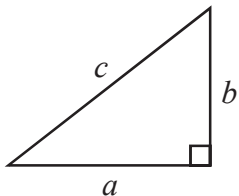


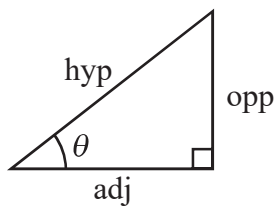
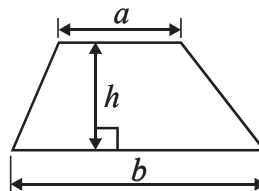
International GCSE MATHEMATICS

FORMULAE SHEET – FOUNDATION TIER

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



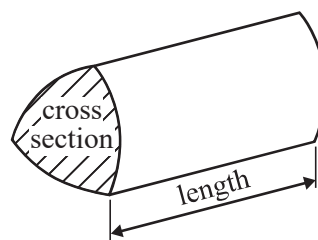
Area of a trapezium =  $\frac{1}{2}(a + b)h$



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

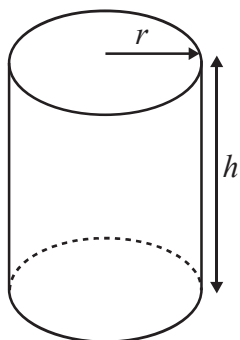
Volume of prism = area of cross section  $\times$  length

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



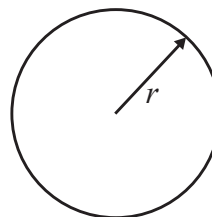
Circumference of circle =  $2\pi r$

Area of circle =  $\pi r^2$



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

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



**Answer ALL TWENTY THREE questions.**

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

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

**1** The number of spectators at a cricket match was 8520

(a) Write the number 8520 in words.

.....  
(1)

The number of club members at the cricket match was 2458

(b) Write down the value of the 4 in the number 2458

.....  
(1)

(c) Write the number 2458 correct to the nearest thousand.

.....  
(1)

At the cricket match, 30% of the spectators were female.

(d) Work out the percentage of spectators who were male.

.....%  
(1)

(e) Work out 30% of 8520

.....  
(2)

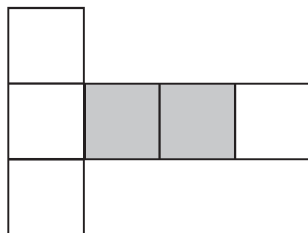
**(Total for Question 1 is 6 marks)**



2 Write down all the factors of 30

.....  
 (Total for Question 2 is 2 marks)

3 Here is a shape made from centimetre squares.



(a) On the shape above, draw the line of symmetry.

(1)

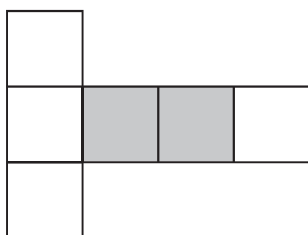
(b) What fraction of the shape is shaded?  
 Give your fraction in its simplest form.

.....  
 (2)

(c) Find the perimeter of the shape.

..... cm  
 (1)

(d) Add two squares to the shape below to make a shape with rotational symmetry of order two.



(1)

(Total for Question 3 is 5 marks)



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

10            14            18            22            26

(a) Write down the next two terms of the sequence.

..... , .....

(2)

(b) Explain how you worked out your answer.

.....

(1)

(c) Find the 12th term of the sequence.

.....

(1)

(d) Explain why 100 cannot be a term of the sequence.

.....

.....

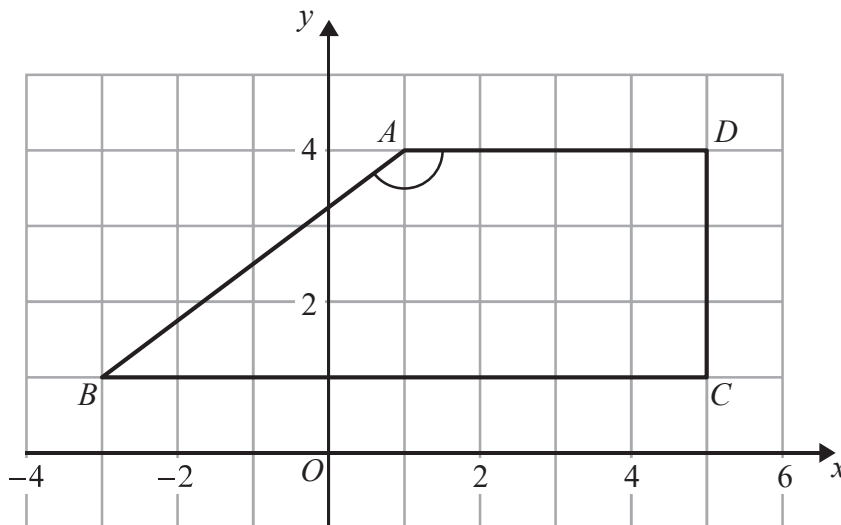
(1)

**(Total for Question 4 is 5 marks)**

**Do NOT write in this space.**



5 The diagram shows quadrilateral  $ABCD$  on a centimetre grid.



(a) Write down the coordinates of the point  $A$ .

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

(b) Write down the coordinates of the point  $B$ .

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

(c) Write down the mathematical name for quadrilateral  $ABCD$ .

.....  
(1)

(d) (i) Measure the size of angle  $BAD$ .

.....  
°

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

.....  
(2)

(e) Work out the area of quadrilateral  $ABCD$ .

.....  $\text{cm}^2$   
(2)

(Total for Question 5 is 7 marks)



6 Here are 9 cards. Each card has a number on it.



(a) Write down the mode of the numbers on the cards.

.....  
(1)

(b) Work out the median of the numbers on the cards.

.....  
(2)

Sally takes at random one card.

(c) 

Certain	Likely	Unlikely	Impossible
---------	--------	----------	------------

Write down a word from the box that best describes the probability of each outcome.

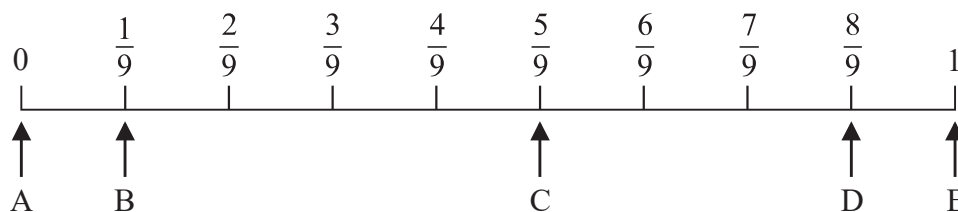
(i) Sally takes a card with the number 6

.....

(ii) Sally takes a card with the number 5

.....  
(2)

(d) Here is a probability scale.



Write down the letter of the arrow that points to the probability that Sally

(i) takes a card with the number 8

.....

(ii) takes a card with a number greater than 0

.....

(iii) takes a card with an even number.

.....  
(3)

**(Total for Question 6 is 8 marks)**



7 Here are some numbers in a list.

2            -4            -8            5            -3

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

.....  
(1)

(b) Work out

(i)  $-4 + 5$

(ii)  $-8 - (-3)$

(iii)  $-3 \times 2$

(iv)  $-8 \div (-4)$

.....  
(4)

**(Total for Question 7 is 5 marks)**

**Do NOT write in this space.**



8 A coach travels along a motorway.

The coach leaves Ashley Service Station at 11 45 am and arrives at Benscliffe Service Station at 2 45 pm.

(a) Write 2 45 pm using the 24-hour clock.

.....  
(1)

(b) Work out the length of time, in hours, between 11 45 am and 2 45 pm.

..... hours  
(1)

The coach leaves Benscliffe Service Station and travels to Clayton Service Station.  
The coach travels for 4 hours at an average speed of 65 km/h.

(c) Calculate the distance, in kilometres, between Benscliffe and Clayton Service Stations.

..... km  
(2)

**(Total for Question 8 is 4 marks)**

9 (a) Simplify fully

(i)  $4d^2 - 6d^2 + 5d^2$

.....

(ii)  $7x + 5y - 3x - 8y$

.....  
(3)

(b) Solve  $6x - 5 = 16$

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

**(Total for Question 9 is 5 marks)**





10

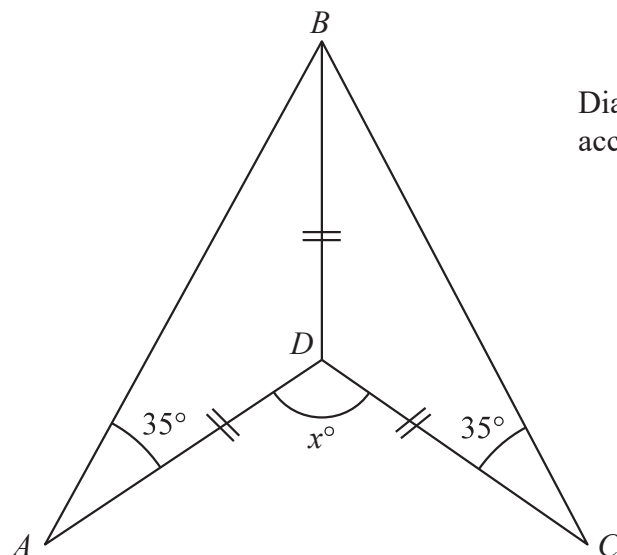


Diagram NOT  
accurately drawn

The diagram shows a quadrilateral  $ABCD$ .

The quadrilateral  $ABCD$  is made from two identical isosceles triangles,  $ABD$  and  $CBD$ .

$DA = DB = DC$ .

Angle  $BAD = \text{Angle } BCD = 35^\circ$

Angle  $ADC = x^\circ$

Work out the value of  $x$ .

$x = \dots\dots\dots$

(Total for Question 10 is 4 marks)

- 11 The cost of an adult ticket to a zoo is \$13.50  
A teacher buys 4 adult tickets and 24 pupil tickets.  
The total cost of the tickets is \$270

Work out the cost, in dollars (\$), of a ticket for one pupil.

\$.....

(Total for Question 11 is 3 marks)

10



12 In a game, a fair coin is spun and a fair 6-sided dice is rolled.  
A score is given according to the rules below.



coin lands on **heads**  
score =  $2 \times$  number on the dice

coin lands on **tails**  
score =  $1 +$  number on the dice

(a) Complete the table to show all the possible scores.

		Dice					
		1	2	3	4	5	6
Coin	Heads					10	
	Tails			4			

(2)

Peter plays the game once.

(b) Find the probability that Peter's score is 4

.....  
(2)

George plays the game 60 times.

(c) Work out an estimate for the number of times George's score is 10

.....  
(2)

**(Total for Question 12 is 6 marks)**

**Do NOT write in this space.**



- 13 (a) Write these fractions in order of size.  
Start with the smallest fraction.

$$\frac{7}{9}$$

$$\frac{5}{6}$$

$$\frac{7}{12}$$

$$\frac{2}{3}$$

.....  
(2)

- (b) Show that  $\frac{4}{9} \div \frac{5}{6} = \frac{8}{15}$

(2)

**(Total for Question 13 is 4 marks)**

- 14 (a) Work out the value of  $\frac{13.8 \times 6.5}{7 + \sqrt{2}}$

Write down all the figures on your calculator display.

.....  
(2)

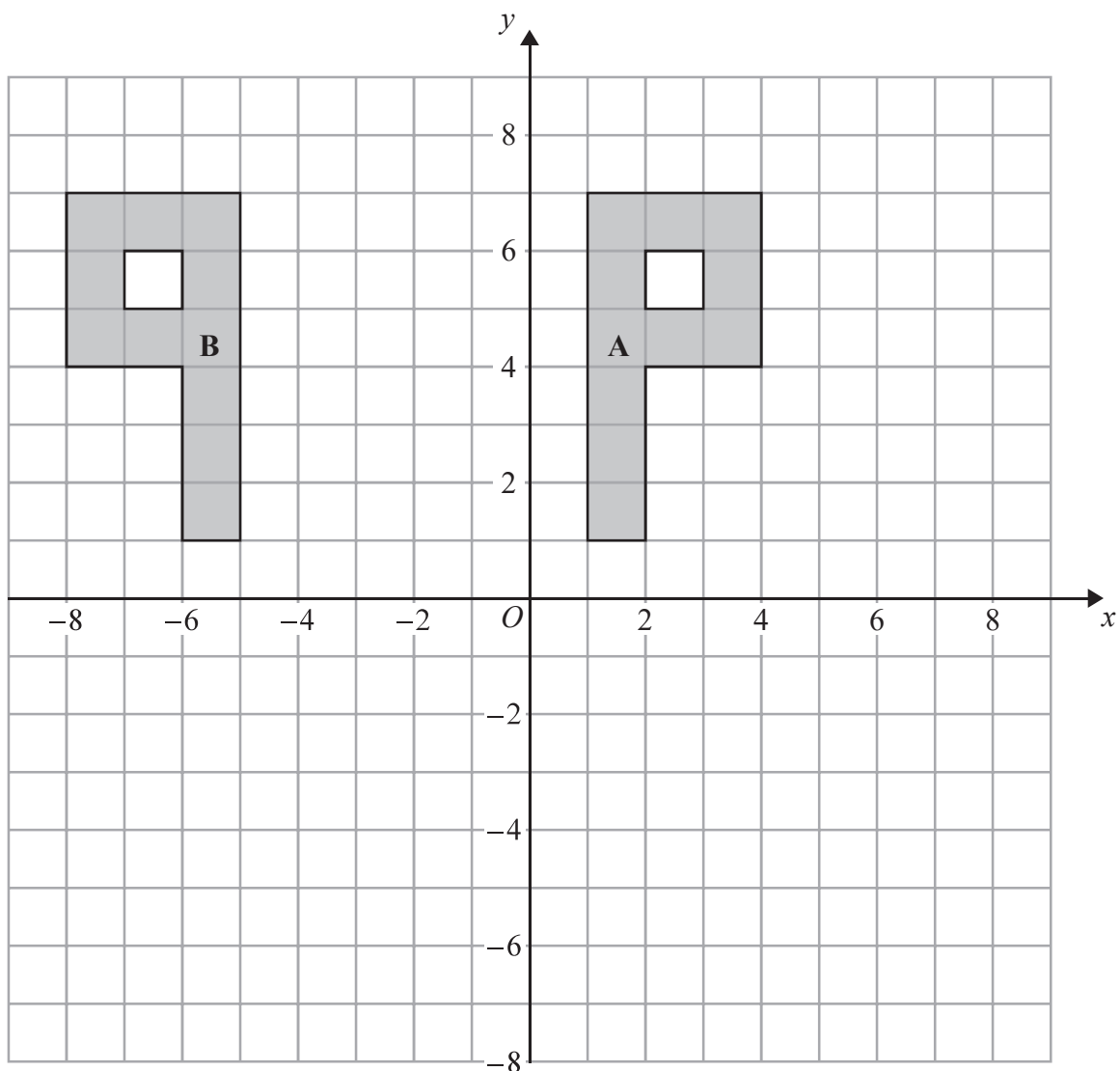
- (b) Give your answer to part (a) correct to 3 significant figures.

.....  
(1)

**(Total for Question 14 is 3 marks)**



15



(a) Describe fully the single transformation that maps shape A onto shape B.

(2)

(b) On the grid, rotate shape A  $90^\circ$  clockwise about the origin O.  
Label the new shape C.

(2)

(Total for Question 15 is 4 marks)

Do NOT write in this space.



16 (a) Simplify  $8d \times 7d$

.....  
(1)

(b) Expand  $4(3e - 5)$

.....  
(1)

(c) Factorise  $f^2 - 2f$

.....  
(2)

(d)  $H = g^3 + 6g$

Work out the value of  $H$  when  $g = 2$

$H =$  .....  
(2)

**(Total for Question 16 is 6 marks)**

17 Zara must take 5 tests.

Each test is out of 100

After 4 tests, her mean score is 64%.

What score must Zara get in her 5th test to increase her mean score in all 5 tests to 70%?

.....  
**(Total for Question 17 is 4 marks)**



- 18 The diagram shows an accurate scale drawing of part of the boundary of a field.  
The complete boundary of the field is in the shape of a quadrilateral  $ABCD$ .

$AB = 300$  metres.

$BC = 230$  metres.

Point  $B$  is due north of point  $C$ .

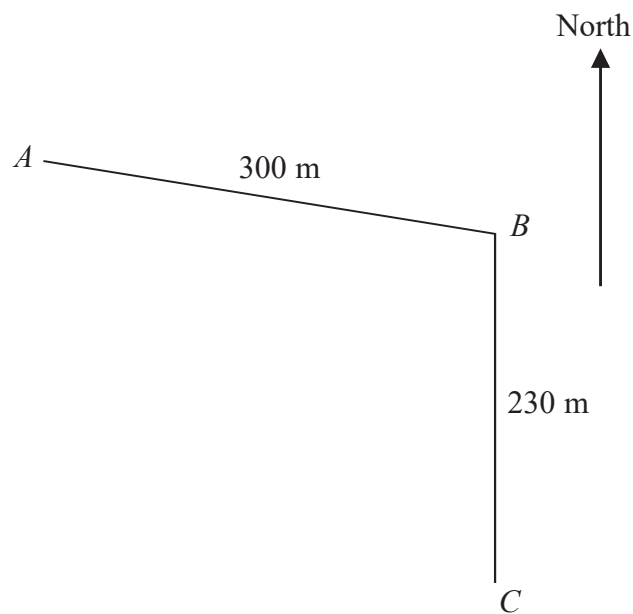
The scale of the diagram is 1 cm to 50 metres.

The bearing of  $D$  from  $C$  is  $260^\circ$

$AD = 480$  metres.

Complete the scale drawing of the boundary of the field.

Mark the position of  $D$ .



(Total for Question 18 is 2 marks)



19 (a)  $A = \{p, r, a, g, u, e\}$

$$B = \{p, a, r, i, s\}$$

$$C = \{b, u, d, a, p, e, s, t\}$$

List the members of the set

(i)  $A \cap B$

.....

(ii)  $B \cup C$

.....

(2)

(b)  $D = \{r, o, m, e\}$

$$E = \{l, i, s, b, o, n\}$$

$$F = \{b, e, r, l, i, n\}$$

Put one of the letters  $D$ ,  $E$  or  $F$  in the box below to make the statement correct.

$$A \cap \boxed{\phantom{D}} = \emptyset$$

Explain your answer.

.....

(1)

(Total for Question 19 is 3 marks)

**Do NOT write in this space.**



- 20 Helen's savings increased from £155 to £167.40  
Work out the percentage increase in Helen's savings.

..... %

(Total for Question 20 is 3 marks)

21

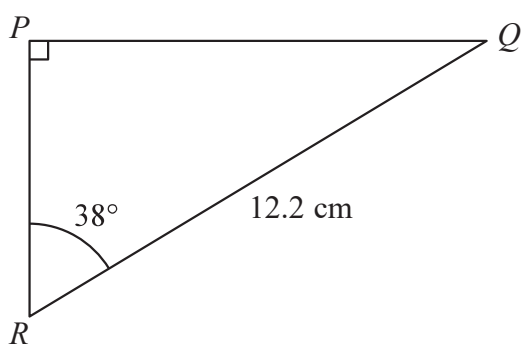


Diagram **NOT**  
accurately drawn

Calculate the length of  $PQ$ .  
Give your answer correct to 3 significant figures.

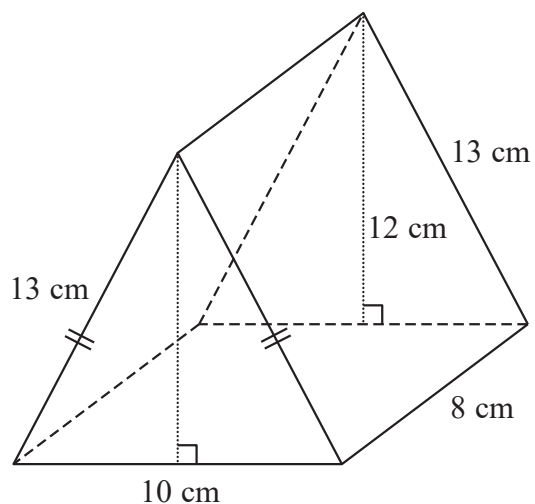
..... cm

(Total for Question 21 is 3 marks)





22

Diagram **NOT**  
accurately drawn

The diagram shows a prism.

The cross-section of the prism is an isosceles triangle.

The lengths of the sides of the triangle are 13 cm, 13 cm and 10 cm.

The perpendicular height of the triangle is 12 cm.

The length of the prism is 8 cm.

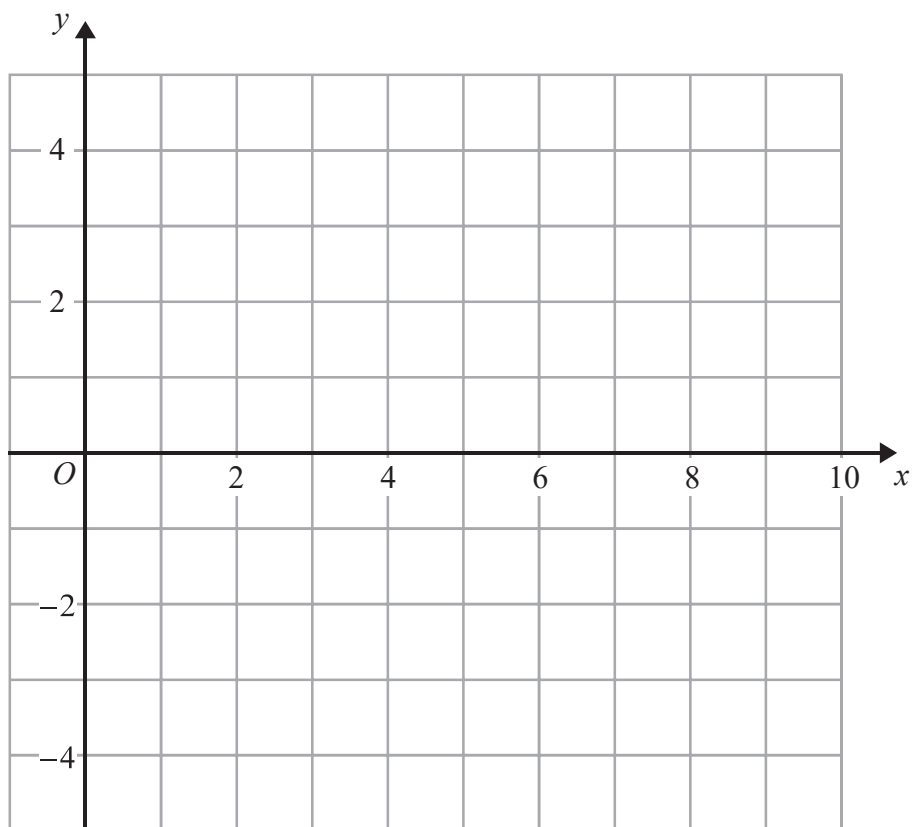
Work out the total surface area of the prism.

..... cm<sup>2</sup>

(Total for Question 22 is 3 marks)



23 (a) On the grid, draw the line with equation  $x + 2y = 8$  for values of  $x$  from 0 to 9



(2)

(b) Show, by shading on the grid, the region defined by all three inequalities

$$x + 2y \leq 8$$

$$x \geq 2$$

$$y \geq 1$$

Label your region **R**.

(3)

(Total for Question 23 is 5 marks)

**TOTAL FOR PAPER IS 100 MARKS**

**Do NOT write in this space.**

