



Annual Examinations for Middle Schools 2023

YEAR 8

MATHEMATICS

TIME: 1h 30min

Main Paper

Question	1	2	3	4	5	6	7	8	9	10	11	12	Total Main	Non Calc	Total
Mark															

DO NOT WRITE ABOVE THIS LINE

Name: _____ Class: _____

**Answer ALL questions.
Calculators are allowed. All necessary working must be shown.**

1. The table below represents Ryan's after school timetable for a week.

Monday	Tuesday	Wednesday	Thursday	Friday
Football 16:00 – 17:30	Violin 16:30 – 17:05	Drama 15:00 – _____	Football 18:00 – 19:00	Art 19:00 – 20:15

- a) The drama lesson on Wednesday is 2 hours 30 minutes long.
At what time does the lesson finish?

Ans: _____

- b) Calculate, in hours and minutes, the time Ryan spends on football in a week.

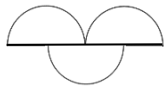
Ans: _____

- c) There are 21 whole weeks from January to the end of May. Calculate, in days, hours and minutes, the time Ryan spends training football during these weeks.

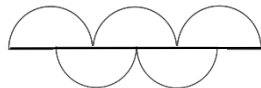
Ans: _____

(7 marks)

2. This is a sequence of patterns made up of semicircles.



Pattern 1



Pattern 2



Pattern 3

Pattern 4

- a) Draw pattern 4.

- b) Fill in this table.

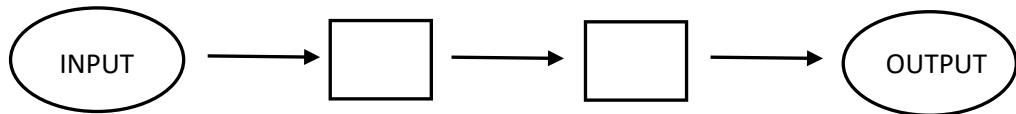
Pattern number	1	2	3	4		8
Number of semicircles	3					

(4 marks)

3. The table below is a function machine.

Input	2	3	5	t	9	10
Output	1	s	7	11	15	17

- a) Use the information in the table to complete the number machine below:



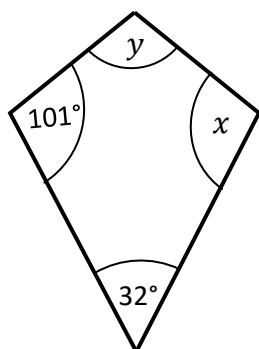
- b) Use your number machine to find the missing values of s and t .

Ans: s = _____

Ans: t = _____

(6 marks)

4. a) The shape below shows a kite.



i) It has _____ line/s of symmetry.

ii) Work out the angles marked with letters.
Give a reason for your answer.

Diagram not drawn to scale

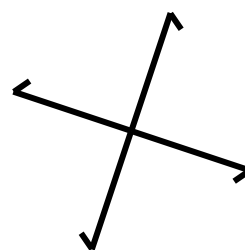
$$x = \text{_____}^\circ$$

Reason: _____

$$y = \text{_____}^\circ$$

Reason: _____

b) The shape has a rotational symmetry of order _____.



(7 marks)

5. a) Complete this Carroll diagram.

10 80 3 15 2 35 11 7

	Even numbers	Odd numbers
Prime numbers		
Multiples of 5		

b) Choose a number from 1 to 20 that cannot be placed in this Carroll diagram.

Ans: _____

(5 marks)

6. Alan, Barbara and Colin bake muffins to sell at a fund-raising activity. They use the recipe below.

Makes 20
<ul style="list-style-type: none">• 2 medium eggs• 125 ml vegetable oil• 250 ml milk• 250 g sugar• 400 g flour• 1 tsp salt• 100 g chocolate or strawberry jam or caramel

- a) They bake 150 muffins.

- i) Calculate the amount of flour needed to bake these muffins.

Ans: _____

- ii) Work out the amount of milk needed to bake these muffins.

Ans: _____

- b) They prepare three different fillings: chocolate, strawberry jam and caramel in the ratio of 5 : 2 : 3 respectively.

- i) Find the amount of chocolate filled muffins they prepare.

Ans: _____

- ii) Find the amount of caramel filled muffins they prepare.

Ans: _____

- iii) Calculate how much more caramel filled muffins than strawberry jam filled muffins are prepared.

Ans: _____

(10 marks)

7. a) Make c the subject of the formula.

$$d = 4c + f$$

Ans: _____

- b) Andrew and Kate are playing a 'mystery number' game. Andrew says: "When my mystery number m is multiplied by 4 and then 9 is subtracted from the answer, the result is 15."
Help Kate find the mystery number m . Show all the necessary working.

Ans: $m =$ _____

- c) i) The area of the rectangle is 112 cm^2 .
Form an equation and solve to find x .

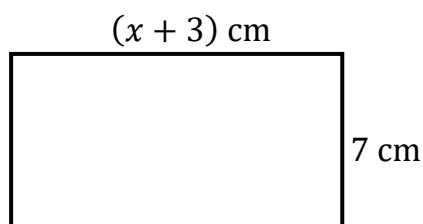


Diagram not drawn to scale

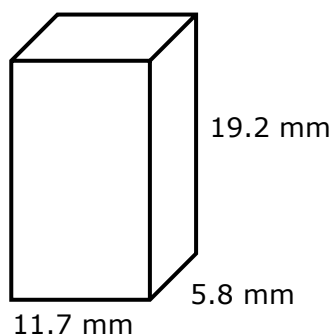
Ans: $x =$ _____

- ii) Use your result in part i) to work out the length of the rectangle.

Ans: _____

(9 marks)

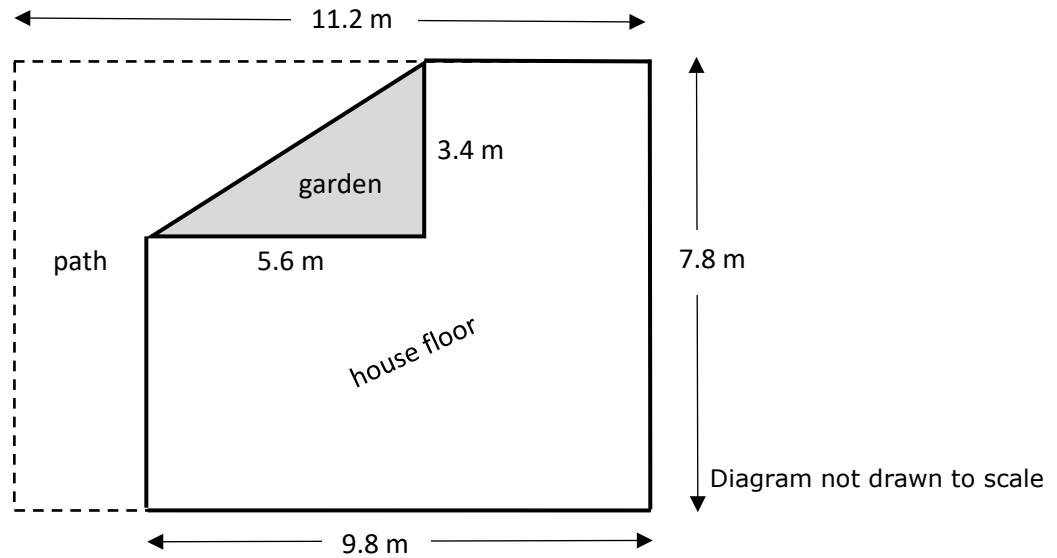
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8. Work out the total surface area of the cuboid.



Ans: _____

(4 marks)

9. The diagram below represents the floor plan of a house, garden and surrounding path.



- a) Calculate, in square metres, the area of:

i) the house floor

Ans: _____

ii) the garden

Ans: _____

iii) the path

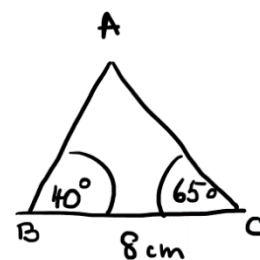
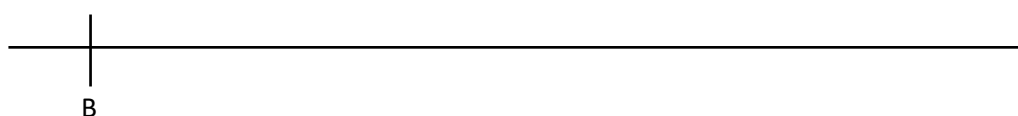
Ans: _____

- b) Express the space occupied by the garden as a percentage of the space occupied by the whole plot, correct to 1 decimal place.

Ans: _____

(10 marks)

10. The diagram below is a sketch of triangle ABC.



- Start at point B, construct the line BC which is 8 cm long.
- Use your protractor to draw angle B and angle C. Label the triangle ABC.
- Use a ruler to measure the side AC.

Ans: AC = _____

(5 marks)

11. David is playing with a six-sided fair dice and a fair counter which has number 3 on one side and 8 on the other. He tosses the dice and the counter at the same time and records the outcomes in the possibility space below.

- Complete the table to show all the possible outcomes.

		Dice					
		1	2	3	4	5	6
Counter	3	(1,3)	(2,3)				
	8						

- Find the probability that:

i) both numbers are odd

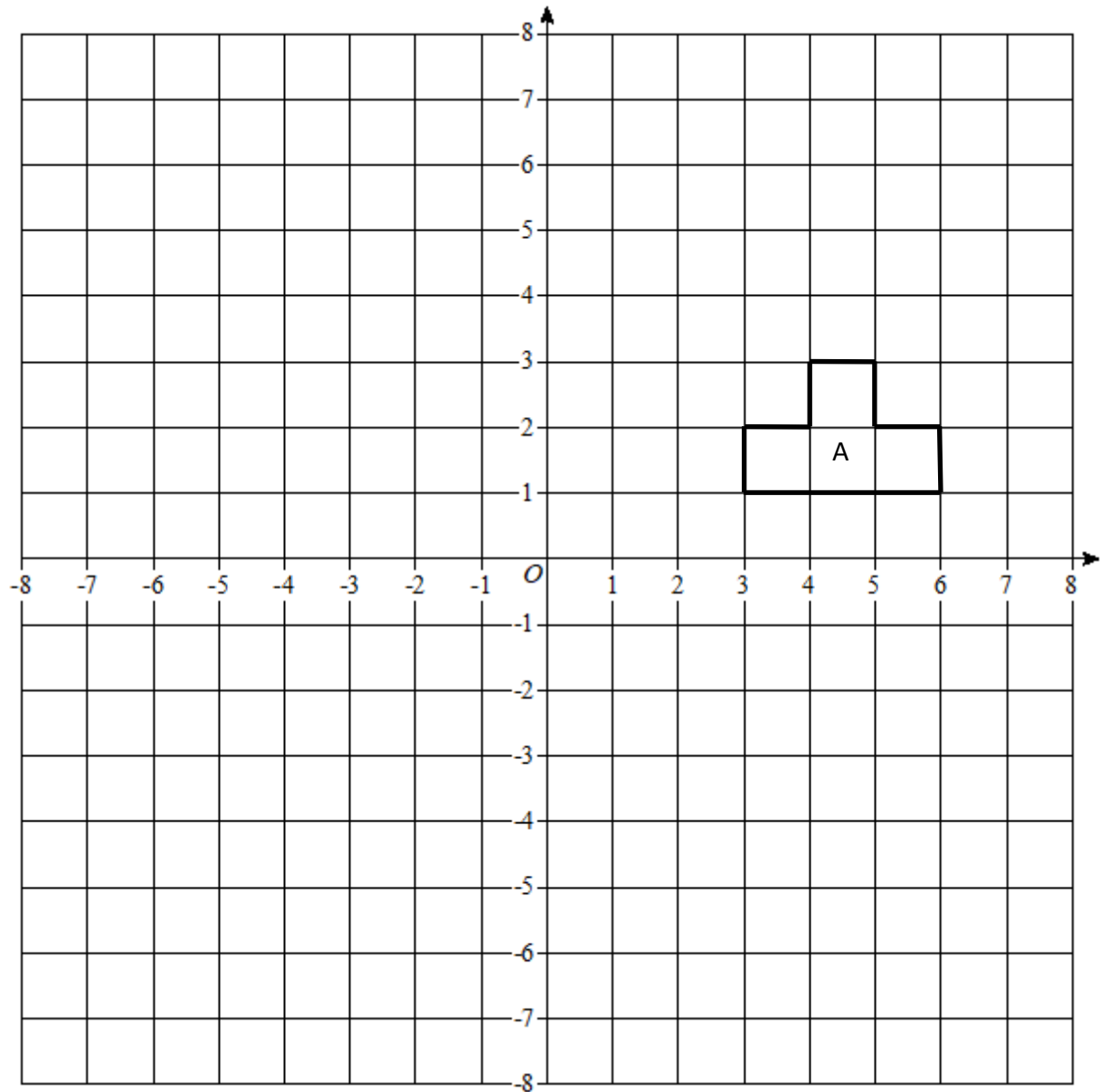
Ans: _____

ii) both numbers are square numbers

Ans: _____

(4 marks)

12.



- a) Reflect shape A in the line $x = 1$. Label the shape B.
- b) Rotate shape A 90° clockwise about the point $(3, 1)$. Label the shape C.
- c) Translate shape A by column vector $\begin{pmatrix} -8 \\ -5 \end{pmatrix}$. Label the shape D.

(4 marks)

End of Main Paper