2016 PRELIMINARY EXAMINATION
MATHEMATICS
PRIMARY 6

PAPER 1
(BOOKLET A)

Name: _____ ( ) Parent's Signature

Class: Primary 6 _____ _____

Marks:

Paper 1	Booklet A	20
	Booklet B	20
Paper 2		60
Total		100

Total Time for Booklets A and B: 50 min

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.

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

(20 marks)

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1 Which one of the following numbers is the largest?

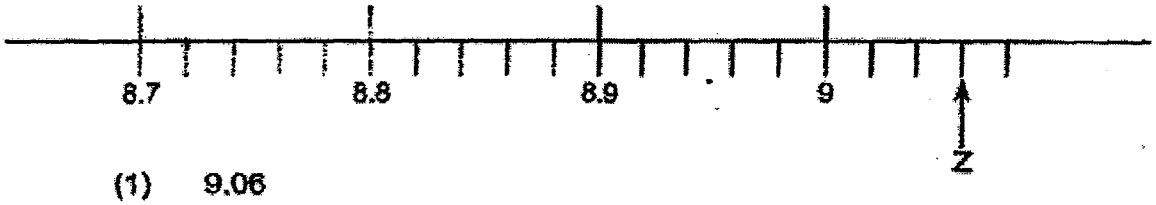
(1) 0.8

(2) 0.84

(3) 0.819

(4) 0.838

2 In the number line below, what is the value of the reading at Z?



(1) 9.06

(2) 9.03

(3) 9.6

(4) 9.3

3 What is the value of $24 - 2 \times 3 + 27 \div 3$?

(1) 13

(2) 27

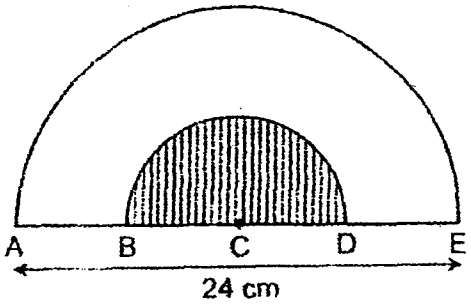
(3) 31

(4) 75

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4 The figure is made up of 2 semi-circles. AB = BC = CD = DE.
Find the area of the shaded part in terms of π.



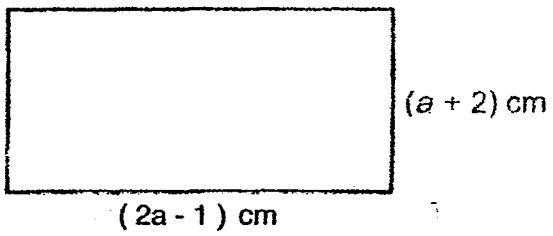
(1) 6π cm^2

(2) 12π cm^2

(3) 18π cm^2

(4) 36π cm^2

5 Find the perimeter of the rectangle below in terms of a.



(1) $(3a + 1)$ cm

(2) $(3a - 3)$ cm

(3) $(6a + 2)$ cm

(4) $(6a - 6)$ cm

(Go on to the next page)

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6 The table below shows the number of children per household in a housing estate.

Number of children per household	0	1	2	3
Number of households	5	32	28	12

What is the total number of children in the households that have at least 2 children?

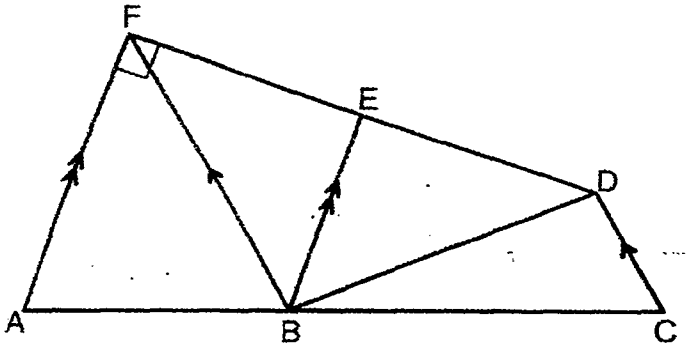
(1) 28

(2) 40

(3) 56

(4) 92

7 In the figure below, ABC and DEF are straight lines.



Which of the following is a trapezium?

(1) ABDF

(2) ACDF

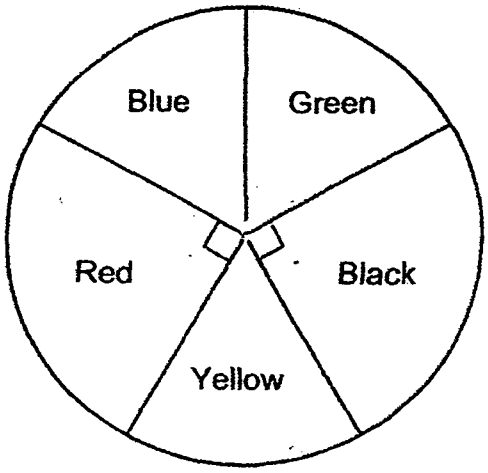
(3) BCDE

(4) BCDF

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8 A group of children was asked to name their favourite colours. Each child named one colour and the pie chart below shows their choices.



An equal number of children chose blue, green and yellow as their favourite colours. What fraction of the children named blue as their favourite colour?

(1) $\frac{1}{7}$

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

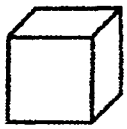
(3) $\frac{1}{5}$

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

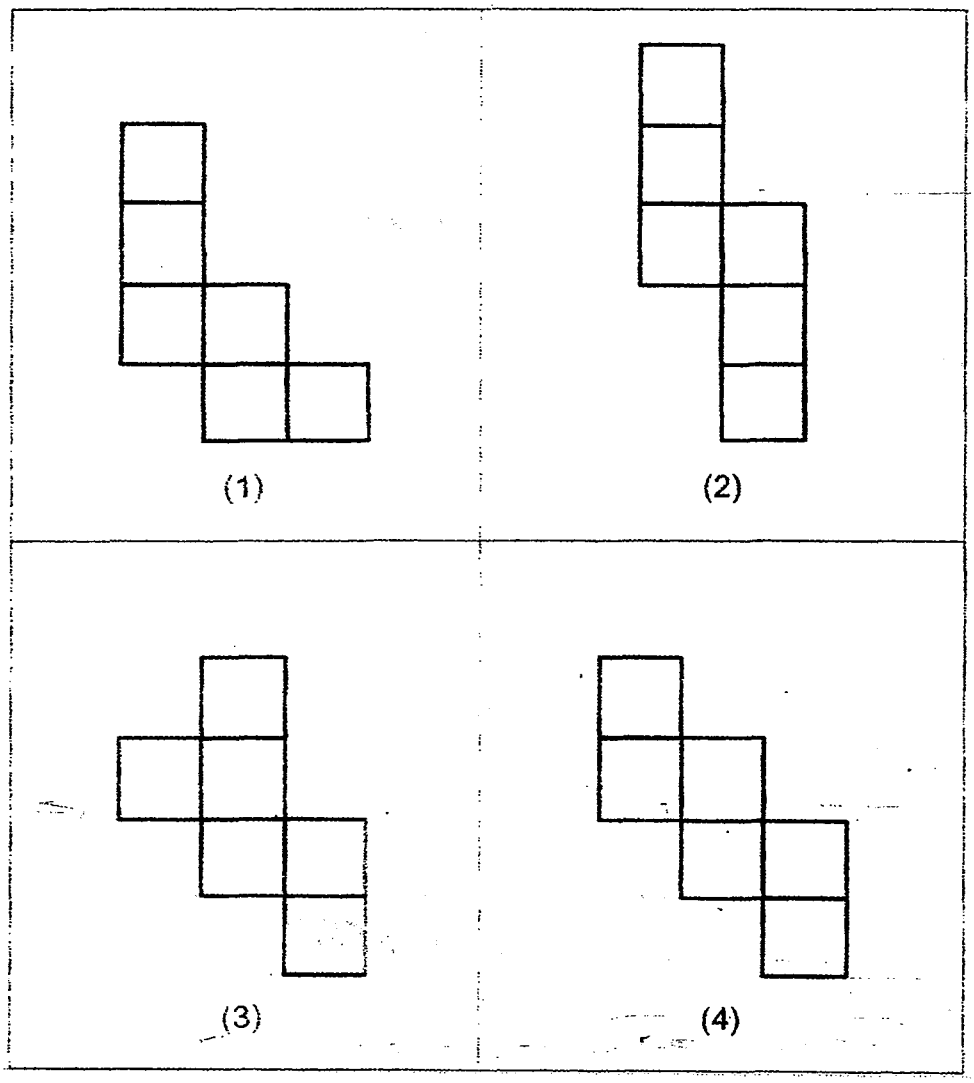
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9 The figure below shows a cube.



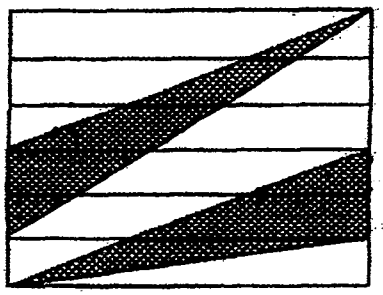
Which of the following is **not** a net of the cube?



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10 The figure below is made up of 6 rectangles of equal area. What fraction of the figure is shaded?



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

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

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

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

11 Rei baked some cookies. She gave $\frac{1}{4}$ of the cookies to her sister and $\frac{2}{5}$ of the remaining cookies to her brother. What fraction of the cookies did Rei have left?

(1) $\frac{3}{10}$

(2) $\frac{7}{20}$

(3) $\frac{9}{20}$

(4) $\frac{13}{20}$

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12 The total mass of Conrad and Timothy is 51 kg. The total mass of Timothy and Seth is 81 kg. Seth is three times as heavy as Conrad. What is the average mass of the three boys?

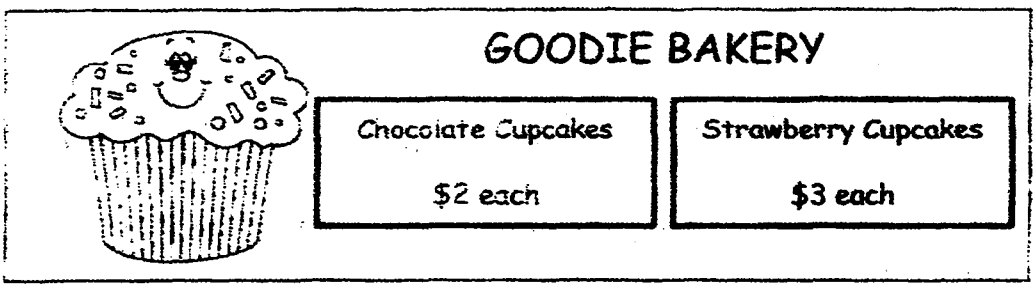
(1) 22 kg

(2) 32 kg

(3) 33 kg

(4) 44 kg

13 Cupcakes are sold at Goodie Bakery at the prices shown below.



Sally spent a total of $50 on 16 chocolate cupcakes and some strawberry cupcakes. How many strawberry cupcakes did Sally buy?

(1) 6

(2) 9

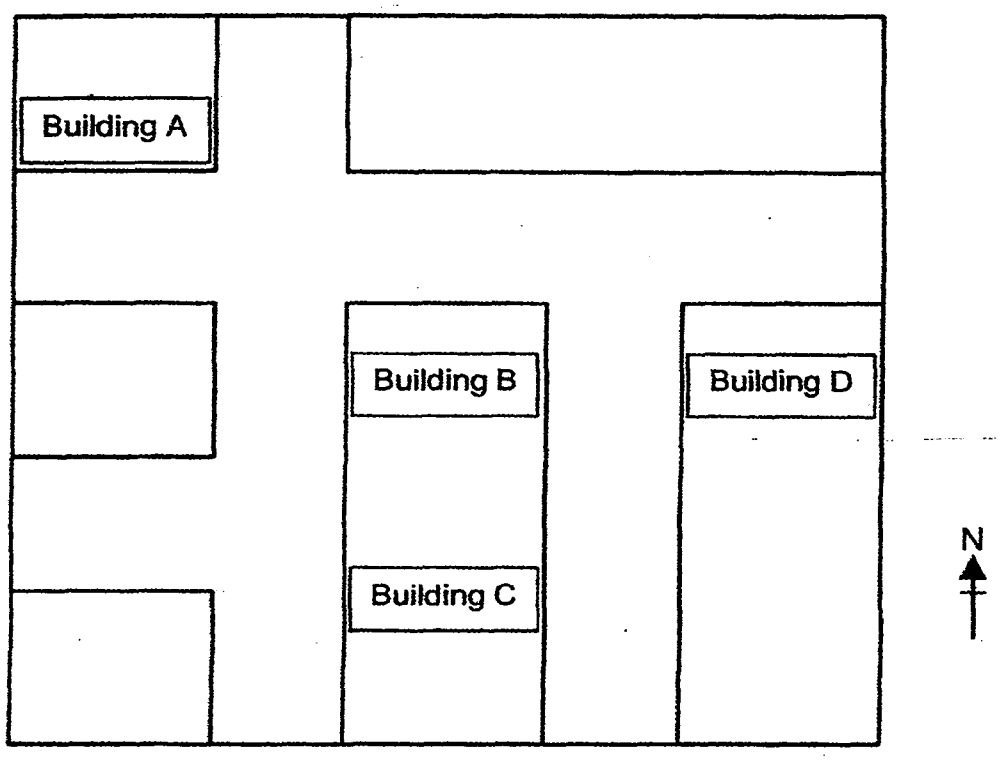
(3) 10

(4) 18

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14 The map below shows the location of different buildings in a town.



The post office is located to the north-east of the mall.
The library is located to the south-east of the school and to the west of the post-office.
Which one of the following buildings is the school?

(1) Building A

(2) Building B

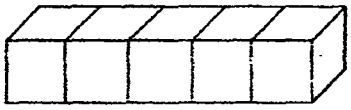
(3) Building C

(4) Building D

(Go on to the next page)

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15 A number of identical cubes are joined as shown in the figure below. The total surface area is 550 cm^2. What is the volume of 1 cube?



(1) 25 cm^3

(2) 110 cm^3

(3) 125 cm^3

(4) 625 cm^3

(Go on to Booklet B)

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2016 PRELIMINARY EXAMINATION
MATHEMATICS
PRIMARY 6

PAPER 1
(BOOKLET B)

Name: _____ ( )

Class: Primary 6 _____

/ 20

Total Time for Booklets A and B: 50 min

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.

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Questions **16** to **25** carry 1 mark each. Write your answers in the spaces provided.
For questions which require units, give your answers in the units stated.

(10 marks)

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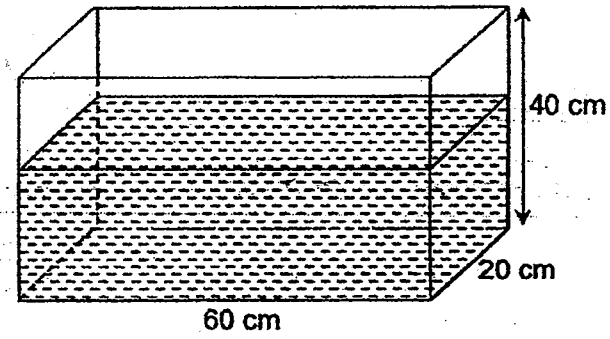
16 Write down all the common factors of 24 and 30.

Ans: _____

17 Find the value of $5 \div 8$
Express your answer as a decimal.

Ans: _____

18 A rectangular tank measuring 60 cm by 20 cm by 40 cm is $\frac{3}{5}$ filled with water. Find the volume of the water in the tank.



Ans: _____ cm^3

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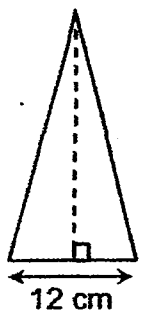
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19 The volume of a wooden cube is 512 cm^3. A small cube of side 3 cm was cut away from it. Find the volume of the remaining solid.

Do not write in this space

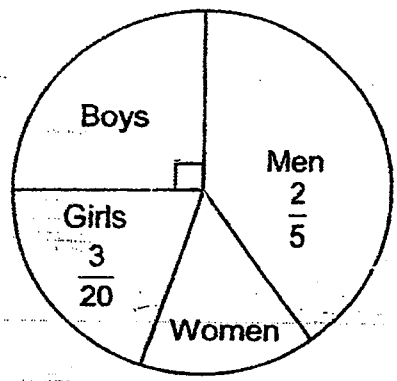
Ans: _____ cm^3

20 The triangle below has an area of 144 cm^2. Find its height.



Ans: _____ cm

21 The pie chart below shows the breakdown of the spectators at a football match.



What percentage of the spectators were women?

Ans: _____ %

(Go on to the next page)

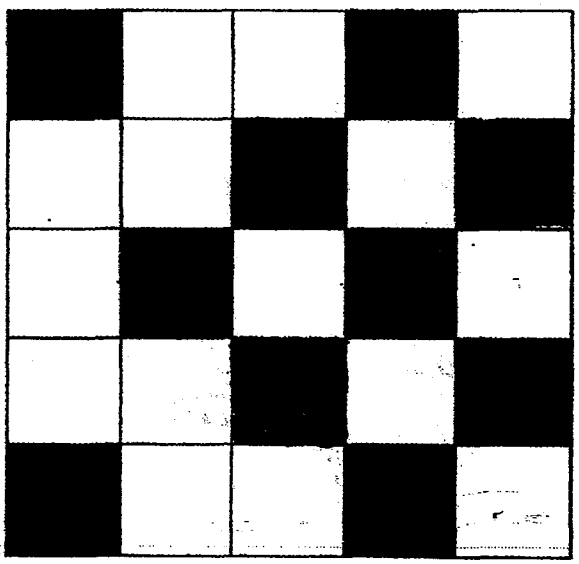
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22 Last year, there were 20 members in the art club. This year, there were 25 members. What was the percentage increase in the art club membership?

Do not write in this space

Ans: _____ %

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

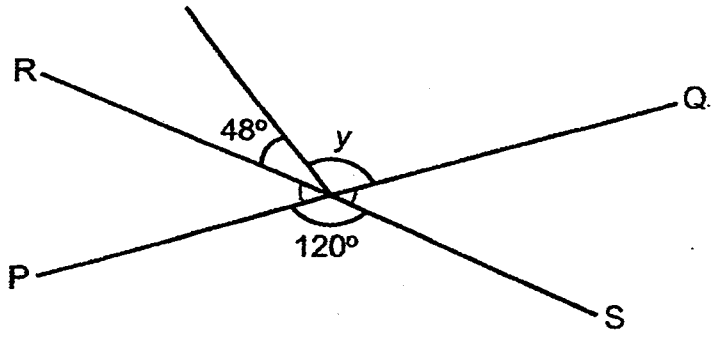


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24 In the figure, PQ and RS are straight lines. Find $\angle y$.

Do not write in this space



Ans: _____ °

25 A camera cost $270 after a discount of 10%. What was the price of the camera before the discount?

Ans: $_____

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Questions **26** 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.

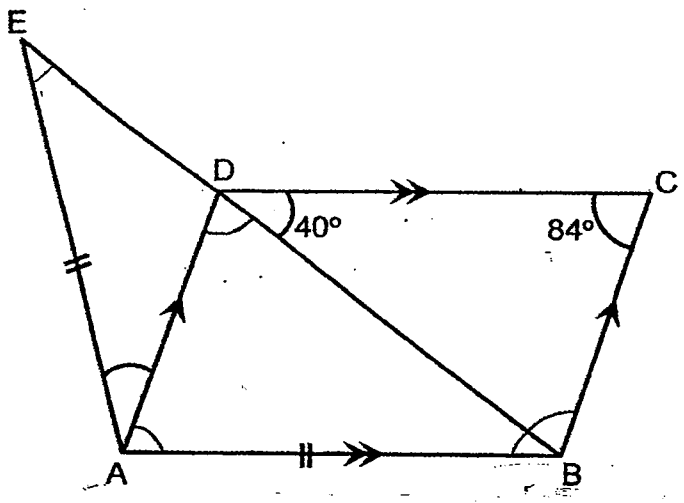
(10 marks)

Do not write in this space

26 The difference between two numbers is 159 and the sum of the numbers is 177. What is the value of the smaller number?

Ans: _____

27 The figure shows a parallelogram ABCD and an isosceles triangle ABE. BDE is a straight line. Find $\angle$ DAE.



Ans: _____ °

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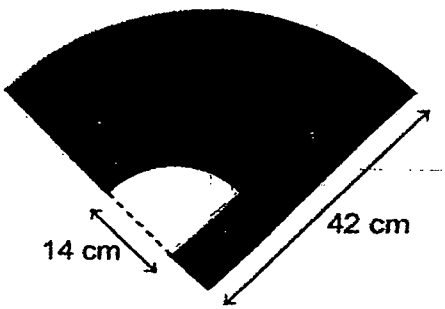
28 Alina had 20 more marbles than Brandon. After Brandon gave Alina 15 marbles, Alina had twice as many marbles as Brandon. How many marbles did they have altogether?

Do not write in this space

Ans: _____

29 Chin Hao had a piece of coloured paper in the shape of a quadrant. He cut out a small quadrant from the coloured paper as shown below. Find the perimeter of the remaining piece of coloured paper.

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



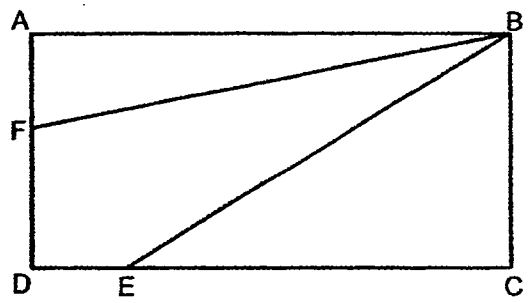
Ans: _____ cm

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30 The figure below shows a rectangle ABCD.

Do not write in this space



The ratio of the length of AF to the length of FD is 2 : 3. The ratio of the length of CE to the length of DE is 8 : 2. Given that the area of triangle ABF is 20 cm^2, find the area of triangle BCE.

Ans: _____ cm^2

End of Paper 1

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2016 PRELIMINARY EXAMINATION
MATHEMATICS
PRIMARY 6

PAPER 2

Name: _____ ( )

Class: Primary 6 _____

/ 60

Time for Paper 2: 1 h 40 min

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.

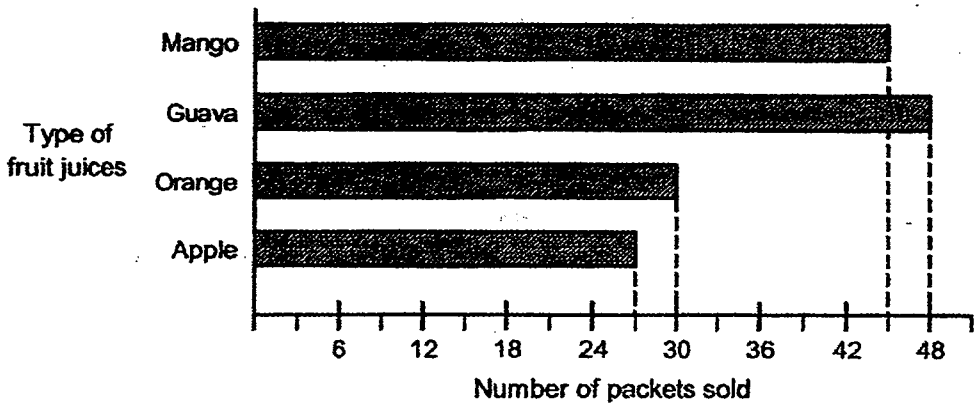
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Questions 1 to 5 carry 2 marks each. Show your working clearly and write your answers in the spaces provided. For questions which require units, give your answers in the units stated.

(10 marks)

Do not write in this space

1 The graph below shows the number of packets of fruit juice sold at a shop in a day.



What percentage of the total number of packets of fruit juice sold were apple juice?

Ans: _____ %

2 The perimeter of a rectangle is 72 cm. The length of the rectangle is 3 times its breadth. What is the area of the rectangle?

Ans: _____ cm^2

(Go on to the next page)

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3 A stack of 35 identical workbooks was 33.25 cm high. Mrs Chua marked some of the workbooks and put aside the marked workbooks in a separate stack. The stack of the remaining unmarked workbooks was then 22.8 cm. How many such workbooks had Mrs Chua marked?

Do not write in this space

Ans: _____

4 Lisa had a container completely filled with rice. After she used 360 g of the rice, the container became half-filled. The container with the remaining rice weighed 1.81 kg. Find the mass of the empty container in kilograms.

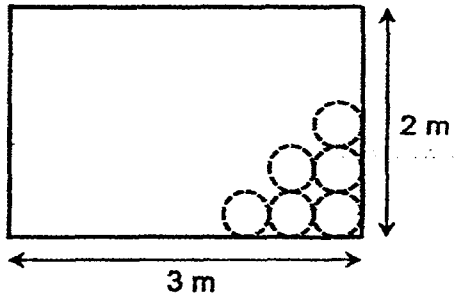
Ans: _____ kg

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5 Roger has a rectangular piece of cardboard measuring 3 m by 2 m. He wants to cut out circular pieces each measuring 40 cm in diameter. What is the maximum number of such circular pieces that he can cut from the cardboard?

Do not write in this space



Ans: _____

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For questions **6** to **18**, 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 or part-question.

(50 marks)

Do not write in this space

6 At an exhibition, $\frac{2}{5}$ of the people were women. There were thrice as many men as children. There were 190 more women than children. Find the total number of people at the exhibition.

Ans: _____ [3]

7 Kayla bought 4 books and 1 file for a total of $72.55. The cost of the file was $15.20 less than the average cost of each book. Find the cost of the file.

Ans: _____ [3]

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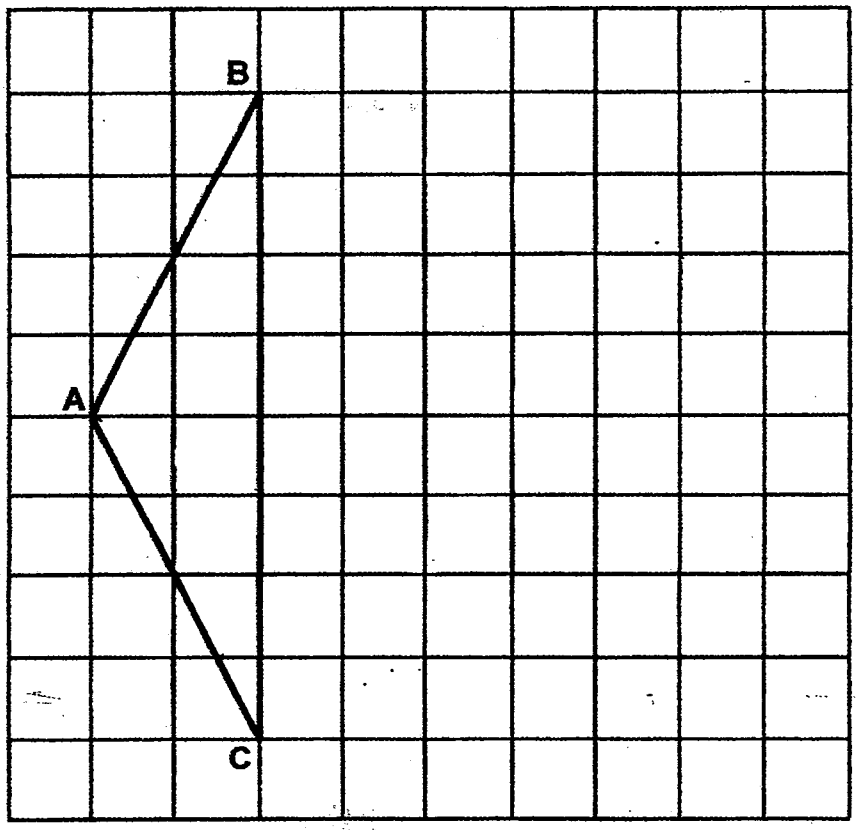
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8 In the square grid below, ABC is an isosceles triangle.

Do not write in this space

(a) Measure and write down the size of ∠BAC.

(b) AB is one of the sides of a square ABDE. D and E are two points inside the square grid. Draw three lines BD, DE and EA to complete the drawing of square ABDE.



[2]

Ans: (a) _____ [1]

(Go on to the next page)

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9 A fruit stall sold large and small boxes of mangoes at the prices shown below.

Do not write in this space

Mangoes for Sale	
1 Large Box	1 Small Box for
$\$(2p - 6)$	$\$(\frac{p}{5} + 7)$

Sean had \$150. He bought an equal number of large and small boxes of mangoes and had \$12 left.
If $p = 10$, how many large and small boxes of mangoes did Sean buy altogether?

Ans: _____ [3]

(Go on to the next page)

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10 A square paper of length 48 cm is cut into 2 identical pieces as shown in Figure 1. The pieces are arranged to form a rectangle as shown in Figure 2. Find the perimeter of the rectangle.

Do not write in this space

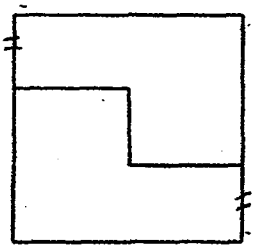


Figure 1

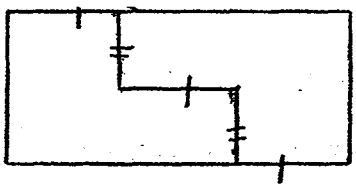


Figure 2

Ans: _____ [3]

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11 Rachel forms a repeated pattern using the numbers 1, 3, 5, 7 and 8.
The first 14 numbers are shown below.

Do not write in this space

1,	7,	3,	1,	8,	5,	1,	1,	7,	3,	1,	8,	5,	1,	...
													14th	

(a) Which number is in the 26th position?

(b) Find the sum of the first 500 numbers.

Ans: (a) _____ [1]

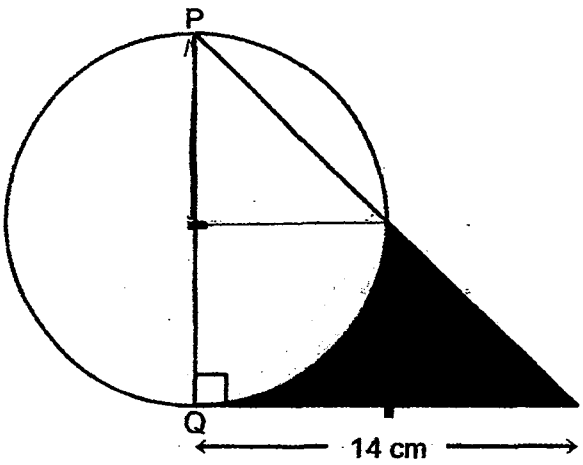
(b) _____ [3]

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12 The figure is made up of a circle and a right-angle isosceles triangle. PQ is the diameter of the circle. Find the area of the shaded part.

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



Do not write in this spac

Ans: _____ [4]

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13 Julian left Town A for Town B at 11.30 a.m. He travelled at an average speed of 60 km/h. At 1 p.m., Shane left Town A for Town B. It took him 3 hours to catch up with Julian.

(a) Find the average speed of Shane.

(b) When Shane caught up with Julian, they had completed 90% of the journey. Find the distance between Town A and Town B.

Do not write in this space

Ans: (a) _____ [2]

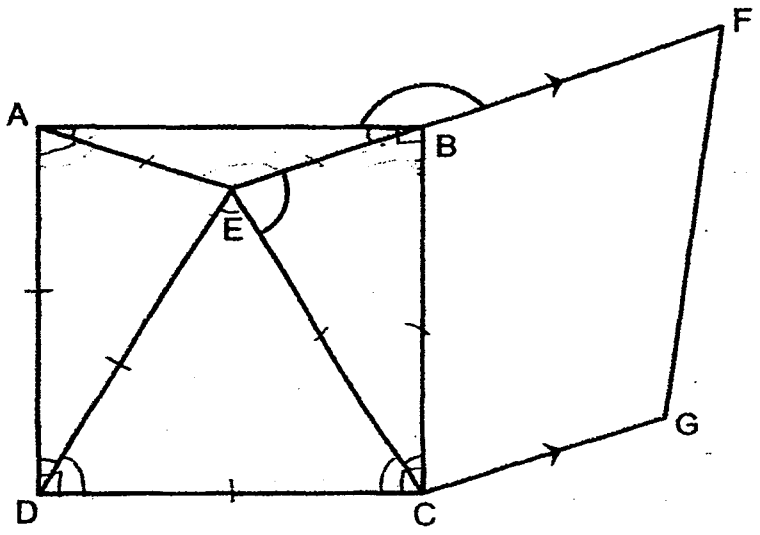
(b) _____ [2]

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14 In the figure below, ABCD is a square, DEC is an equilateral triangle and CEFG is a trapezium. EBF is a straight line.

Do not write in this space



(a) Find ∠CEB.

(b) Find ∠ABF.

Ans: (a) _____ [2]

(b) _____ [2]

(Go on to the next page)

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15 Ashley bought 8 identical files and her sister bought 8 identical keychains. The total cost of all the files and keychains was $96. Ashley then exchanged a file with her sister for a keychain. After the exchange, the total cost of the items Ashley had was $\frac{1}{3}$ of the total cost of the items that her sister had. Find the cost of one such keychain.

Do not write in this space

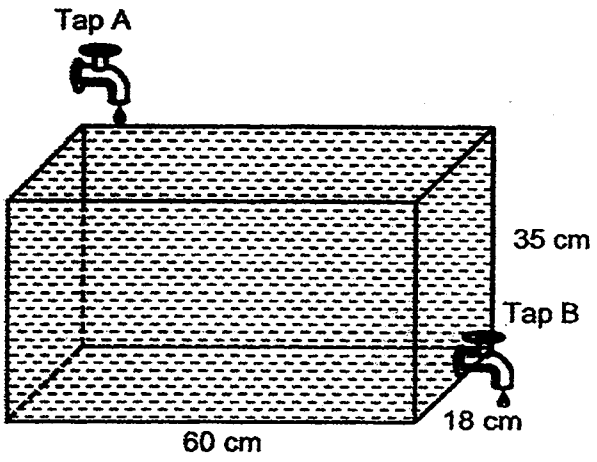
Ans: _____ [4]

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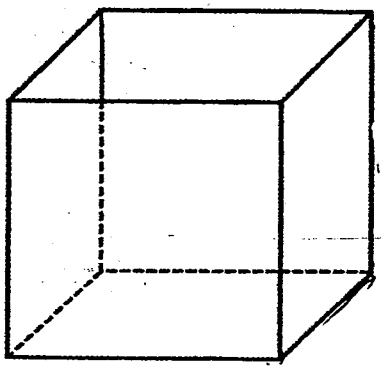
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16 The figures below show a rectangular tank P and a cubical tank Q. Tank P measures 60 cm by 18 cm by 35 cm. It is completely filled with water. Both tap A and tap B were turned on at the same time for 20 minutes. Water flowed from tap A into tank P at a rate of 500 cm^3 per minute. Water drained out from tap B at a rate of 800 cm^3 per minute and was collected in tank Q.

Do not write in this space



Tank P



Tank Q

(a) How many litres of water was left in tank P at the end of 20 minutes?

(b) Given that tank Q had a capacity of 64 litres, what would be the height of the water level in tank Q at the end of 20 minutes?

Ans: (a) _____ [3]

(b) _____ [2]

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17 Ann had 20% more money than Megan at first. After Ann gave some of her money to Megan, the ratio of Ann's money to Megan's money became 4 : 7 and Ann had $99 left.

Do not write in this space

(a) How much money did Megan receive from Ann?

(b) After Megan received the money from Ann, they bought a present for a friend. They both shared the cost of the present equally. In the end, the ratio of Ann's remaining money to Megan's remaining money was 1 : 6. What was the cost of the present?

Ans: (a) _____ [2]

(b) _____ [3]

(Go on to the next page)

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18 Zachary had some money left after spending $158 on a jacket, a polo shirt and 2 T-shirts. He could not buy another similar jacket with his remaining money as he was short of $54. He decided to buy another similar T-shirt instead and had $27 left in the end.

Do not write in this space

(a) How much more did the jacket cost than the T-shirt?

(b) Given that the jacket cost three times as much as the polo shirt, how much money did Zachary have at first?

Ans: (a) _____ [1]

(b) _____ [4]

End of Paper

Setters:
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ANSWER KEY

YEAR	:	**2016**
LEVEL	:	**PRIMARY 6**
SCHOOL	:	**HENRY PARK PRIMARY**
SUBJECT	:	**MATHEMATICS**
TERM	:	**PRELIMINARY EXAMINATION**

Paper 1

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

Q16 1, 2, 3, 6

Q17 0.625

Q18 $60 \times 20 \times 24 = \underline{28800\ cm^3}$

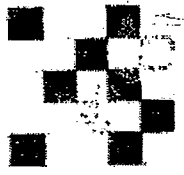
Q19 $3 \times 3 \times 3 = 27$
$512 - 27 = \underline{485\ cm^3}$

Q20 $144 \div 6 = \underline{24\ cm}$

Q21 $\frac{4}{20} \times 100 = \underline{20\ \%}$

Q22 $\frac{5}{20} \times 100 = \underline{25\ \%}$

Q23



Q24 $\angle y = 120° - 48° = 72°$

Q25 90% = \$270
10% = \$270 ÷ 9 = \$30
100% = \$30 x 10 = \$300

Q26 $177 - 159 = 18$
$18 \div 2 = \underline{9}$

Q27 $180° - 40° - 40° - 84° = \underline{16°}$

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Q28 $15 + 20 + 15 = 50$
$50 \times 3 =$ <u>150 marbles</u>

Q29 $42 - 14 = 28$
$7 \times \pi = 22$
$21 \times \pi = 60$
$14 + 42 + 28 + 22 + 66 =$ <u>172 cm</u>

Q30 $\triangle ABF = 200\ cm^2$
$\triangle ABD = 50\ cm^2$
$\triangle BDC = 50\ cm^2 \rightarrow \frac{1}{2} \times 10u \times BC$
$\triangle BCE =$ <u>$40\ cm^2$</u> $\rightarrow \frac{1}{2} \times 8u \times BC$

<u>Paper 2</u>

Q1 $30 + 27 + 48 + 45 = 150$
$\frac{27}{150} \times 100 =$ <u>18%</u>

Q2 $72 \div 8 = 9$
$9 \times 3 = 27$
$27 \times 9 =$ <u>$243\ cm^2$</u>

Q3 $33.25 - 22.8 = 10.45$
35 workbooks $\rightarrow$ 33.25
1 workbook $\rightarrow 33.25 \div 35 = 0.95$
$10.45 \div 0.95 =$ <u>11 workbooks</u>

Q4 $1.81kg = 1810g$
$1810 - 360 = 1450$
$1450g =$ <u>1.45kg</u>

Q5 $3m = 300cm$, $2m = 200cm$
$300 \div 40 = 7.5$
$200 \div 40 = 5$
$7 \times 5 =$ <u>35 circular pieces</u>

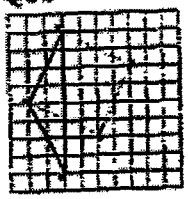
Q6 $8 - 3 = 5$
5 units = 190
1 unit $= 190 \div 5 = 38$
$8 + 9 + 3 = 20$
20 units $= 38 \times 20 =$ <u>760 people</u>

Q7 $15.20 \times 4 = 60.80$
$72.55 - 60.80 = 11.75$
$11.75 \div 5 =$ <u>$2.35</u>

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Q8a 127°

Q8b



Q9 1 large box = 2 x 10 – 6 = 20 – 6 = 14
1 small box = $\frac{10}{5}$ + 7 = 2 + 7 = 9
150 ÷ 2 = 138
14 ÷ 9 = 23
138 ÷ 23 = 6 ⇒ 6 ÷ 6 = <u>12 boxes</u>

Q10 48 ÷ 2 = 24
48 x 4 = 192
192 ÷ 2 = 96
48 ÷ 3 = 16
16 ÷ 16 = 32
48 + 24 = 72
32 + 32 + 72 + 72 = <u>208 cm</u>

Q11a 8

Q11b 500 ÷ 7 = 71R3
71 x 26 = 1846
1 + 7 + 3 = 11
1846 +11 = <u>1857</u>

Q12 7 x 7 x $\frac{1}{4}$ x $\frac{22}{7}$ = 38.5
7 x 7 x $\frac{1}{2}$ = 24.5
38.5 – 24.5 = 14
38.5 + 24.5 = 63
14 x 14 x $\frac{1}{2}$ = 98
98 – 63 = <u>35cm^2</u>

Q13a 60 x 4$\frac{1}{2}$ = 270
Shane → 270 ÷ 3 = <u>90 km/h</u>

Q13b 90% → 270km
10% → 30km
100% ⇒ <u>300km</u>

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Q14a $90° - 60° = 30°$
$\angle CEB = (180° - 30°) \div 2 = \underline{75°}$

Q14b $90° - 75° = 15°$
$\angle ABF = 180° - 15° = \underline{165°}$

Q15 $8F + 8K = 96$
$7F + 1K = 1u\ (\$24)$
$7K + 1k = 3u\ (\$72)$
$8F + 8K = 4u$
$\$96 = 4u$
$1u = \$24$
$3u = \$72$
$1F + 1K = 96 \div 8 = 12$
$72 - 12 = 60$
$6K \rightarrow \$60$
$1K = \underline{\$10}$

Q16a $800 - 500 = 300$
$300 \times 20 = 6000$
$60 \times 18 \times 35 = 37800$
$37800 - 6000 = 31800$
$31800 \div 1000 = \underline{31.80\ \ell}$

Q16b $\sqrt[3]{64000} = 40$
$40 \times 40 = 1600$
$800 \times 20 = 15000$
$16000 \div 40 \div 40 = \underline{10\ cm}$

Q17a $4\ units = 99$
$1\ unit = 99 \div 4 = 24.75$
$2\ units = 24.75 \times 2 = \underline{\$49.50}$

Q17b $17u \rightarrow 4.95 \times 17 = \$84.15$
$34u \rightarrow 84.15 \times 2 = \underline{\$168.30}$

Q18a $\$27 + \$54 = \underline{\$81}$

Q18b $81 \div 3 = 27$
$158 - 81 - 27 = 50$
$50 \div 10 = 5$
$5 \times 3 = 15$
$158 + 15 + 27 = \underline{\$200}$

End

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