

METHODIST GIRLS' SCHOOL (PRIMARY)
Founded in 1887



PRELIMINARY EXAMINATION 2023
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: 21 August 2023

This booklet consists of 8 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). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet. (20 marks)

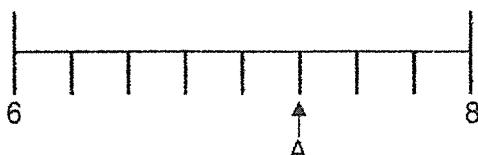
1 What is the value of the digit 5 in 45 678?

- (1) 50
- (2) 500
- (3) 5000
- (4) 50 000

2 Round 4.567 to 2 decimal places.

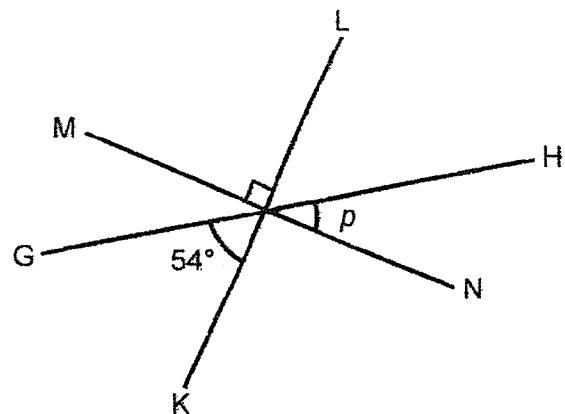
- (1) 4.50
- (2) 4.56
- (3) 4.57
- (4) 4.60

3 In the number line, what is the number represented by A?



- (1) 6.5
- (2) 6.75
- (3) 7.2
- (4) 7.25

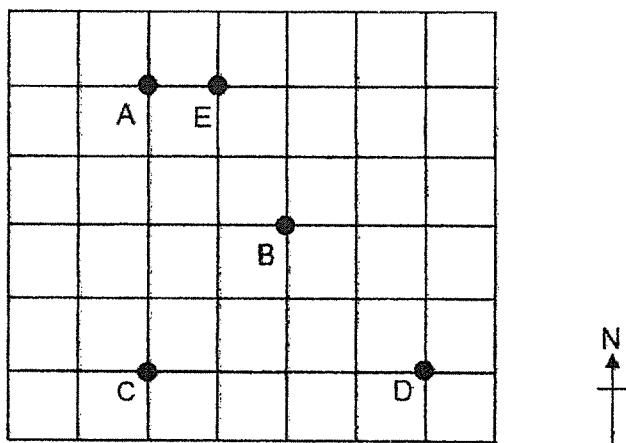
4 GH, KL and MN are straight lines. Find $\angle p$.



- (1) 27°
- (2) 36°
- (3) 54°
- (4) 73°

5 Five landmarks A, B, C, D and E on a map are shown in the square grid below.

Neha is at landmark B. She faces east and turns 135° anti-clockwise.

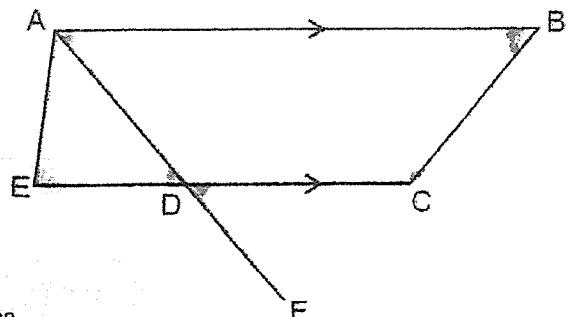


Which landmark is Neha facing now?

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

- 6 In the figure below, ABCD is a trapezium. AF and EC are straight lines. Peishan wrote four statements to describe the figure.

Statement A: $\angle AED = \angle ABC$



Statement B: $\angle EDA = \angle FDC$

Statement C: $\angle ABC + \angle ECB = 180^\circ$

Statement D: $\angle DAB + \angle ABC = 180^\circ$

Which of the following statements are true?

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

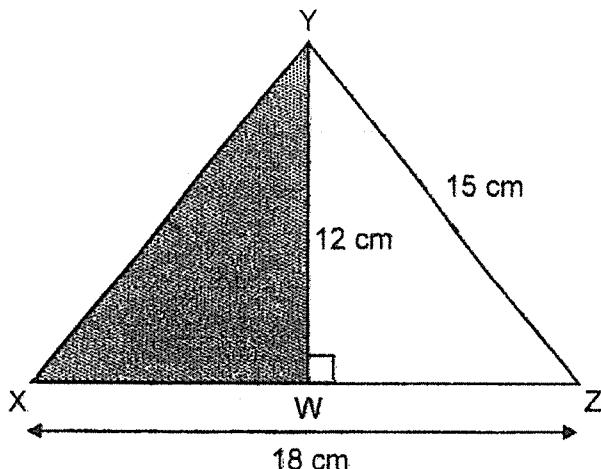
- 7 Arrange the following fractions from the smallest to the largest.

$$\frac{3}{2}, \quad 1\frac{5}{9}, \quad \frac{6}{5}$$

- | | <u>Smallest</u> | <u>Largest</u> |
|-----|-----------------|----------------|
| (1) | $\frac{6}{5}$ | $\frac{3}{2}$ |
| (2) | $1\frac{5}{9}$ | $\frac{6}{5}$ |
| (3) | $\frac{3}{2}$ | $1\frac{5}{9}$ |
| (4) | $\frac{6}{5}$ | $1\frac{5}{9}$ |

8 The figure below shows an isosceles triangle XYZ, where XY = YZ.

WY = 12 cm, YZ = 15 cm and XZ = 18 cm. Find the area of triangle WXY.

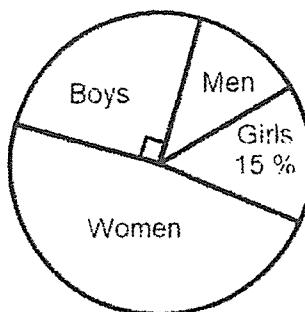


- (1) 216 cm^2
- (2) 108 cm^2
- (3) 90 cm^2
- (4) 54 cm^2

9 There are 36 pens in a box. $\frac{1}{3}$ of them are red, 50% are blue and the rest are green. Express the number of green pens as a fraction of the number of blue pens.

- (1) $\frac{1}{2}$
- (2) $\frac{1}{3}$
- (3) $\frac{1}{4}$
- (4) $\frac{1}{6}$

- 10 The pie chart shows the number boys, girls, men and women who were in a cinema. There were 180 girls in the cinema. How many boys were there?



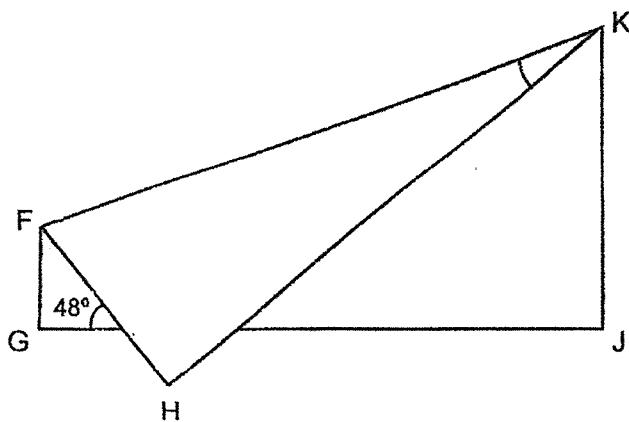
- (1) 25
(2) 60
(3) 300
(4) 360
- 11 Sandy is given a total of \$30 to spend from Monday to Friday. Every day, she spends \$4 on food, q on transport and saves the rest. How much does she save each week?
- (1) \$ $(130 - 5q)$
(2) \$ $(30 - 4q)$
(3) \$ $(26 - q)$
(4) \$ $(10 - 5q)$
- 12 Lisa paid \$18.90 for 3 identical files and 3 identical pencils. Howard paid \$10.50 for 2 such files and 1 such pencil. How much did each file cost?
- (1) \$3.15
(2) \$3.50
(3) \$4.20
(4) \$7.00

- 13 The ratio of Tianwei's height to Bala's height is 6 : 5.

Bala is $\frac{10}{11}$ as tall as Chelsea. What is the ratio of Tianwei's height to Chelsea's height?

- (1) 5 : 11
 (2) 6 : 11
 (3) 10 : 11
 (4) 12 : 11

- 14 In the figure below, a rectangular piece of paper was folded as shown. Given that $\angle GHF$ is 48° , find $\angle FKH$.



- (1) 21°
 (2) 42°
 (3) 48°
 (4) 69°

15 Dalia has 30 more stickers than Huda at first. Dalia gave 40% of her stickers to Huda. Then, Huda gave 50% of her stickers to Dalia. In the end, Dalia has 48 more stickers than Huda. How many stickers did Dalia have at first?

- (1) 24
- (2) 48
- (3) 50
- (4) 80

(Go on to Booklet B)

METHODIST GIRLS' SCHOOL (PRIMARY)

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PRELIMINARY EXAMINATION 2023 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: 21 August 2023

| | |
|----------------------|------|
| Paper 1 Booklet B | / 25 |
|----------------------|------|

This booklet consists of 8 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. (5 marks)

16 Express $6\frac{7}{100}$ as a decimal.

Ans: _____

17 Write down all the common multiples of 3 and 5 that are smaller than 40.

Ans: _____

18 Find the value of $\frac{2}{5} \div 12$.

Ans: _____

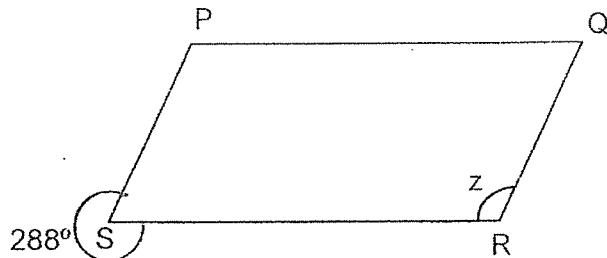
19 Simplify $11 + 5y - 2y + 4y$.

Ans: _____

- 20 PQRS is a parallelogram.

Find $\angle z$.

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this space.

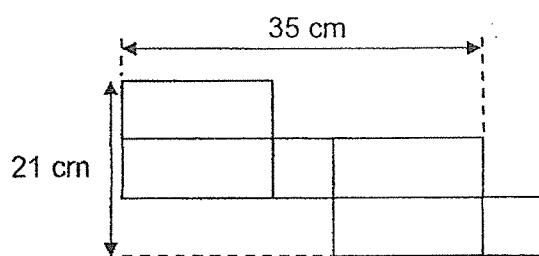


Ans: _____ $^\circ$



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)

- 21 The figure, not drawn to scale, shows the net of a cuboid. The cuboid has a square base. Find the volume of the cuboid.



Ans: _____ cm^3



- 22 Mrs Pandi wants to send letters overseas by airmail.
The airmail rates to two countries are shown in the table below.

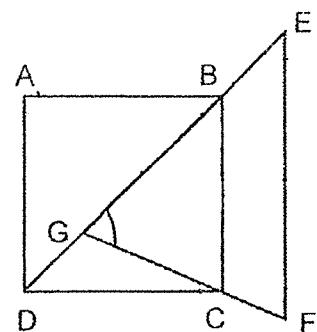
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this space.

| Airmail Rates | | |
|-------------------------------|----------|-----------|
| | Thailand | Australia |
| First 25 g | \$0.90 | \$1.50 |
| Every additional 10 g or less | \$0.20 | \$0.30 |

Mrs Pandi wants to send a letter weighing 33 g to Thailand and a letter weighing 42 g to Australia. How much will she need to pay in total?

Ans: \$ _____

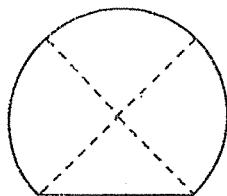
- 23 ABCD is a square. EFG is an isosceles triangle where $EF = EG$.
DGBE and GCF are straight lines, BC is parallel to EF.
Find $\angle EGF$.



Ans: _____ °

- 24 The figure is formed by 3 identical quarter circles and a triangle. The radius of each quarter circle is 8 cm. Find the area of the figure. (Leave your answer in terms of π)

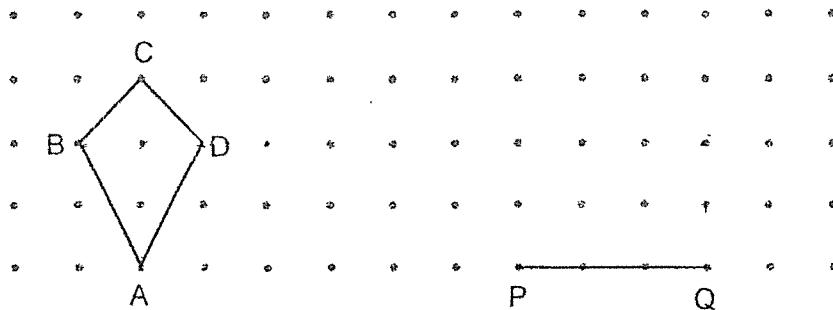
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Ans: _____ cm^2



- 25 Figure ABCD is drawn on a square grid.



By joining the dots on the grid with straight lines,

- (a) draw and label triangle PQR, such that it has the same area as ABCD and without overlapping.

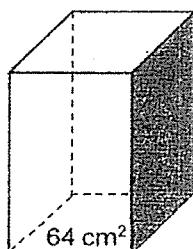


- (b) draw and label a parallelogram ADEF such that DE is shorter than AD.



- 26 The figure shows a cuboid with a square base of area 64 cm^2 . The area of the shaded face is 72 cm^2 . Find the height of the cuboid.

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write in
this space.



Ans: _____ cm



- 27 Lishi pressed a calculator to multiply a 3-digit number by a 1-digit number. For the 1-digit number, she made a mistake by pressing a wrong number. She obtained an incorrect product of 624 which is $\frac{3}{4}$ of the correct product. What is the smallest possible value of the 3-digit number?

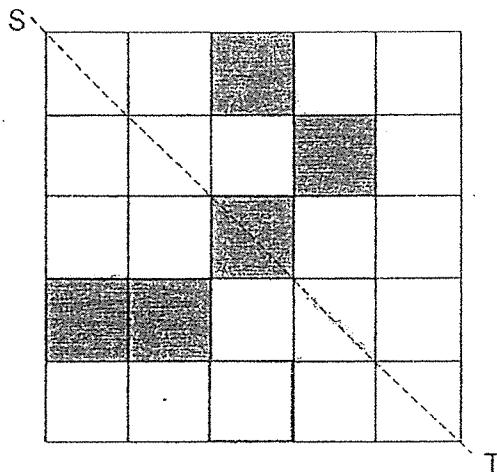
Ans: _____



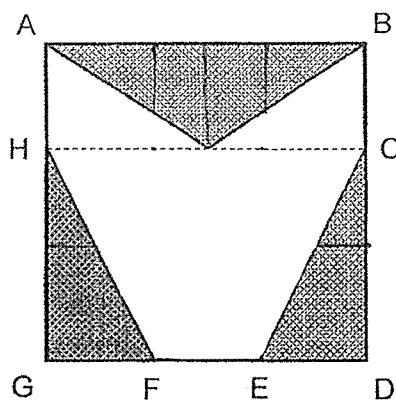
- 28 There are 5 shaded squares in the figure.

Shade 3 more squares to form a symmetric figure with ST as the line of symmetry.

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write in
this space.



- 29 ABDG is a square. Given that $BC = DE = EF = FG = AH$, what fraction of the figure is shaded?



Ans: _____



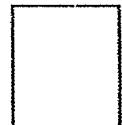
- 30 A player has to score an average of 18 points and above over 5 rounds of a game to qualify for the next level.

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write in
this space.

| Round | Score |
|-------|-------|
| One | 20 |
| Two | 15 |
| Three | 25 |
| Four | 15 |
| Five | ? |

What is the lowest score Mathew can get in the fifth round in order to qualify for the next level?

Ans: _____



END OF PAPER

METHODIST GIRLS' SCHOOL (PRIMARY)

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PRELIMINARY EXAMINATION 2023 PRIMARY 6 MATHEMATICS

PAPER 2

Duration: 1h 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: 21 August 2023

Parent's Signature: _____

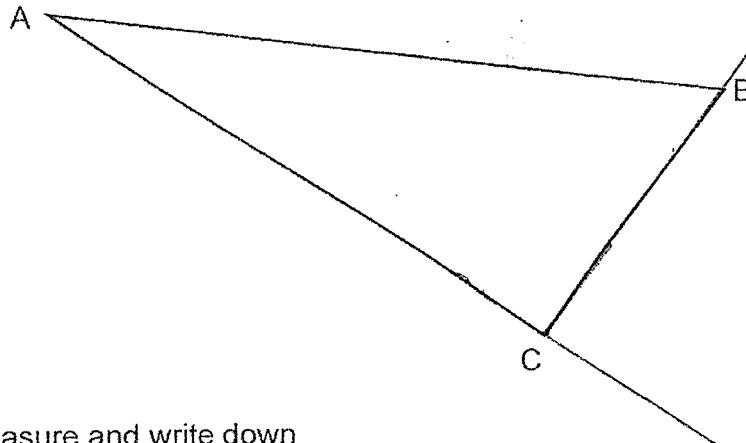
| | |
|----------------------|--------------|
| Paper 1 Booklet A | / 20 |
| Paper 1 Booklet B | / 25 |
| Paper 2 | / 55 |
| TOTAL | / 100 |

This booklet consists of 17 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



Measure and write down

(a) the length of BC

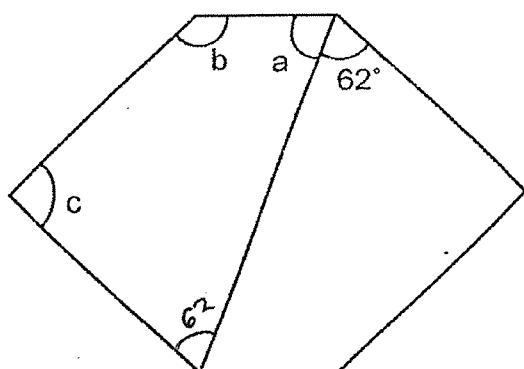
Ans: (a) _____ cm

(b) the size of $\angle ACB$

Ans: (b) _____ °

2 The figure below is made up of 2 identical 4-sided figures.

Find the sum of $\angle a + \angle b + \angle c$.



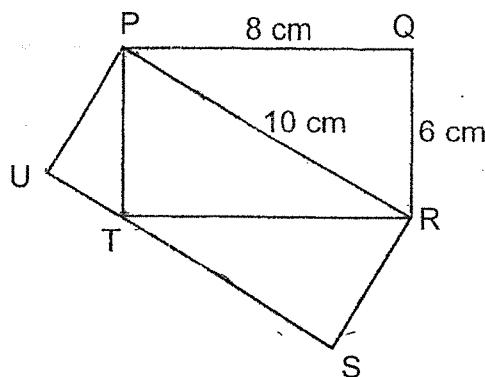
Ans: _____ °

- 3 Kenny took 3 hours to paint 3 bedrooms. He took the same amount of time to paint the first 2 bedrooms. He took 15 minutes longer to paint the third bedroom than the first. How many minutes did he take to paint the third bedroom?

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write in
this space

Ans: _____ min

- 4 In the figure below, PQRT and PRSU are rectangles.
 $PQ = 8 \text{ cm}$, $QR = 6 \text{ cm}$ and $PR = 10 \text{ cm}$. Find the length of RS.



Ans: _____ cm

- 5 The cube in Figure 1 is formed by folding the net shown in Figure 2.

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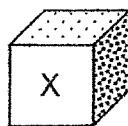


Figure 1

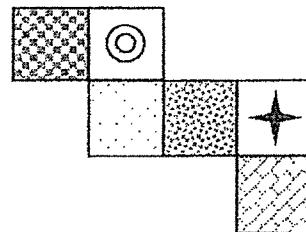


Figure 2

Which of the faces below is represented by X in Figure 1?
Circle your answer.



For questions 6 to 17, show your working clearly and write your answers in the space 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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- 6 Mr Raja paid a total of \$1406.40 for a laptop and a camera at a sale. The price of the camera before discount was \$864.

Sale!

1st item 10% discount

2nd item 20% discount

(Price of the 2nd item must be equal or less than the 1st item.)

What was the price of the laptop before discount?

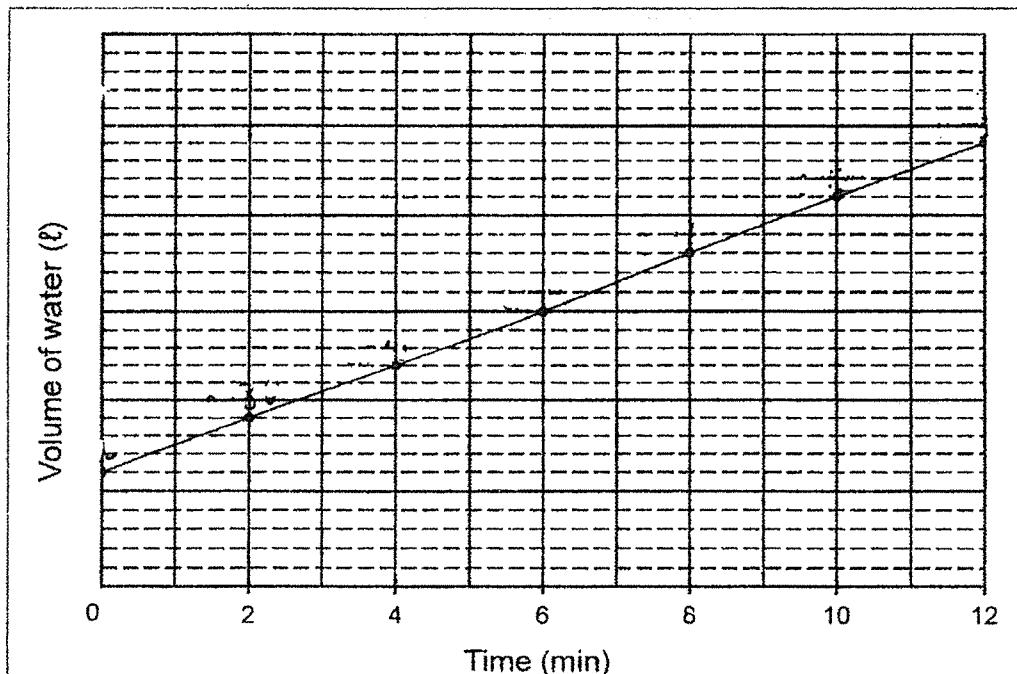
Ans: _____ [3]



(Go on to the next page)

- 7 A tank with a capacity of 1200 l was $\frac{1}{10}$ - filled with water at first. Then, Tony turned on the tap to add more water to the tank. The line graph below shows the volume of water in the tank over 12 minutes after the tap was turned on.

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- (a) What was the volume of the water in the tank at first?

Ans: _____ [1]

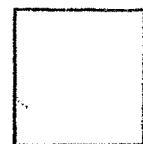
- (b) What was the volume of water in the tank after 18 minutes?

Ans: _____ [3]

- 8 Kelly bought a total of 40 pieces of squares and rectangular craft paper. She cut all the squares into 3 rectangles. She now has a total of 92 rectangles. How many pieces of rectangular craft paper did she buy?

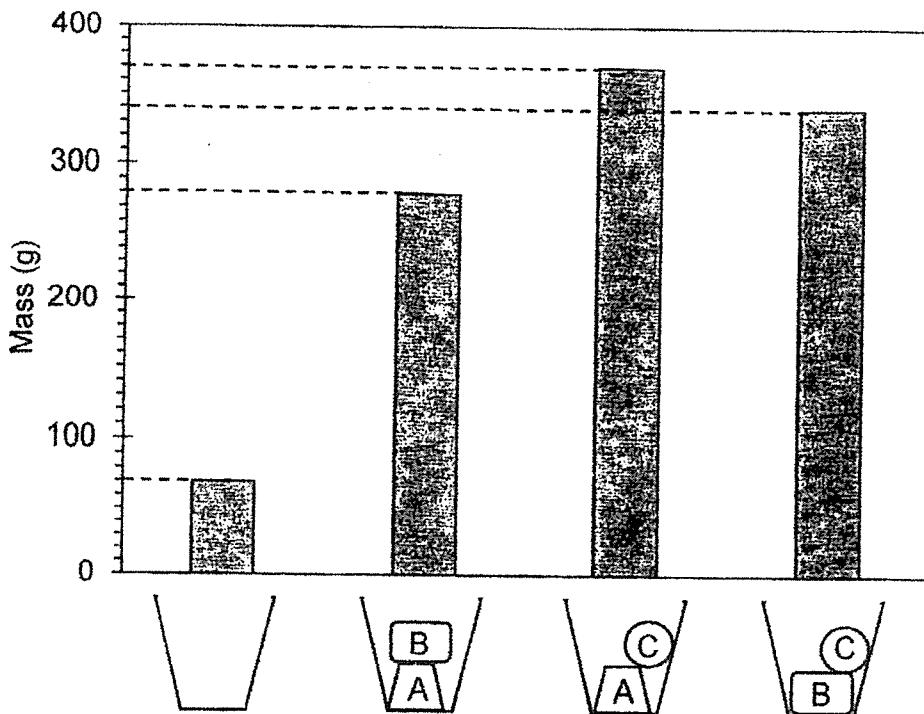
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Ans: _____ [3]



- 9 The graph below shows the mass of a cup when empty and when different combinations of objects A, B and C are placed in the cup.

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(a) What is the mass of the empty cup?

Ans: (a) _____ [1]

(b) What is the mass of object A?

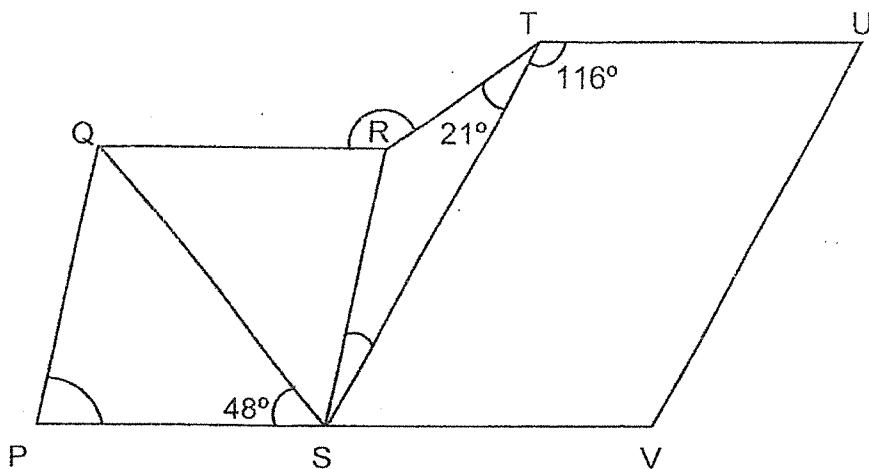
Ans: (b) _____ [2]

(c) What is the average mass of objects A, B and C?

Ans: (c) _____ [2]

- 10 In the figure, PQRS is a rhombus and STUV is a parallelogram. PSV is a straight line. $\angle PSQ = 48^\circ$, $\angle RTS = 21^\circ$ and $\angle STU = 116^\circ$.

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(a) Find $\angle QPS$.

Ans: (a) _____ [1]

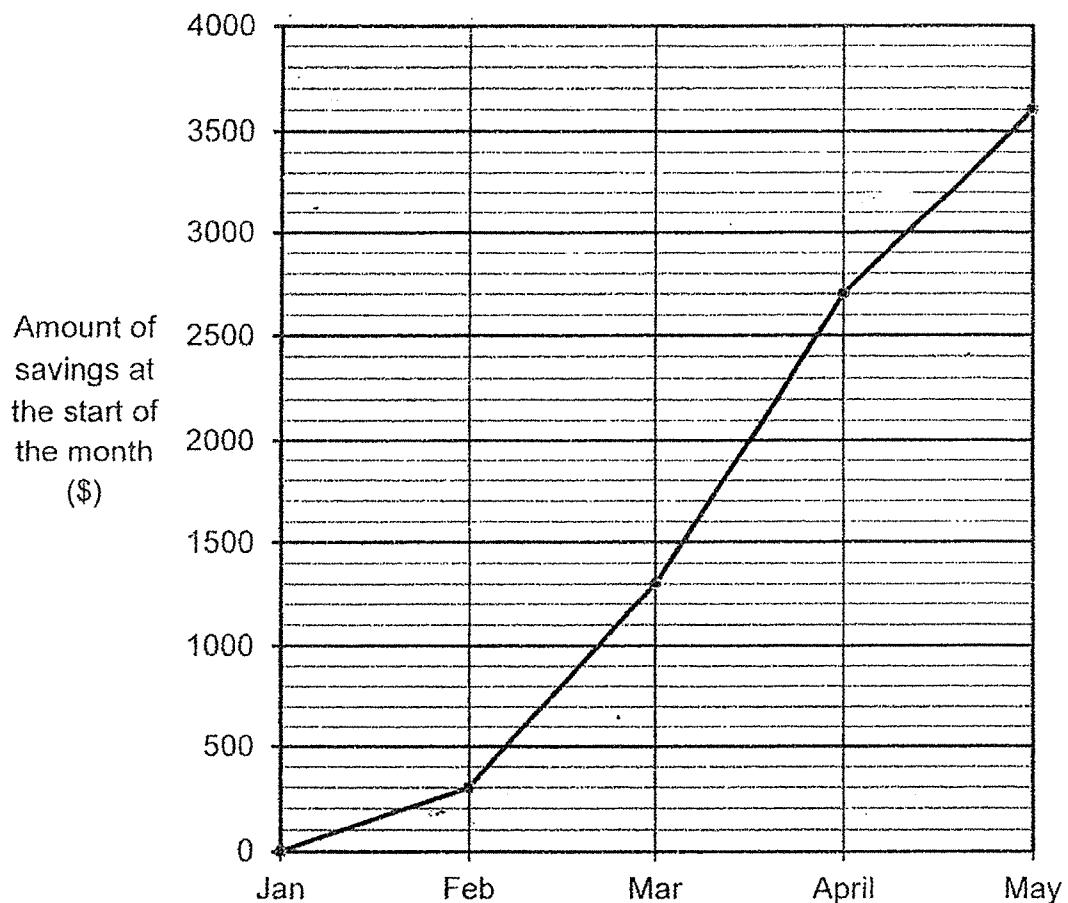
(b) Find $\angle RST$.

Ans: (b) _____ [2]

(c) Find $\angle QRT$.

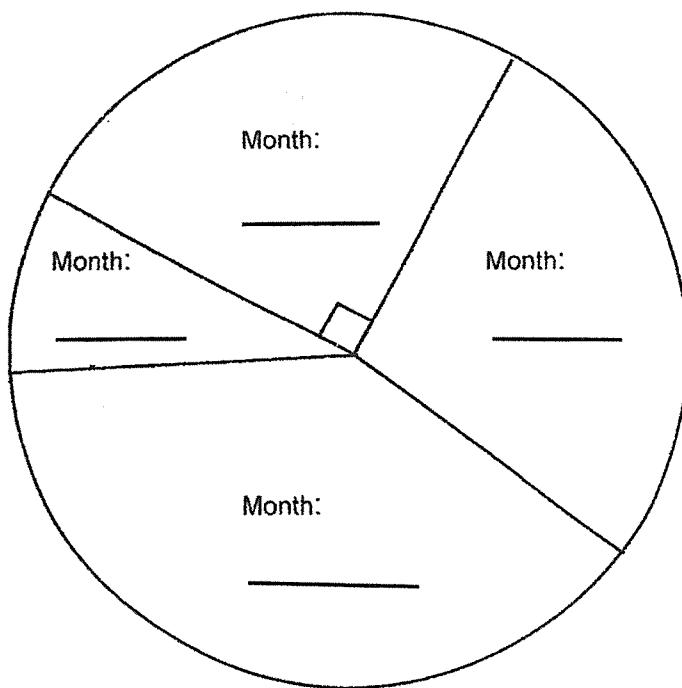
Ans: (c) _____ [2]

- 11 Tom wanted to buy a new television and started a 4-month savings plan. The line graph shows the total amount of savings at the start of each month.



- (a) The amount of savings for each month can be represented by the pie chart below. Label each part of the pie chart with the month that corresponds to the amount of savings for that month. [2]

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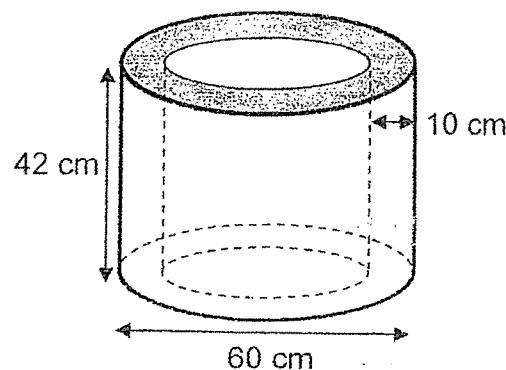
- (b) What was the percentage increase in the amount of savings from the end of January to the end of February?

Ans: (b) _____ [2]

(Go on to the next page)

- 12 The figure shows a cylinder which is hollow in the middle and has a thickness of 10 cm. (Taking $\pi = 3.14$.)

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- (a) Find the area of the shaded face.

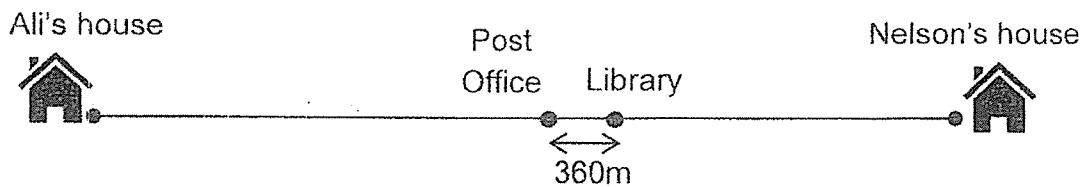
Ans: (a) _____ [1]

- (b) Randall dipped the entire cylinder into red paint. What is the surface area of the cylinder that is painted red?

Ans: (b) _____ [2]

- 13 A post office and a library are 360 m apart. They are located between Ali's house and Nelson's house as shown below. The post office is exactly half-way in between Ali's house and Nelson's house.

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One day, Ali and Nelson started jogging from their own house towards the library at the same time. They met each other at the library. Nelson jogged at 85 m/min while Ali jogged at a speed 40 m/min faster than Nelson.

- (a) How much further did Ali jog than Nelson?

Ans: (a) _____ [1]

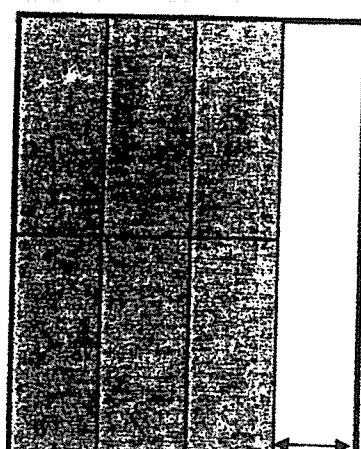
- (b) How far is Nelson's house from the library?

Ans: (b) _____ [3]

- 14 Six identical rectangular boxes can be stored in a cupboard 1.5 m high. Two arrangements are shown below. The arrangement in figure A leaves a 30-cm gap at the side. The arrangement in figure B leaves a 13-cm gap at the side and another gap at the top.

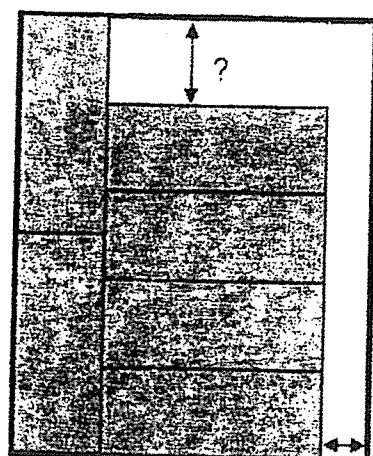
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Figure A



30 cm

Figure B



13 cm

- (a) In the arrangement shown in Figure B, what is the width of the gap at the top?

Ans: (a) _____ [3]

- (b) What is the width of the cupboard in metres?

Ans: (b) _____ [1]

- 15 The ratio of the number of girls to boys in Hall A is 7 : 3. The ratio of the number of girls to boys in Hall B is 2 : 7. The total number of pupils in Hall A is $\frac{2}{3}$ of the total number of pupils in Hall B.

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- (a) What is the ratio of the number of boys in Hall A to the number of boys in Hall B? Express your answer in the simplest form.

Ans: (a) _____ [2]

- (b) After a total of 375 boys left the hall, the percentage of all the girls became 62%. How many boys remained in the hall?

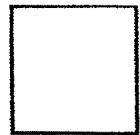
Ans: (b) _____ [2]

(Go on to the next page)

- 16 At a concert, \$9180 was collected from the sale of adult and child tickets. The ratio of the money collected from adult to child tickets is 14 : 3.

$\frac{1}{5}$ of the tickets sold were child tickets. Each adult ticket is \$9 more than each child ticket. How many child tickets were sold?

Ans: _____ [3]



- 17 At a bakery, cupcakes are sold in boxes of 4 and tarts are sold in boxes of 3 at the prices shown below.

Do not
write in
this space

| | |
|---|--|
|  |  |
| Cupcakes 4 for \$2.10 | Tarts 3 for \$1.60 |

Mrs Lee spent a total of \$203.60 on some cupcakes and tarts at the bakery. She repacks them onto trays such that there are 3 cupcakes and 5 tarts on each tray for a party. How many tarts did she buy from the bakery?

Ans: _____ [3]



END OF PAPER

METHODIST GIRLS' SCHOOL (PRIMARY)www.sgexam.com
Primary 6 Standard Mathematics
Preliminary Examination 2023

Paper 1 - Booklet A (20 marks)

| Questions 1 to 10 1 mark each | |
|--|---------------|
| Question | Answer |
| 1. | 3 |
| 2. | 3 |
| 3. | 4 |
| 4. | 2 |
| 5. | 1 |
| 6. | 3 |
| 7. | 1 |
| 8. | 4 |
| 9. | 2 |
| 10. | 3 |

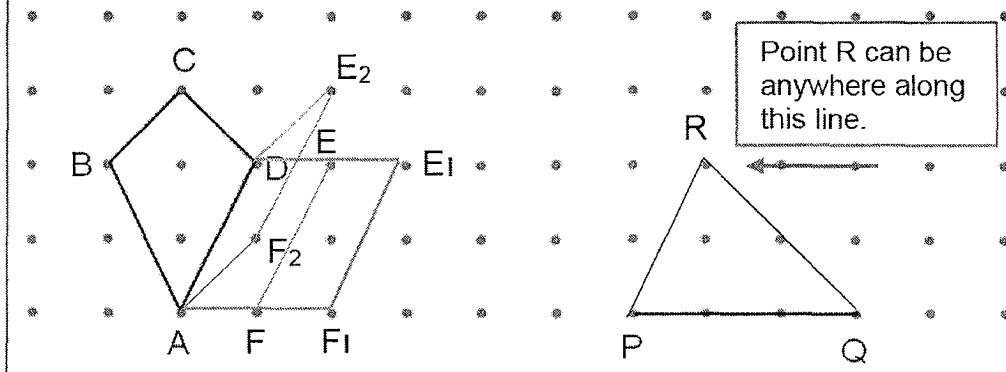
| Questions 11 to 15 2 marks each | |
|--|---------------|
| Question | Answer |
| 11. | 4 |
| 12. | 3 |
| 13. | 4 |
| 14. | 1 |
| 15. | 4 |

Paper 1 - Booklet B (25 marks)

Questions 16 to 20 – 1 mark each

| Question | Answer | Remarks |
|-----------------|---|--|
| 16. | 6.07 | |
| 17. | 15, 30 | |
| 18. | $\frac{1}{30}$ (equivalent fractions accepted) | $\frac{2}{5} \div 12 = \frac{2}{5} \times \frac{1}{12}$ $= \frac{1}{30}$ |
| 19. | $11 + 7y$ | $11 + 7y$ |
| 20. | 108 | $360 - 288 = 72$ $180 - 72 = 108$ |

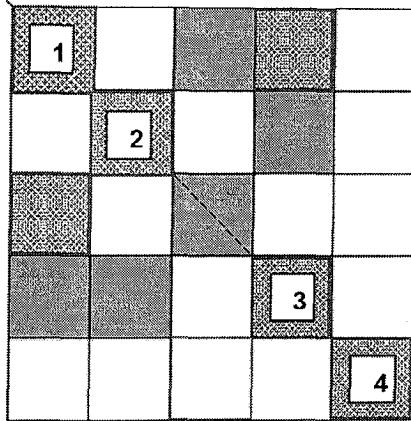
Questions 21 to 30 – 2 marks each

| Qns | Answer | Worked solutions |
|------------|---|---|
| Q21 | 686 cm³ | $21 \div 3 = 7$ $(35 - 7) \div 2 = 14$ $14 \times 7 \times 7 = 686$ |
| Q22 | \$ 3.20 | $33 - 25 = 8$ Postage for letter to Thailand = $0.90 + 0.20 = 1.10$ $42 - 25 = 17$ Postage for letter to Aust = $1.50 + 0.30 + 0.30 = 2.10$ Total = $\$1.10 + \$2.10 = \$3.20$ |
| Q23 | 67.5° | $\angle DBC = 45^\circ$ $\angle EGF = (180^\circ - 45^\circ) \div 2 = 67.5^\circ$ |
| Q24 | $(48\pi + 32)$ cm² | Area of 3 quarter circles = $\frac{3}{4} \times \pi \times 8\text{cm} \times 8\text{cm} = 48\pi \text{ cm}^2$ Area of triangle = $\frac{1}{2} \times 8\text{cm} \times 8 \text{ cm} = 32 \text{ cm}^2$ Area of figure = $(48\pi + 32) \text{ cm}^2$ |
| Q25 | Refer to diagram |  |
| Q26 | 9 cm | $8 \times 8 = 64$ Length of base = 8 cm Height of cuboid = $72 \text{ cm}^2 \div 8 \text{ cm} = 9 \text{ cm}$ |
| Q27 | 104 | $624 \div 3 = 208$ $208 \times 4 = 832$ $832 \div 8 = 104$ Or $624 \div 6 = 104$ Or $208 \div 2 = 104$ |

The 3rd square can be any of the 4 squares labelled.

Q28

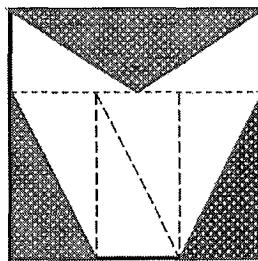
Refer to diagram



Q29

$\frac{7}{18}$

$$\begin{aligned}\frac{1}{2} \times \frac{1}{3} &= \frac{1}{6} \\ \frac{1}{3} \times \frac{2}{3} &= \frac{2}{9} \\ \frac{1}{6} + \frac{2}{9} &= \frac{7}{18}\end{aligned}$$



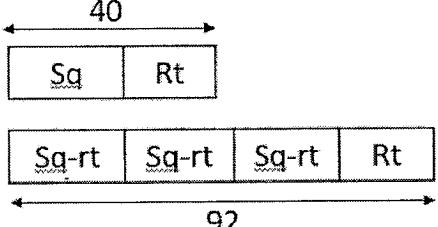
Q30

15

$$\begin{aligned}20 + 15 + 25 + 15 &= 75 \\ 18 \times 5 &= 90 \\ 90 - 75 &= 15\end{aligned}$$

Paper 2 (55 marks)

| Qns | Answer | Worked solutions | |
|-----|---|---|--|
| 1. | (a) 4.1 cm (accepted range 4 cm – 4.2 cm) (b) 94° (accepted range 92° – 95°) | | |
| 2. | 298 | $360^\circ - 62^\circ = 298^\circ$ | |
| 3. | 70 | $180 \text{ min} - 15 \text{ min} = 165 \text{ min}$ $165 \text{ min} \div 3 = 55 \text{ min}$ $55 \text{ min} + 15 \text{ min} = 70 \text{ min}$ | |
| 4. | 4.8 | <u>Method 1</u> $\frac{1}{2} \times 8 \times 6 = 24$ $24 \times 2 = 48$ $48 \div 10 = 4.8 \text{ cm}$ | <u>Method 2</u> $\frac{1}{2} \times 10 \times \text{RS} = 24$ $24 \div 5 = 4.8 \text{ cm}$ |
| 5. | | | |

| Qns | Answer | Worked solutions |
|-----|------------------------------|--|
| 6. | \$786 | $90\% \times \$864 = \777.60 $\$1406.40 - \$777.60 = \$628.80$ $\$628.80 \div 80 \times 100 = \mathbf{\$786}$ |
| 7. | a) 120 ℥ b) 660 ℥ | a) $\frac{1}{10} \times 1200 \text{ ℥} = \mathbf{120 \text{ ℥}}$ b) <u>Method 1</u> $(180 \text{ ℥} - 120 \text{ ℥}) \div 2 = 30 \text{ ℥ per min}$ $18 \times 30 \text{ ℥} = 540 \text{ ℥}$ $540 \text{ ℥} + 120 \text{ ℥} = \mathbf{660 \text{ ℥}}$ <u>Method 2</u> $2 \text{ mins} \rightarrow 60$ $18 \text{ mins} \rightarrow 9 \times 60 = 540$ $540 \text{ ℥} + 120 \text{ ℥} = \mathbf{660 \text{ ℥}}$ |
| 8. | 14 | <u>Method 1</u>  $2u = 92 - 40 = 52$ $1u = 26$ $40 - 26 = \mathbf{14}$ <u>Method 2</u> Assume all are squares, $40 \times 3 = 120$ $120 - 92 = 28$ $28 \div 2 = \mathbf{14}$ |
| 9. | a) 70g b) 120g c) 130g | a) 70 g b) <u>Method 1</u> $A + B = 280 - 70 = 210$ $A + C = 370 - 70 = 300$ $B + C = 340 - 70 = 270$ $2A = 210 + 300 - 270 = 240$ $A = 240 \div 2 = \mathbf{120 \text{ g}}$ <u>Method 2</u> Diff btw A & B $\rightarrow 370 - 340 = 30$ $2B = 280 - 70 - 30 = 180$ $B = 180 \div 2 = 90$ $A = 90 + 30 = \mathbf{120 \text{ g}}$ |

c) Method 1

$$B = 210 - 120 = 90$$

$$C = 300 - 120 = 180$$

$$\text{Average} = (90 + 120 + 180) \div 3 = 130 \text{ g}$$

Method 2

$$2A + 2B + 2C = 280 + 370 + 340 - 3 \times 70 = 780$$

$$\text{Average mass} = 780 \div 6 = 130 \text{ g}$$

10.

- a) 84°
b) 20°
c) 137°

a) $\angle QPS = 180^\circ - 48^\circ - 48^\circ = 84^\circ$

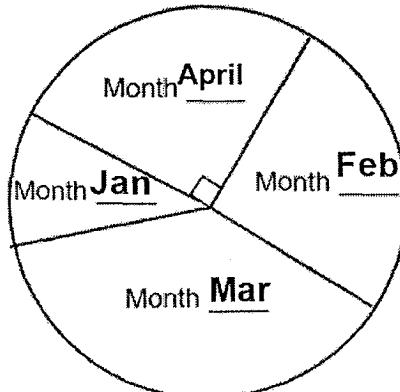
b) $\angle TSV = 180^\circ - 116^\circ = 64^\circ$
 $\angle RST = 180^\circ - 64^\circ - 48^\circ - 48^\circ = 20^\circ$

c) $\angle SRT = 180^\circ - 21^\circ - 20^\circ = 139^\circ$
 $\angle QRT = 360^\circ - 84^\circ - 139^\circ = 137^\circ$

11.

- b)
 $333\frac{1}{3}\%$

$$3600 \div 4 = 900$$



b) $\frac{1000}{300} \times 100\% = 333\frac{1}{3}\%$

12.

- (a) 1570 cm^2

- (b) 16328 cm^2

a) Area of big circle = $3.14 \times 30 \text{ cm} \times 30 \text{ cm} = 2826 \text{ cm}^2$

Area of small circle = $3.14 \times 20 \text{ cm} \times 20 \text{ cm} = 1256 \text{ cm}^2$

Shaded area = $2826 - 1256 = 1570 \text{ cm}^2$

b) Circ of large circle / Length of large rect.
 $= 3.14 \times 60 = 188.4 \text{ cm}$

Outer surface area = $188.4 \text{ cm} \times 42 = 7912.8 \text{ cm}^2$

Circ of small circle / Length of small rect.
 $= 3.14 \times 40 = 125.6 \text{ cm}^2$

Inner surface area = $125.6 \times 42 = 5275.2 \text{ cm}^2$

Total = $7912.8 + 5275.2 + 1570 + 1570 = 16328 \text{ cm}^2$

| | | | | | | | | | | | |
|--------------------|-------------------------------|---|---|---------------|--------------|--------------|--------------------|--------------------|----------|-----------|---|
| 13. | <p>a) 720m b) 1530m</p> | <p>a) $360 \times 2 = 720 \text{ m}$ b) $720 \div 40 = 18$ $18 \times 85 = 1530 \text{ m}$</p> | <p>www.sgexam.com</p> | | | | | | | | |
| 14. | <p>(a) 34cm (b) 1.17m</p> | <p><u>Method 1</u> Length of 1 rect box = $1.5 \div 2 = 0.75 \text{ m} = 75 \text{ cm}$ Breadth of 2 rect box = $75 + 13 - 30 = 58 \text{ cm}$ Breadth of 1 rect box = $58 \div 2 = 29 \text{ cm}$ Width of gap = $150 - 29 \times 4 = 34 \text{ cm}$</p> <p><u>Method 2</u> Length of 1 rect box = $150 \div 2 = 75 \text{ cm}$ Breadth of 2 rect box = $75 - (30 - 17) = 58 \text{ cm}$ Width of gap = $150 - 58 - 58 = 34 \text{ cm}$</p> <p><u>Method 3</u> Area of empty space in Fig A = $30 \times 150 = 4500 \text{ cm}^2$ Area of empty vertical space in Fig B = $150 \times 13 = 1950 \text{ cm}^2$ Area of horizontal space in Fig B = $4500 - 1950 = 2550 \text{ cm}^2$ Width of gap = $2550 \div 75 = 34 \text{ cm}$</p> <p><u>Method 4</u> Diff btw 1 length & 2 breadths of rect box = $30 - 13 = 17 \text{ cm}$ 1 length = 2 breadths + 17 cm 2 lengths = 4 breadths + 17 cm x 2 Width of gap = $17 \times 2 = 34 \text{ cm}$</p> <p>(b) $75 \text{ cm} + 29 \text{ cm} + 13 \text{ cm} = 117 \text{ cm} = 1.17 \text{ m}$</p> | | | | | | | | | |
| 15. | <p>a) 9 : 35 b) 285</p> | <p>a) A : B $2 : 3 (\times 15)$ $30 : 45$</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center; padding-bottom: 5px;"><u>Hall A</u></td> <td style="width: 50%; text-align: center; padding-bottom: 5px;"><u>Hall B</u></td> </tr> <tr> <td style="text-align: center; padding-bottom: 5px;">Girls : Boys</td> <td style="text-align: center; padding-bottom: 5px;">Girls : Boys</td> </tr> <tr> <td style="text-align: center; padding-bottom: 5px;">$7 : 3 (\times 3)$</td> <td style="text-align: center; padding-bottom: 5px;">$2 : 7 (\times 5)$</td> </tr> <tr> <td style="text-align: center; padding-bottom: 5px;">$21 : 9$</td> <td style="text-align: center; padding-bottom: 5px;">$10 : 35$</td> </tr> </table> <p>Boys (Hall A) : Boys (Hall B) $9 : 35$</p> <p>b) $62\% \rightarrow 31u$ (girls) $1\% \rightarrow 31u \div 62 = \frac{1}{2}u$ $38\% \rightarrow \frac{1}{2}u \times 38 = 19u$ (boys left) $44u - 19u = 25u$</p> | <u>Hall A</u> | <u>Hall B</u> | Girls : Boys | Girls : Boys | $7 : 3 (\times 3)$ | $2 : 7 (\times 5)$ | $21 : 9$ | $10 : 35$ | <p>www.sgexam.com</p> |
| <u>Hall A</u> | <u>Hall B</u> | | | | | | | | | | |
| Girls : Boys | Girls : Boys | | | | | | | | | | |
| $7 : 3 (\times 3)$ | $2 : 7 (\times 5)$ | | | | | | | | | | |
| $21 : 9$ | $10 : 35$ | | | | | | | | | | |

$$\begin{aligned}
 25u &= 375 \\
 1u &= 375 \div 25 \\
 &= 15 \\
 19u &= 15 \times 19 \\
 &= \mathbf{285}
 \end{aligned}$$

| | | |
|-----|-----|---|
| | | |
| | | |
| 16. | 30 | <p><u>Method 1</u></p> <p>Value of tickets</p> $ \begin{aligned} A : C \\ 14 : 3 \\ 17u &= \$9180 \\ 1u &= \$540 \\ 14u &= \$7560 \\ 3u &= \$1620 \end{aligned} $ $ \begin{aligned} \$7560 \div 4 &= \$1890 \\ \$1890 - \$1620 &= \$270 \\ \$270 \div \$9 &= \mathbf{30} \end{aligned} $ <p><u>Method 2</u></p> <p>Adult $\rightarrow 14 \times 4u = 56u$ Child $\rightarrow (1u - \\$9) \times 14 = 14u - \\126</p> <p>Value of tickets</p> $ \begin{aligned} A : C \\ 14 : 3 \\ 56 : 12 \\ 14u - \$126 &= 12u \\ 2u &= \$126 \\ 1u &= \$63 \text{ (Adult ticket price)} \\ \$63 - \$9 &= \$54 \\ \$1620 \div \$54 &= \mathbf{30} \end{aligned} $ <p><u>Method 3</u></p> $ \begin{aligned} 3u \times 4 &= 12u \\ 14u - 12u &= 2u \\ 2 \times 540 &= 1080 \\ 1080 \div 9 &= 120 \\ 120 \div 4 &= \mathbf{30} \end{aligned} $ |
| 17. | 240 | <p>Packed boxes</p> $ \begin{aligned} C : T \\ 3 : 5 \\ 36 : 60 \text{ (multiples of 4 and 3)} \end{aligned} $ $ \begin{aligned} 1 \text{ set} &= \$2.10 \times 9 + \$1.60 \times 20 = \$50.90 \\ \$203.60 \div \$50.90 &= 4 \text{ sets} \\ 4 \times 60 &= \mathbf{240} \end{aligned} $ |

