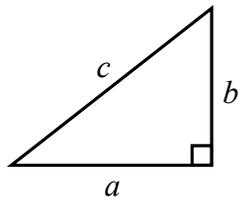


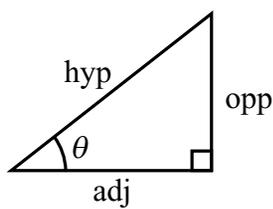
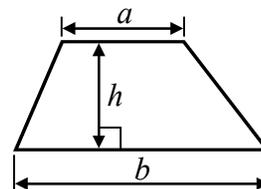
IGCSE MATHEMATICS 4400

FORMULA SHEET – FOUNDATION TIER

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



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



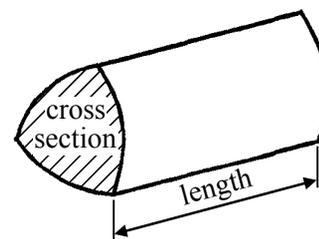
$adj = hyp \times \cos \theta$
 $opp = hyp \times \sin \theta$
 $opp = adj \times \tan \theta$

Volume of prism = area of cross section \times length

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

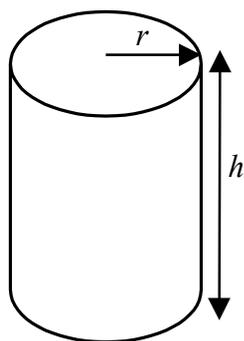
$\cos \theta = \frac{adj}{hyp}$

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



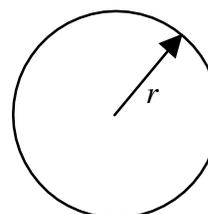
Circumference of circle = $2\pi r$

Area of circle = πr^2



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

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



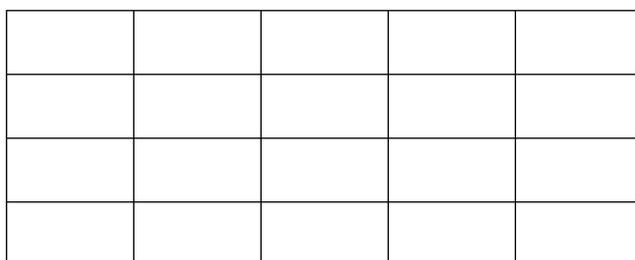
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Answer ALL NINETEEN questions.

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.

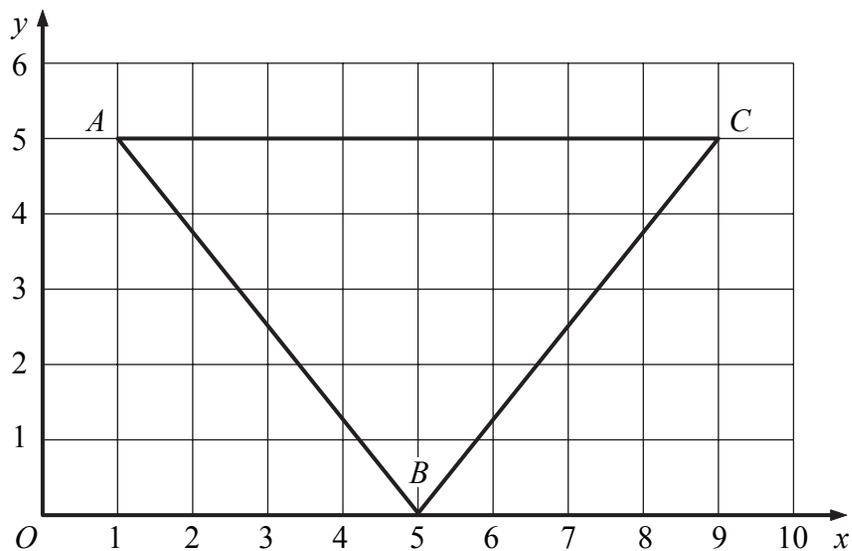
.....
(2)

(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



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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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blank

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.

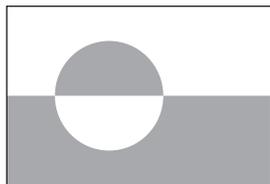
.....
.....
.....
(1)

Q4

(Total 5 marks)



5. Here are 9 flags.



A



B



C



D



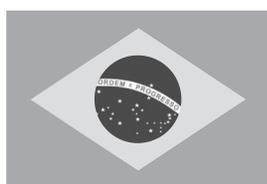
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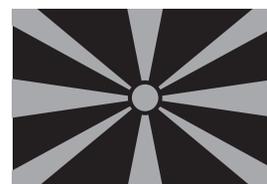
F



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.

.....

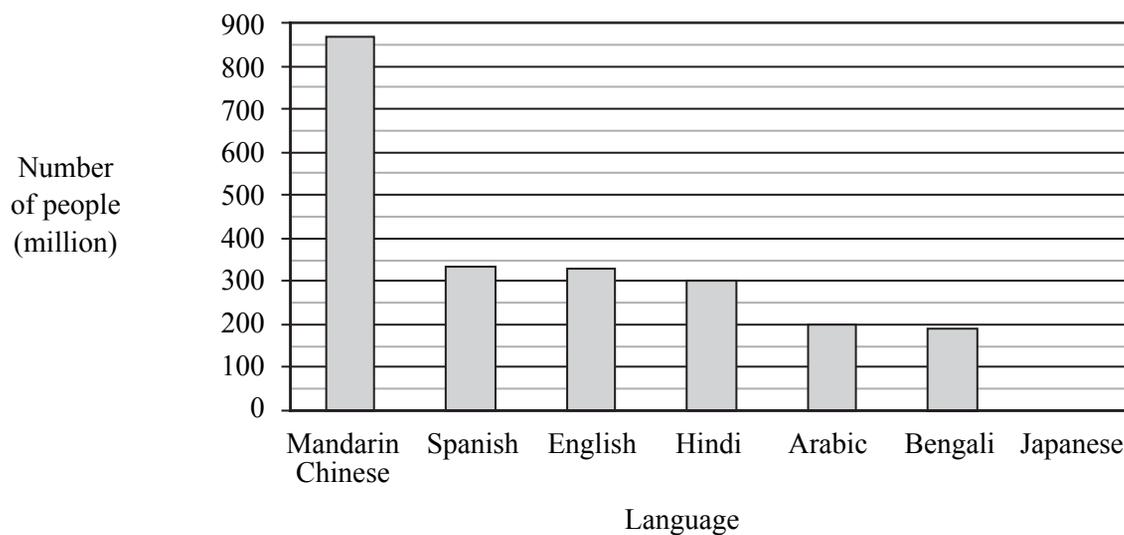
(1)

(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)

9



Turn over

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 $\sqrt{6.76}$

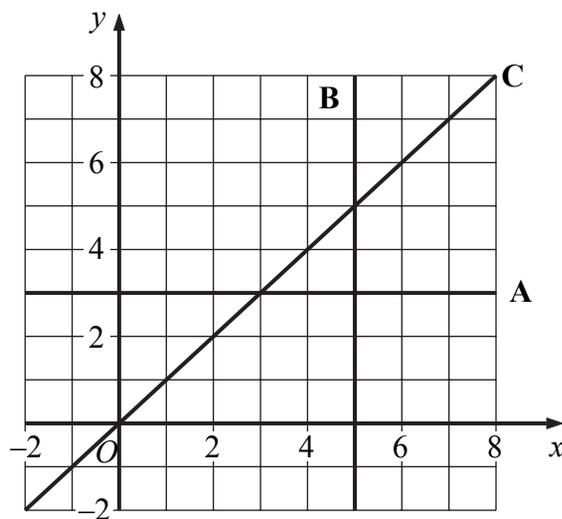
.....
(1)

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.

..... m²
(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)



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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.

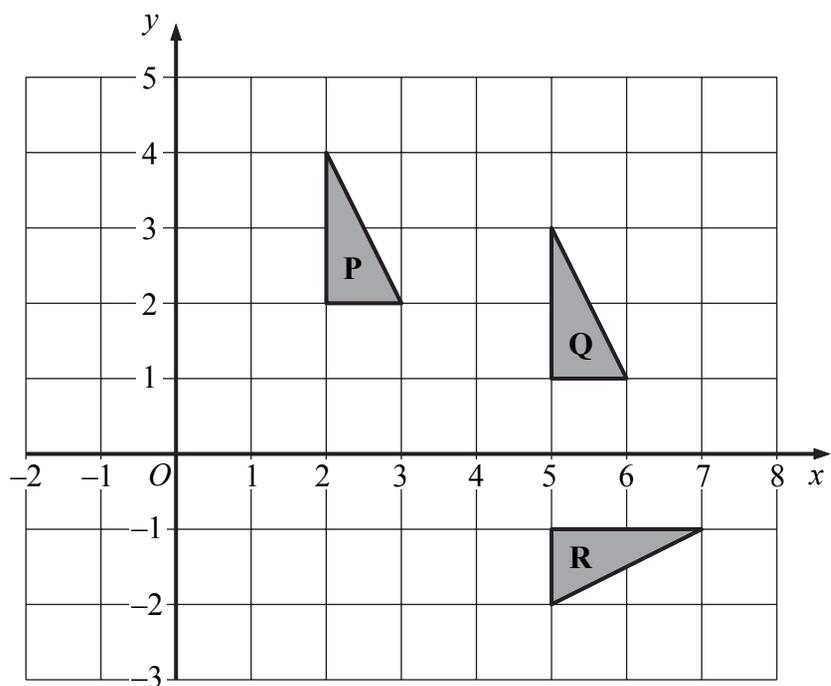
.....
(3)

(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



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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 m^3 , which was removed to make the hole.
Give your answer correct to 3 significant figures.

..... m^3
(3)

Q19

(Total 6 marks)

TOTAL FOR PAPER: 100 MARKS

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N 2 5 7 4 2 A 0 1 9 2 0

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