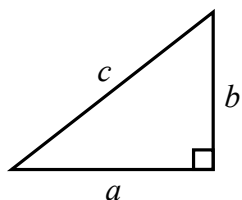




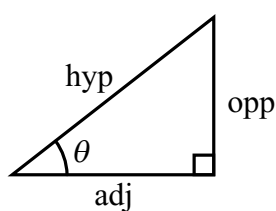
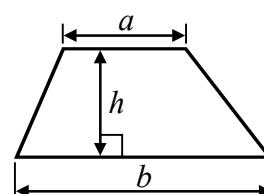
IGCSE MATHEMATICS 4400

FORMULA SHEET – FOUNDATION TIER

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



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



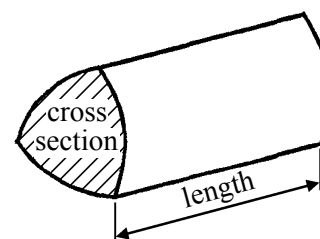
adj = hyp  $\times$  cos  $\theta$   
 opp = hyp  $\times$  sin  $\theta$   
 opp = adj  $\times$  tan  $\theta$

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

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

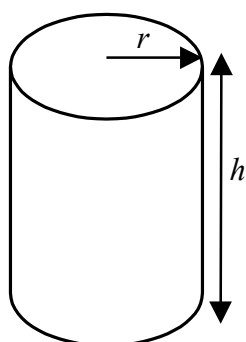
$\cos \theta = \frac{\text{adj}}{\text{hyp}}$

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



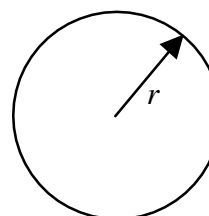
Circumference of circle =  $2\pi r$

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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blank

**Answer ALL NINETEEN questions.**

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

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

1. (a) (i) Shade 40% of this shape.


- (ii) When 40% of the shape is shaded, what percentage is unshaded?

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

- (b) Write 40% as a decimal.

.....  
**(1)**

- (c) Write 40% as a fraction.  
Give your fraction in its simplest form.

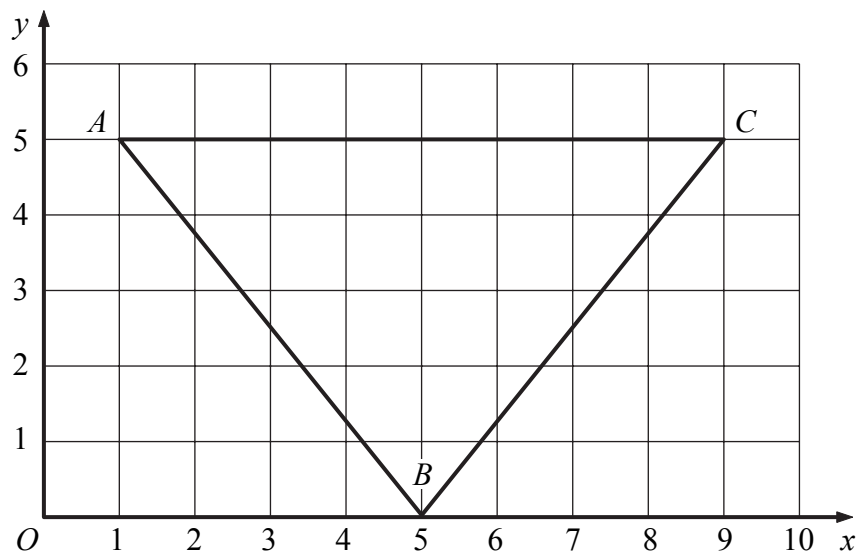
.....  
**(2)**

**(Total 5 marks)**

**Q1**



2. The diagram shows a triangle  $ABC$  on a centimetre grid.



(a) Write down the coordinates of the point

(i)  $A$ , (....., .....) (1)

(ii)  $B$ , (....., .....) (2)

(b) Measure the length of the line  $AB$ .  
Give your answer in millimetres.

..... mm (1)

(c) Find the perimeter of triangle  $ABC$ .

..... mm (2)

(d) Write down the special name for triangle  $ABC$ .

..... (1)

(e) (i) Measure the size of angle  $B$ .

..... °

(ii) Write down the special name for this type of angle.

..... (2)

(Total 8 marks)

Q2



3.

- |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|
| 15 | 21 | 23 | 24 | 25 | 27 | 33 | 35 | 39 |
|----|----|----|----|----|----|----|----|----|

(a) From the numbers in the box, write down

(i) an even number

.....

(ii) a factor of 60

.....

(iii) a multiple of 9

.....

(iv) a square number

.....

(v) a prime number.

.....

**(5)**

(b) Write a number from the box on the dotted line so that each calculation is correct.

(i) ..... + 87 = 111

(ii) ..... × 46 = 1794

**(2)**

**Q3**

**(Total 7 marks)**



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4. Here are the first five terms of a number sequence.

1            7            13            19            25

(a) Write down the next term in the sequence.

.....  
**(1)**

(b) Explain how you worked out your answer.

.....  
**(1)**

(c) Find the 11th term of the sequence.

.....  
**(1)**

(d) The 50th term of the sequence is 295  
Work out the 49th term of the sequence.

.....  
**(1)**

Tamsin says, "Any two terms of this sequence add up to an even number."

(e) Explain why Tamsin is right.

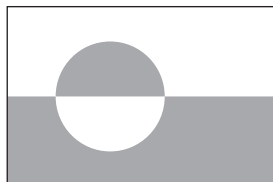
.....  
.....  
.....  
**(1)**

**Q4**

**(Total 5 marks)**



5. Here are 9 flags.



A



B



C



D



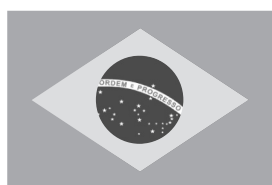
E



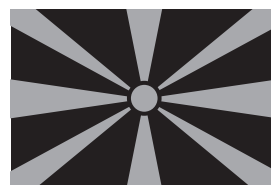
F



G



H



I

(a) Write down the letter of the flag which has

(i) exactly one line of symmetry

.....

(ii) rotational symmetry of order 4

.....

(iii) 2 lines of symmetry and rotational symmetry of order 2

.....

(iv) no lines of symmetry and rotational symmetry of order 2

.....

(4)

(b) Write down the letter of the flag which has a rhombus on it.

.....

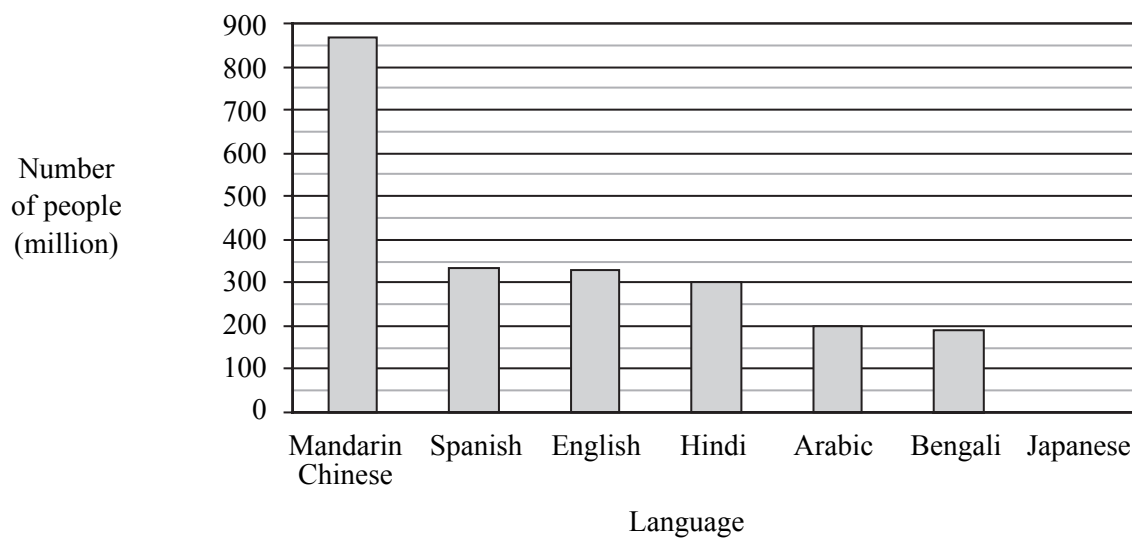
(1)

(Total 5 marks)

Q5



6. The bar chart shows information about the number of people, in millions, who speak each of 6 languages.



(a) Write down the number of people who speak Hindi.

..... million  
**(1)**

(b) Write down the number of people who speak Mandarin Chinese.

..... million  
**(1)**

(c) Which language is spoken by 190 million people?

.....  
**(1)**

125 million people speak Japanese.

(d) Draw a bar on the bar chart to show this information.

**(1)**

(e) Find the ratio of the number of people who speak Hindi to the number of people who speak Japanese.

Give your ratio in its simplest form.

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





Leave  
blank

330 million people speak English.  
70% of these people live in the USA.

(f) Work out 70% of 330 million.

..... million  
(2)

332 million people speak Spanish.  
143 million of these people live in South America.

(g) Work out 143 million as a percentage of 332 million.  
Give your answer correct to 1 decimal place.

..... %  
(2)

Q6

(Total 10 marks)

7. (a) Solve  $2x + 9 = 1$

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

(b) Solve  $5y - 4 = 2y + 7$

$y =$  .....  
(2)

Q7

(Total 4 marks)



8. The table shows information about the time in each of five cities. For each city, it shows the number of hours time difference from the time in London. + shows that the time is ahead of the time in London. – shows that the time is behind the time in London.

City	Time difference from London (hours)
Cairo	+2
Montreal	–5
Bangkok	+7
Rio de Janeiro	–3
Los Angeles	–8
Mexico City	

- (a) When the time in London is 6 a.m., what is the time in

(i) Bangkok,

.....

(ii) Los Angeles.

.....

(2)

- (b) The time in Mexico City is 2 hours ahead of the time in **Los Angeles**. Complete the table to show the time difference of Mexico City from London.

(1)

- (c) Write down the name of the city in which the time is 10 hours behind Bangkok.

.....

(1)

- (d) Work out the time difference between

(i) Cairo and Montreal,

..... hours

(ii) Rio de Janeiro and Los Angeles.

..... hours

(2)

(Total 6 marks)

Q8



Leave  
blank

9. (a) Find the value of  $4 \times (8 - 3)$

.....  
(1)

(b) Put brackets in the expression below so that the answer is 19

$$7 + 4 \times 5 - 2$$

(1)

(c) Find  $3.8^3$

.....  
(1)

(d) Find  $\sqrt{6.76}$

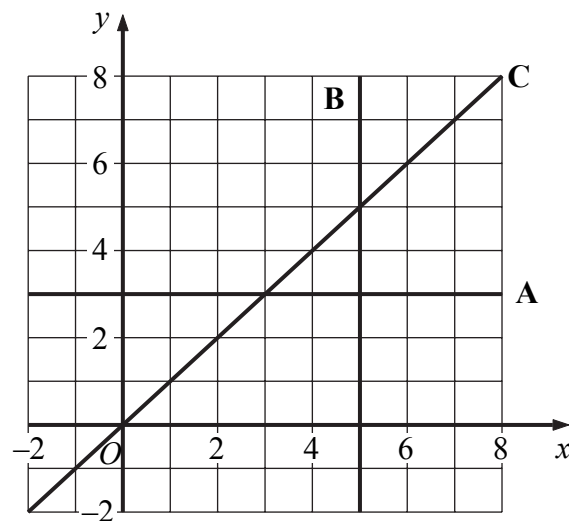
.....  
(1)

Q9

(Total 4 marks)



10.



Write down the equation of

(i) line A,

.....

(ii) line B,

.....

(iii) line C.

.....

**Q10**

**(Total 3 marks)**

11. (a) Use your calculator to work out the value of

$$\frac{(3.7 + 4.6)^2}{2.8 + 6.3}$$

Write down all the figures on your calculator display.

.....

**(2)**

(b) Give your answer to part (a) correct to 2 decimal places.

.....

**(1)**

**Q11**

**(Total 3 marks)**



12. Here are five shapes.



Four of the shapes are squares and one of the shapes is a circle.  
One square is black.  
Three squares are white.  
The circle is black.

The five shapes are put in a bag.  
Alec takes at random a shape from the bag.

(a) Find the probability that he will take the black square.

.....  
(1)

(b) Find the probability that he will take a white square.

.....  
(2)

Jasmine takes a shape at random from the bag 150 times.  
She replaces the shape each time.

(c) Work out an estimate for the number of times she will take a white square.

.....  
(2)

(Total 5 marks)

Q12



N 2 5 7 4 2 A 0 1 3 2 0

Leave  
blank

13. A basketball court is a rectangle 28 m long and 15 m wide.

(a) Work out the area of the rectangle.

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

(b) In the space below, make an accurate scale drawing of the rectangle.  
Use a scale of 1 cm to 5 m.

(2)

Q13

(Total 4 marks)

14. (a) Work out the value of  $x^2 - 5x$  when  $x = -3$

.....  
(2)

(b) Factorise  $x^2 - 5x$

.....  
(2)

Q14

(Total 4 marks)



Leave  
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15. Hajra counted the numbers of sweets in 20 packets.  
The table shows information about her results.

Number of sweets	Frequency
46	3
47	6
48	3
49	5
50	2
51	1

- (a) What is the mode of the number of sweets?

.....  
**(1)**

- (b) Work out the range of the number of sweets.

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

- (c) Work out the mean number of sweets in the 20 packets.

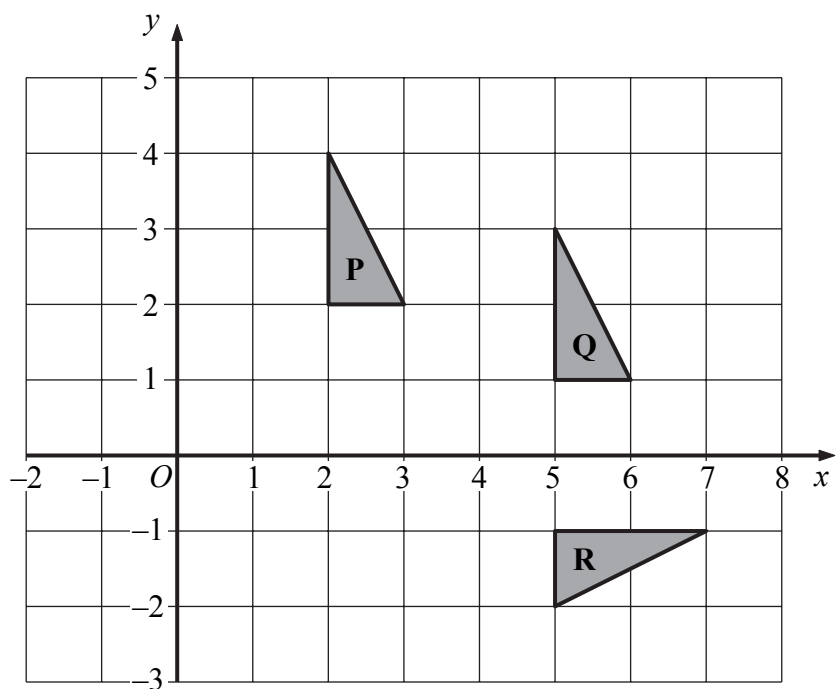
.....  
**(3)**

**(Total 6 marks)**

**Q15**



16.



(a) Describe fully the single transformation which maps triangle **P** onto triangle **Q**.

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

(b) Describe fully the single transformation which maps triangle **P** onto triangle **R**.

.....  
 .....  
 (3)

(Total 5 marks)

Q16





Leave  
blank

17. (a) Simplify, leaving your answers in index form,

(i)  $7^5 \times 7^3$

.....

(ii)  $5^9 \div 5^3$

.....

(2)

(b) Solve  $\frac{2^9 \times 2^4}{2^n} = 2^8$

$n =$  .....

(2)

Q17

(Total 4 marks)

18. (a) Expand and simplify  $3(4x - 5) - 4(2x + 1)$

.....

(2)

(b) Expand and simplify  $(y + 8)(y + 3)$

.....

(2)

(c) Expand  $p(5p^2 + 4)$

.....

(2)

Q18

(Total 6 marks)



Leave  
blank

19. A tunnel is 38.5 km long.

(a) A train travels the 38.5 km in 21 minutes.

Work out the average speed of the train.  
Give your answer in km/h.

..... km/h  
(3)

(b) To make the tunnel, a cylindrical hole 38.5 km long was drilled.  
The radius of the cylindrical hole was 4.19 m.

Work out the volume of earth, in  $\text{m}^3$ , which was removed to make the hole.  
Give your answer correct to 3 significant figures.

.....  $\text{m}^3$   
(3)

Q19

(Total 6 marks)

**TOTAL FOR PAPER: 100 MARKS**

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