks)**

**Q1**



<p>2.</p> <table border="1"> <tr> <td>Certain</td> <td>Likely</td> <td>Unlikely</td> <td>Impossible</td> </tr> </table> <p>Write down the word from the box that best describes each event.</p> <p>(i) Two people chosen at random have the same birthday.</p> <p>.....</p> <p>(ii) The next day after Saturday will be Wednesday.</p> <p>.....</p> <p>(iii) When two positive numbers are added together, the total is positive.</p> <p>.....</p> <p style="text-align: right;"><b>(Total 3 marks)</b></p>	Certain	Likely	Unlikely	Impossible	<p>Leave blank</p> <p style="text-align: center;"><b>Q2</b></p> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 0 auto;"></div>
Certain	Likely	Unlikely	Impossible		
<p>3. (a) Write down the value of the 7 in 43.672</p> <p>.....</p> <p style="text-align: right;"><b>(1)</b></p> <p>(b) Round 43.672 to 3 significant figures.</p> <p>.....</p> <p style="text-align: right;"><b>(1)</b></p> <p style="text-align: right;"><b>(Total 2 marks)</b></p>	<p style="text-align: center;"><b>Q3</b></p> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 0 auto;"></div>				



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4. (a) The temperature in Copenhagen was  $-5^{\circ}\text{C}$ .  
The temperature in Helsinki was  $2^{\circ}\text{C}$  lower than in Copenhagen.  
Work out the temperature in Helsinki.

.....  $^{\circ}\text{C}$   
**(2)**

(b) Work out

(i)  $8 + (-6)$

.....

(ii)  $8 \times (-6)$

.....  
**(2)**

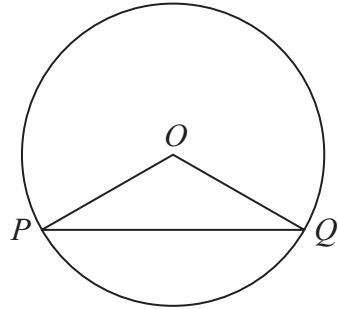
**(Total 4 marks)**

**Q4**



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5. (a)  $P$  and  $Q$  are points on a circle, centre  $O$ .



Write down the mathematical name for

(i) the line  $OP$ ,

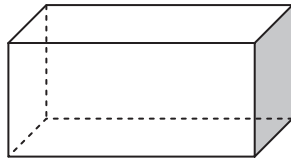
.....

(ii) the line  $PQ$ .

.....

(2)

(b) Here is a solid.



(i) Write down the mathematical name for this solid.

.....

(ii) How many faces does this solid have?

.....

(2)

Q5

(Total 4 marks)



Leave  
blank

6. Here are seven numbers.

8 2 8 8 4 5 4

(a) Find the mode.

.....  
(1)

(b) Work out the range.

.....  
(2)

(c) Find the median.

.....  
(2)

(d) Work out the mean.

.....  
(2)

(e) One of the seven numbers is chosen at random.  
Find the probability that it is 8.

.....  
(1)

(Total 8 marks)

Q6

7

Turn over



N 3 1 3 9 0 A 0 7 2 0

Leave  
blank

7. Michael started work at 07 30 and finished at 14 15  
He had one break of 30 minutes and another break of 45 minutes.  
He worked all the rest of the time.  
Work out the time for which Michael worked.  
Give your answer in hours and minutes.

..... hours ..... minutes

**(Total 4 marks)**

**Q7**

8. There are 432 students at a college.  
 $\frac{3}{8}$  of these students study mathematics.

(a) Work out  $\frac{3}{8}$  of 432

.....  
**(2)**

(b) (i) What fraction of the students do **not** study mathematics?

.....

(ii) Give your answer to part (b) (i) as a percentage.

..... %  
**(3)**

(c) College fees were £1500 per year.  
These fees were increased by 4%.  
Work out the new fees.

£.....  
**(3)**

**(Total 8 marks)**

**Q8**





Leave blank

9. Here are the first five terms of a sequence.

1      2      5      10      17

(i) Write down the next two terms in this sequence.

....., .....

(ii) Write down the rule for working out the terms in this sequence.

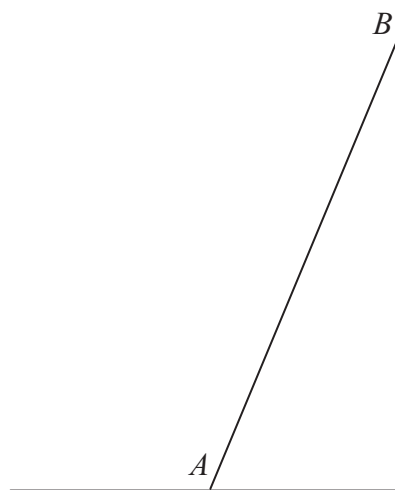
.....

.....

Q9

(Total 3 marks)

10. The scale diagram shows a ladder,  $AB$ , leaning against a wall.



(a) Measure the length of  $AB$ .

..... cm  
(1)

(b) The scale of the diagram is 2 cm to 1 m.  
Work out the length of the ladder.

..... m  
(2)

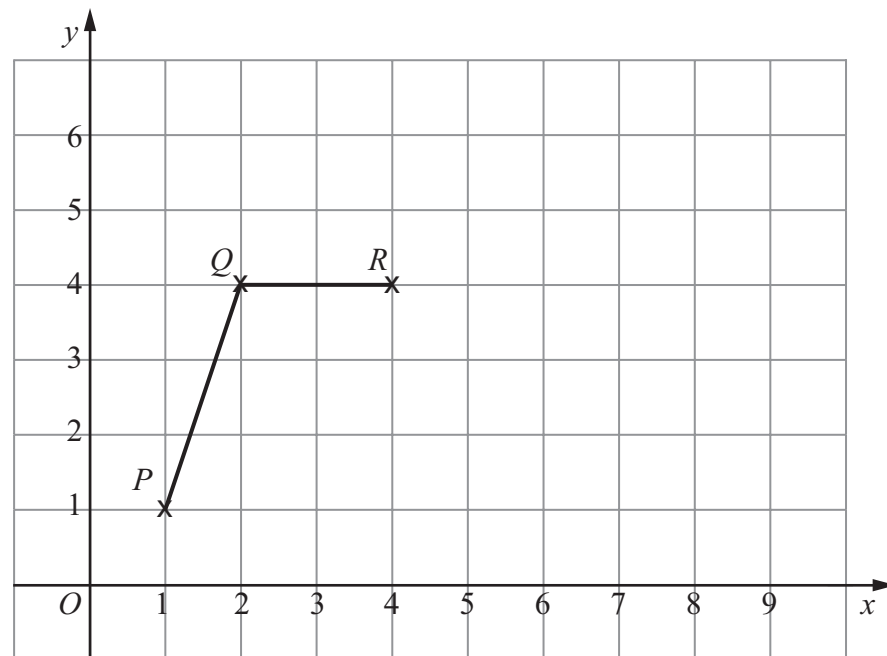
Q10

(Total 3 marks)



Leave blank

11. The diagram shows three points,  $P$ ,  $Q$  and  $R$ , plotted on a centimetre grid.



(a) Write down the coordinates of  $Q$ .

(....., .....)  
(1)

(b)  $S$  is the point  $(3, 1)$ .

(i) Complete the quadrilateral  $PQRS$ .

(ii) What is the mathematical name for quadrilateral  $PQRS$ ?

.....

(iii) Work out the area of  $PQRS$ .  
Give the units of your answer.

.....  
(5)

(c) Triangle  $TQR$  is both isosceles and right-angled.  
On the grid, mark a possible position for  $T$ .

(1)

(d) Joshi draws a line passing through points  $O$ ,  $P$  and  $R$ .  
Write down the equation of this line.

.....  
(1)

(Total 8 marks)

Q11



Leave blank

12. Here are three white cards and three grey cards.  
Each card has a number on it.



A white card and a grey card are chosen at random.  
The **difference** between the numbers on these two cards is found.

- (a) Complete the table to show all the differences.

		Number on grey card		
		6	7	8
Number on white card	1			
	3			
	5	1		

(2)

- (b) Find the probability that the difference is 5

(2)

Q12

(Total 4 marks)

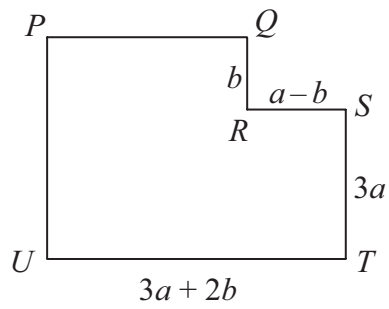


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13. (a) Simplify  $3x + y - 4x + 5y$

.....  
(2)

(b) The diagram shows a shape,  $PQRSTU$ .  
All the corners are right angles.  
The lengths of four of the sides are given in terms of  $a$  and  $b$ .



Find an expression, in terms of  $a$  and  $b$ , for

(i)  $PU$ ,

.....

(ii)  $PQ$ .

.....  
(3)

(Total 5 marks)

Q13



14. Show that  $\frac{3}{4} + \frac{1}{6} = \frac{11}{12}$

Leave  
blank

Q14

(Total 2 marks)

15. (a) Philip and Nikos share some money in the ratio 3:4  
Nikos receives £24  
Work out how much Philip receives.

£.....  
(2)

- (b) James and Suki share £40 in the ratio 3:5  
Work out how much Suki receives.

£.....  
(2)

Q15

(Total 4 marks)



Leave blank

16. The diagram shows a wall.

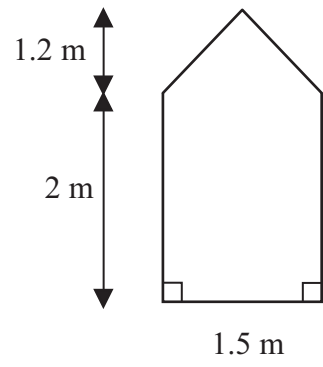


Diagram **NOT** accurately drawn

(a) Calculate the area of the wall.

..... m<sup>2</sup>  
(3)

(b) 1 litre of paint covers an area of 20 m<sup>2</sup>.  
Work out the volume of paint needed to cover the wall.  
Give your answer in millilitres.

..... ml  
(3)

Q16

(Total 6 marks)



<p>17. A train travels 165 km.          Its average speed for the journey is 60 km/h.          Work out the time that this journey takes.          Give your answer in hours and minutes.</p> <p style="text-align: right;">..... hours ..... minutes</p> <p style="text-align: right;"><b>(Total 3 marks)</b></p>	<p>Leave blank</p> <p style="text-align: center;"><b>Q17</b></p> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 0 auto;"></div>
<p>18. When Peter goes to work, he can be early or on time or late.          The probability that he will be early is 0.2          The probability that he will be late is 0.1</p> <p>(a) Work out the probability that he will be on time.</p> <p style="text-align: right;">.....</p> <p style="text-align: right;"><b>(2)</b></p> <p>(b) Peter will go to work 20 times next month.          Work out an estimate for the number of times he will be <b>early</b> next month.</p> <p style="text-align: right;">.....</p> <p style="text-align: right;"><b>(2)</b></p> <p style="text-align: right;"><b>(Total 4 marks)</b></p>	<p style="text-align: center;"><b>Q18</b></p> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 0 auto;"></div>



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19. (a) Multiply out  $5(x - 2)$

.....  
(2)

(b) Solve the equation  $\frac{x}{4} + 3 = 10$

You must show sufficient working.

$x =$  .....  
(2)

(c) Solve the inequality  $5x - 6 > 2$

You must show sufficient working.

.....  
(2)

(Total 6 marks)

Q19





20.

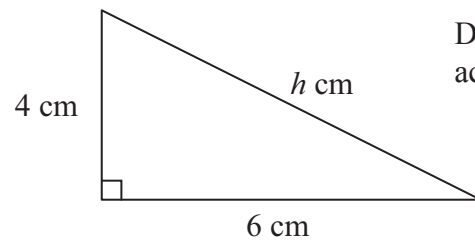


Diagram **NOT** accurately drawn

Work out the value of  $h$ .  
Give your answer correct to 3 significant figures.

$h = \dots\dots\dots$

(Total 3 marks)

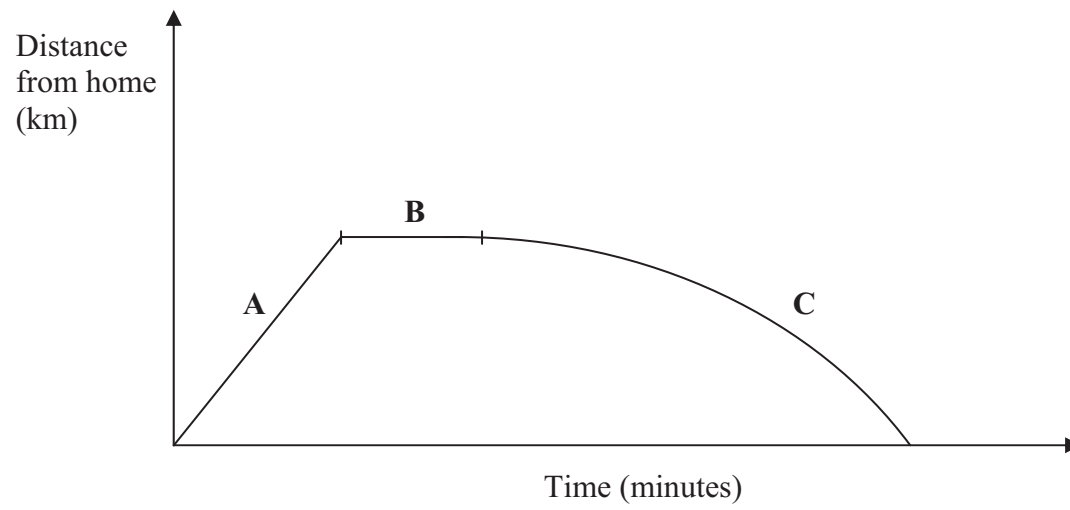
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Q20



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21. John goes on a trip.  
Here is the travel graph for his trip.



The travel graph has three parts, **A**, **B** and **C**.

Here are four statements.

John is not moving.  
John is travelling at a steady speed.  
John's speed is increasing.  
John's speed is decreasing.

Choose the statement from the box that best describes

- (i) part **A**, .....
- (ii) part **B**, .....
- (iii) part **C**, .....

Q21

(Total 3 marks)



Leave  
blank

22.  $\mathcal{E} = \{\text{Positive integers less than 11}\}$   
 $A = \{\text{Multiples of 3}\}$   
 $B = \{\text{Multiples of 2}\}$

(a) List the members of

(i)  $A$ ,

.....

(ii)  $A \cup B$ .

.....

(3)

(b)  $\mathcal{E} = \{\text{Students in class 12Y}\}$   
 $P = \{\text{Students who study Mathematics}\}$   
 $Q = \{\text{Students who study History}\}$

(i) Describe the members of  $P \cap Q$ .

.....

(ii)  $R$  is also a set of students in class 12Y.

$$P \cap R = \emptyset$$

Use this information to write a statement about the students in set  $R$ .

.....

(3)

Q22

(Total 6 marks)

**TOTAL FOR PAPER: 100 MARKS**

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