

HENRY PARK PRIMARY SCHOOL
2018 PRELIMINARY EXAMINATION
MATHEMATICS
PRIMARY 6

PAPER 1
(BOOKLET A)

Name: _____ ()

Parent's Signature

Class: Primary 6 _____

Marks:

Paper 1	Booklet A	20
	Booklet B	25
Paper 2		55
Total		100

Total Time for Booklets A and B: 1 hour

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.

You are **not** allowed to use a calculator.

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)

1 Express 3.025 as a mixed number in the simplest form.

(1) $3\frac{1}{4}$

(2) $3\frac{2}{5}$

(3) $3\frac{1}{25}$

(4) $3\frac{1}{40}$

2 Simplify $12 + 10y - 5 - 9y + 2$

(1) $5 + y$

(2) $9 - y$

(3) $9 + y$

(4) $19 - y$

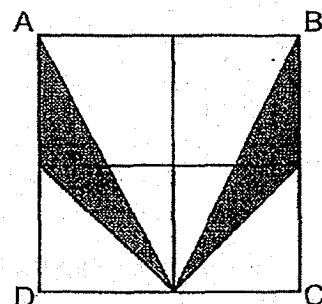
3 In the figure below, ABCD is made up of four identical squares.
 What fraction of the figure is shaded?

(1) $\frac{1}{8}$

(2) $\frac{1}{2}$

(3) $\frac{1}{3}$

(4) $\frac{1}{4}$

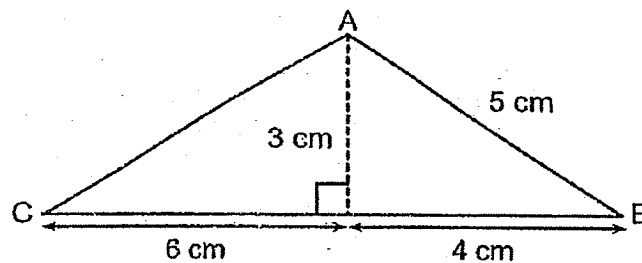


(Go on to the next page)

4 Which of the following is the same as 2030 cm?

- (1) 2 m 30 cm
- (2) 2 m 3 cm
- (3) 20 m 30 cm
- (4) 20 m 3 cm

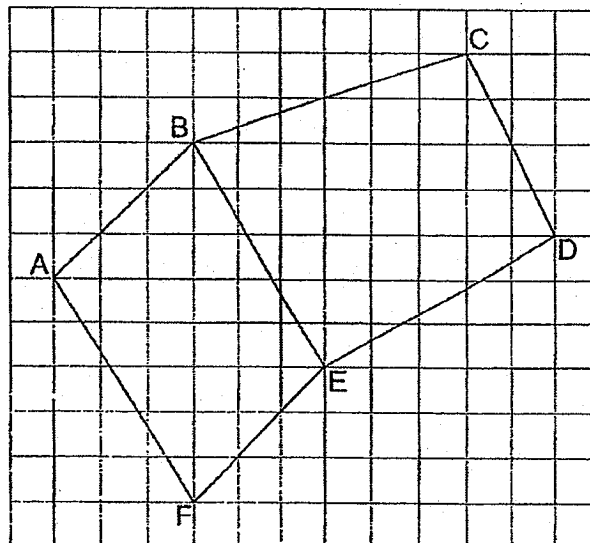
5 What is the area of triangle ABC shown below?



- (1) 15 cm^2
- (2) 18 cm^2
- (3) 30 cm^2
- (4) 36 cm^2

6 In the square grid below, which two lines are perpendicular to each other?

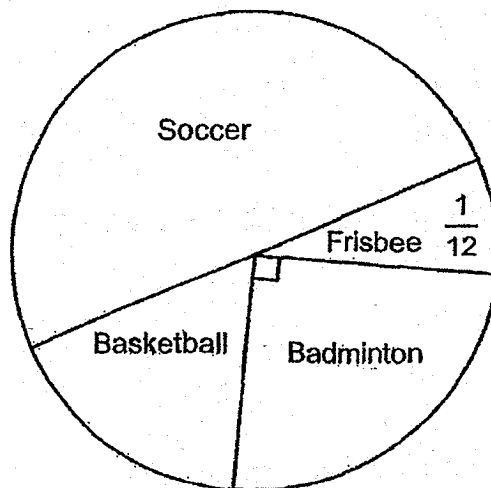
- (1) AF and BE
- (2) BE and ED
- (3) ED and DC
- (4) EF and AF



(Go on to the next page)

Use the information below to answer questions 7 and 8.

The pie chart shows the different games a number of students played during recess. Half of the students played soccer.



7 What fraction of the students played basketball?

(1) $\frac{5}{12}$

(2) $\frac{1}{6}$

(3) $\frac{1}{3}$

(4) $\frac{1}{4}$

8 There were 75 more students who played soccer than frisbee. How many students played badminton?

(1) 15

(2) 30

(3) 45

(4) 90

(Go on to the next page)

- 9 Joan baked a pie. She ate $\frac{1}{6}$ of it and her sister ate $\frac{1}{4}$ of the remainder.

What fraction of the pie was left?

(1) $\frac{3}{8}$

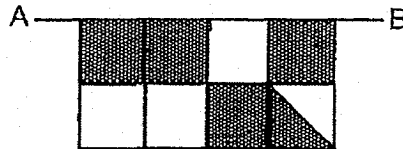
(2) $\frac{5}{8}$

(3) $\frac{5}{12}$

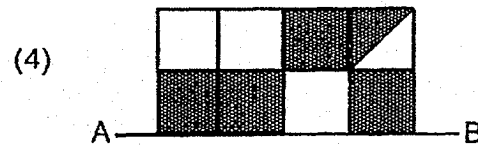
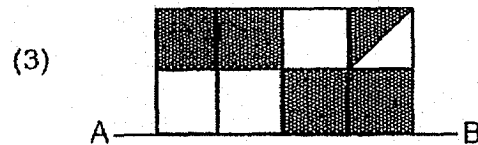
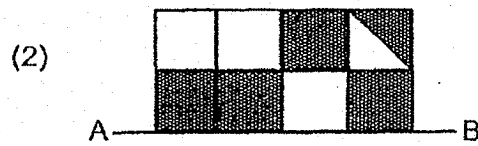
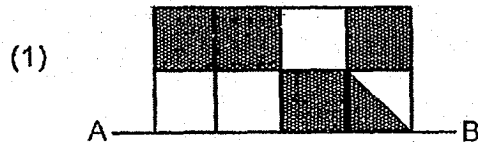
(4) $\frac{7}{12}$

(Go on to the next page)

- 10 The bottom half of a symmetric figure is shown below. AB is the line of symmetry.



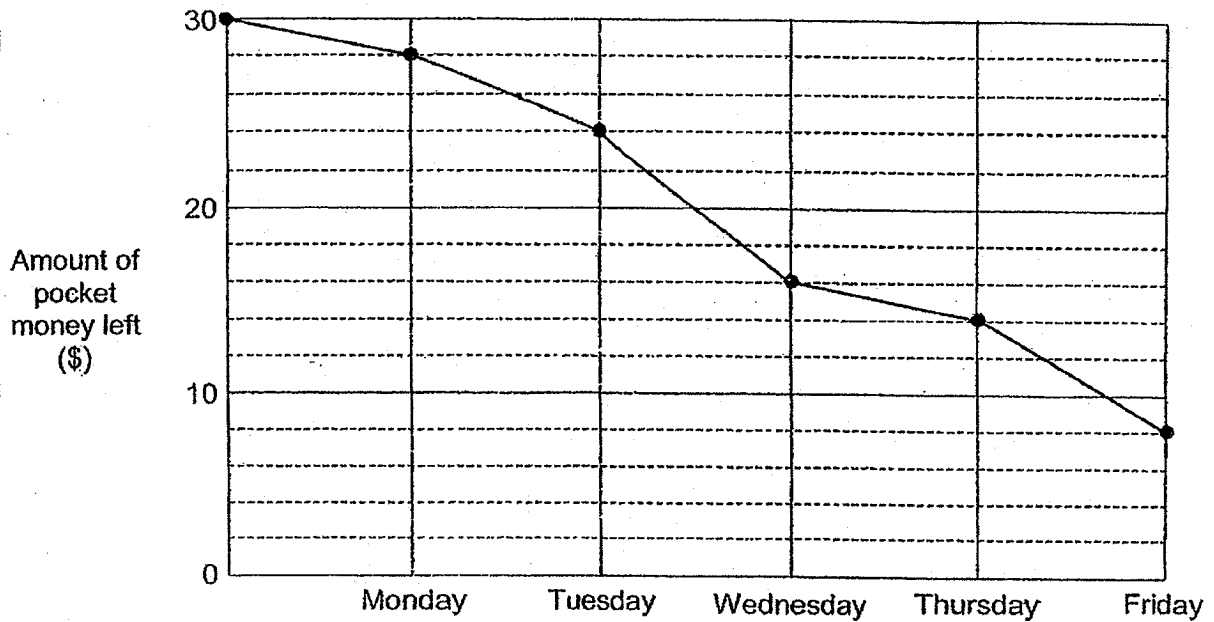
Which one of the following completes the symmetric figure?



(Go on to the next page)

Use the information below to answer questions 11 and 12.

Tom received \$30 each week for his pocket money. The line graph below shows the amount of pocket money he had left at the end of each day.



11 On which day did Tom spend the most amount of money?

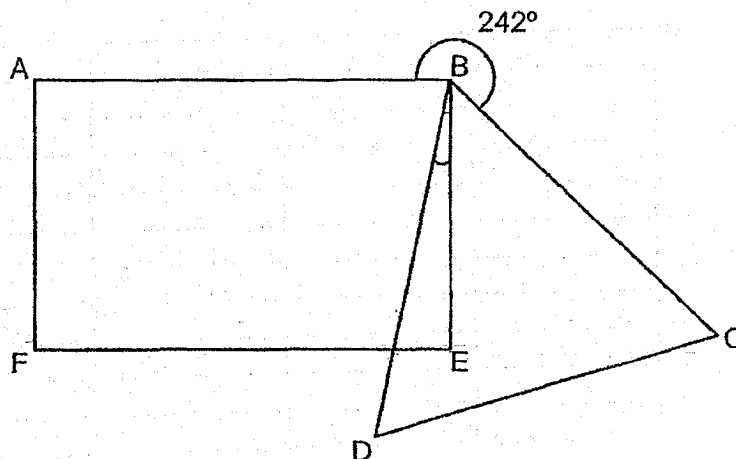
- (1) Tuesday
- (2) Wednesday
- (3) Thursday
- (4) Friday

12 What was the average amount of pocket money that Tom spent each day from Monday to Friday?

- (1) \$4.40
- (2) \$12
- (3) \$20
- (4) \$22

(Go on to the next page)

- 13 In the figure, ABEF is a rectangle, BCD is an equilateral triangle and $\angle ABC = 242^\circ$. Find $\angle DBE$.



- (1) 28°
(2) 30°
(3) 32°
(4) 58°
- 14 Adam and Bella had the same number of stamps. After Adam gave Bella $\frac{1}{6}$ of his stamps, Bella had 84 stamps. How many stamps did Adam have at first?
- (1) 60
(2) 70
(3) 72
(4) 98

(Go on to the next page)

- 15 A family of 8 adults and 5 children went for the high tea buffet at Royal Café. What is the least amount of money the family had to pay?

Royal Café High Tea Buffet

Adult price : \$22.50

Child price : \$11.10

Promotion!

For 3 paying adults, 2 children dine free!

- (1) \$179.10
- (2) \$191.10
- (3) \$213.30
- (4) \$235.50

(Go on to Booklet B)

THE JOURNAL OF THE

ROYAL ANTHROPOLOGICAL INSTITUTE

OF GREAT BRITAIN AND IRELAND

Volume 100, Part 1

1970

Published by the Royal Anthropological Institute of Great Britain and Ireland

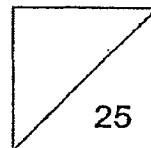


HENRY PARK PRIMARY SCHOOL
2018 PRELIMINARY EXAMINATION
MATHEMATICS
PRIMARY 6

PAPER 1
(BOOKLET B)

Name: _____ ()

Class: Primary 6 _____



Total Time for Booklets A and B: 1 hour

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.

You are **not** allowed to use a calculator.

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 Find the value of $\frac{85 - 7a}{4}$ when $a = 5$. Express your answer as a decimal.

Ans: _____

- 17 Find the value of $\frac{4}{5} \div \frac{3}{7}$

Ans: _____

- 18 A number with 3 decimal places is 7.9 when rounded to 1 decimal place. What is the greatest possible value of this number?

Ans: _____

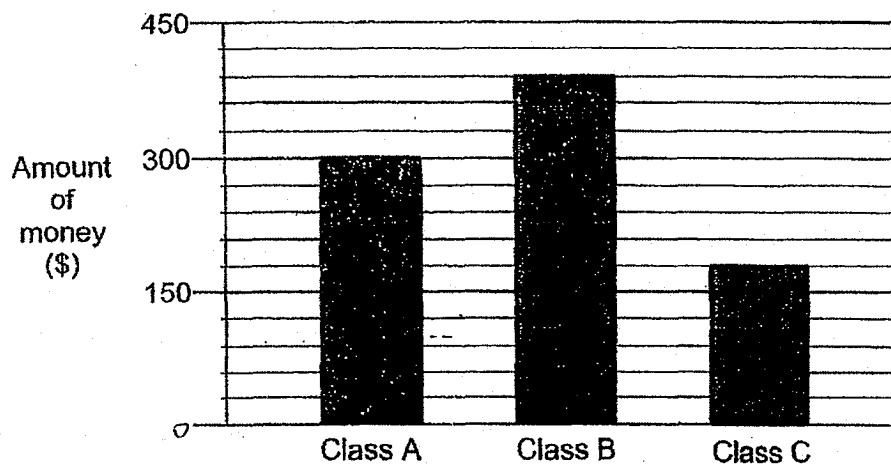
(Go on to the next page)

- 19 The ratio of the length to the breadth of a cuboid is 3 : 1. The ratio of the height to breadth of the cuboid is 4 : 3. Find the ratio of the length to the height of the cuboid.

Do not write
in this space

Ans: _____

- 20 The graph shows the amount of money collected by 3 classes for a charity.



What was the total amount of money collected by the 3 classes?

Ans: \$ _____

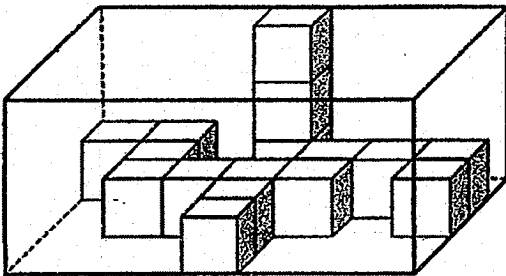
(Go on to the next page)

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.

Do not write
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(20 marks)

- 21 The figure shows a rectangular box partly filled with 1-cm cubes. What is the capacity of the rectangular box?



Ans: _____ cm³

- 22 The airmail rates to Country X and Country Y are shown below.

Mass Step	Country X	Country Y
First 20 g or part thereof	\$1.25	\$0.75
Every additional 10 g or part thereof	\$0.30	\$0.45

Jayen sent a letter weighing 18 g to Country X and a letter weighing 41 g to Country Y. How much did he pay altogether?

Ans: \$ _____

(Go on to the next page)

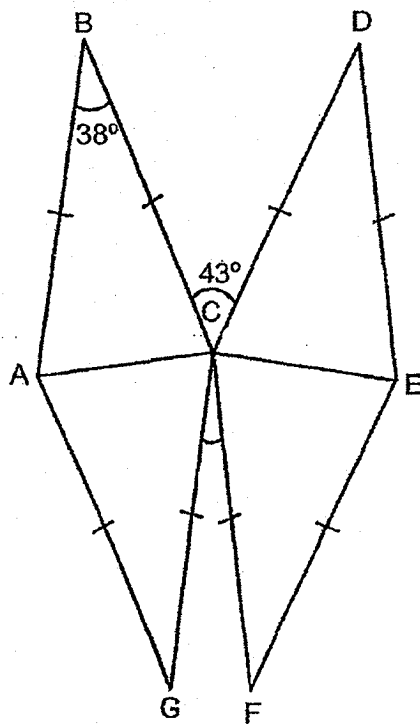
- 23 The receipt below shows the cost of 3 dresses Mrs Koh bought. The cost of Dress C was 20% of the total cost of the 3 dresses. Find the total cost of the 3 dresses.

Do not write
in this space

Dress A	\$136
Dress B	\$104
Dress C	\$

Ans: \$ _____

- 24 In the figure, ABC, CDE, EFC and CGA are identical isosceles triangles. $\angle ABC = 38^\circ$ and $\angle BCD = 43^\circ$. Find $\angle GCF$.

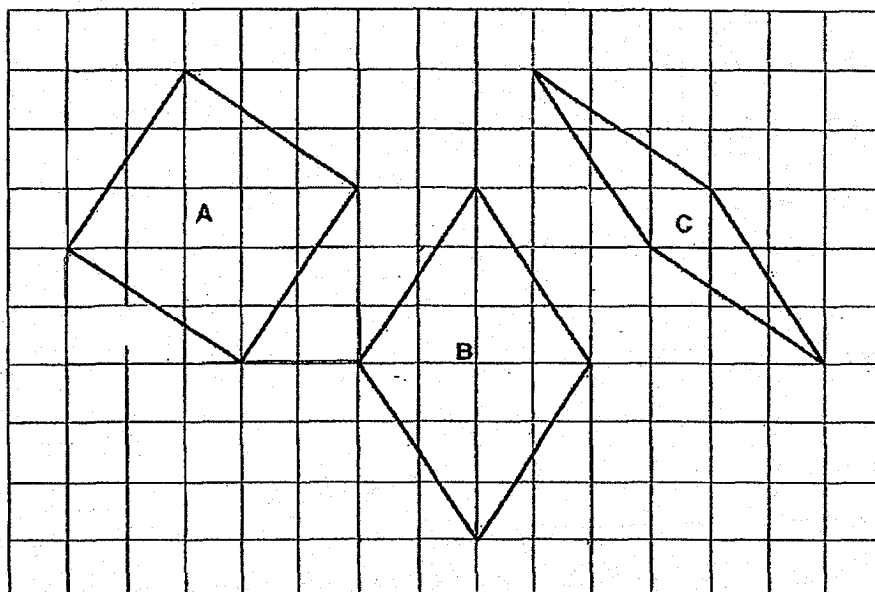


Ans: _____ °

(Go on to the next page)

- 25 Three rhombuses, A, B and C are shown in the square grid below.

Do not write
in this space



Each statement below is either **true**, **false** or **not possible to tell** from the information given. For each statement, put a tick (✓) in the correct column.

Statement		True	False	Not possible to tell
(a)	Rhombus A has the same perimeter as Rhombus C.			
(b)	Rhombus A has the same area as Rhombus B.			

(Go on to the next page)

- 26 Figure 1 is a parallelogram. Figure 2 is made up of 7 such parallelograms. The perimeter of Figure 2 is 180 cm. What is the length of the side AB of the parallelogram?

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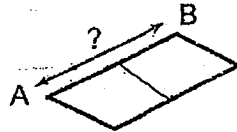


Figure 1

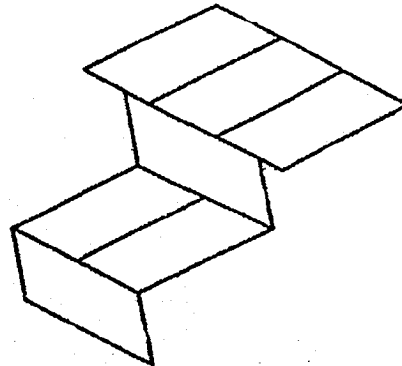


Figure 2

Ans: _____ cm

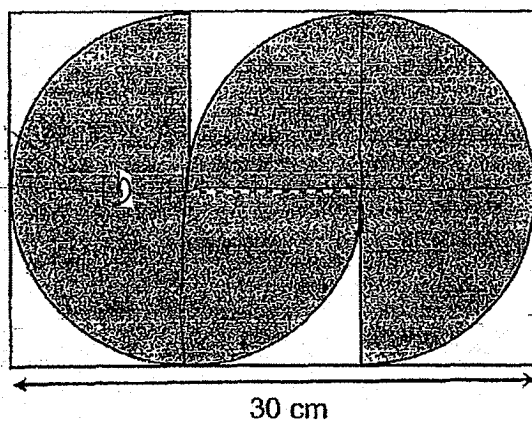
- 27 The average of three different 2-digit numbers is 30. Find the largest possible sum of two of the numbers.

Ans: _____

(Go on to the next page)

- 28 The figure shows 2 identical three-quarter circles on a rectangle. Given that the length of the rectangle is 30 cm, find the area of the unshaded parts of the figure. (Take $\pi = 3.14$)

Do not write
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Ans: _____ cm²

(Go on to the next page)

- 29 Figure 1 shows a cuboid measuring 5 cm by 7 cm by 10 cm. The base of the cuboid is shaded. Figure 2 shows the net of the cuboid.

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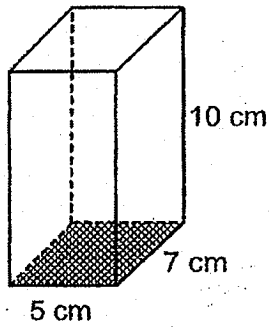


Figure 1

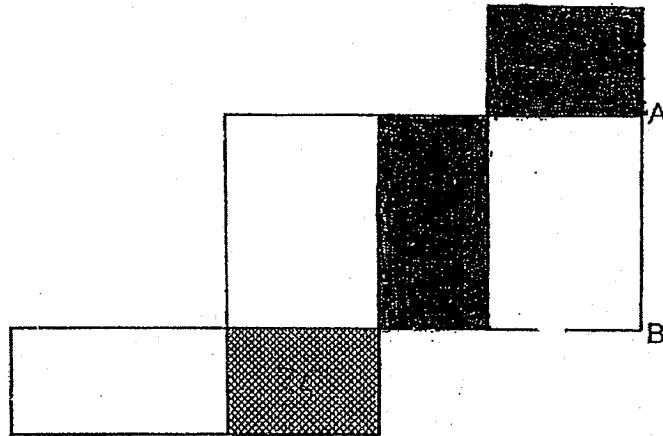


Figure 2

- Find the length of side AB of the net in Figure 2.
- Shade two more faces in Figure 2 so that the total shaded area of the net is 120 cm^2 .

Ans: (a) _____ cm

(Go on to the next page)

- 30 Mr Tan is between 30 and 70 years old. This year, his age is a multiple of 6. Next year, his age will be a multiple of 7. How old is Mr Tan this year?

Do not write
in this space

Ans: _____ years

End of Paper 1



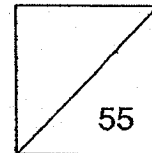
HENRY PARK PRIMARY SCHOOL
2018 PRELIMINARY EXAMINATION
MATHEMATICS
PRIMARY 6

PAPER 2

Parent's Signature

Name: _____ ()

Class: Primary 6 _____



Time for Paper 2: 1 hour 30 minutes

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

Follow all instructions carefully.

Answer all questions.

Show your working clearly as marks are awarded for correct working.

Write your answers in this booklet.

You are allowed to use a calculator.

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
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- 1 $\frac{3}{5}$ of the length of Bar X is glued to $\frac{2}{5}$ of the length of Bar Y as shown.

Find the ratio of the length of Bar X to the length of Bar Y. Express your answer in the simplest form.

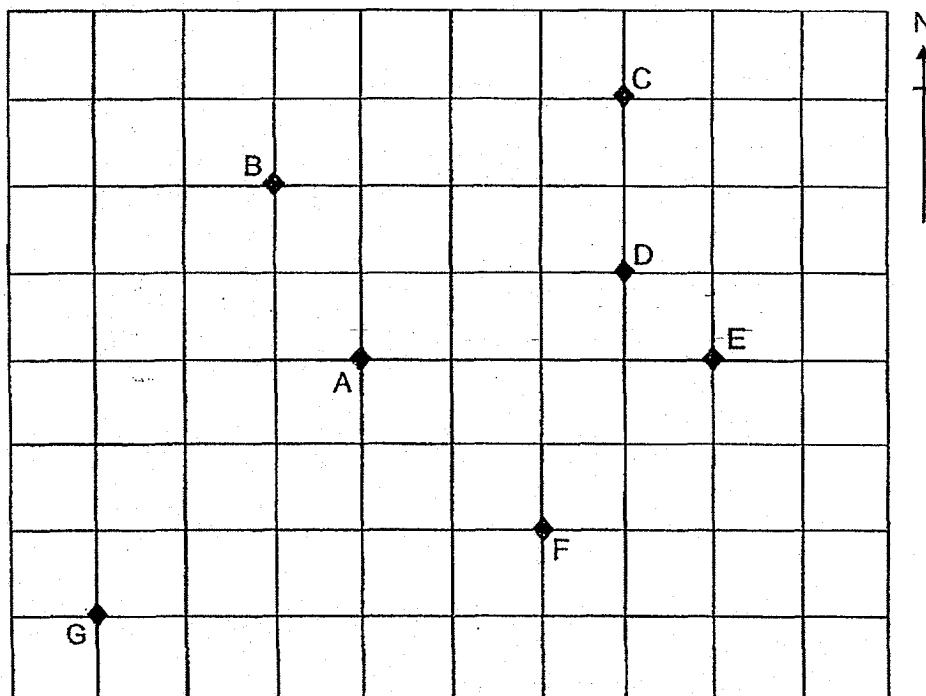


Ans: _____

(Go on to the next page)

- 2 Seven places of interest, A, B, C, D, E, F and G, of a town are shown in the square grid below.

Do not write
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- (a) In which direction is D from E?
- (b) Mr Lee is at one of the places of interest. He is facing C. When he turns 270° anti-clockwise, he faces F. Which place of interest is Mr Lee at?

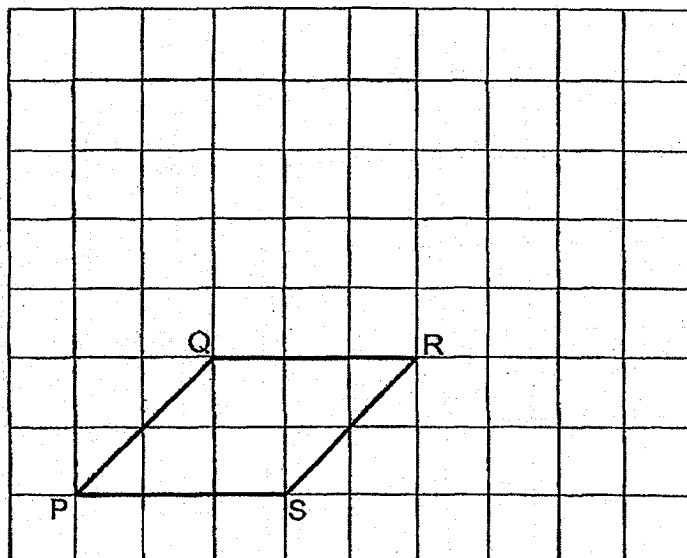
Ans: (a) _____

(b) _____

(Go on to the next page)

- 3 The figure below shows a parallelogram PQRS drawn on the square grid.

Do not write
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- (a) Draw an isosceles triangle PXY in the square grid such that PX is twice of PS, $PX = XY$ and $\angle PXY$ is 90° . Triangle PXY does not overlap with parallelogram PQRS.
- (b) What is the ratio of the area of triangle PXY to the area of parallelogram PQRS? Express your answer in the simplest form.

Ans: (b) _____

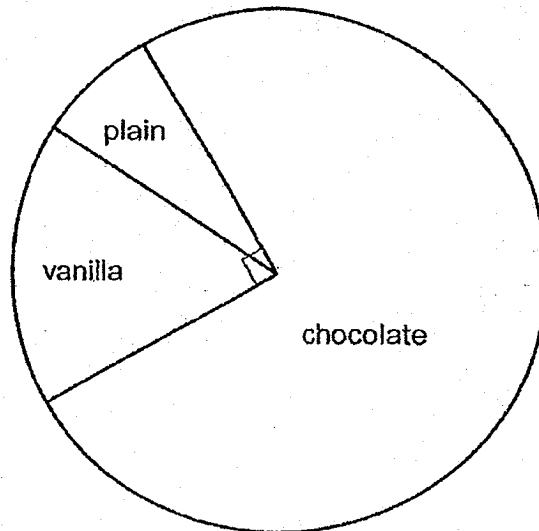
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- 4 The pie chart below shows the different types of muffins in a bakery.

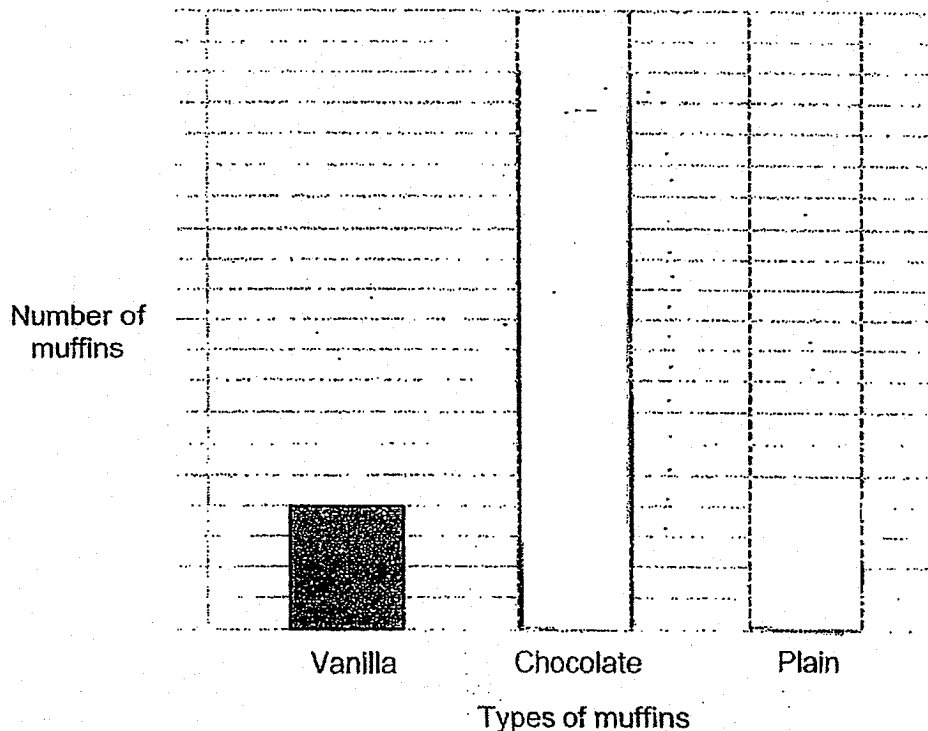
$\frac{1}{4}$ of the muffins were either vanilla or plain.

There were twice as many vanilla muffins as plain muffins.

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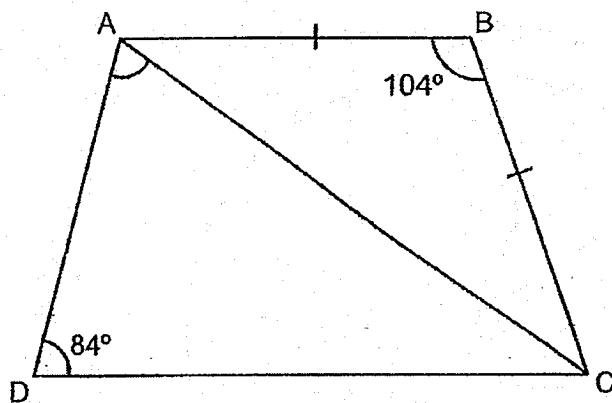
The different types of muffins are also represented by the bar graph below. Draw the bars for the number of chocolate muffins and plain muffins.



(Go on to the next page)

- 5 In the figure, ABCD is a trapezium, ABC is an isosceles triangle, $\angle ADC = 84^\circ$ and $\angle ABC = 104^\circ$. Find $\angle CAD$.

Do not write
in this space



Ans: _____

(Go on to the next page)

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

Do not write
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(45 marks)

- 6 Ali, Ben and Chen have an average of 42 stamps. Ali has y stamps, Ben has 4 times as many stamps as Ali and Chen has 27 stamps less than Ben.

- (a) Find the number of stamps Chen has in terms of y .
(b) How many stamps does Ali have?

Ans: (a) _____ [1]

(b) _____ [2]

- 7 The ratio of the volume of water in Jug A to the volume of water in Jug B is 8 : 3. After 50 ml of water was poured from Jug A to Jug B, Jug A had twice amount of water as Jug B. How much water was there in Jug B in the end?

Ans: _____ [3]

(Go on to the next page)

- 8 25% of the coins in a coin box are 50-cent coins, 35% are 20-cent coins and the rest are 10-cent coins. The total amount of money in the box is \$28.20. How many 10-cent coins are there in the box?

Do not write
in this space

Ans: _____ [3]

- 9 At a minimart, rice is sold in bags of different masses as shown below.

Mass per bag	Cost per bag
1-kg	\$4.40
2-kg	\$8.05
5-kg	\$19.90

What is the least amount of money that a customer has to pay to buy 16 kg of rice?

Ans: _____ [3]

(Go on to the next page)

- 10 Figure 1 is made up of 5 identical rectangles. The area of Figure 1 is 375 cm^2 . The rectangles are rearranged into Figure 2. Find the perimeter of Figure 2.

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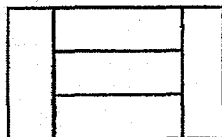


Figure 1

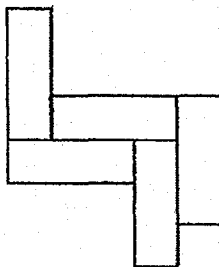


Figure 2

Ans: _____ [3]

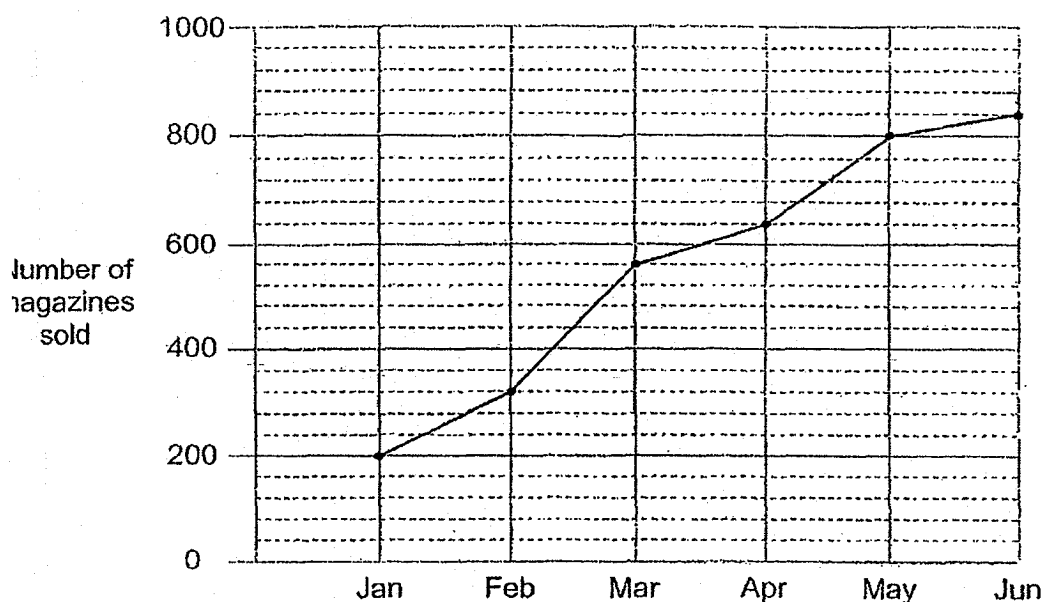
- 11 Aisyah and Jenny competed in a 200-m race. Both did not change their speeds from start to finish. Aisyah ran at 8 m/s and Jenny ran at a speed 3 m/s slower than Aisyah. How far was Jenny from Aisyah when Aisyah reached the finishing line?

Ans: _____ [3]

(Go on to the next page)

- 12 The graph below shows the number of magazines sold each month by a new publishing company from January to June.

Do not write
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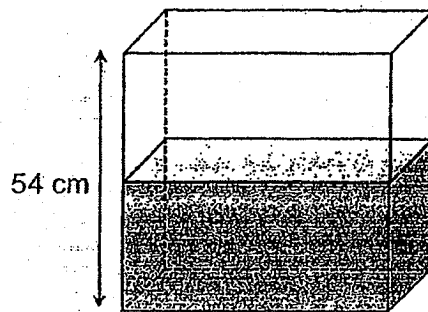
- (a) What was the percentage increase in the number of magazines sold in March compared to January?
- (b) What was the average increase in the number of magazines sold per month from January to June?

Ans: (a) _____ [2]

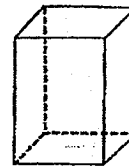
(b) _____ [2]

(Go on to the next page)

- 13 Two rectangular tanks, A and B, are shown below. The height of Tank A is 54 cm. After Annie poured 41 472 cm³ of water into an empty Tank A, it was $\frac{4}{9}$ filled as shown below.



Tank A



Tank B

- (a) Find the base area of Tank A.
- (b) After Annie poured some water from Tank A into an empty Tank B, the height of the water level in Tank A decreased to 21.5 cm. Given that the base area of Tank B is 270 cm², find the height of the water level in Tank B.

Ans: (a) _____ [1]

(b) _____ [3]

Do not write
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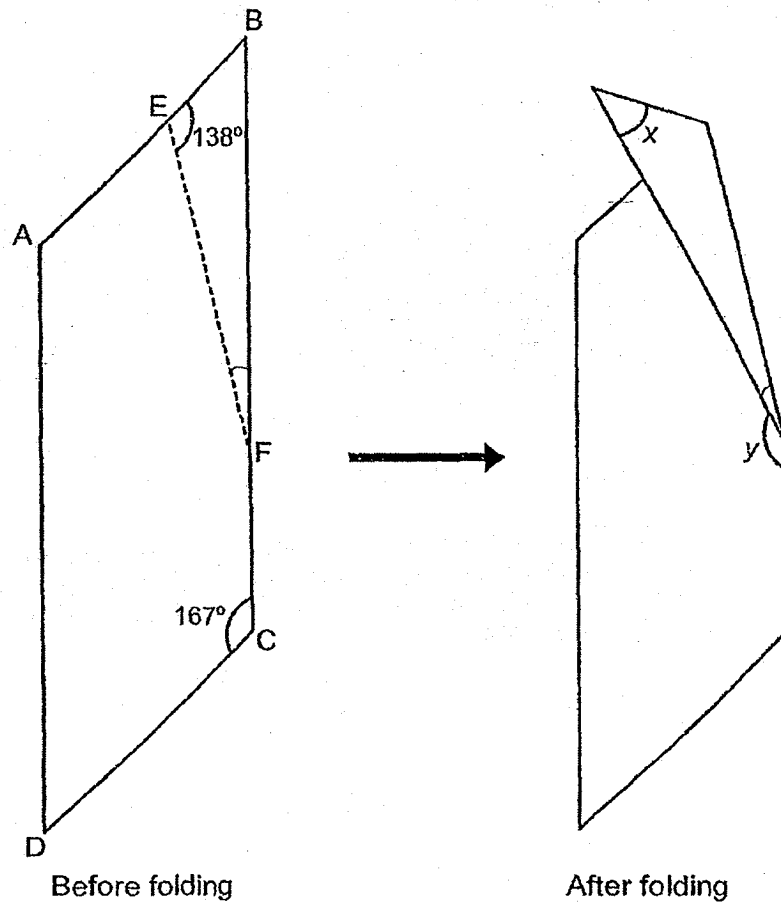
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- 14 Shiva has a piece of paper, ABCD, in the shape of a parallelogram. He folded it along the line EF as shown below. Given that $\angle BCD = 167^\circ$, $\angle BEF = 138^\circ$, AE and BFC are straight lines, find:

Do not write
in this space

(a) $\angle x$,

(b) $\angle y$.



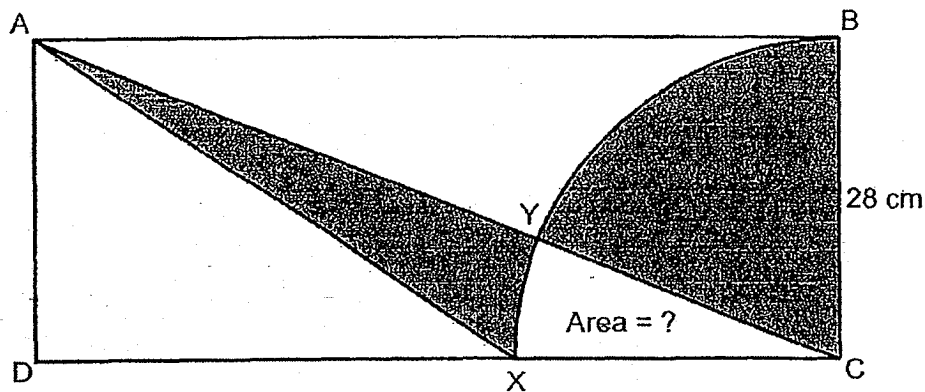
Ans: (a) _____ [1]

(b) _____ [3]

(Go on to the next page)

- 15 In the figure below, ABCD is a rectangle and BCX is a quarter circle. The length of BC is 28 cm. The total area of the shaded parts of the figure is $51\frac{1}{4}$ cm². Find the area of the unshaded part CXY of the figure.
(Take $\pi = \frac{22}{7}$)

Do not write
in this space



Ans: _____ [5]

(Go on to the next page)

- 16 $\frac{3}{8}$ of Abby's savings was \$100 more than $\frac{1}{3}$ of Betty's savings. After Abby spent $\frac{5}{8}$ of her savings and Betty spent $\frac{1}{2}$ of her savings, Betty had \$30 more than Abby. Find Betty's savings at first.

Do not write
in this space

Ans: _____ [5]

(Go on to the next page)

- 17 Farah uses black and white buttons to form figures that follow a pattern. The first four figures are shown below.

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Figure 1



Figure 2

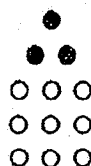


Figure 3

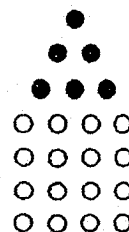


Figure 4

- (a) The table shows the number of black and white buttons used for each figure. Complete the table for Figure 5.

Figure Number	1	2	3	4	5
Number of black buttons	0	1	3	6	
Number of white buttons	1	4	9	16	
Total number of buttons	1	5	12	22	

[1]

- (b) A figure in the pattern has a total of 176 black and white buttons. What is the Figure Number?
- (c) A figure in the pattern has 784 white buttons. How many black buttons are there in that figure?

Ans:(b) Figure _____ [2]

(c) _____ [2]

End of Paper 2

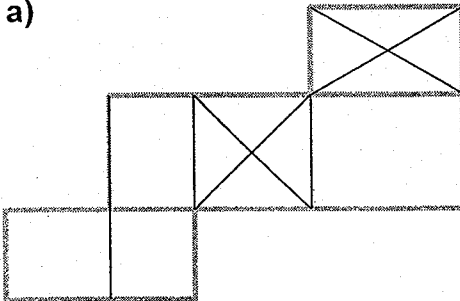
SCHOOL : HENRY PARK PRIMARY SCHOOL
 LEVEL : PRIMARY 6
 SUBJECT : MATH
 TERM : 2018 PRELIM

PAPER 1 BOOKLET A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
4	3	4	3	1	2	2	3	2	4

Q 11	Q12	Q13	Q14	Q15
2	1	3	3	2

PAPER 1 BOOKLET B

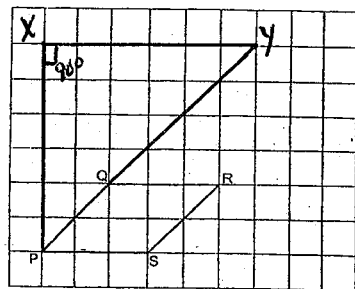
Q16)	12.5
Q17)	28/15
Q18)	7.949
Q19)	9:4
Q20)	\$870
Q21)	$7 \times 3 \times 5 = 105\text{cm}^3$
Q22)	$1.25 + 0.75 + 0.45 \times 3 = \3.35
Q23)	\$300
Q24)	33°
Q25)	a)True b)False
Q26)	20cm
Q27)	80
Q28)	129cm ²
Q29)	<div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>a)</p>  </div> <div style="flex: 1;"> <p>b)10cm</p> </div> </div>
Q30)	48 years

PAPER 2

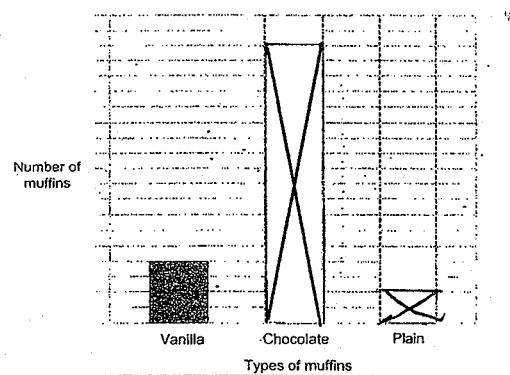
Q1) 10 : 15
2 : 3

Q2) a) North-west
b) A

Q3) a) b) 3 : 1



Q4)



Q5) $\angle BAD = (180^\circ - 104^\circ) \div 2 = 38^\circ$
 $\angle CAD = 180^\circ - 84^\circ - 38^\circ = 58^\circ$

Solutions to Word Problems
Henry Park Paper 2
P6 Mathematics SA2 2018

Show your working clearly in the space provided for each question and write your answers in the spaces provided.

6. a)

Number of stamps Ben has = $4 \times y = 4y$

Number of stamps Chen as = $4y - 27$

b)

Total number of stamps = $y + 4y + 4y - 27 = 42 \times 3$

$9y = 126 + 27 = 153$

$y = 153 \div 9 = 17$

Ans: (a) $4y - 27$

(b) 17

7. At first ratio of volume of Jug A to Jug B = $8 : 3 \rightarrow 24u : 9u$

$- 2u : + 2u$

At the end, ratio of volume of Jug A to Jug B = $2 : 1 \rightarrow 22u : 11u$

$2u = 50\text{ml}$

$u = 25$

Volume of Jug B at the end = $11u = 11 \times 25 = 275 \text{ ml}$

Ans: 275 ml

8. Let u = total number of coins

$$\text{Value of 50-cents coins} = \frac{25}{100} \times u \times 50 = 12.5u \text{ cents}$$

$$\text{Value of 20-cents coins} = \frac{35}{100} \times u \times 20 = 7u \text{ cents}$$

$$\text{Value of 10-cents coins} = \frac{40}{100} \times u \times 10 = 4u \text{ cents}$$

$$\text{Total value} = 12.5u + 7u + 4u = 23.5u$$

$$23.5u = 28.20 \times 100 \text{ cents}$$

$$u = 2820 \div 23.5 = 120$$

$$\text{Number of 10-cent coins} = \frac{40}{100} \times 120 = 48$$

Ans: 48

9. Rice from cheapest to expensive \rightarrow 5-kg, 2-kg, 1-kg

$$16 \text{ kg} \rightarrow 3 \times 5\text{-kg} + 1\text{-kg} \rightarrow 3 \times 19.90 + 4.40 = \$64.10$$

$$16 \text{ kg} \rightarrow 2 \times 5\text{-kg} + 3 \times 2\text{-kg} \rightarrow 2 \times 19.90 + 3 \times 8.05 = \$63.95$$

$$\text{Cheapest amount} = \$63.95$$

Ans: \$63.95

10. Area of 1 rectangle = $375 \div 5 = 75 \text{ cm}^2$

Let breadth of rectangle = u

Length = $3u$

$$3u \times u = 75$$

$$u \times u = 25 = 5 \times 5$$

$$u = 5 \text{ cm}$$

$$\text{Perimeter of Figure 2} = 3u \times 4 + 2u \times 2 + 6 \times u = 21u = 21 \times 5 = 105 \text{ cm}$$

Ans: 110 cm

11. Completion time for Aisyah = $200 \div 8 = 25 \text{ sec}$

$$\text{Speed of Jenny} = 8 - 3 = 5 \text{ m/s}$$

$$\text{Distance of Jenny in 25 sec} = 5 \times 25 = 125 \text{ m}$$

$$\text{Distance between Jenny and Aisyah when Aisyah completed} = 200 - 125 = 75 \text{ m}$$

Ans: 75m

12. a)

March sales = 560 magazines

January sales = 200 magazines

$$\text{Percentage increase} = \frac{560-200}{200} \times 100 = 180\%$$

b)

June sales = 840 magazines

Total increase from Jan to Jun = $840 - 200 = 640$

Average increase = $640 \div 5 = 128$

Ans: (a) 180%

(b) 128

13. a)

$$\text{Height of water level at Tank A} = \frac{4}{9} \times 54 = 24 \text{ cm}$$

$$\text{Base area of Tank A} = 41\,472 \div 24 = 1728 \text{ cm}^2$$

b)

$$\text{Volume of water in Tank B} = (24 - 21.5) \times 1728 = 4320 \text{ cm}^3$$

$$\text{Height of water level at Tank B} = 4320 \div 270 = 16 \text{ cm}$$

Ans: (a) 1728 cm^2

(b) 16 cm

14. a)

$$\angle x = \angle ABC = 180 - 167 = 13^\circ$$

b)

$$\angle BFE = 180 - 13 - 138 = 29^\circ$$

$$\angle y = 180 - 29 - 29 = 122^\circ$$

Ans: (a) 13°
(b) 122°

15. Area of triangle ACX = $\frac{1}{2} \times 28 \times 28 = 392 \text{ cm}^2$

$$\text{Area of quarter circle} = \frac{1}{4} \times \frac{22}{7} \times 28 \times 28 = 616 \text{ cm}^2$$

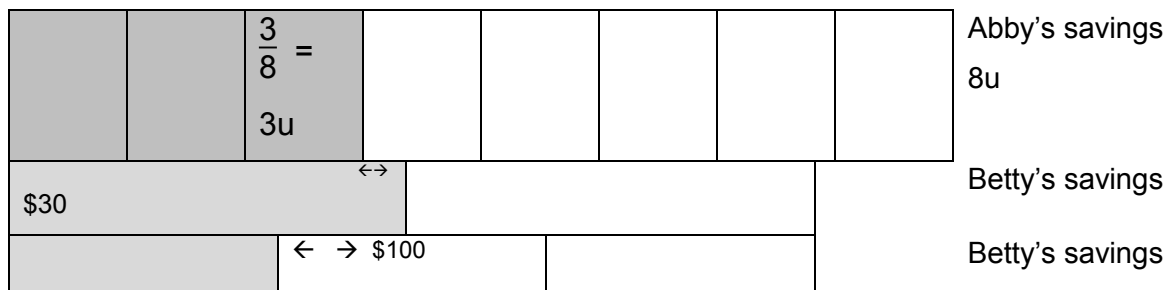
$$\text{Area of } \triangle ACX + \text{area of quarter circle} - 2 \times \text{area of CXY} = 514 \text{ cm}^2$$

$$2 \times \text{area of CXY} = 392 + 616 - 514 = 494 \text{ cm}^2$$

$$\text{Area of CXY} = 494 \div 2 = 247 \text{ cm}^2$$

Ans: 247 cm^2

16.



$$8u \times \frac{3}{8} - 100 = \frac{1}{3} (3u + 30 + 3u + 30)$$

$$3u - 100 = 2u + 20$$

$$u = 120$$

Betty's savings = $6u + 60 = 6 \times 120 + 60 = \780

Ans: \$780

17. a)

Number of black buttons for figure 5 = 10

Number of white buttons for figure 5 = 25

Total number of buttons for figure 5 = 35

b)

Number of black buttons for figure $n = n-1 + n-2 + n-3 + \dots$

Number of white buttons for figure $n = n \times n$

For figure 10, total buttons = $100 + 45 = 145$

For figure 11, total buttons = $121 + 55 = 176$

c)

White buttons = $784 = 28 \times 28$

$n = 28$

Black buttons = $27 + 26 + 25 + \dots + 1 = 378$

Ans: (a) 10, 25, 35

(b) 11

(c) 378