

**METHODIST GIRLS' SCHOOL (PRIMARY)**  
Founded in 1887



**END OF YEAR EXAMINATION 2025**  
**PRIMARY 6**  
**MATHEMATICS**

**PAPER 1**  
**BOOKLET A**

Total Time for Booklets A and B: 1 hour

**INSTRUCTIONS TO CANDIDATES**

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

Shade your answers in the Optical Answer Sheet (OAS) provided.

The use of calculators is **NOT** allowed.

Name: \_\_\_\_\_ ( )

Class: Primary 6. \_\_\_\_\_

Date : 19 August 2025

This booklet consists of 7 printed pages including this page.

Questions 1 to 10 carry 1 mark each. Questions 11 to 15 carry 2 marks each.

For each question, four options are given. One of them is the correct answer.

Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet.

(20 marks)

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1 In 8 532 194, the digit 3 stands for \_\_\_\_\_.

- (1) 300
- (2) 3000
- (3) 30 000
- (4) 300 000

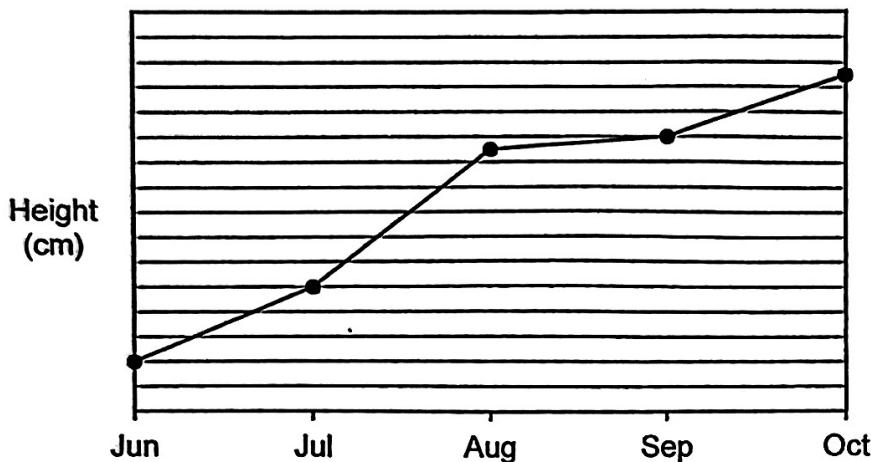
2 Which one of the following numbers is the smallest?

- (1) 0.301
- (2) 0.031
- (3) 0.103
- (4) 0.013

3 Express  $2\frac{2}{8}$  as a decimal.

- (1) 2.28
- (2) 2.25
- (3) 2.14
- (4) 2.2

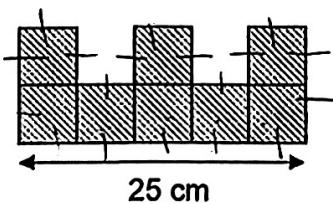
4 The graph shows the height of a plant from June to October.



In which month did the plant's height increase the most?

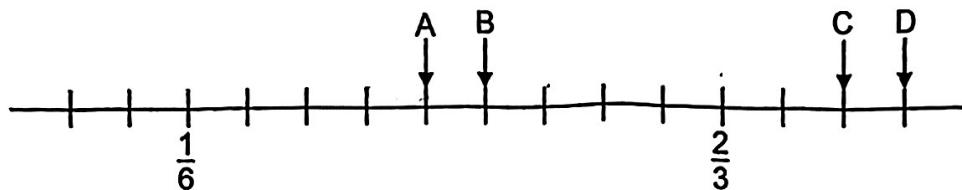
- (1) June to July
- (2) July to August
- (3) August to September
- (4) September to October

5 The figure below is made up of 8 identical squares. Find the perimeter of the figure.



- (1) 40 cm
- (2) 70 cm
- (3) 90 cm
- (4) 105 cm

6 In the number line below, which point represents  $\frac{5}{6}$ ?



- (1) A
- (2) B
- (3) C
- (4) D

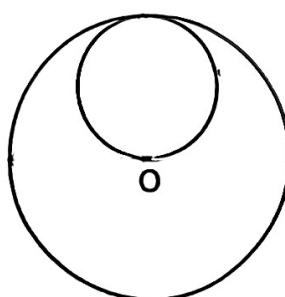
7 Express 20¢ as a percentage of \$5.

- (1) 4%
- (2) 25%
- (3) 400%
- (4) 2500%

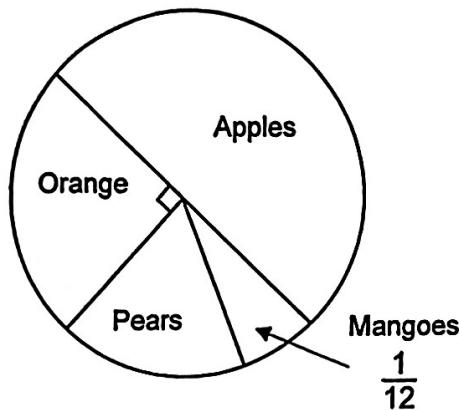
8 The figure below is made up of a big circle and a small circle. O is the centre of the big circle which has a diameter of 28 cm. Find the area of the small circle.

(Take  $\pi = \frac{22}{7}$ )

- (1)  $22 \text{ cm}^2$
- (2)  $44 \text{ cm}^2$
- (3)  $154 \text{ cm}^2$
- (4)  $616 \text{ cm}^2$



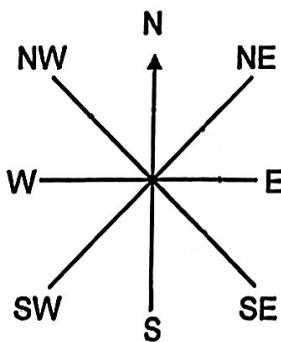
9 The pie chart below represents the number of fruits at a fruit stall.



There are 300 fruits at the fruit stall. There are twice as many apples as oranges. How many pears are there?

- (1) 25
- (2) 50
- (3) 75
- (4) 100

10 The figure below shows an 8-point compass. James was facing north-west (NW) at first. He turned  $225^\circ$  clockwise. Which direction is he facing now?



- (1) North (N)
- (2) South (S)
- (3) East (E)
- (4) West (W)

11 Calvin had 20 more stamps than Devi at first. After Devi gave 16 of her stamps to Calvin, Calvin now has 3 times as many stamps as Devi. How many stamps did Devi have at first?

- (1) 18
- (2) 26
- (3) 34
- (4) 42

12 The table below shows the number of books read by a class of P6 pupils. They read a total of 56 books. How many pupils read 3 books?

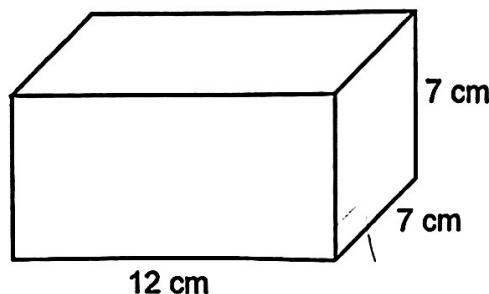
Number of books read per pupil	0	1	2	3	4
Number of pupils	3	14	11	?	2

- (1) 26
- (2) 12
- (3) 3
- (4) 4

13 A toy car cost \$8 after a discount of 20%. Kenny was given a further discount of \$2 because of the SG60 promotion at the toy store. What is the total percentage discount for the toy car?

- (1) 20 %
- (2) 25 %
- (3) 40 %
- (4) 60 %

14 A cuboid measuring 12 cm by 7 cm by 7 cm was dipped into some red paint.

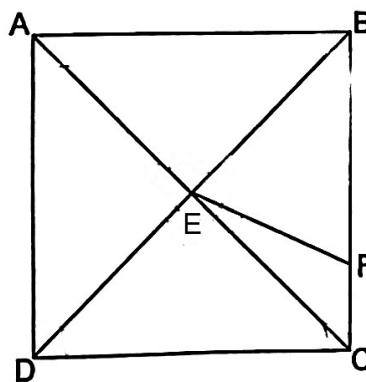


The cuboid was then cut into 1-cm cubes.

How many of the cubes would have none of their surfaces painted red?

- (1) 588
- (2) 539
- (3) 396
- (4) 250

15 In the figure, ABCD is a square. AC and BD are straight lines. BE = BF. Find  $\angle CEF$ .



- (1)  $67.5^\circ$
- (2)  $45^\circ$
- (3)  $30^\circ$
- (4)  $22.5^\circ$



# METHODIST GIRLS' SCHOOL (PRIMARY)

Founded in 1887



## END OF YEAR EXAMINATION 2025 PRIMARY 6 MATHEMATICS

### PAPER 1 BOOKLET B

Total Time for Booklets A and B: 1 hour

#### INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

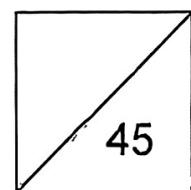
Write your answers in this booklet.

The use of calculators is NOT allowed.

Name: \_\_\_\_\_ ( )

Class: Primary 6. \_\_\_\_\_

Date: 19 August 2025



Parent's Signature: \_\_\_\_\_

This booklet consists of 9 printed pages including this page.

Questions 16 to 20 carry 1 mark each. Write your answers in the spaces provided.  
For questions which require units, give your answers in the units stated.

Do not write  
in this space

(5 marks)

16 Write down all the common factors of 9 and 18.

Ans: \_\_\_\_\_

17 Find the value of  $3402 \div 20$

Ans: \_\_\_\_\_

18 Find the value of  $63 + (9 - 6) + 4 \times 12$

Ans: \_\_\_\_\_

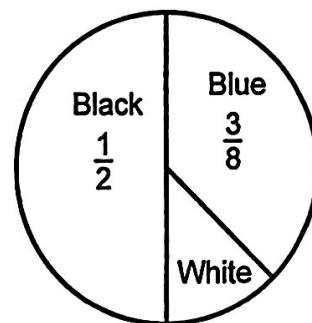
19 Find the value of  $\frac{3}{8} \div 12$ .

Give your answer as a fraction in the simplest form.

Do not write  
in this space

Ans: \_\_\_\_\_

20 All the members from a school club chose one colour for their club t-shirt.  
The pie chart shows their choices. 7 members chose White.  
How many members were there in the club?



Ans: \_\_\_\_\_

Questions 21 to 30 carry 2 marks each. Show your working clearly and write your answers in the spaces provided. For questions which require units, give your answers in the units stated. (20 marks)

**Do not write  
in this space**

**21** The table shows the hourly rate of work done at a call center.

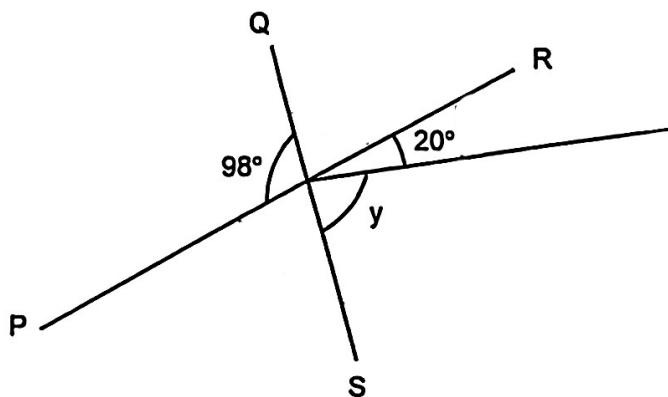
Day	Hourly rate
Weekdays (Monday to Friday)	\$8
Weekend (Saturday and Sunday)	\$10

Leonard works at the call center for 10 hours daily on weekdays and 5 hours on Saturdays. How much does he earn in a week?

Ans: \$ \_\_\_\_\_

A large, empty square box with a black border, intended for a drawing or sketch.

22 PR and QS are straight lines. Find  $\angle y$ .

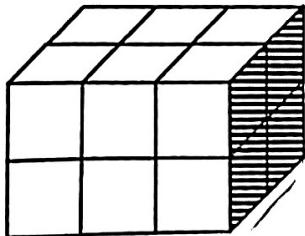


Ans: \_\_\_\_\_

A large, empty rectangular box with a black border, designed for drawing or writing.

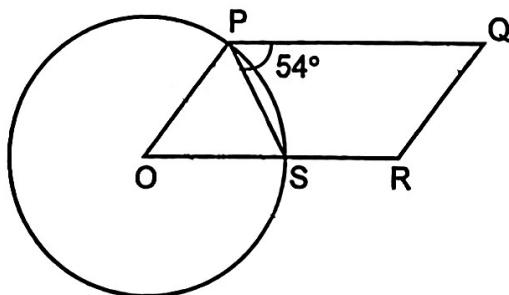
23

12 identical cubes are joined together to form a cuboid shown below. The shaded face of the cuboid is  $16 \text{ cm}^2$ . Find the volume of the cuboid.

Do not write  
in this spaceAns: \_\_\_\_\_  $\text{cm}^3$ 


24

The figure below is made up of a circle and a parallelogram. O is the center of the circle and  $\angle QPS = 54^\circ$ . Find  $\angle PQR$ .

Ans: \_\_\_\_\_  $^\circ$

25

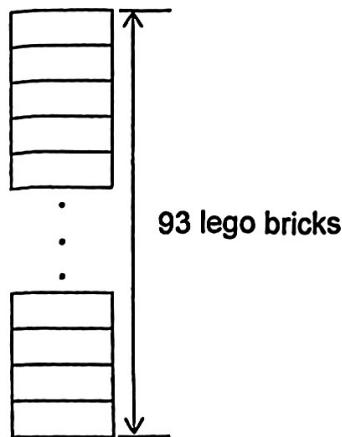
A bag contains marbles of three different colours.  $\frac{1}{3}$  of the marbles are blue. The ratio of the number of red marbles to green marbles is 2 : 3. Find the ratio of the number of blue marbles to that of the green marbles.

Do not write  
in this space

Ans: \_\_\_\_\_

26

A total of 93 Lego bricks are used to build a tower. There are at least 5 red bricks between any 2 blue bricks. What is the greatest number of blue bricks used?



Ans: \_\_\_\_\_

27

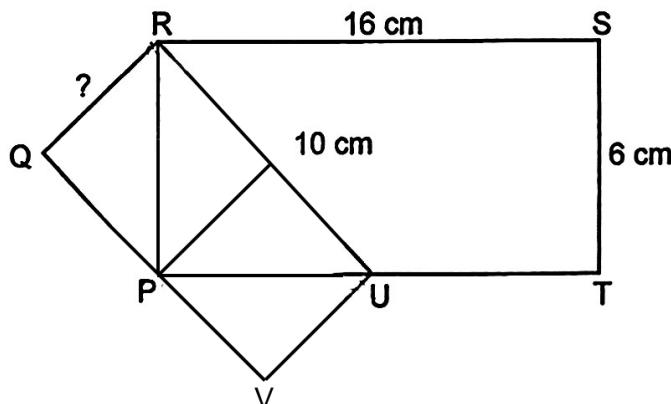
June had \$5a. After buying some cakes at \$5 each, she had \$2a left.  
How many cakes did she buy? Give your answer in terms of a.

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in this space

Ans: \_\_\_\_\_

28

In the figure below, QRVU and PRST are rectangles. U is the midpoint of PT. RS = 16 cm, ST = 6 cm and UR = 10 cm.  
Find the length of QR.



Ans: \_\_\_\_\_ cm

29 A table with 4 columns is filled with numbers in a pattern as shown below.

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in this space

Column A	Column B	Column C	Column D
3	4	5	6
10	9	8	7
11	12	13	14
18	17	16	15
...	...	...	...

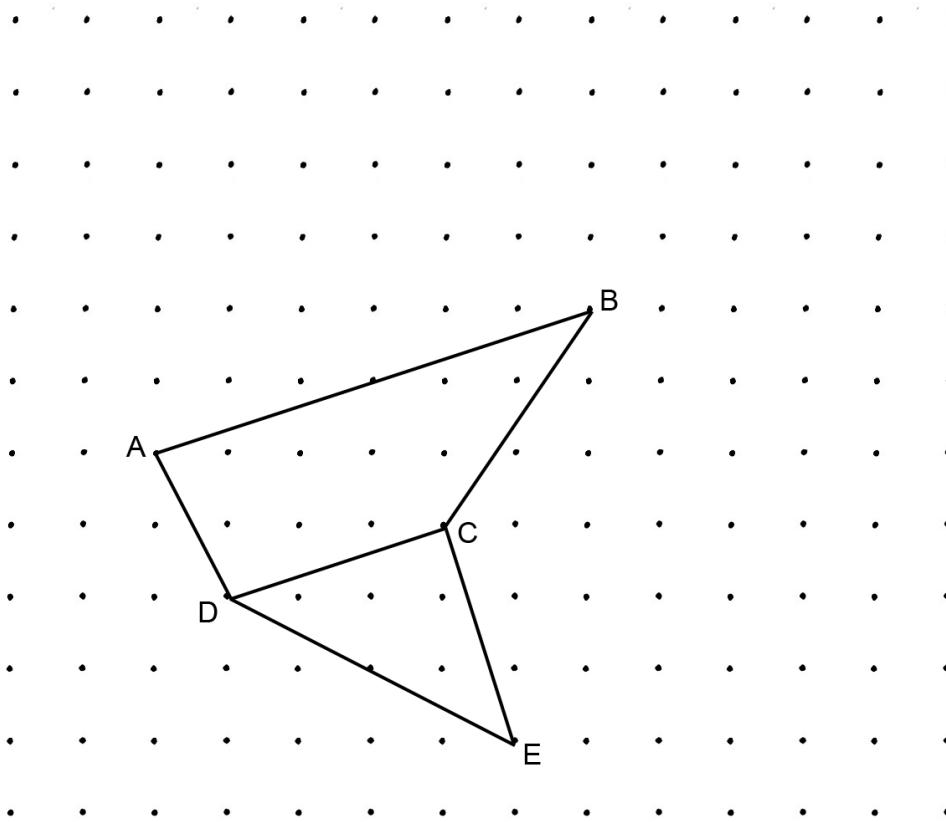
In which column will the number 272 appear?

Ans: \_\_\_\_\_



30

The dot grid below shows a trapezium ABCD and a right-angled triangle CDE.



By joining the dots on the grid with straight lines,

- draw and label another trapezium BCDX, such that DX is twice as long as BC.
- draw and label another triangle CDY, such that it has the same area as triangle CDE. Triangle CDY must not overlap with trapezium ABCD.



End of Paper



**METHODIST GIRLS' SCHOOL (PRIMARY)**  
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**END OF YEAR EXAMINATION 2025**  
**PRIMARY 6**  
**MATHEMATICS**

**PAPER 2**

Duration: 1 h 30 min

**INSTRUCTIONS TO CANDIDATES**

Do not turn over this page until you are told to do so.  
Follow all instructions carefully.

Answer all questions.

Write your answers in this booklet.

The use of an approved calculator is expected, where appropriate.

Name: \_\_\_\_\_ ( )

Class: Primary 6. \_\_\_\_\_

Date : 19 Aug 2025

Parent's Signature: \_\_\_\_\_

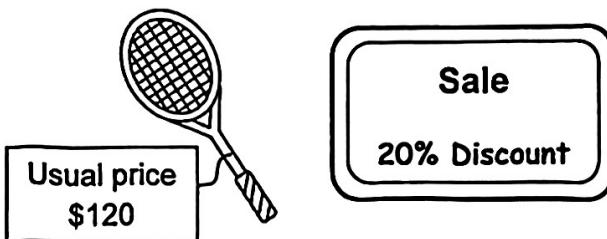
<b>Paper 1 Booklet A</b>	<b>/ 20</b>
<b>Paper 1 Booklet B</b>	<b>/ 25</b>
<b>Paper 2</b>	<b>/ 55</b>
<b>TOTAL</b>	<b>/ 100</b>

This booklet consists of **19** printed pages including this page.

Questions 1 to 5 carry 2 marks each. Show your working clearly and write your answers in the spaces provided. For questions which require units, give your answers in the units stated. (10 marks)

Do not write  
in this space

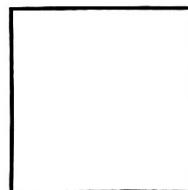
1 The usual price of a tennis racket is \$120. During a sale, Joe bought the racket at a discount of 20% How much did Joe pay for the racket?



Ans: \$ \_\_\_\_\_

2 Judy had a 1-m long metal wire. She used some of it to form a square of sides  $(4s + 3)$  cm and had 32 cm of wire left. What is the value of  $s$ ?

$(4s + 3)$  cm



Ans: \_\_\_\_\_

3 The sum of three different 3-digit numbers is 405.  
Of the three numbers, find the largest possible number.

Ans: \_\_\_\_\_

4 Participants of a shooting contest must obtain at least a certain score in the first round to qualify for the second round. There were 150 ~~participants~~ in the first round and the table shows the number of participants for each score.

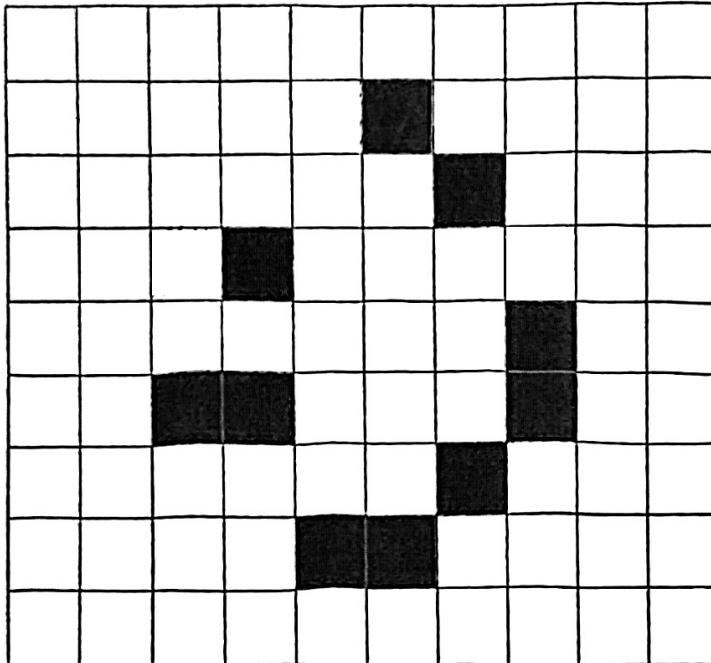
Score	Number of participants
0	28
1	32
2	30
3	23
4	25
5 or more	12

60% of the participants did not qualify for the second round. From the table, what was the lowest score of a participant who qualified for the second round?

Ans: \_\_\_\_\_

5 The figure below is made up of squares. Shade 3 more squares so that the figure has a line of symmetry.

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in this space



For questions to 6 to 17, show your workings clearly and write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part-question. (45 marks)

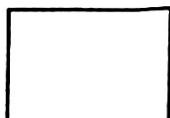
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in this space

6 Mrs Tan needs 21 pieces of ribbon, each of length 70 cm, to tie some presents. Ribbon is sold in rolls of 4.5 m each. What is the least number of rolls of ribbons that Mrs Tan needs to buy?

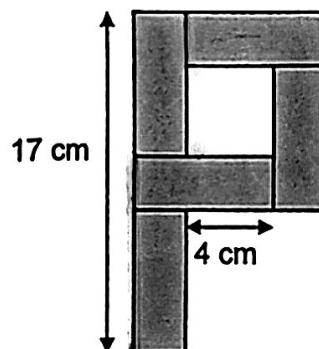
Ribbons  
\$3.50 per roll



Ans: \_\_\_\_\_ [3]



7 The figure is made up of 5 identical rectangles. Find the area of the figure.



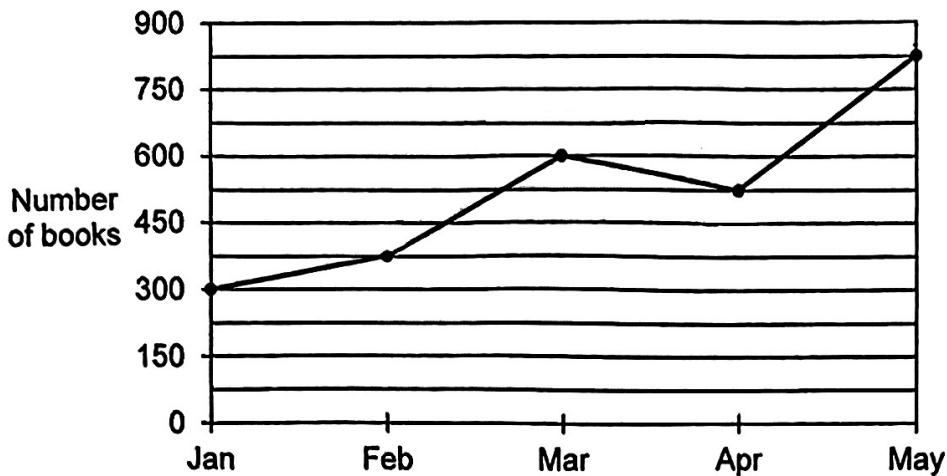
Ans: \_\_\_\_\_ [3]



8

The graph below shows the number of books borrowed by the pupils in a school from January to May.

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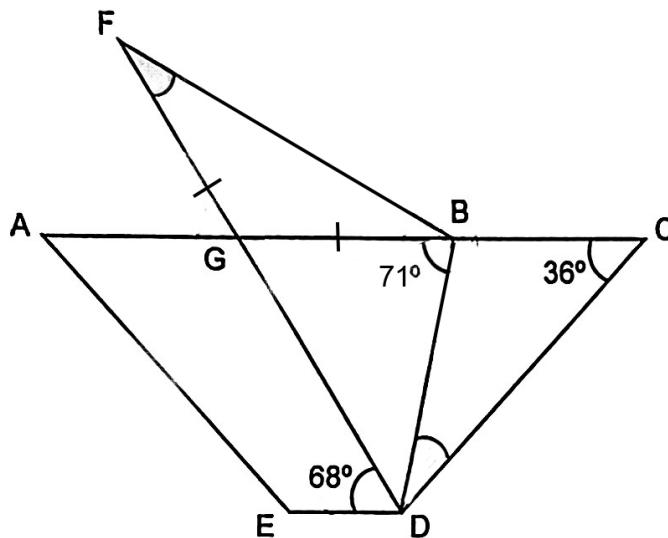
(a) What was the average number of books borrowed per month from January to May?

Ans: (a) \_\_\_\_\_ [2]

(b) What was the percentage increase in the number of books borrowed from February to March?

Ans: (b) \_\_\_\_\_ [2]

9 In the figure,  $ACDE$  is a trapezium and  $AC \parallel ED$ .  $AC$  and  $FD$  are straight lines.  $BG = FG$ ,  $\angle GDE = 68^\circ$ ,  $\angle ABD = 71^\circ$  and  $\angle BCD = 36^\circ$ . Do not write in this space



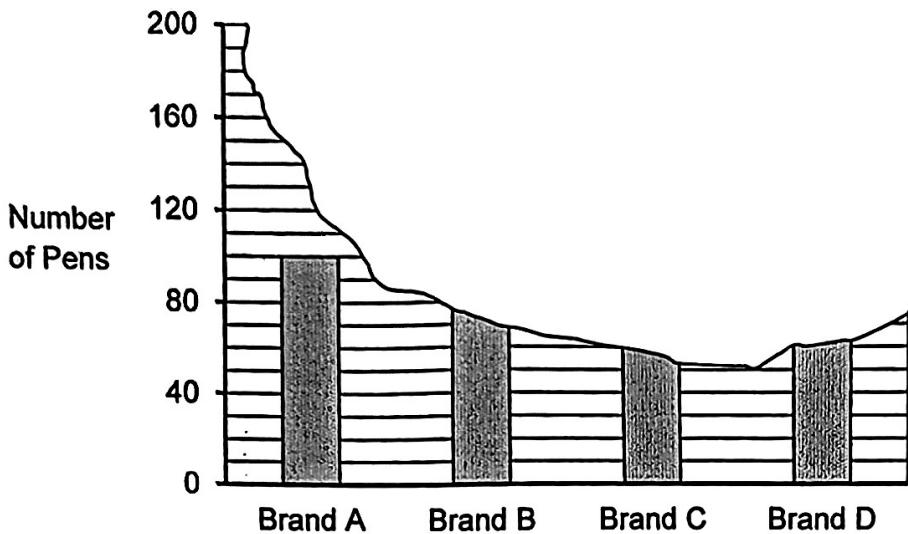
(a) Find  $\angle BDC$ .

Ans: (a) [2]

(b) Find  $\angle BFD$ .

**Ans: (b)** [2]

10 The bar graph shows the number of four different brands of pens sold at a shop. 560 pens were sold altogether. Part of the graph was torn off. Do not write in this space



The prices of each brand of pens is shown below.

Brand	Price per pen
A	\$2.80
B	\$2.20
C	\$2.50
D	\$1.60

The number of pens sold from Brand C was  $\frac{3}{5}$  the number of pens sold

from Brand D. The total amount collected from the sales of pens from Brand C and Brand D was \$620.

(a) How many Brand C pens were sold?

Do not write  
in this space

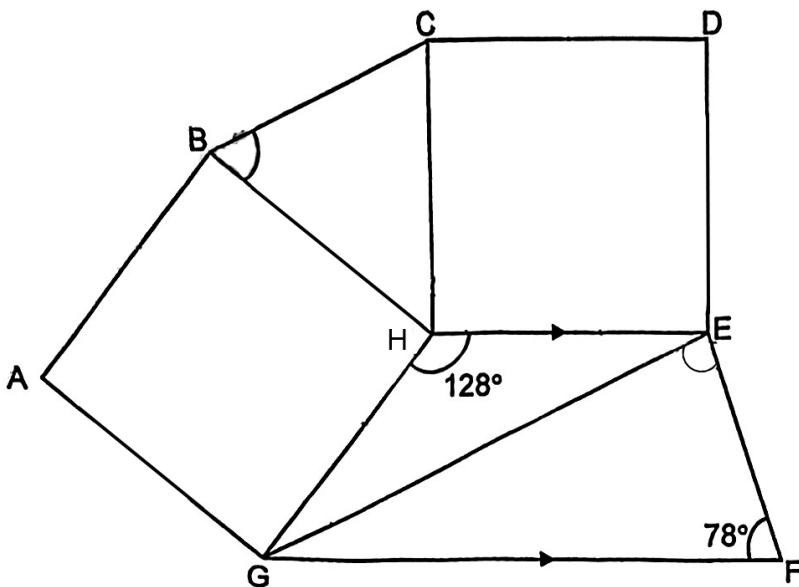
Ans: (a) \_\_\_\_\_ [3]

(b) How many Brand B pens were sold?

Ans: (b) \_\_\_\_\_ [2]

11 The figure below is made up of 2 identical squares and 3 triangles. EH is parallel to FG.  $\angle EHG = 128^\circ$  and  $\angle EFG = 78^\circ$ .

Do not write  
in this space



(a) Find  $\angle CBH$ .

Ans: (a) \_\_\_\_\_ [2]

(b) Find  $\angle GEF$ .

Ans: (b) \_\_\_\_\_ [2]

12

Rae and Jane took part in a 14km race. Both of them started running at the same time. Rae arrived at the finishing point 10 minutes before Jane who was 1.75km behind her. Jane did not change her speed throughout the race and she completed the race at 1015.

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(a) What time did both of them start running?

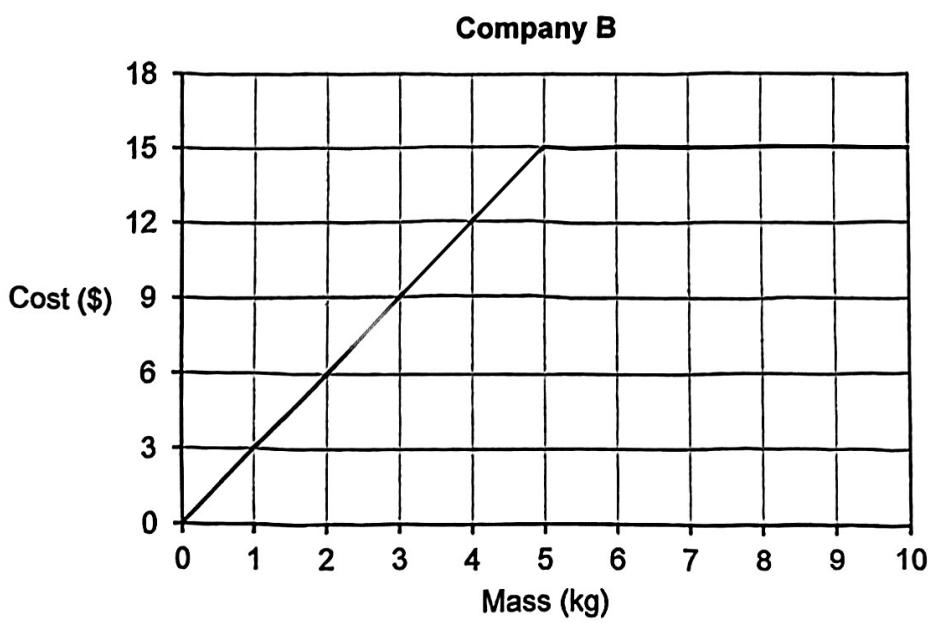
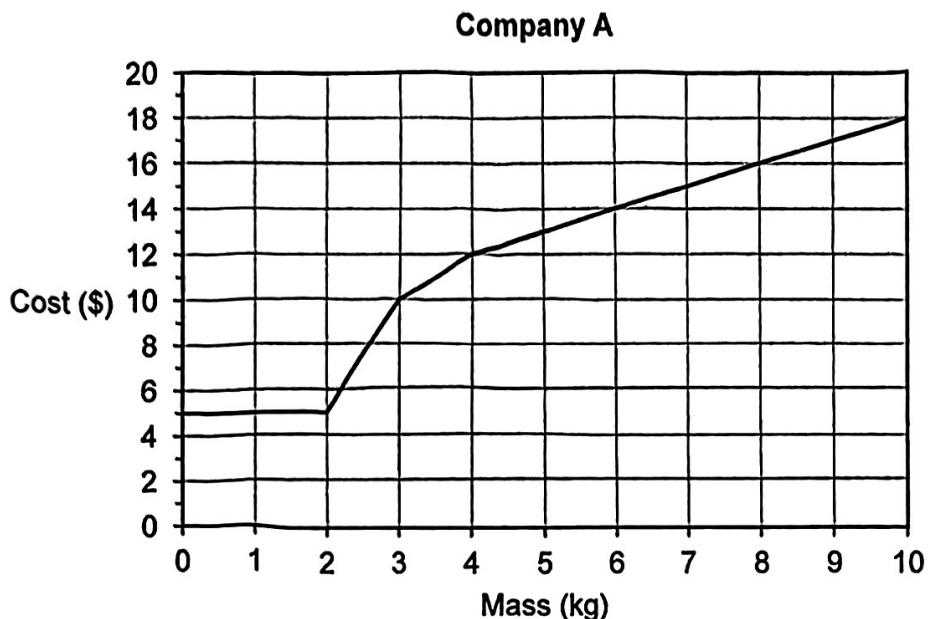
Ans: (a) \_\_\_\_\_ [2]

(b) What was Rae's average speed for the race in m / min?

Ans: (b) \_\_\_\_\_ [2]

13 The graphs below show the cost of sending packages to Indonesia for the first 10 kg by 2 courier companies.

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in this space



(a) How much does it cost to courier a package for the first 2 kg when using Company A's service?

Do not write  
in this space

Ans: (a) \_\_\_\_\_ [1]

(b) Adele used Company B's service and paid \$9 for her package. What was the mass of her package?

Ans: (b) \_\_\_\_\_ [1]

(c) Yanti and Dewi each sent a 8.7-kg package to Indonesia. Yanti used Company A's service while Dewi used Company B's service. What is the difference in the amounts they paid?

Ans: (c) \_\_\_\_\_ [2]

14 At a talent show, 23 participants invited either 1, 2 or 3 guests. The number of participants who invited 1 guest to those who invited 2 guests was 2 : 1. There were 44 guests altogether. Find the number of participants who invited 3 guests.

Do not write  
in this space

Ans: \_\_\_\_\_ [3]



15 Bala had 120 more stamps than Charles in at first.  
Each of them gave Ali some of their stamps.  
The number of stamps Charles gave Ali was 30% of the stamps Bala  
had at first. The number of stamps Bala gave to Ali was  $\frac{3}{5}$  of the number  
of stamps Charles had at first. Both Bala and Charles had an equal  
number of stamps left. How many stamps did Bala have at first?

Do not write  
in this space

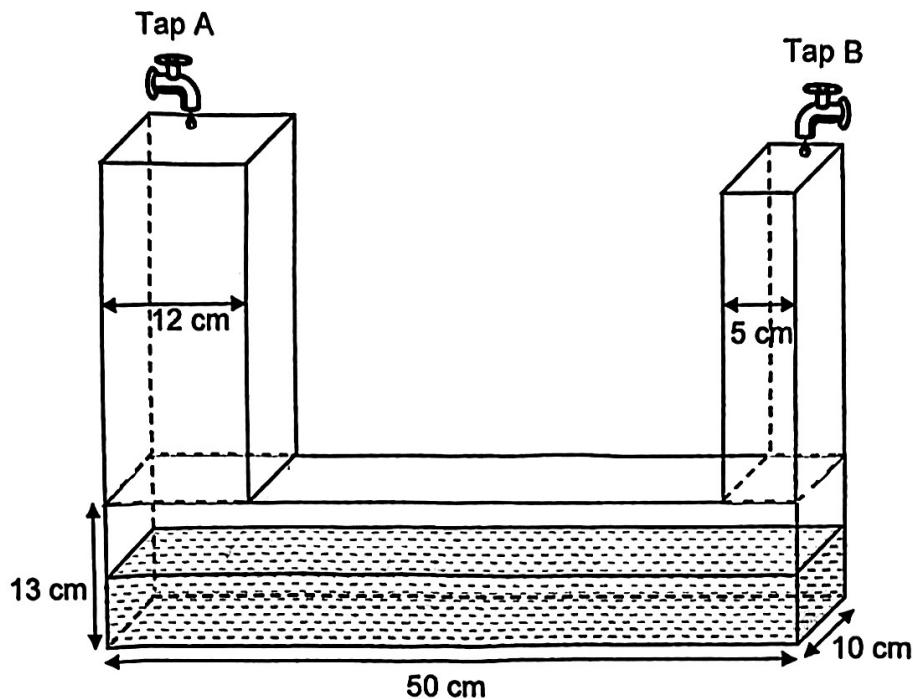
Ans: \_\_\_\_\_ [3]



Do not write  
in this space

16

The water tank below is made up of 3 rectangular cuboids joined together. At first, the tank was filled with 1800 ml of water. Both taps were turned on for 2 minutes. Tap A flowed at 1.2 litres per minute while Tap B flowed at 2 litres per minute.



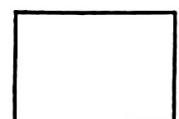
(a) What was the total volume of water in the tank at the end of the 2 minutes?

Ans: (a) \_\_\_\_\_ [1]

**(b) What was the height of the water in the tank in the end?**

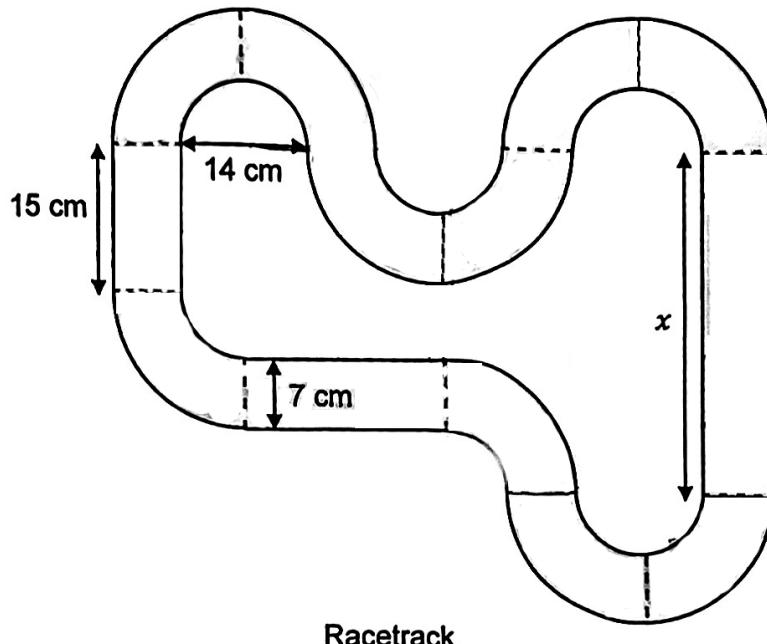
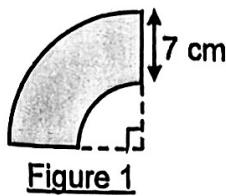
**Do not write  
in this space**

Ans: (b) \_\_\_\_\_ [3]



17 Ken built a racetrack for toy cars by using 3 different rectangular pieces and 10 identical curved pieces. A curved piece is as shown in Figure 1. The width of the racetrack is 7 cm.

Do not write  
in this space



(a) Find the length of  $x$ .

Ans: (a)

[1]



(b) Find the area of the entire track. (Take  $\pi = \frac{22}{7}$ )

Ans: (b) \_\_\_\_\_ [3]



END OF PAPER



**SCHOOL** : **METHODIST GIRLS' SCHOOL (PRIMARY)**  
**LEVEL** : **PRIMARY 6**  
**SUBJECT** : **MATHS**  
**TERM** : **MGS P6 PRELIM**

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### **Paper 1 Booklet A**

<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>
3	4	2	2	3	4	1	3	2	2
<b>Q11</b>	<b>Q12</b>	<b>Q13</b>	<b>Q14</b>	<b>Q15</b>					
4	4	3	4	4					

### **Paper 1 Booklet B**

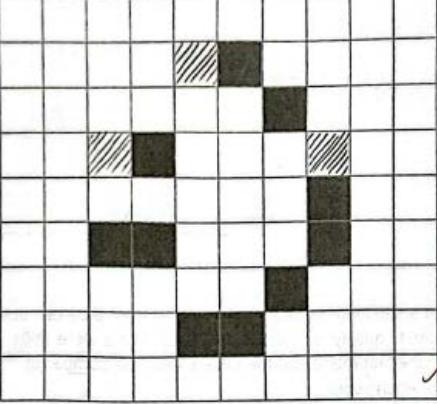
<b>Q16</b>	$9 = \frac{1}{3} \times 9$ $18 = \frac{1}{2} \times 18$ $\frac{3}{3} \times 3$ $\frac{2}{2} \times \frac{9}{9}$ $\frac{3}{3} \times 6$ <b>Ans: 1, 3, 9</b>
<b>Q17</b>	$\frac{3402}{20} = 170 \frac{1}{10}$
<b>Q18</b>	$63 \div (9-6) + 4 \times 12 = 63 \div 3 + 4 \times 12$ $= 21 + 4 \times 12$ $= 21 + 48$ $= 69$
<b>Q19</b>	$\frac{3}{8} \div \frac{12}{1} = \frac{3}{8} \times \frac{1}{12} = \frac{1}{32}$
<b>Q20</b>	$\text{White} - 8-4-3 = 8-7 = 1$ $\frac{1}{8} = 7$ $\frac{8}{8} = 7 \times 8 = 56$
<b>Q21</b>	$10 \times 5 = 50$ $50 \times \$8 = \$400$ $5 \times \$10 = \$50$ $\$400 + \$50 = \$450$
<b>Q22</b>	$\angle y = 98^\circ - 20^\circ = 78^\circ$

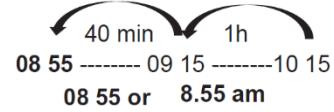
<b>Q23</b>	$  \begin{aligned}  1 \text{ shaded face} &= 16\text{cm}^2 \div 4 \\  &= 4 \text{ cm}^2 \\  \sqrt{4\text{cm}^2} &= 2\text{cm} \\  2\text{cm} \times 2 &= 4\text{cm} \\  2\text{cm} \times 3 &= 6\text{cm} \\  \\   6\text{cm} \times 4\text{cm} \times 4\text{cm} &= 96\text{cm}^3  \end{aligned}  $
<b>Q24</b>	$180^\circ - 54^\circ - 54^\circ = 72^\circ$
<b>Q25</b>	$  \begin{array}{ll}  B : R + G & R : G \\  1 : 2 \quad (3) & 2 : 3 \quad (5) \\  5 : 10 \quad (15) & 4 : 6 \quad (10)  \end{array}  $
<b>Q26</b>	$  \begin{aligned}  \text{No of sets} &= 93 \div 6 = 15 \text{ r } 3 \\  &= 15 + 1 = 16  \end{aligned}  $
<b>Q27</b>	$  \begin{aligned}  \text{Cakes} - \$5a - \$2a \\  &= \$3a  \end{aligned}  $
<b>Q28</b>	$  \begin{aligned}  \frac{1}{2} \times 8 \times 6 &= 24 \\  24 \times 2 &= 48 \\  48 \div 10 &= 4.8 \text{ cm}  \end{aligned}  $
<b>Q29</b>	$  \begin{aligned}  272 - 2 &= 270 \\  270 \div 8 &= 33 \text{ r } 6  \end{aligned}  $
<b>Q30</b>	

**SCHOOL** : **METHODIST GIRLS' SCHOOL (PRIMARY)**  
**LEVEL** : **PRIMARY 6**  
**SUBJECT** : **MATHS**  
**TERM** : **MGS P6 PRELIM**

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**Paper 2**

<b>Q1</b>	$100\% \rightarrow \$120$ $80\% \rightarrow \$120 \div 100 \times 80$ $= \$96$
<b>Q2</b>	$4 \times (4s + 3) = 100 - 32$ $16s + 12 = 68$ $16s = 68 - 12$ $16s = 56$ $s = 3.5\text{cm}$
<b>Q3</b>	$100 + 101 = 201$ $405 - 201 = 204$
<b>Q4</b>	$60\% \times 150 = 90$ $28 + 32 + 30 = 90$
<b>Q5</b>	<p>Biggest Possible Number = 204</p> <p>Lowest Possible Score = 3</p> 
<b>Q6</b>	$450 \div 70 = 6 \text{ r } 30 \text{ cm}$ $21 \div 6 = 3 \text{ r } 3$ No of rolls = $3 + 1$ $= 4$
<b>Q7</b>	Breadth = $(17\text{cm} - 2 \times 4\text{cm}) \div 3 = 3 \text{ cm}$ Length = $3\text{cm} + 4\text{cm} = 7\text{cm}$ Area = $(3\text{cm} \times 7\text{cm}) = 21\text{cm}^2 \times 5$ $= 105 \text{ cm}^2$
<b>Q8 (a)</b>	$(300 + 375 + 600 + 525 + 825) \div 5$ $= 525$
<b>Q8 (b)</b>	$\frac{225}{375} \times 100\% = 60\%$

<b>Q9 (a)</b>	$\angle BDC \rightarrow 180^\circ - 109^\circ - 36^\circ$ = $35^\circ$
<b>Q9 (b)</b>	$\angle BFD \rightarrow (180^\circ - 112^\circ) \div 2$ = $34^\circ$
<b>Q10(a)</b>	Total cost of 1 set of 3 brand C pens and 5 brand D pens = $3 \times \$2.50 + 5 \times \$1.60$ = $\$15.50$ No. of sets = $\$620 \div \$15.50$ = 40 No. of brand C pens bought = $40 \times 3$ = 120
<b>Q10(b)</b>	No. of brand D pens bought = $40 \times 5 = 200$ No. of brand B pens bought = $560 - 200 - 120 - 100$ = 140
<b>Q11(a)</b>	$\angle CBH \rightarrow (180^\circ - 52^\circ) \div 2$ = $64^\circ$
<b>Q11(b)</b>	$180^\circ - 78^\circ = 102^\circ$ $\angle GEF \rightarrow 102^\circ - 26^\circ$ = $76^\circ$
<b>Q12(a)</b>	Jane's average speed = $1750 \text{ m} \div 10 \text{ min}$ = $175 \text{ m/ min}$ Time taken by Jane = $14000 \div 175$ = $80 \text{ min}$ = $1 \text{ h } 20 \text{ min}$
	 <p>Ans: <u>8.55am</u></p>
<b>Q12(b)</b>	Time taken by Rae = $80 \text{ min} - 10 \text{ min}$ = $70 \text{ min}$  Rae's average speed = $14000 \text{ m} \div 70 \text{ min}$ = $200 \text{ m/ min}$
<b>Q13(a)</b>	\$5
<b>Q13(b)</b>	3kg
<b>Q13(c)</b>	For 8.5 kg package, Cost of package with Company B = \$15  Company A Rate per 1kg after 4kg = \$1 per kg Cost of package with Company A = $\$12 + 4.7 \times \$1$ = \$16.70 Difference = \$16.70 - \$15 = \$1.70  Company B offers a lower courier charge and the difference is \$1.70

**Q14**

1S : 2S  
 2 : 1  
 No. of guests for each set of 3 participants  
 $= 2 + 2 = 4$

1G or 2G	3G	Divisible by 3?	23 Total participants
4	40	x	
8	36		$6 + 12 = 18$
12	32	x	
16	28	x	
20	24		$15 + 8 = 23$
24	20	x	
28	16	x	
32	12		$24 + 4 = 28$
36	8	x	
40	4	x	
44	0	x	

Hence, 8 participants invited 3 guests.

**Q15**

At First	Gave	Left
B: $10u + 120$	$-6u$	$4u + 120$
C: $10u$	$-3u - 36$	$7u - 36$

$$\begin{aligned}
 7u - 36 &= 4u + 120 \\
 3u &= 120 + 36 \\
 1u &= 52 \\
 10u &= 52 \times 10 = 520
 \end{aligned}$$

$$\begin{aligned}
 \text{No. of stamps Bala had at first} \\
 &= 520 + 120 \\
 &= 640
 \end{aligned}$$

**16(a)**

$$\begin{aligned}
 \text{Volume of water from taps A and B} \\
 &= 2 \times (1.2 \text{ } \ell + 2 \text{ } \ell) \\
 &= 6.4 \text{ } \ell
 \end{aligned}$$

$$\begin{aligned}
 \text{Total volume of water at the end of 2 minutes} \\
 &= 6.4 \text{ } \ell + 1.8 \text{ } \ell \\
 &= 8.2 \text{ } \ell
 \end{aligned}$$

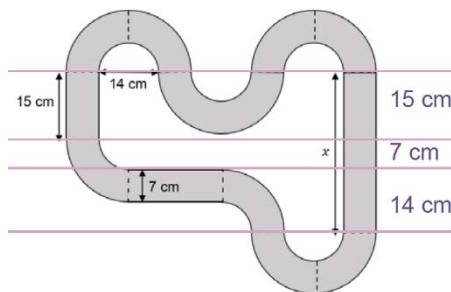
**16(b)**

$$\begin{aligned}
 \text{Capacity of base cuboid} &= 50 \text{ cm} \times 10 \text{ cm} \times 13 \text{ cm} = 6500 \text{ cm}^3 \\
 \text{Total base area of 2 side cuboids} &= 12 \times 10 + 5 \times 10 = 170 \text{ cm}^2 \\
 \text{Volume of water in 2 side cuboids} &= 8200 \text{ cm}^3 - 6500 \text{ cm}^3 = 1700 \text{ cm}^3 \\
 \text{Height of water in 2 side cuboids} &= 1700 \text{ cm}^3 \div 170 \text{ cm}^2 = 10 \text{ cm}
 \end{aligned}$$

$$\begin{aligned}
 \text{Total height of water in tank} \\
 &= 10 \text{ cm} + 13 \text{ cm} \\
 &= 23 \text{ cm}
 \end{aligned}$$

17(a)

$$\begin{aligned}
 \text{Length of } X &= 15 \text{ cm} + 14 \text{ cm} + 7 \text{ cm} \\
 &= 36 \text{ cm}
 \end{aligned}$$



17(b)

$$\begin{aligned}
 \text{Area of 3 rectangles} &= (15 \text{ cm} + 21 \text{ cm} + 36 \text{ cm}) \times 7 \text{ cm} \\
 &= 504 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Radius of big quadrant} &= (14 \text{ cm} + 7 \text{ cm} + 7 \text{ cm}) \div 2 \\
 &= 14 \text{ cm}
 \end{aligned}$$

$$\begin{aligned}
 \text{Area of 10 big quadrants} &= 10 \times \frac{1}{4} \times \frac{22}{7} \times 14 \text{ cm} \times 14 \text{ cm} \\
 &= 1540 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Area of 10 small quadrants} &= 10 \times \frac{1}{4} \times \frac{22}{7} \times 7 \text{ cm} \times 7 \text{ cm} \\
 &= 385 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Area of 10 curved pieces} &= 1540 \text{ cm}^2 - 385 \text{ cm}^2 \\
 &= 1155 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Total area of track} &= 504 \text{ cm}^2 + 1155 \text{ cm}^2 \\
 &= 1659 \text{ cm}^2
 \end{aligned}$$