

Annual Examinations for Secondary Schools 2022

YEAR 9

MATHEMATICS

TIME: 1h 30min

Main Paper

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

DO NOT WRITE ABOVE THIS LINE

Name: _____ Class: _____

Calculators are allowed but all necessary working must be shown.
Answer ALL questions.

1. a) Simplify the following ratios:

i) 15 : 33 : 60

Ans: _____

ii) 60 cm : 2 m

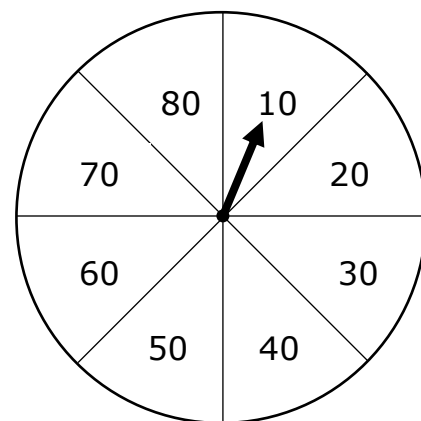
Ans: _____

b) The angles of a quadrilateral are divided in the ratio 2 : 3 : 1 : 4. Work out the value of the largest angle.

Ans: _____

(6 marks)

2. Alice uses this fair spinner for a game. She spins the arrow and records the score.



- a) What is the probability that the arrow lands on 20 or 30?

Ans: _____

Alice spins the spinner **ten** times and records the scores as follows:

60, 50, 10, 80, 30, 60, 50, 40, 60, 20

- b) What is the modal score?

Ans: _____

- c) Work out the mean.

Ans: _____

- d) What is the median?

Ans: _____

(6 marks)

3. a) Describe the **rule** in each of the following sequences:

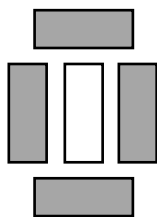
- i) 49, 38, 27, 16, ...

Ans: Start from _____ and _____

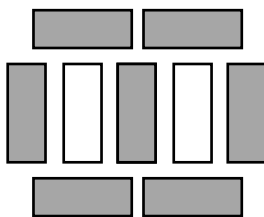
- ii) 100, 50, 25, 12.5, ...

Ans: Start from _____ and _____

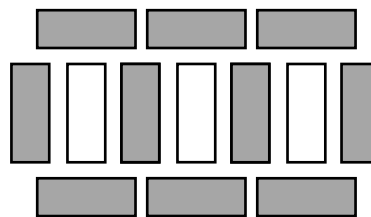
b) The following pattern uses rectangles.



Pattern 1



Pattern 2



Pattern 3

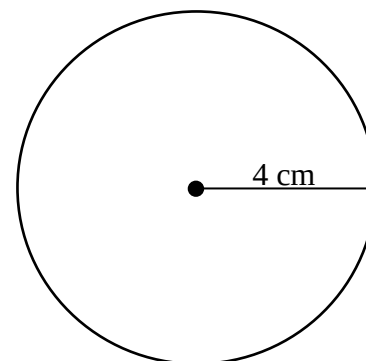
Complete the table below for Pattern numbers 3, 4 and 7.

Pattern number	1	2	3	4	...	7
Number of white rectangles	1	2			...	
Number of grey rectangles	4	7			...	
Total number of rectangles	5	9	13		...	

(9 marks)

4. Work out:

a) the circumference of the circle.



Ans: _____

b) the area of the circle.

Ans: _____
(6 marks)

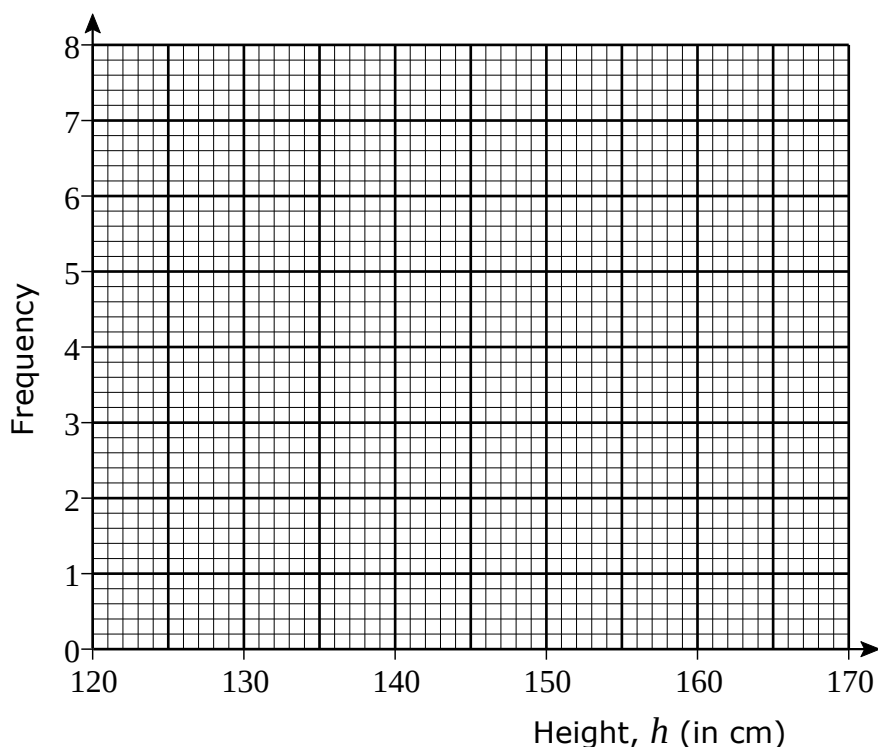
5. The frequency table below shows **partial** results of a survey about the height of a group of 13-year olds. The height, in centimetres, of five other teenagers was recorded as follows:

133, 150, 167, 145, 160

- a) Mark these measurements in the tally column and complete the frequency table.

Height, h (in cm)	Tally	Frequency
$120 < h \leq 130$	/	1
$130 < h \leq 140$	///	
$140 < h \leq 150$	/// /	
$150 < h \leq 160$	///	
$160 < h \leq 170$	//	
	Total	

- b) Draw a bar chart to show the results of the survey.



- c) The average height of a 13-year old is 150 cm. How many students are **taller** than the average height?

Ans: _____

(7 marks)

6. a) Expand: $6(3x + 4)$

Ans: _____

b) Simplify: $2x - 3x + 10x$

Ans: _____

c) Factorise completely: $8x^2 - 16$

Ans: _____

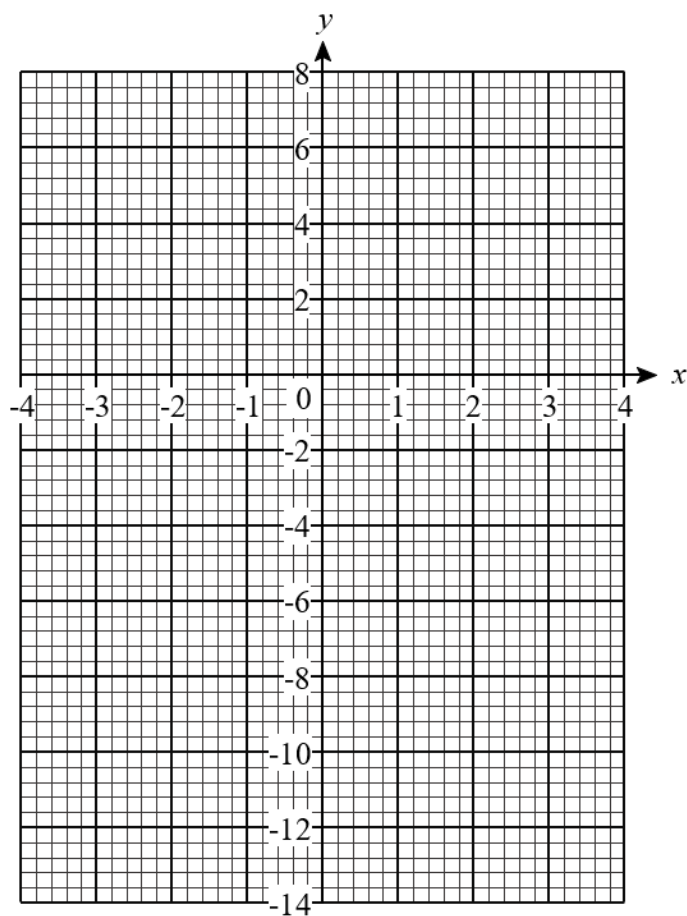
d) Work out the value of a in $a = 2b - 4c$ if $b = 22$ and $c = 3$.

Ans: _____

(7 marks)

7. A straight line passes through the points $(-4, -14)$, $(-1, -5)$ and $(3, 7)$.

a) Plot the straight line on the graph below.



b) From your graph find:

i) the value of x when y is 4.

Ans: _____

ii) the value of the y intercept.

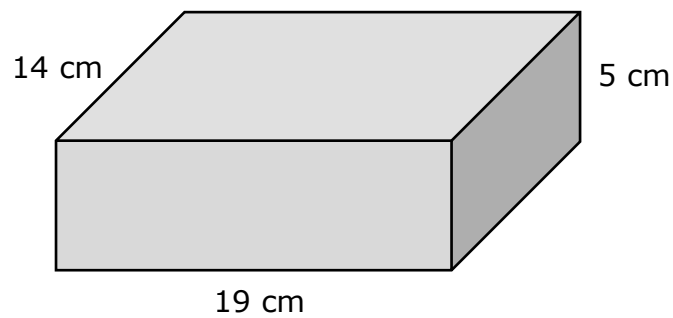
Ans: _____

c) Work out the gradient of the line.

Ans: _____

(7 marks)

8. A cuboid is 19 cm long, 14 cm wide and 5 cm high.

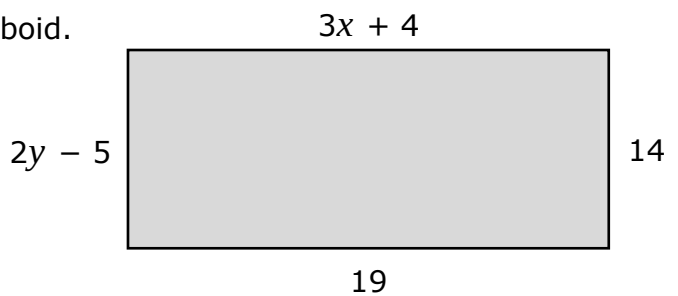


a) Calculate the total surface area of the cuboid.

Ans: _____

b) The diagram shows one face of the cuboid.

All the measurements are in cm.



i) Work out the value of x .

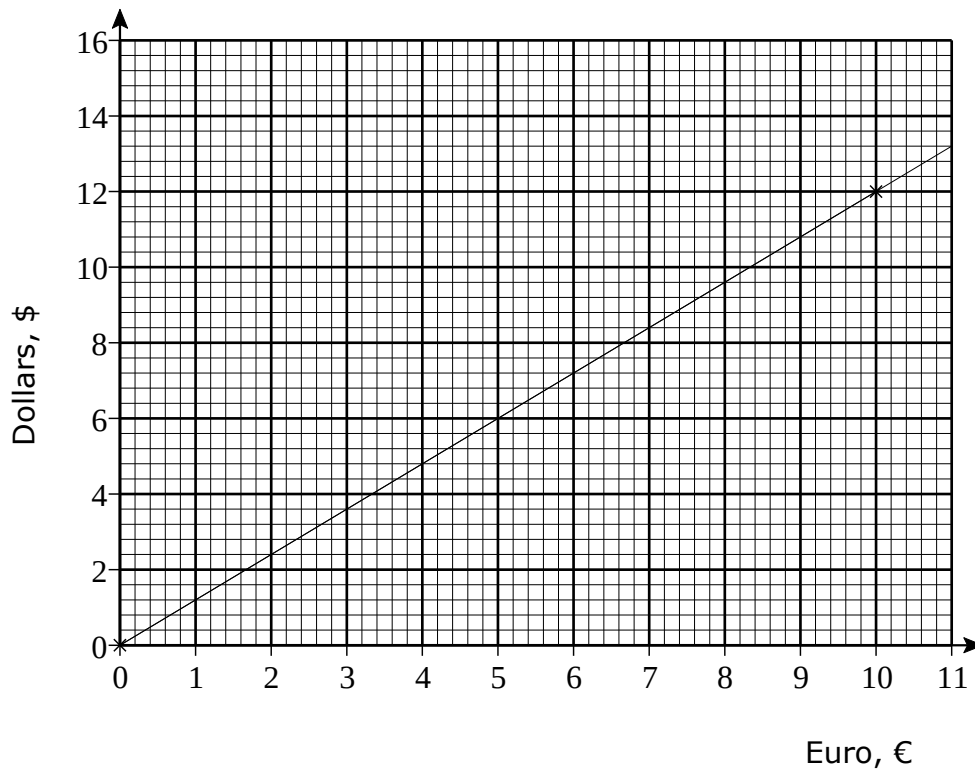
Ans: _____

ii) Work out the value of y .

Ans: _____

(10 marks)

9. This is a conversion graph of Dollars, \$, against Euro, €.



Use the graph to answer the following questions:

a) How many Dollars do you receive when exchanging €5?

Ans: _____

b) How many Euro do you receive when exchanging \$32?

Ans: _____

(3 marks)

10. Anthony bought a new aquarium of length 120 cm and width 40 cm. The aquarium is 60 cm deep.

- a) Anthony fills the aquarium to $\frac{11}{12}$ of its depth. Calculate the depth of the water in the aquarium.

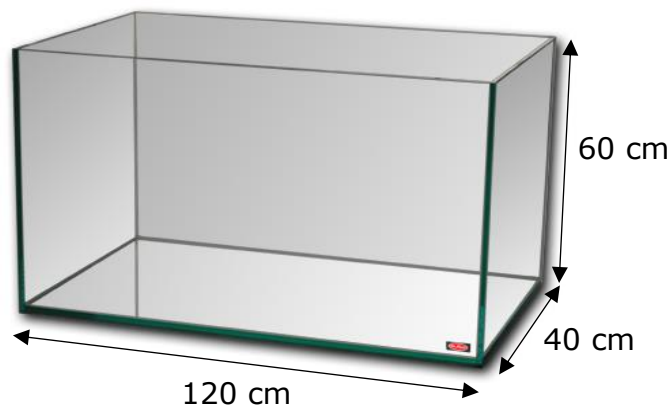


Diagram not drawn to scale

Ans: _____

- b) Work out the volume of the water in the aquarium.

Ans: _____

- c) If 1 litre = 1000 cm³, how many litres of water are there in the aquarium?

Ans: _____

- d) Anthony fills his aquarium with water flowing at a rate of 22 litres per minute. How long does it take the aquarium to fill?

Ans: _____

(8 marks)

11. a) Using ruler and compasses only, construct triangle ABC at point A (shown below) such that:

- i) side AB is 8 cm long.
- ii) angle A is 60° .
- iii) side AC is 7 cm long.

+

A

b) Measure:

i) the length of line BC.

Ans: _____

ii) the size of angle B.

Ans: _____

(6 marks)

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