



THE ENGLISH SCHOOL
MID PROGRAM ENTRY INTO YEAR 2

MATHEMATICS

SATURDAY 1st June 2024

Time allowed: 2 hours

Instructions to candidates

Answer all the questions in the spaces provided.
Without sufficient working, correct answers may be awarded no marks.

Information to candidates

This paper has 26 questions.
There are 28 pages in this question paper.
Full marks may be obtained for answers to all questions.
The total marks for this paper is 120.
The marks for each question are shown in round brackets, e.g. (2)
Calculators are not allowed

Advice for candidates

Write your answers neatly and in good English.
Work steadily through the paper.
Do not spend too long on one question.
Show all stages in any calculations.

Materials required for the paper

Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.
Tracing paper may be used.

Total Marks:

.....%

1. Here is a list of numbers:

9 11 25 27 33 40

a. From the numbers in the list, write down,

i. an even number

.....
(1)

ii. a cube number

.....
(1)

Here are the temperatures, in °C, in Paris at midnight for one week.

-3 -7 -2 -6 -9 -1 -5

b. Write down the lowest temperature.

..... °C
(1)

c. Find the difference between the lowest and the highest temperature.

.....
(1)

Hassan says,

“the sum of two prime numbers is always even”

d. Give an example to show that Hassan is not correct.

.....
(1)

(Total for Question 1 is 5 marks)

2. George buys

3 packets of seeds at €2.45 each packet

2 bags of compost at €6.20 each bag

and 4 plant pots

Each plant pot costs the same amount of money.

George paid a total of €34.35 for the seeds, compost and plant pots.

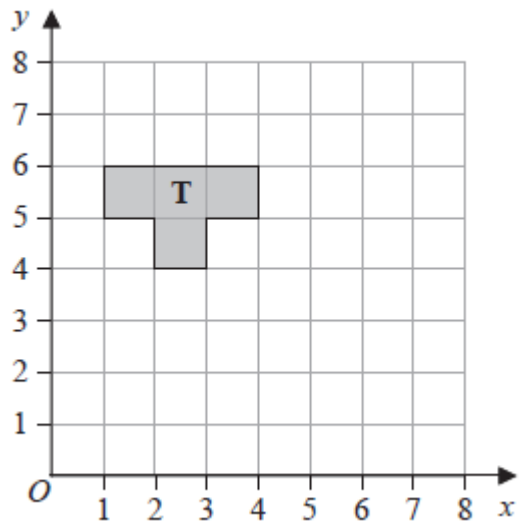
Work out the cost of each plant pot.

(4)

€.....

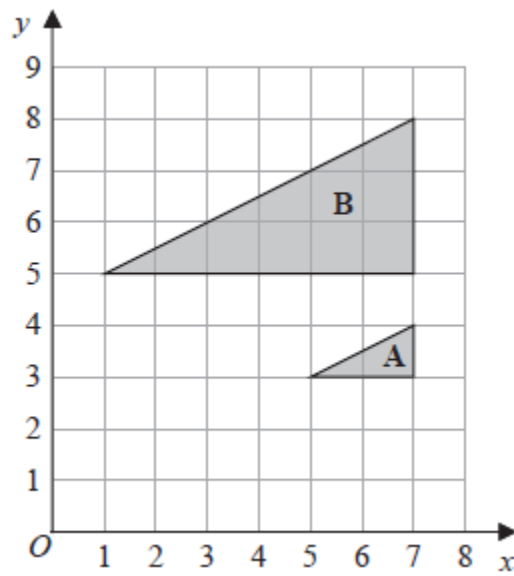
(Total for Question 2 is 4 marks)

3.



a. Reflect shape **T** in the line $y = x$

(2)



b. Describe fully the single transformation that maps triangle **A** onto triangle **B**

.....
.....

(3)

(Total for Question 3 is 5 marks)

4. Given that $R = 2d - 3 - 4f$, work out the value of R , when $d = 2$, $e = 3$ and $f = -\frac{1}{2}$.

$R = \dots\dots\dots$

(Total for Question 4 is 3 marks)

5. Express the given quantities in terms of the units given in the brackets:

(a) 10357 g (kg)	(b) 67.8 m (mm)
(c) 0.06 l (cm ³)	(d) 9873 mm ³ (cm ³)

(Total for Question 5 is 4 marks)

6. The diagram shows two triangles ABE and ECD

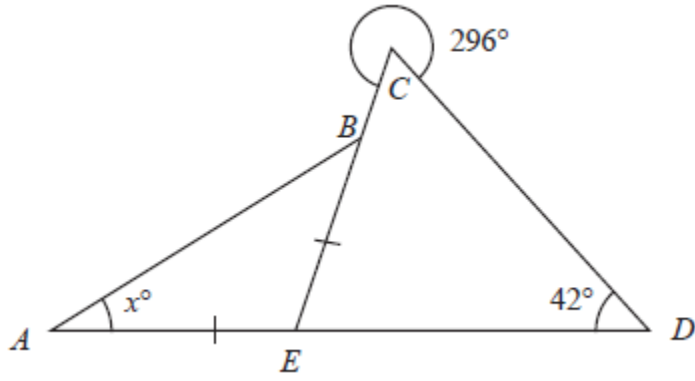


Diagram NOT
accurately drawn

Triangle ABE is isosceles with $AE = EB$
 AED and EBC are straight lines.

Angle $CDE = 42^\circ$

The reflex angle $ECD = 296^\circ$

Angle $BAE = x^\circ$

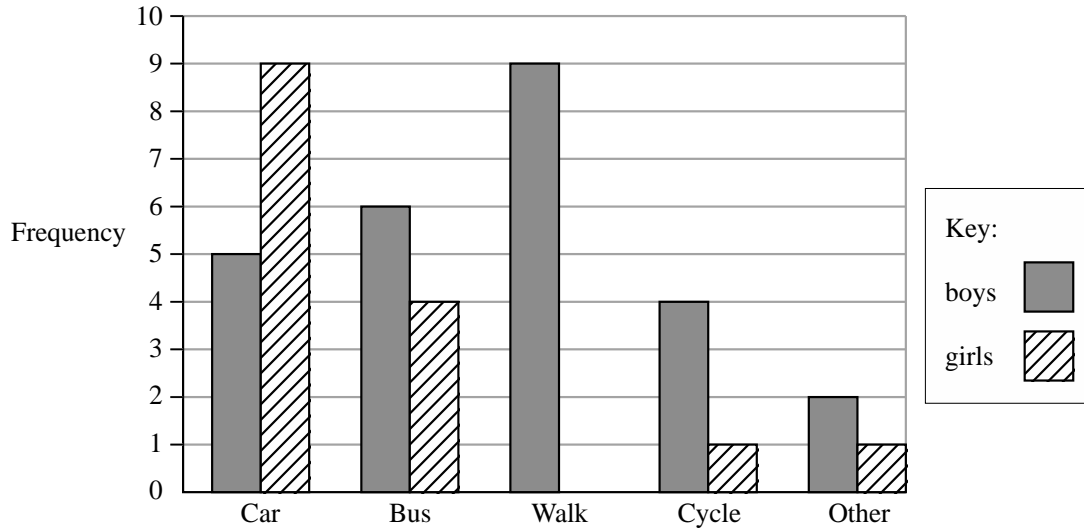
Work out the value of x .

$x = \dots\dots\dots$

(4)

(Total for Question 6 is 4 marks)

7. A teacher asks the students in Year 6 what type of transport they use to get to school. The dual bar chart shows some of the results.



- a. What is the most popular type of transport used by the boys?

.....
(1)

7 girls walk to school.

- b. Show this information on the dual bar chart.

(1)

More of the students get to school by car than by bus.

- c. How many more?

.....
(2)

The number of students in Year 5 is the same as the number of students in Year 6.

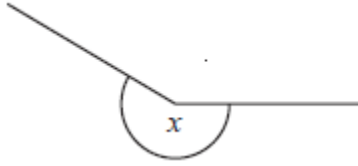
- d. What is the total number of students in Years 5 and 6?

.....
(2)

(Total for Question 7 is 6 marks)

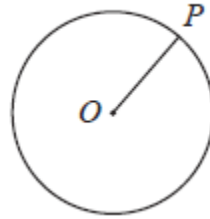
8.

a.



Write down the mathematical name of the angle marked x

.....
(1)

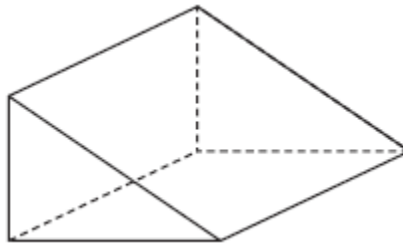


P is a point on a circle with centre O

b. Write down the mathematical name of the line OP

.....
(1)

Here is a solid prism.



c. Write down the mathematical name of this prism.

.....
(1)

d. Write down the number of edges of this solid prism.

.....
(1)

(Total for Question 8 is 4 marks)

9. Here is a number machine.



When the input is 7 the output is 60

a. Work out the value of y

$y = \dots\dots\dots$
(2)

Here is a different number machine.



The input is x

b. Write down an expression, in terms of x , for the output.

$\dots\dots\dots$
(2)

(Total for Question 9 is 4 marks)

10. Here are the first 4 terms in an arithmetic sequence.

3 7 11 15

a. Write down the next two terms.

Fifth term:

Sixth term:

b. Give an expression for the n th term for the following sequence.

Expression for the n th term:

(Total for Question 10 is 4 marks)

11. Trevor buys a boat.

The cost of the boat is £14 200 plus VAT at 20%

Trevor pays a deposit of £5000

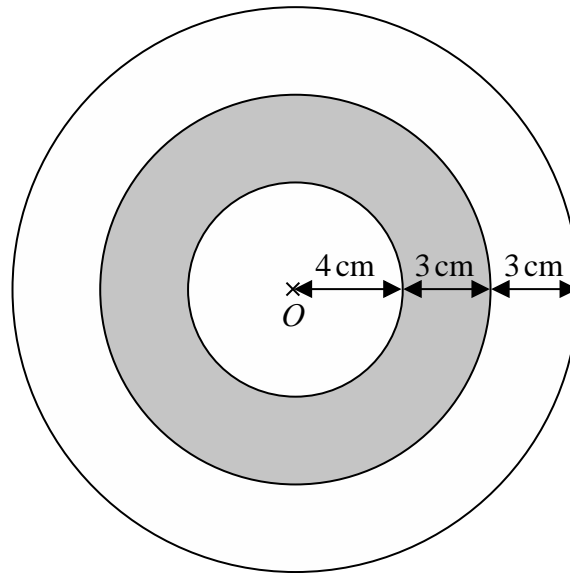
He pays the rest of the cost in 10 equal payments.

Work out the amount of each of the 10 payments.

£

(Total for Question 11 is 5 marks)

12. The diagram shows a logo made from three circles.



Each circle has centre O .

Daisy says that approximately $\frac{1}{3}$ of the logo is shaded.

Is Daisy correct?

You must show all your working.

.....
(Total for Question 12 is 5 marks)

13.

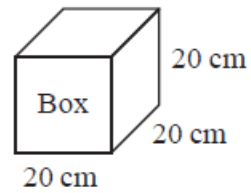
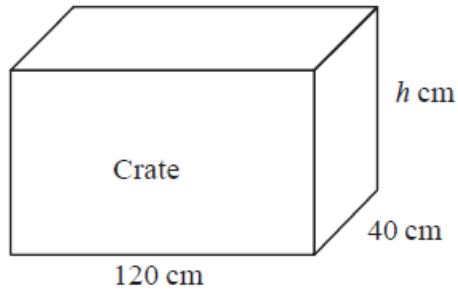


Diagram **NOT**
accurately drawn

A crate is in the shape of a cuboid with inside lengths of 120 cm, 40 cm and h cm
The crate has a lid.

Micah has 48 boxes.

Each box is in the shape of a cube 20 cm by 20 cm by 20 cm

Micah wants to put all the boxes in the crate and shut the lid.

Work out the least possible value of h

(Total for Question 13 is 4 marks)

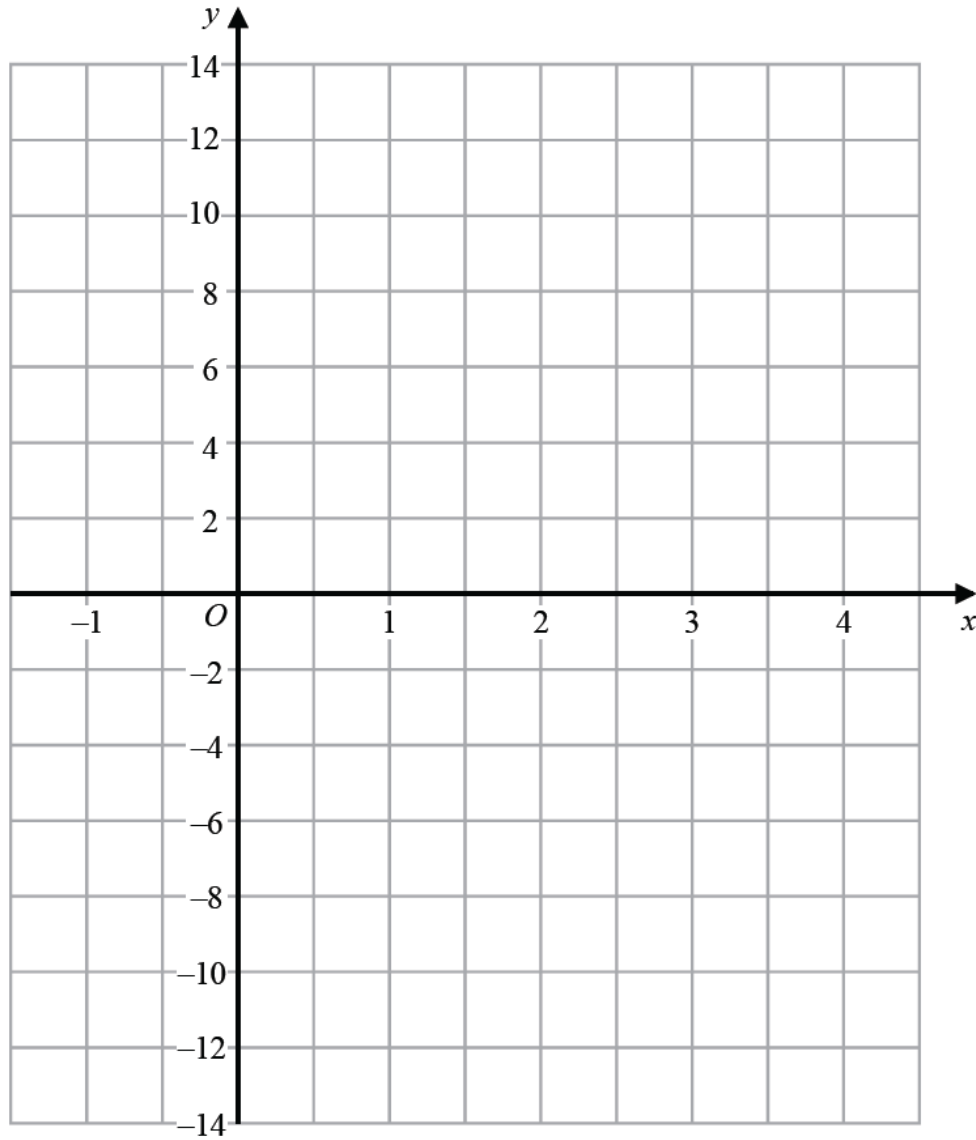
14.

a. Complete the table of values for $y = 4x - 6$

x	-1	0	1	2	3	4
y			-2			10

(2)

b. On the grid, draw the graph of $y = 4x - 6$ for values of x from -1 to 4



(2)

c. Does the point $(-20, -86)$ lie on the line $y = 4x - 6$?

Show workings to justify your answer.

(2)

.....

(Total for Question 14 is 6 marks)

15. A bonus of £2100 is shared by 10 people who work for a company.

40% of the bonus is shared equally between 3 managers.

The rest of the bonus is shared equally between 7 salesmen.

One of the salesmen says,

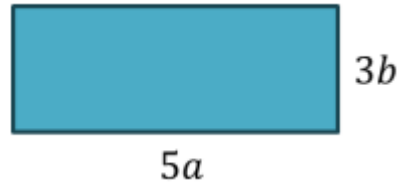
“If the bonus is shared equally between all 10 people I will get 25% more money.”

Is the salesman correct?

You must show how you get to your answer.

.....
(Total for Question 15 is 5 marks)

16. Below is a rectangle with measurements given in terms of a and b .



a. Find in its simplest form, a formula for the area A .

$$A = \dots\dots\dots$$

(2)

b. Find a formula for the perimeter P .

$$P = \dots\dots\dots$$

(2)

c. Given that $a = 3$ cm and $b = 2$ cm, find the value of the area.

$$A = \dots\dots\dots \text{cm}^2$$

(2)

(Total for Question 16 is 6 marks)

17.

- a. Write 168 as a product of its prime factors.
You must show your working.

.....
(2)

- b. Find the highest common factor (HCF) of 168 and 180.

HCF =
(3)

(Total for Question 17 is 5 marks)

18. Solve each equation below showing all your workings. Give your answer in a simplified fraction where appropriate.

a. $4x + 3 = 7 - x$

$x = \dots\dots\dots$

(2)

b. $5x - 6 = 3(x - 1)$

$x = \dots\dots\dots$

(3)

c. $\frac{5-x}{2} = 2x - 35$

$x = \dots\dots\dots$

(3)

d. $x^2 = 169$

$x = \dots\dots\dots$

(2)

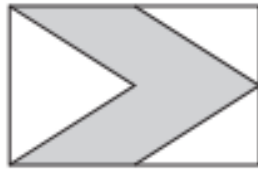
(Total for Question 18 is 10 marks)

19.

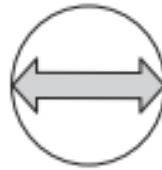
a. Here are four diagrams.



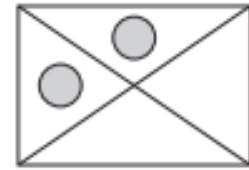
A



B



C



D

Which two diagrams have more than one line of symmetry? Write down the letters that corresponds to the ones that have more than one line of symmetry.

..... and (2)

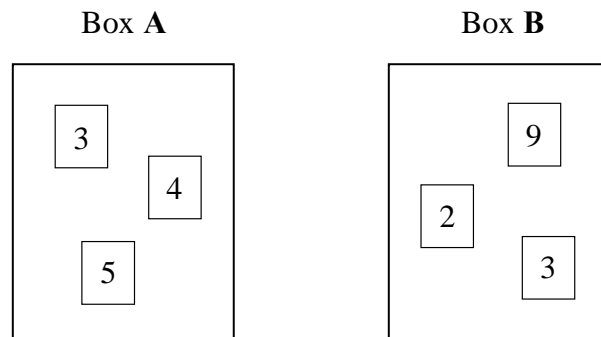
b. Here is a shape. Write down the order of rotational symmetry of this shape.



..... (1)

(Total for Question 19 is 3 marks)

20. There are 3 cards in Box A and 3 cards in Box B.
There is a number on each card.

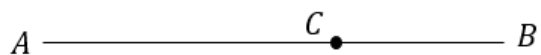


Ryan takes at random a card from Box A and a card from Box B.
He adds together the numbers on the two cards to get a total score.

Work out the probability that the total score is an odd number.

.....
(Total for Question 20 is 3 marks)

21. Construct the perpendicular to the line AB at the point C .



(Total for Question 21 is 2 marks)

22.

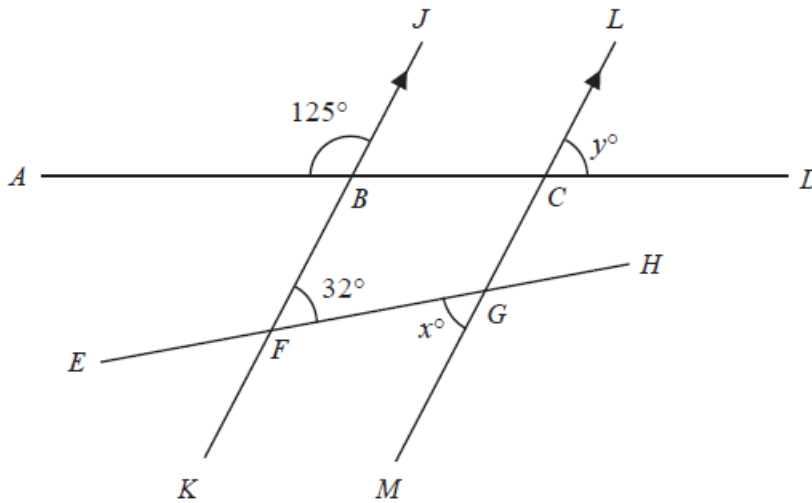


Diagram NOT accurately drawn

$ABCD$ and $EFGH$ are straight lines.
 KBJ and MGL are parallel straight lines.

angle $ABJ = 125^\circ$ angle $BFG = 32^\circ$ angle $FGM = x^\circ$ angle $LCD = y^\circ$

a. Write down the value of x

$x = \dots\dots\dots$ (1)

b.

i. Work out the value of y

$y = \dots\dots\dots$ (2)

ii. Give a reason for your answer to **a.**

$\dots\dots\dots$ (1)

(Total for Question 22 is 4 marks)

23. A rental company has 360 cars and some vans.

The ratio of the number of cars to the number of vans is 3 : 5

$\frac{4}{9}$ of the cars are electric.

36% of the vans are electric.

The company has more electric vans than electric cars.

Work out how many more.
Show your working clearly.

.....
(Total for Question 23 is 5 marks)

24. The mean number of goals scored by a hockey team in 8 matches is 6.

The team plays 2 more matches and scores k goals in each match.

The mean number of goals scored by the hockey team in the 10 matches is 7

Work out the value of k

$k = \dots\dots\dots$

(Total for Question 24 is 4 marks)

25. The number of rewards gained by each of 18 students last term is shown below:

1	2	1	3	2	3
5	4	1	2	2	2
3	1	2	3	1	4

a. Write down the mode of the number of rewards.

.....
(1)

b. Work out the median number of rewards.

.....
(2)

One of these students is chosen at random.

c. Find the probability that this student gained more than 2 rewards.

.....
(2)

(Total for Question 25 is 5 marks)

26. The diagram shows a hexagon $ABCDEF$

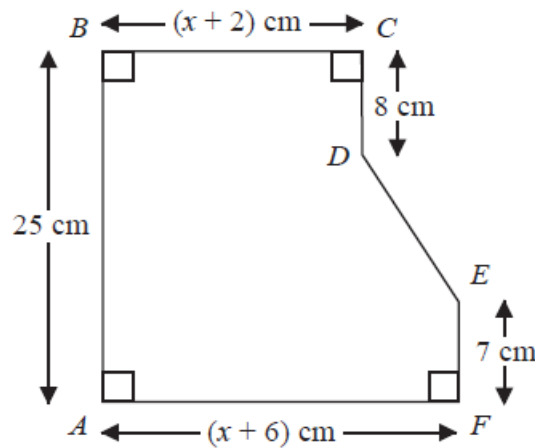


Diagram **NOT**
accurately drawn

$$AB = 25\text{ cm} \quad BC = (x + 2)\text{ cm} \quad CD = 8\text{ cm} \quad EF = 7\text{ cm} \quad AF = (x + 6)\text{ cm}$$

The area of hexagon $ABCDEF$ is 258 cm^2

Work out the value of x .

$$x = \dots\dots\dots$$

(Total for Question 26 is 5 marks)

END OF PAPER

Additional page

Additional page

