Name: _____ (  )

Class: Primary 6 _____

**CHIJ ST NICHOLAS GIRLS' SCHOOL (PRIMARY)**

**Primary 6 Mathematics**

**2018 Preliminary Examination**

**Paper 1**

**Booklet A**

**21 August 2018**

**15 questions**
**20 marks**

**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.

This booklet consists of 8 printed pages.

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. 3 ones, 9 tenths and 5 thousandths is _____.

(1) 0.395
(2) 3.095
(3) 3.905
(4) 3.95

2. Which of the following numbers has no remainder when it is divided by 4?

(1) 5402
(2) 5204
(3) 4502
(4) 4250

3. Which of the following fractions is closest to $\frac{1}{3}$?

(1) $\frac{1}{2}$
(2) $\frac{2}{3}$
(3) $\frac{4}{9}$
(4) $\frac{7}{12}$

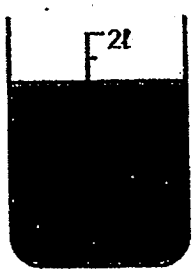
4. At a fruit stall, the ratio of the number of apples to the number of oranges is 3 : 4. The ratio of the number of apples to the number of pears is 5 : 2. What is the ratio of the number of pears to the number of oranges?

(1) 1 : 2
(2) 1 : 3
(3) 2 : 5
(4) 3 : 10

5. Simplify $12 \times m + 3 - 8m \div 2 - 1$.

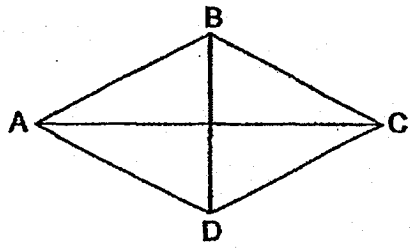
(1) $2m + 2$
(2) $2m - 4$
(3) $8m + 2$
(4) $8m - 4$

6. How much water is in the container shown below?



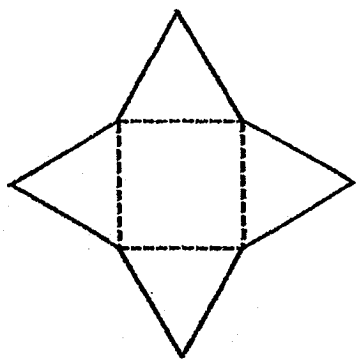

(1) 800 ml
(2) 1000 ml
(3) 1300 ml
(4) 1600 ml

7. ABCD is a rhombus. Which line is parallel to AB?




(1) AC
(2) AD
(3) BC
(4) CD

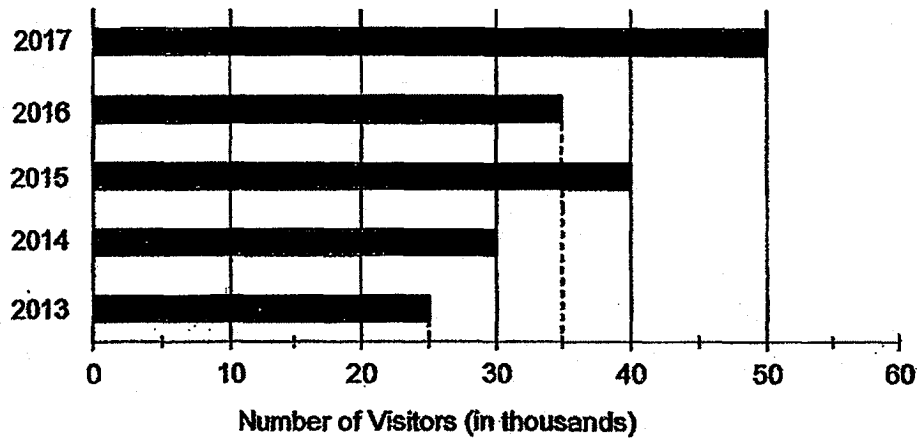
8. Which of the following solids does this net belong to?



(1) Cube
(2) Prism
(3) Pyramid
(4) Cylinder

Use the information below to answer questions 9 and 10.

The bar graph shows the number of visitors to a zoo from 2013 to 2017.



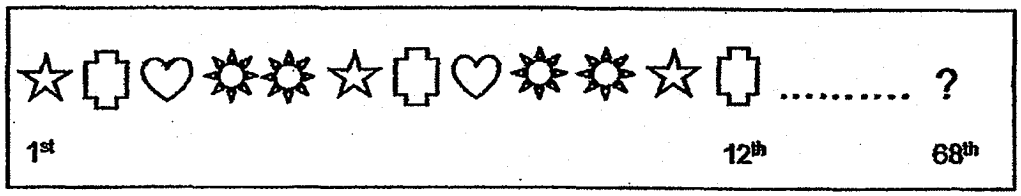

9. During which one-year period was the increase in the number of visitors the greatest?

(1) Between 2013 and 2014
(2) Between 2014 and 2015
(3) Between 2015 and 2016
(4) Between 2016 and 2017

10. From 2013 to 2017, for how many years did the zoo receive more than 30 000 visitors?

(1) 1
(2) 2
(3) 3
(4) 4

11. David uses some shapes to form a pattern. The first 12 shapes are shown below.




Which shape is in the 68th position?

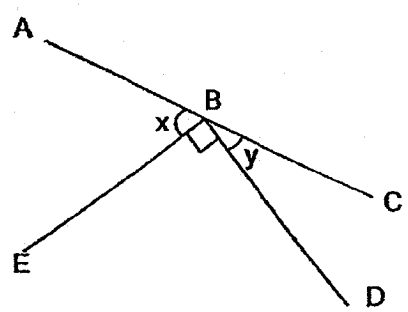
(1) ☆

(2) ▯

(3) ♡

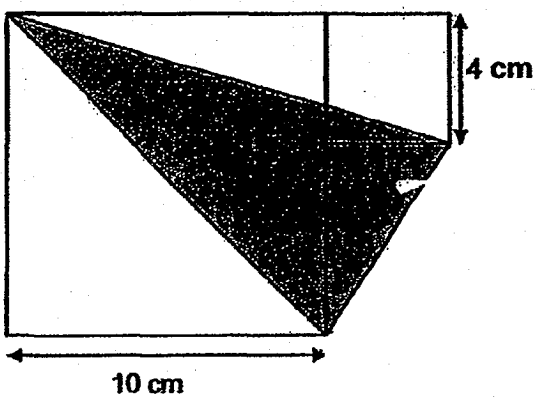
(4) ☼

12. In the figure below, ABC is a straight line. ∠y is 24° smaller than ∠x.
Find ∠x.




(1) 33°
(2) 52°
(3) 57°
(4) 76°

13. The figure below is made up of two squares and a triangle. Find the area of the shaded part.




(1) 26 $cm^2$
(2) 50 $cm^2$
(3) 78 $cm^2$
(4) 98 $cm^2$

14. Debbie was given a fixed monthly allowance. In January, she spent \$50 of her allowance and saved the rest. In February, she reduced her spending by 20% and her savings increased by 50%. How much was her monthly allowance?

(1) \$60
(2) \$70
(3) \$80
(4) \$90

15. A group of friends shared some chocolates among themselves. They tried taking 10 chocolates each, but found that the last person had only 2 chocolates. When each person took 8 chocolates, there were 20 left over. How many friends shared the chocolates?

(1) 14
(2) 11
(3) 8
(4) 6

Name: _____ (  )

Class: Primary 6 _____

**CHIJ ST NICHOLAS GIRLS' SCHOOL (PRIMARY)**

**Primary 6 Mathematics**

**2018 Preliminary Examination**

**Paper 1**

**Booklet B**

**21 August 2018**

| | |
|---|---|
| **Booklet A** | 20 |
| **Booklet B** | 25 |
| **Total (Paper 1)** | 45 |

**15 questions**
**25 marks**

**Total Time for Booklets A and B: 1 hour**

**INSTRUCTIONS TO CANDIDATES**

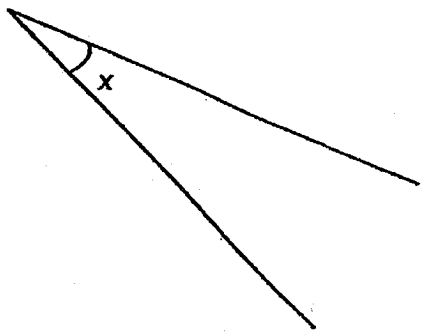
Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Write your answers in this booklet.
The use of calculators is **NOT** allowed.

This booklet consists of 10 printed pages.

Questions 16 to 20 carry 1 mark 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. (5 marks)

Do not write in this space

16. Measure and write down the size of $\angle x$ in the figure.




Ans : _____°

17. Find the value of $\frac{5n}{6} + n$ when $n = 9$.

Give your answer as a mixed number in its simplest form.

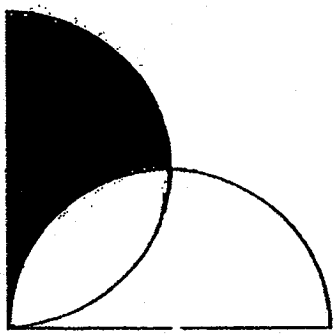
Ans : _____

18. A movie started at 11.45 p.m. and ended at 1.35 a.m.
How long was the movie?

Do not write in this space

Ans: _____ min

19. The figure below shows two identical semicircles with radius 8 cm each.
Find the perimeter of the shaded part.
Leave your answer in terms of $\pi$.



Ans : _____ cm

20. Dave participated in 5 quizzes. His scores are shown in the table below.

| Quiz | 1st | 2nd | 3rd | 4th | 5th |
|---|---|---|---|---|---|
| Score | 12 | 15 | 16 | 18 | 14 |

Find his average score.

Ans : _____

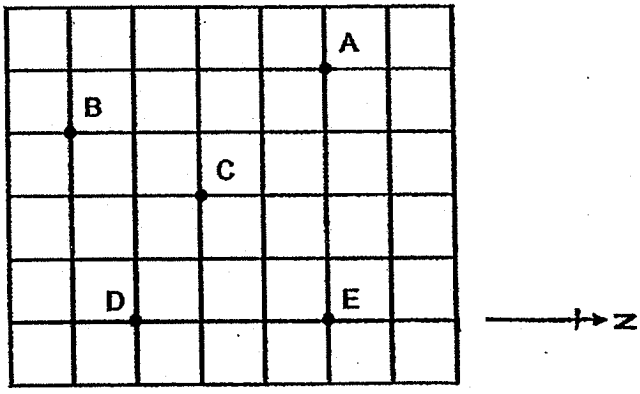
Questions 21 to 30 carry 2 marks each. Show your working clearly and write your answers in the spaces provided. For questions which require units, give your answers in the units stated. (20 marks)

Do not write in this space

21. Cherries are sold at $1.50 per 200 g at the supermarket.
What is the price of 4 kg of cherries?

Ans : $_____

22.

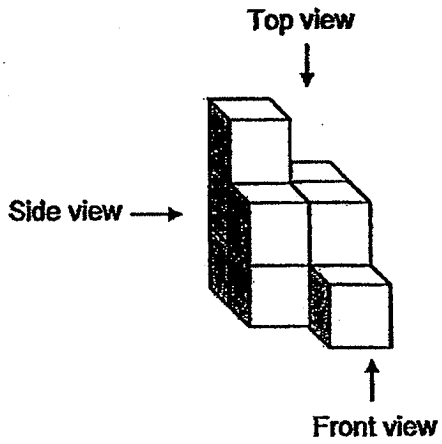


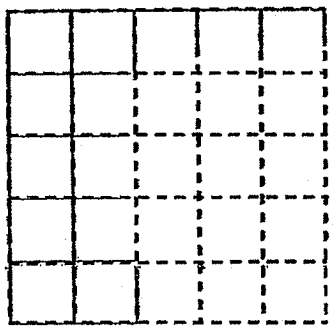

Refer to the square grid above and fill in the blanks with A, B, C, D or E.

(a) Point _____ is west of Point _____ [1]

(b) Point _____ is north-east of Point _____. [1]

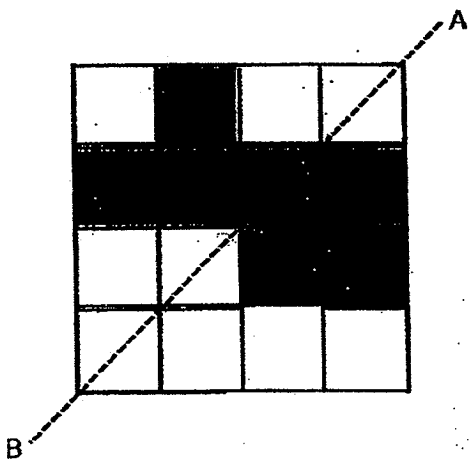
23. Draw the top view of the following solid in the square grid provided.



Do not write in this space

24. Shade 2 more squares in the figure below so that the dotted line AB is the line of symmetry.



25. Raja bought a string of 130 decorative red and green light bulbs. There were at least 2 red light bulbs in between every 2 green light bulbs. What was the smallest possible number of red light bulbs in the string of decorative light bulbs?

Do not write in this space

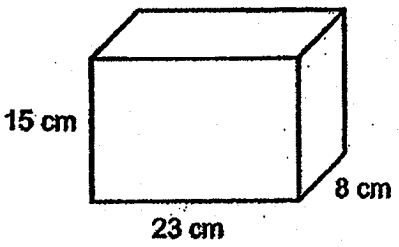
Ans : _____

26. Printer X and Printer Y print a total of 688 pages in 4 minutes. Every minute, Printer X prints 20 pages fewer than Printer Y. At this rate, how many pages does Printer X print in 1 minute?

Ans : _____

27. Find the greatest number of 2-cm cubes that can be put into the box below.

Do not write in this space




Ans : _____

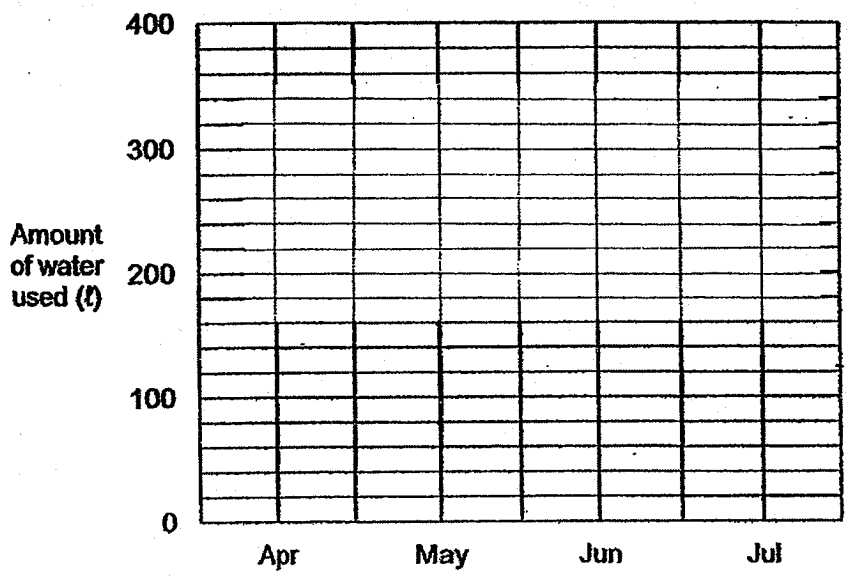
28. Last year, Mr Lee sold an average of 7.5 mobile phones per month from January to October. He did not sell any mobile phone from November to December.

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 |
|---|---|---|---|
| Mr Lee sold a total of 90 mobile phones last year. | | | |
| On the average, the number of mobile phones Mr Lee sold from January to October was higher than the number of mobile phones he sold from January to December. | | | |

29. The line graph below shows the amount of water used by a stall for the months of April to July.

Do not write in this space




In the month of March, the stall used 520 ℓ of water. Which two months from April to July was the total amount of water used the same as the month of March?

Ans : _____ and _____

30. 90 adults took part in a competition. $\frac{1}{2}$ of the men and $\frac{1}{4}$ of the women won the competition. There were 25 winners altogether. How many women took part in the competition?

Do not write in this space

Ans : _____

End of Paper

Name: _____ (  )

Class: Primary 6 _____

**CHIJ ST NICHOLAS GIRLS' SCHOOL (PRIMARY)**

**Primary 6 Mathematics**

**2018 Preliminary Examination**

**Paper 2**

**21 August 2018**

| | |
|---|---|
| Paper 1 | 45 |
| Paper 2 | 55 |
| Total | 100 |

_____

**Parent's / Guardian's Signature**

**17 questions**
**55 marks**

**Total Time for Paper 2: 1 hour 30 minutes**

**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.

This booklet consists of 15 printed pages.

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. A baker bought 15 kg of flour. He packed the flour into smaller bags of 1.2 kg each and had some flour left. How much flour was left?

Ans : _____ g

2. Alice has 69 more candies than Bonnie. Cathy has 27 more candies than Bonnie. Alice has 40 fewer candies than the total number of candies Bonnie and Cathy have. How many candies does Bonnie have?

Ans : _____

3. A block of wood was dipped into a pail of paint. The block was then cut into 3 identical cubes along the lines as shown below and taken apart. The total painted area of the 3 cubes was 686 $cm^2$. Find the edge of each cube.

Do not write in this space

Ans : _____ cm

4. Gracelyn and Hilda saved the same amount of money. $\frac{1}{3}$ of Gracelyn's savings was \$32.50 more than $\frac{1}{4}$ of Hilda's savings. How much did each girl save?

Ans : \$ _____

5. The table below shows the number of books a group of pupils borrowed from the school library in a week.

Do not write in this space

| Number of books | Number of pupils |
|---|---|
| 0 | ? |
| 1 | 34 |
| 2 | 36 |
| 3 | 63 |
| 4 or more | 81 |

60% of the pupils borrowed 3 books or more. How many pupils did not borrow any book?

Ans : _____

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 or part-question. (45 marks)

Do not write in this space

6. Springfresh Laundry charges the washing of blankets and curtains as shown in the table below.

| Item | Price per kg |
|---|---|
| Blankets | $9.00 |
| Curtains | $10.50 |

Nancy sent 12 kg of blankets and some curtains for washing. Being a member, Nancy got a $10 discount when her bill was above $100. She paid $266 in total. Find the mass of curtains Nancy sent for washing.

Ans : _____ [3]

7. Hafizah took part in a run. She completed 4.2 km in 20 minutes. She then completed the remaining 70% of the run in another hour. Find the average speed, in m/min, at which Hafizah took to complete the run.

Do not write in this space

Ans : _____ [3]

8 . Lydia is $k$ years old now. Mariam is 2 times as old as Lydia. Naya is 3 years younger than Mariam.

(a) What is Naya's age now?

Express your answer in terms of $k$ in the simplest form.

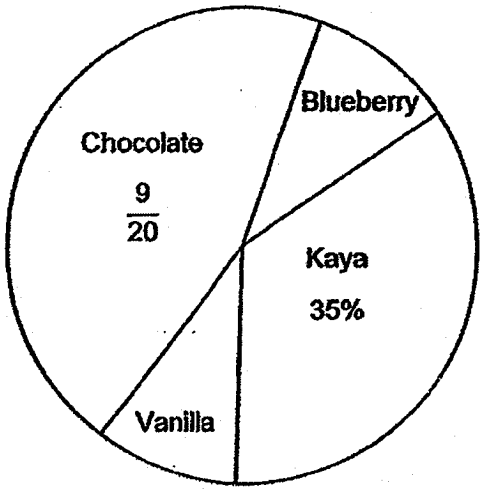
(b) Lydia will be 16 years old five years later. How old is Naya now?

Ans: (a) _____ [1]

(b) _____ [2]

9. The pie chart below shows the number of buns sold. In total, 88 blueberry and vanilla buns were sold. How many buns were sold altogether?

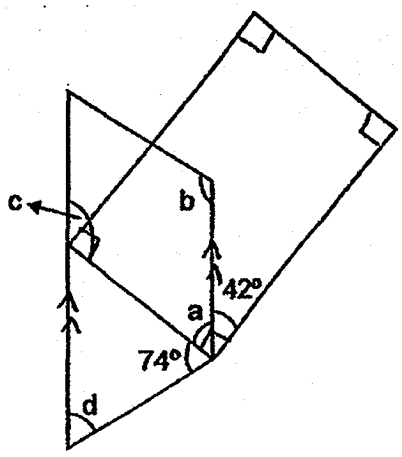
Do not write in this space




Ans : _____ [3]

10. The figure below shows a trapezium and a rectangle.

Do not write in this space




(a) Which of the following are obtuse angles in the figure?
For each correct answer, put a tick (✓) in the box. [1]

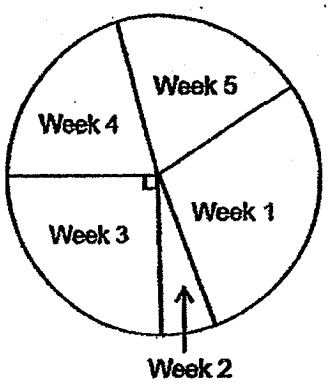
| ∠a | ∠b | ∠c | ∠d |
|---|---|---|---|
| | | | |

(b) Find ∠d.

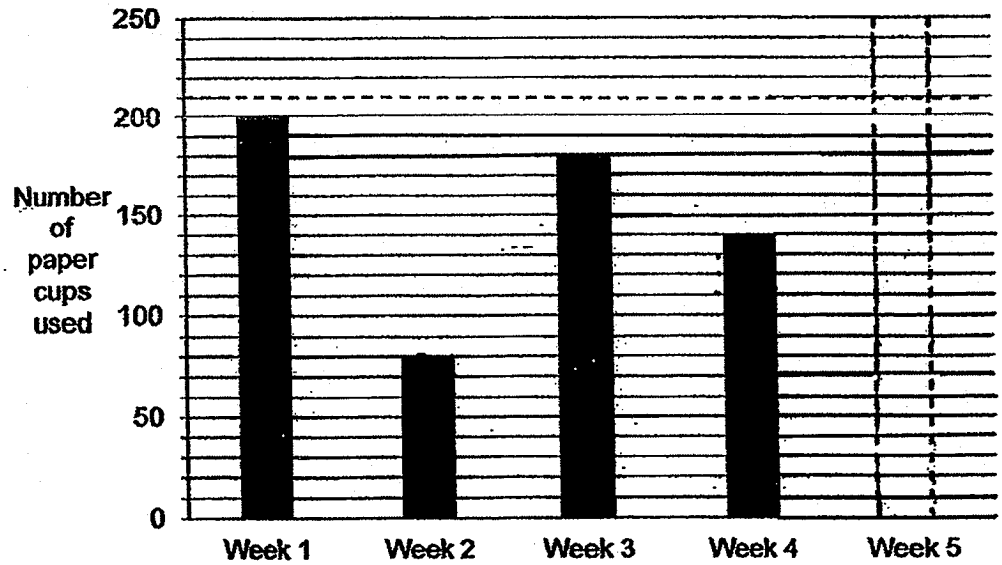
Ans : (b) _____ [2]

11. The pie chart below represents the number of paper cups used by a canteen vendor in 5 weeks.

Do not write in this space




(a) The number of paper cups used in the 5 weeks is also represented by the bar graph below. The bar that shows the number of paper cups used in Week 5 has not been drawn. Draw this bar in the bar graph below. [2]




(b) What percentage of the paper cups was used in Week 1? Give your answer correct to 2 decimal places.

Ans : _____ [1]

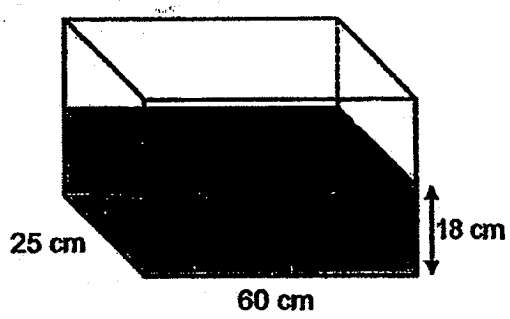
12. For a scrapbook-making course, each participant was given some buttons. Each adult received 10 buttons. Each girl received 5 buttons and each boy received 4 buttons. The ratio of the number of girls to the number of boys was 7 : 4. Half of the total number of participants was adults. The participants received a total of 3381 buttons. How many participants were there at the course?

Do not write in this space

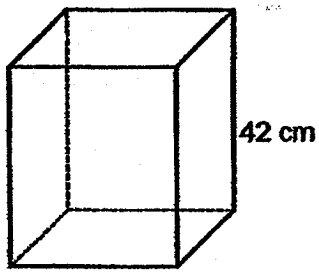
Ans : _____ [4]

13. A and B are two rectangular containers. The base area of Container A is twice the base area of Container B. Container A was filled with water to a height of 18 cm and Container B was empty.

Do not write in this space




Container A




Container B

(a) What was the volume of the water in Container A?

(b) All the water from Container A was poured into Container B.
How much more water was needed to fill Container B to the brim?

Ans : (a) _____ [1]

(b) _____ [3]

14. Lisa, Meng and Nin shared some stickers. Lisa had 20% of the stickers. Meng had 66 stickers and Lisa had 12 more stickers than Nin.

(a) What was the total number of stickers shared among the three children?

(b) Lisa bought some more stickers. The total number of stickers increased by 10%. What was the ratio of the number of Lisa's stickers to the total number of stickers that the three children had in the end? Leave your answer in the simplest form.

Do not write in this space

Ans : (a) _____ [2]

(b) _____ [2]

15. Kamal, Larry and Muthu were given some concert tickets to sell. Kamal sold $\frac{1}{3}$ of the tickets. Larry sold $\frac{2}{5}$ of the remaining tickets and Muthu sold the rest.

Do not write in this space

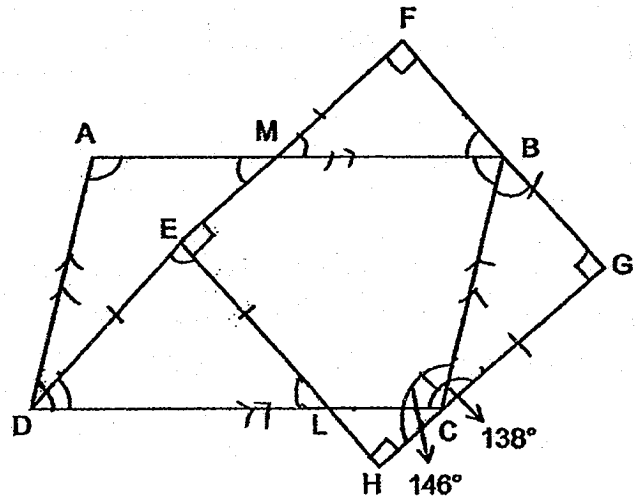
| Price of Concert Tickets (per ticket) | |
|---|---|
| Category 1 | $13 |
| Category 2 | $8 |

Kamal sold all the Category 1 tickets while Larry and Muthu sold all the Category 2 tickets. Muthu collected $208 more than Larry. How much money was collected from the sale of the tickets altogether?

Ans : _____ [5]

16. In the figure below, ABCD is a parallelogram. EFGH is a square. DE = EL, $\angle DCG = 138°$ and $\angle BCH = 146°$.

(a) Find $\angle ABC$.
(b) Find $\angle DEL$.

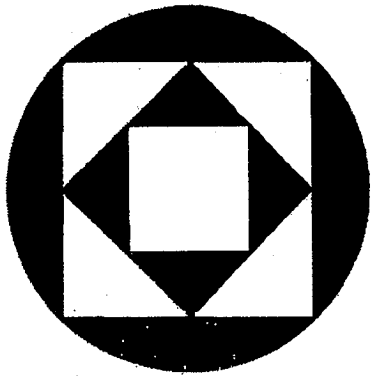



Do not write in this space

Ans: (a) _____ [3]

(b) _____ [2]

17. The figure below is made up of 3 different squares and a circle with diameter 10 cm. What is the total shaded area?
Take $\pi = 3.14$



Do not write in this space

Ans : _____ [5]

End of Paper

# ANSWER KEY

| | | |
|---|---|---|
| **YEAR** | : | **2018** |
| **LEVEL** | : | **PRIMARY 6** |
| **SCHOOL** | : | **CHIJ ST NICHOLAS GIRLS'** |
| **SUBJECT** | : | **MATHEMATICS** |
| **TERM** | : | **PRELIMINARY EXAMINATION** |

**Paper 1**

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

**Q16** 23°

**Q17** $16\frac{1}{2}$

**Q18** 1h 50min

**Q19** $(8\pi + 16)$ cm

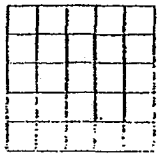
**Q20** 15

**Q21** $30

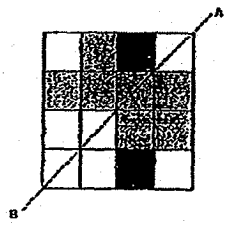
**Q22** (a) Point A is west of Point E.

(b) Point E is north-east of Point C.

**Q23**



**Q24**




**Q25** 86

**Q26** 76

**Q27** 308

**Q28** False
True

**Q29** April and June

**Q30** 80

Paper 2

**Q1**
$15 \div 1.2 = 12R$
$12 \times 1.2 = 14.4$
$15 - 14.4 = 0.6$
$0.6kg \Rightarrow \underline{600\ g}$

**Q2**
$A \rightarrow 1u + 69$
$B \rightarrow 1u$
$C \rightarrow 1u + 27$
$(2u + 27) - (1u + 69) = 40$
$2u - (1u + 2)\ 40$
$2u = 1u + 42 + 40$
$= 1u + 82$
$1u \Rightarrow \underline{82}$

**Q3**
$686 \div 14 = 49$
$\sqrt{49} \Rightarrow \underline{7\ cm}$

**Q4** $G \rightarrow \frac{1}{3} = \frac{4}{12}$

$H \rightarrow \frac{1}{4} = \frac{3}{12}$

$1u = 32.50$

$12u = 12 \times 32.50 \Rightarrow \underline{\$390}$

**Q5** $60\% \rightarrow 81 + 63 = 144$

$1\% \rightarrow 144 \div 60 = 2.4$

$34 + 36 = 70$

$70 + 2.4 = 29\frac{1}{6}$

$29\frac{1}{6} + 60 = 89\frac{1}{6}$

$100 - 89\frac{1}{6} = 10\frac{5}{6}$

$10\frac{5}{6} \times 2.4 \Rightarrow \underline{26 \text{ pupils}}$

# Solutions to Word Problems

# St Nicholas 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. Cost of washing 12 kg of blankets = 9 x 12 = $108

Undiscounted total cost = 266 + 10 = $276

Cost of washing curtains = 276 – 108 = $168

Mass of curtains = 168 ÷ 10.50 = 16 kg

Ans: 16 kg

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7. 30% of run → 4200 m

10% of run → 4200 ÷ 3 = 1400 m

100% of run → 1400 x 10 = 14 000 m

Time taken = 20 + 60 = 80 min

Average speed = 14 000 ÷ 80 = 175 m / min

Ans: 175 m / min

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8. a)

Naya's age = 2k - 3

b)

Lydia's age now = 16 – 5 = 11

Naya's age = 2 x 11 – 3 = 19

Ans: (a) 2k – 3
(b) 19

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9. Percentage of chocolate and kaya buns sold = $\frac{35}{100} + \frac{9}{20} = \frac{35}{100} + \frac{45}{100} = 80\%$

Percentage of blueberry and vanilla buns sold = 100 – 80 = 20%

20% → 88

100% → 88 x 5 = 440

Ans: 440 buns

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10. a)

∠b and ∠c are obtuse

b)

∠a = 90 – 42 = 48

∠d = 180 – 74 – 48 = 58°

Ans: (a) ∠b and ∠c
(b) 58°

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11. a)

$\frac{1}{4}$ of total paper cups → Week 3 paper cups → 180

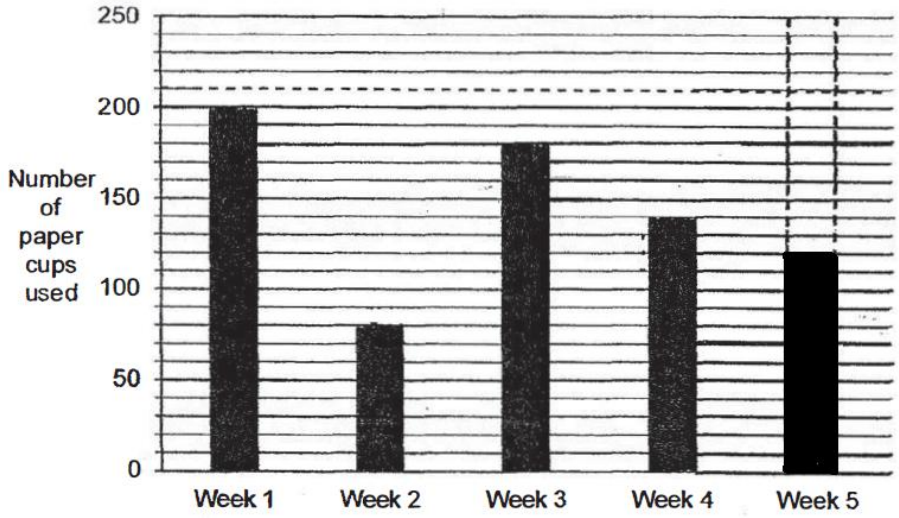
Total paper cups → 180 x 4 = 720

Week 5 paper cups = 720 – 200 – 80 – 180 – 140 = 120

b)

Week 1 paper cups = 200

Percentage of Week 1 paper cups = 200 ÷ 720 x 100 = 27.78%




Ans: a) 120

b) 27.78%

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12. Ratio of number of adults to number of girls to number of boys → 11 : 7 : 4

Ratio of buttons of adults to girls to boys → 11x 10 : 7 x 5 : 4 x 4

→ 110 : 35 : 16 → 110u : 35u : 16u

110u + 35u + 16u = 161u = 3381

u = 3381 ÷ 161 = 21

Number of buttons for adults = 110 x 21 = 2310

Number of adults = 2310 ÷ 10 = 231

Number of buttons for girls = 35 x 21 = 735

Number of girls = 735 ÷ 5 = 147

Number of buttons for boys = 16 x 21 = 336

Number of boys = 336 ÷ 4 = 84

Total number of participants = 231 + 147 + 84 = 462

Ans: 462 participants

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13. a)

Volume in container A = 25 x 60 x 18 = 27 000 $cm^3$

b)

Height of water in container B = 18 x 2 = 36 cm (as base is half)

Additional water to fill container B = (42 – 36) x 25 x 60 x $\frac{1}{2}$ = 4500 $cm^3$

Ans: (a) 27 000 $cm^3$

(b) 4500 $cm^3$

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14. a)

60% → 66 – 12 = 54

10% → 54 ÷ 6 = 9

100% → 9 x 10 = 90

Total number of stickers = 90

b)

Number of stickers Lisa had at first = 0.2 x 90 = 18

At the end total stickers = 90 x 1.10 = 99

Additional stickers Lisa bought = 99 – 90 = 9

Number of stickers Lisa had at last = 18 + 9 = 27

Ratio of number of Lisa's sticker to total = 27 : 99 → 3 : 11

Ans: (a) 90

(b) 3 : 11

15. Let total number of tickets = 15u (multiple of 3, 5)

Number of tickets Kamal sold = $\frac{1}{3}$ x 15u = 5u

Number of remaining tickets = 15u – 5u = 10u

Number of tickets Larry sold = $\frac{2}{5}$ x 10u = 4u

Number of tickets Muthu sold = 10u – 4u = 6u

Ratio of number of Kamal, Larry and Muthu's tickets → 5u : 4u : 6u

Ratio of sales of Kamal, Larry and Muthu → 5u x 13 : 4u x 8 : 6u x 8

→ 65u : 32u : 48u

Difference between Muthu and Larry's sales = 48u – 32u = 208

u = 208 ÷ 16 = 13

Total sales = 65u + 32u + 48u = 145u = 145 x 13 = $1885

Ans: $1885

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16. a)

∠LCH = 180 – 138 = 42°

∠BCD = 146 – 42 = 104°

∠ABC = 180 – 104 = 76°

b)

∠DLE = 180 – 42 – 90 = 48°

∠DEL = 180 – 48 – 48 = 84°

Ans: (a) 76°

(b) 84°

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17. Radius = 10 ÷ 2 = 5 cm

Area of circle = π x 5 x 5 = 25π $cm^2$

Area of large square = area of 4 triangles = 4 x $\frac{1}{2}$ x 5 x 5 = 50 $cm^2$

Area of medium square = half of large square = 50 x $\frac{1}{2}$ = 25 $cm^2$

Area of small square = half of medium square = 25 x $\frac{1}{2}$ = 12.5 $cm^2$

Shaded area = (25π – 50) + (25 – 12.5) = 78.5 = 41 $cm^2$

Ans: 41 $cm^2$

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