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

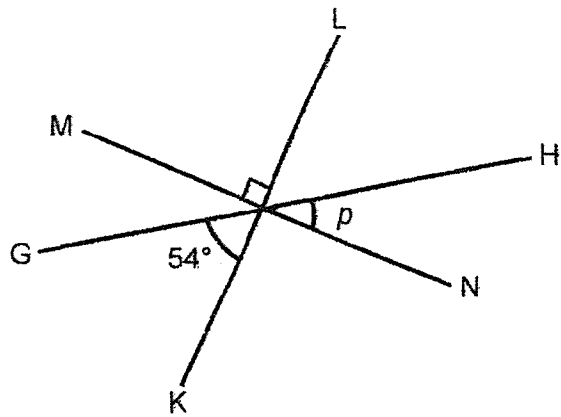   (4)   50 000

2   Round 4.567 to 2 decimal places.

    (1)   4.50

    (2)   4.56

    (3)   4.57

    (4)   4.60

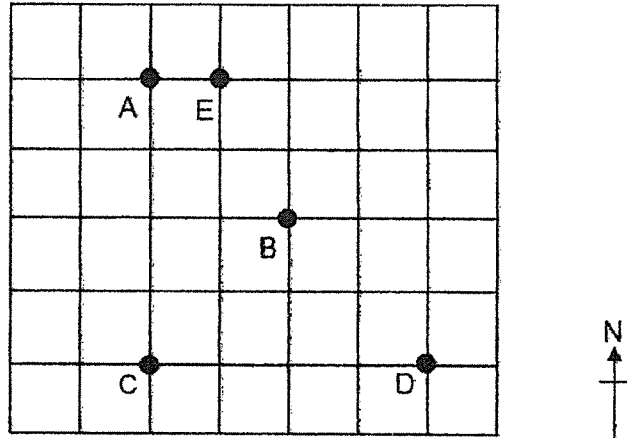3   In the number line, what is the number represented by A?

    (1)   6.5

    (2)   6.75

    (3)   7.2

    (4)   7.25
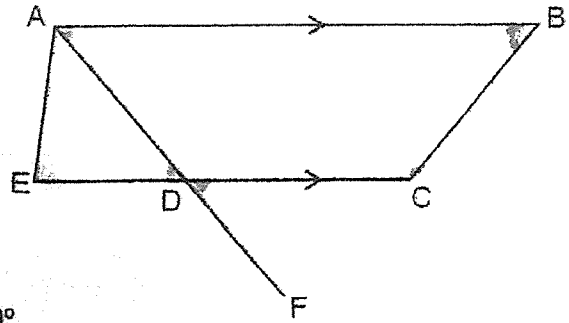
4 GH, KL and MN are straight lines. Find $\angle p$.

    (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: $\angle ABC + \angle ECB = 180°$

Statement D: $\angle DAB + \angle ABC = 180°$
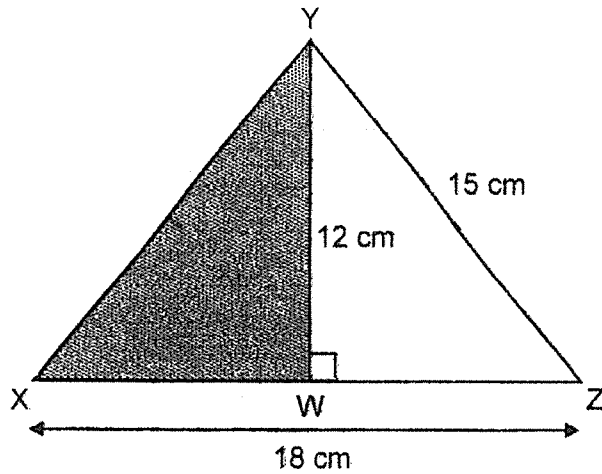
Which of the following statements are true?

(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.

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

	Smallest		Largest
(1)	$\frac{6}{5}$,	$\frac{3}{2}$,	$1\frac{5}{9}$
(2)	$1\frac{5}{9}$,	$\frac{3}{2}$,	$\frac{6}{5}$
(3)	$\frac{3}{2}$,	$\frac{6}{5}$,	$1\frac{5}{9}$
(4)	$\frac{6}{5}$,	$1\frac{5}{9}$,	$\frac{3}{2}$

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 cm²

(2)   108 cm²

(3)   90 cm²

(4)   54 cm²

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?
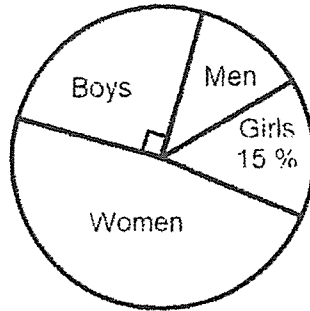

(1)   25
(2)   60
(3)   300
(4)   360

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.

K

F

48°

G   J

H
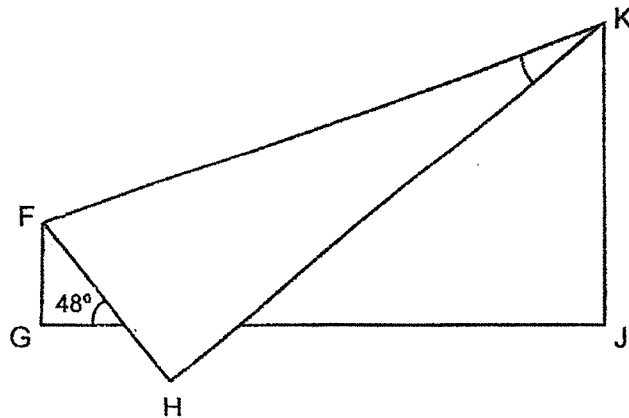
(1) 21 °

(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

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PRELIMINARY EXAMINATION 2023
PRIMARY 6
MATHEMATICS

PAPER 1
BOOKLET B

Total Time for Booklets A and B: 1 hour

<u>INSTRUCTIONS TO CANDIDATES</u>

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 $11 + 5y - 2y + 4y$.
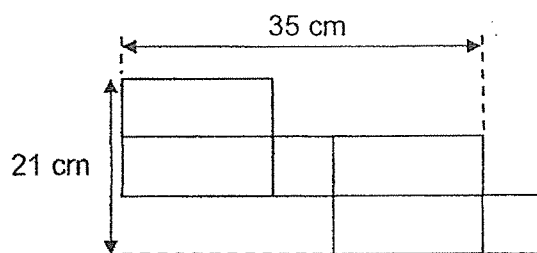
Ans: _____

20 PQRS is a parallelogram.

Find ∠z.

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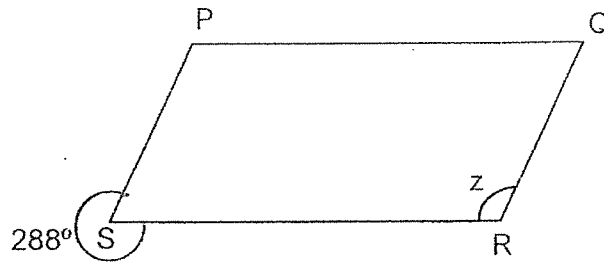
Questions **21** to **30** carry 2 marks each. Show your working clearly and write your answers in the spaces provided. For questions which require units, give your answers in the units stated. **(20 marks)**

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: _____ cm³

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

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 ∠EGF.
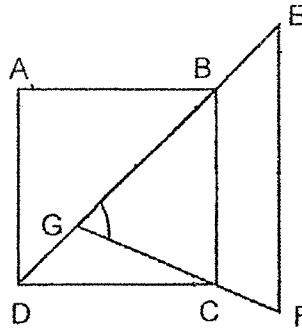
Ans: _____ °

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)
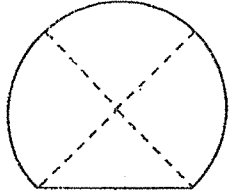
Ans: _____ cm²

25   Figure ABCD is drawn on a square grid.
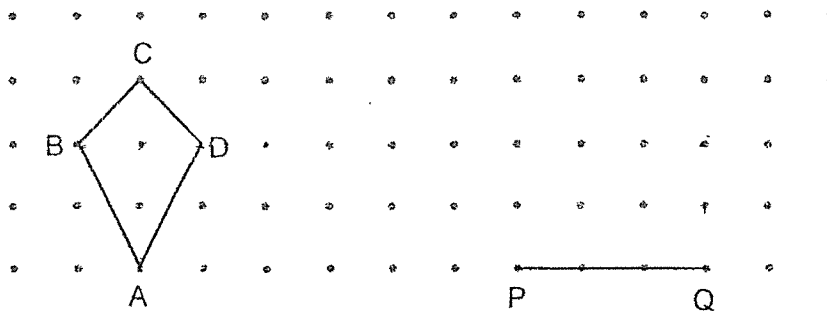
By joining the dots on the grid with straight lines,

(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 cm². The area of the shaded face is 72 cm². Find the height of the cuboid.
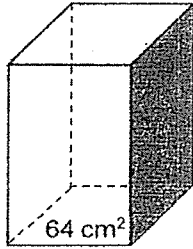
Ans: _____ cm

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.
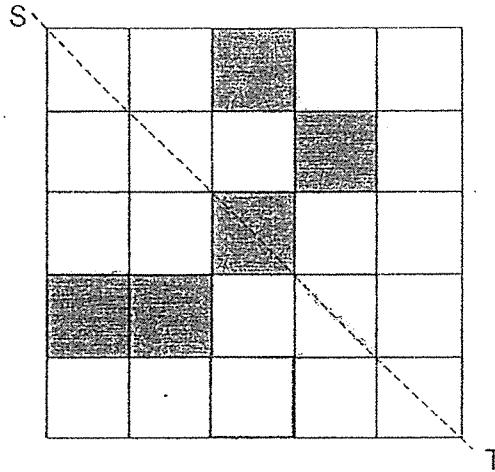
29 ABDG is a square. Given that BC = DE = EF = FG = AH, what fraction of the figure is shaded?
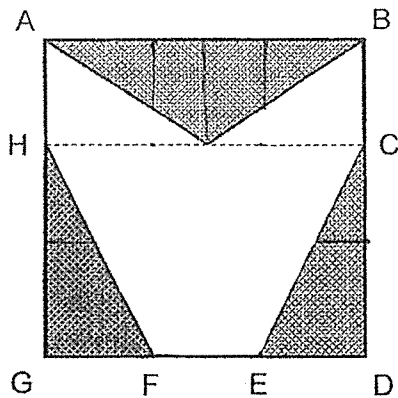
Ans: _____
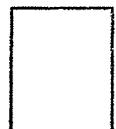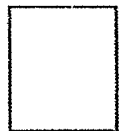
30 A player has to score an average of 18 points and above over 5 rounds of a game to qualify for the next level.

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)
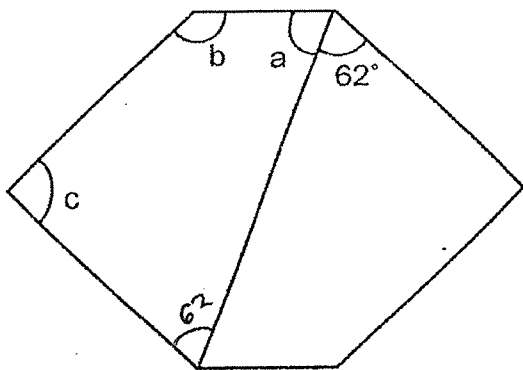
1
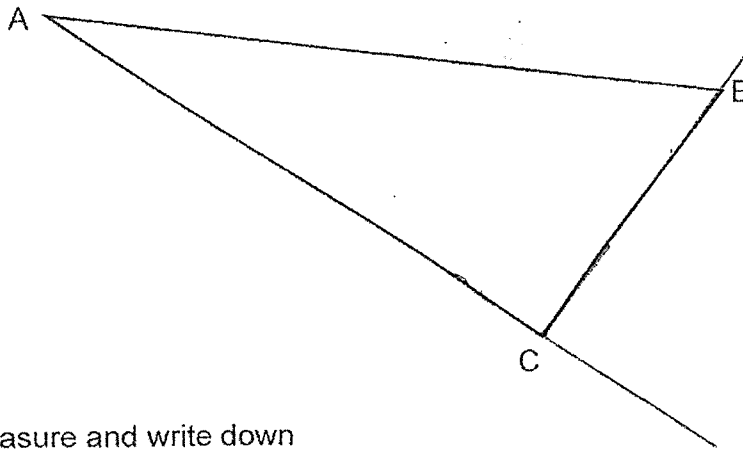
Measure and write down

(a)   the length of BC

(b)   the size of ∠ACB

Ans: (a) _____ cm

Ans: (b) _____ °

2   The figure below is made up of 2 identical 4-sided figures.
Find the sum of ∠a + ∠b + ∠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?

Ans: _____ min

4   In the figure below, PQRT and PRSU are rectangles.
     PQ = 8 cm, QR = 6cm and PR = 10 cm. Find the length of RS.
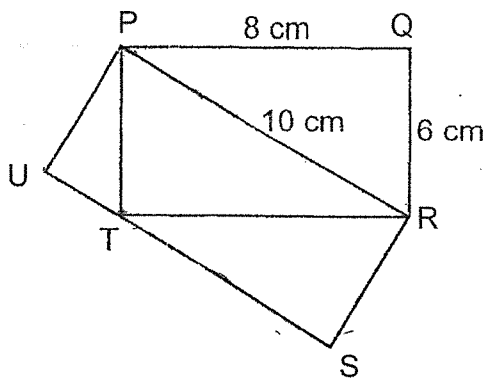
Ans: _____ cm
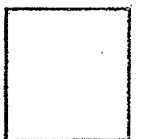
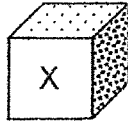5 The cube in Figure 1 is formed by folding the net shown in Figure 2.

Figure 1
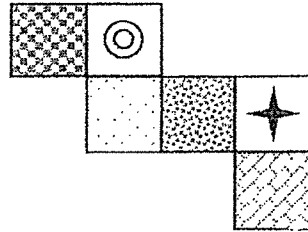
Figure 2

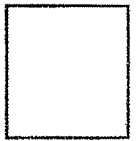Which of the faces below is represented by X in Figure 1?
Circle your answer.

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)

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

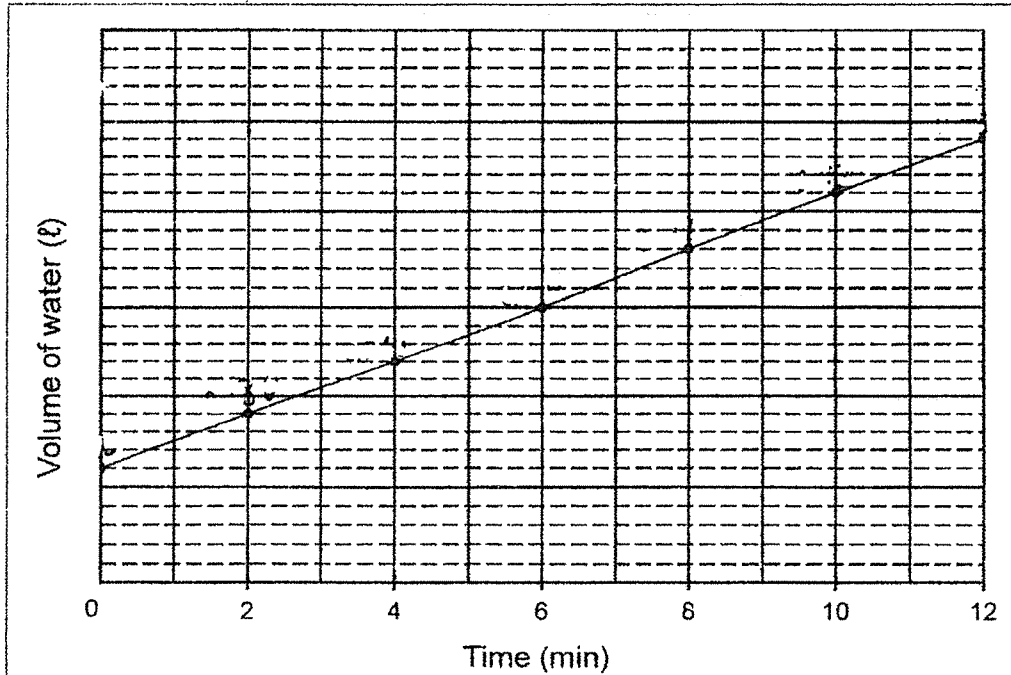(Price of the 2nd item must be equal or less than the 1st item.)

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.

(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?
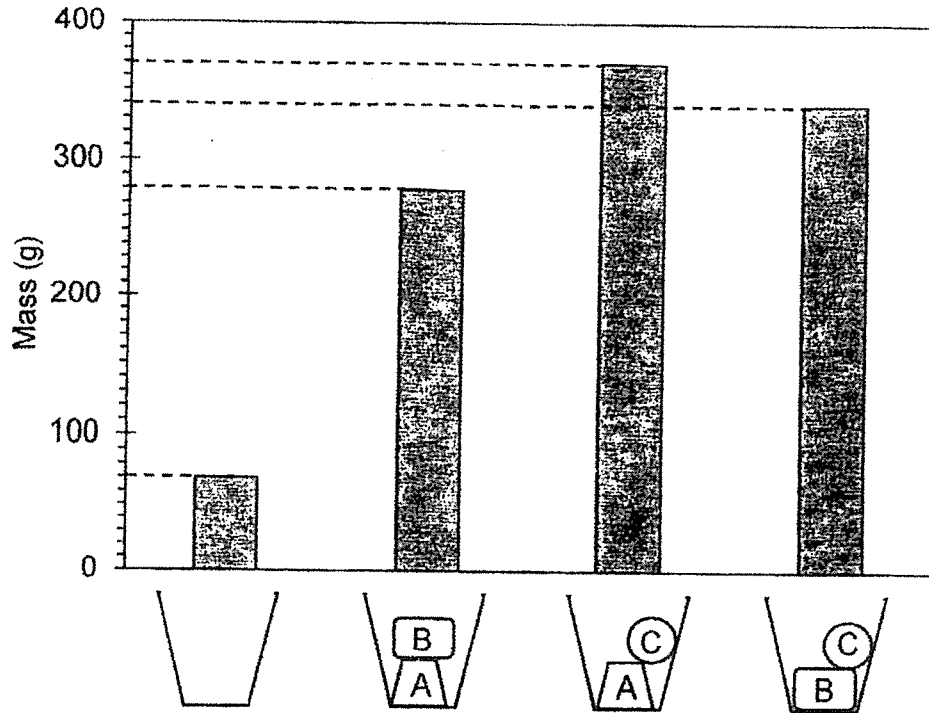
Ans: _____ [3]

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.

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

Ans: (a) _____ [1]
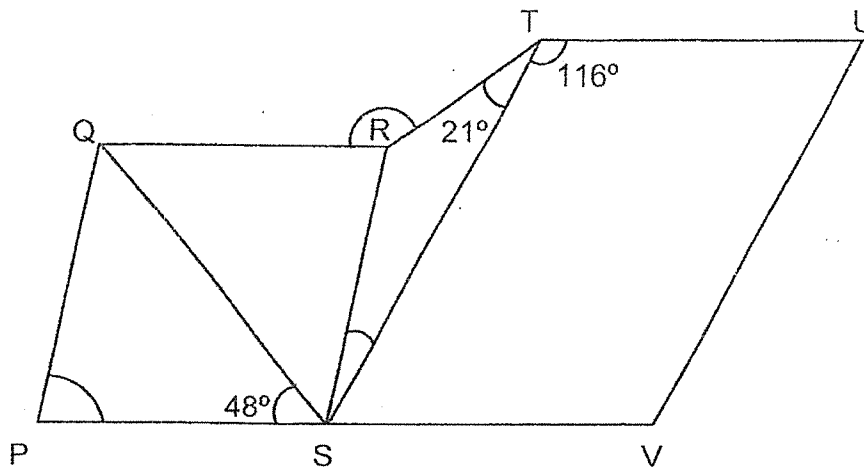
(b) What is the mass of object A?

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. ∠PSQ = 48°, ∠RTS = 21° and ∠STU = 116°.

(a) Find ∠QPS.

Ans: (a) _____ [1]

(b) Find ∠RST.

Ans: (b) _____ [2]

(c) Find ∠QRT.

Ans: (c) _____ [2]
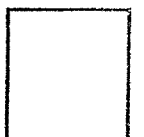
11 Tom wanted to buy a new television and started a 4-month savings plan.
    The line graph shows the total amount of savings at the start of each
    month.

Amount of savings at the start of the month ($)
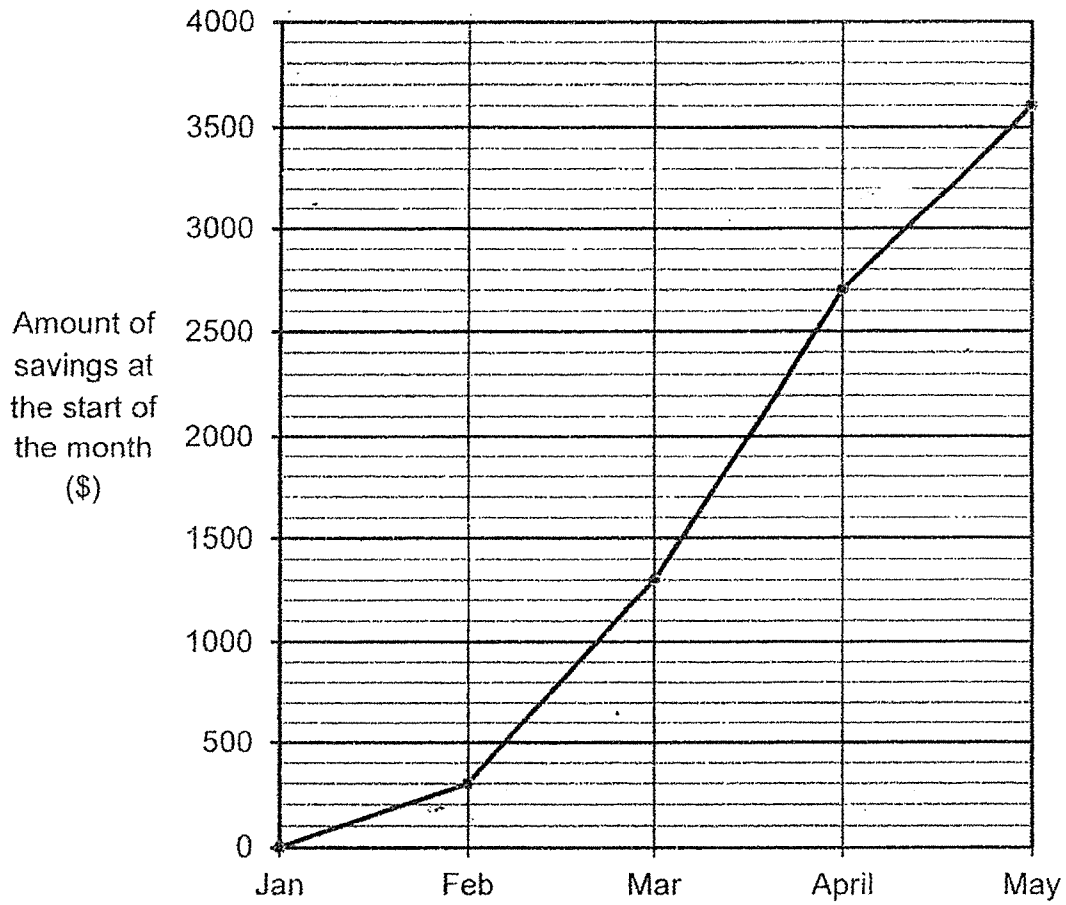
(a) The amount of savings for each month can be represented by the pie chart below. Label each part of the pie chart with the month that corresponds to the amount of savings for that month. [2]
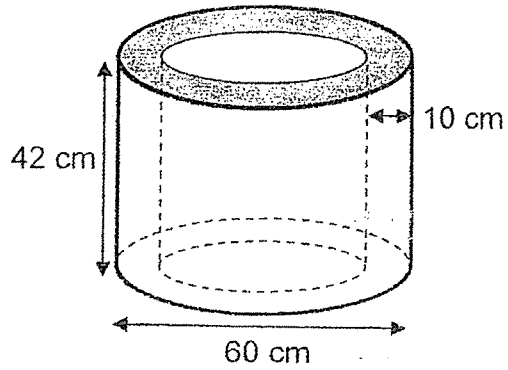
Month: _____

Month: _____

Month: _____

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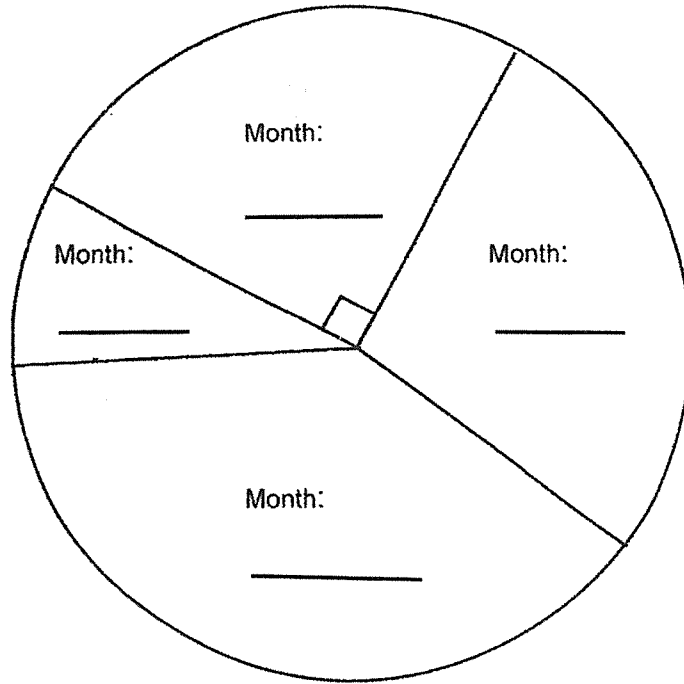
(b) What was the percentage increase in the amount of savings from the end of January to the end of February?

Ans: (b) _____ [2]

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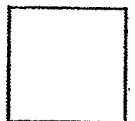   thickness of 10 cm. (Taking π = 3.14.)

42 cm

10 cm

60 cm

(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.

Ali's house   Post   Nelson's house
                     Office   Library

360m
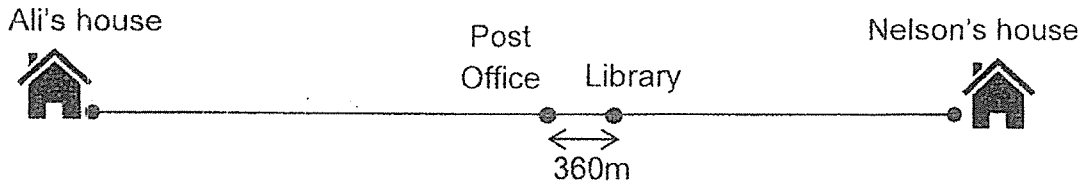
One day, Ali and Nelson started jogging from their own house towards the library at the same time. They met each other at the library. Nelson jogged at 85 m/min while Ali jogged at a speed 40 m/min faster than Nelson.

(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]

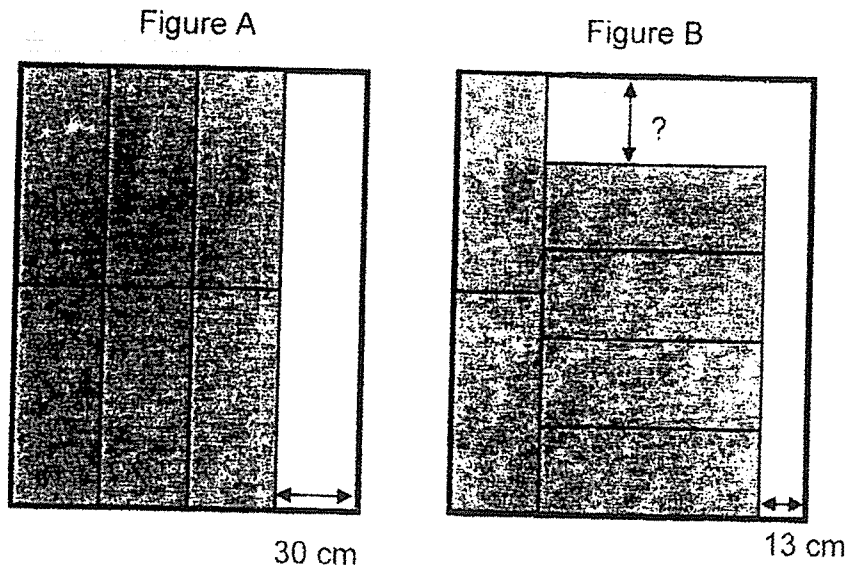14 Six identical rectangular boxes can be stored in a cupboard 1.5 m high. Two arrangements are shown below. The arrangement in figure A leaves a 30-cm gap at the side. The arrangement in figure B leaves a 13-cm gap at the side and another gap at the top.

Figure A

Figure B

30 cm

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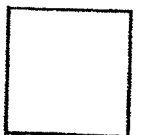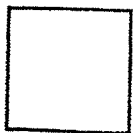
(a) In the arrangement shown in Figure B, what is the width of the gap at the top?

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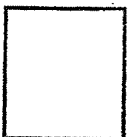
  (a)   What is the ratio of the number of boys in Hall A to the number of boys in Hall B? Express your answer in the simplest form.

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?
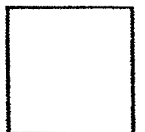
Ans: (b) _____ [2]

(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?
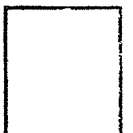
Ans: _____ [3]

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

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)
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

16	6.07
17	15, 30
18	$\frac{1}{30}$ (equivalent fractions accepted)
19	11 + 7y
20	360 - 288 = 72 180 - 72 = 108
21	21 ÷ 3 = 7 (35 − 7) ÷ 2 = 14 14 x 7 x 7 = 686
22	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
23	∠ DBC = 45° ∠ EGF = (180°− 45°) ÷ 2 = 67.5°

24	Area of 3 quarter circles = $\frac{3}{4}$ x π x 8cm x 8cm = 48 π cm²
	Area of triangle = $\frac{1}{2}$ x 8cm x 8cm = 32 cm²
	Area of figure = (48 π + 32) cm²

| 25 | |

26	8 x 8 = 64
	Length of base = 8cm
	Height of cuboid = 72 cm² ÷ 8cm = 9cm

27	624 ÷ 3 = 208
	208 x 4 = 832
	832 ÷ 8 = 104 or 624 ÷ 6 =104 or 208 ÷ 2 =104
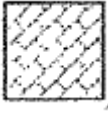
| Q28 | Refer to diagram | The 3rd square can be any of the 4 squares labelled. |

| Q29 | $\frac{7}{18}$ | $\frac{1}{2}$ x $\frac{1}{3}$ = $\frac{1}{6}$
 $\frac{1}{3}$ x $\frac{2}{3}$ = $\frac{2}{9}$
 $\frac{1}{6}$ + $\frac{2}{9}$ = $\frac{7}{18}$ | |
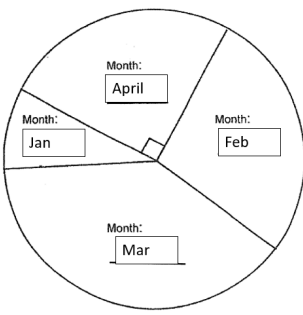
30	20 + 15 + 25 + 15 = 75
	18 x 5 = 90
	90 - 75 = 15

Paper 2

| 1 | a) 4.1cm (acceptable 4cm - 4.2cm) |
| | b) 94º (accepted 92º - 95º) |

2	360° - 62° =298°
3	180 min - 15 min = 165min 165min ÷ 3 = 55 min 55 min + 15min = 70 min
4	$\frac{1}{2}$ x 10 x RS = 24 24 ÷ 5 = 4.8cm
5	

		Worked Solutions
6.	**$786**	90% x $864 = $777.60 $1406.40 − $777.60 = $628.80 $628.80 ÷ 80 x 100 = **$786**
7.	**a) 120 ℓ** **b) 660 ℓ**	a) $\frac{1}{10}$ x 1200 ℓ = **120 ℓ** b) <u>Method 1</u> (180 ℓ − 120 ℓ) ÷ 2 = 30 ℓ per min 18 x 30 ℓ = 540 ℓ 540 ℓ + 120 ℓ = **660 ℓ** <u>Method 2</u> 2 mins → 60 18 mins → 9 x 60 = 540 540 ℓ + 120 ℓ = **660 ℓ**

8	Assume all are square, 40 x 3 = 120 120 - 92 = 28 28 ÷ 2 = 14
9	a) 70 g b) 120g c) 130g
10	a) ∠ QPS = 180° − 48° − 48°= **84°** b) ∠ TSV = 180°− 116°= 64° ∠ RST = 180°− 64°− 48°− 48°= **20°** c) ∠ SRT = 180°− 21°− 20°= 139° ∠ QRT = 360°− 84°− 139°= **137°**
11	3600 ÷ 4 = 900 b) $\frac{1000}{300}$ x 100% = 333 $\frac{1}{3}$%

12	a) Area of big circle = 3.14 x 30cm x30cm = 2826 cm² Area of small circle = 3.14 x 20xm x 20cm = 1256 cm² Shaded area = 2826 - 1256 = 1570 cm² b) Circ of large circle / length of large rect. = 3.14 x 60 = 188.4 cm Outer surface area = 188.4cm x 42 = 7912.8 cm² Circ of small circle / length of small rect. = 3.14 x 40 = 125.6cm² Inner surface area = 125.6 x 42 = 5275.2 cm² Total = 7912.8 + 5275.2 + 1570 + 1570 = 16 328 cm²
13	a) 360 x 2 = **720 m** b) 720 ÷ 40 = 18 18 x 85 = **1530** m
14	Length of 1 rect box = 1.5 ÷ 2 = 0.75 m = 75 cm Breadth of 2 rect box = 75 + 13 − 30 = 58 cm Breadth of 1 rect box = 58 ÷ 2 = 29 cm a) Width of gap = 150 − 29 x 4 **= 34 cm** b) 75 cm + 29 cm + 13 cm = 117 cm = 1.17m

15	a) A : B
	2 : 3 (x15)
	30 : 45
	
	Hall A Hall B
	Girls: Boys Girls: Boys
	  7: 3 (x3) 2: 7 (x5)
	  21: 9 10: 35
	
	Boys (Hall A) : Boys (Hall B)
	        9: 35
	
	b) 62% → 31u (girls)
	1% → 31u ÷ 62 = $\frac{1}{2}$u
	
	38% → $\frac{1}{2}$u x38 = 19u (boys left)
	44u - 19u = 25u
	25u = 375
	1u= 375 ÷ 25
	  = 15
	19u = 15 x 19 = **285**

16	Value of tickets A : C 14 : 3 17u = $9180 1u = $540 14u = $7560 3u = $1620 $7560 ÷ 4 = $1890 $1890 − $1620 = $270 $270 ÷ $9 = **30**
17	Packed boxes C : T 3 : 5 36 : 50 (multiples of 4 and 3) 1 set = $2.10 x9 + $1.60 x20 = $50.90 $203.6 ÷ $50.90 = 4sets 4 x60 =240