

Index No.

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**NAN HUA PRIMARY SCHOOL  
PRELIMINARY EXAMINATION – 2018  
PRIMARY 6**

**MATHEMATICS**

**Paper 1**

**Section A: 15 Multiple Choice Questions ( 20 marks )**

**Section B: 15 Short Answer Questions ( 25 marks )**

**Total Time for Paper 1: 45 minutes**

**INSTRUCTION TO CANDIDATES**

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers in the Optical Answer Sheet (OAS) provided for Questions 1-15.
6. You are not allowed to use calculator for Paper 1.

**Marks Obtained**

Paper 1	Booklet A		/ 45
	Booklet B		
Paper 2			/ 55
Total			/ 100

Name : \_\_\_\_\_ (            )

Class : 6 \_\_\_\_\_

Date : 27 August 2018

Parent's Signature : \_\_\_\_\_



**Section A (20marks)**

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.

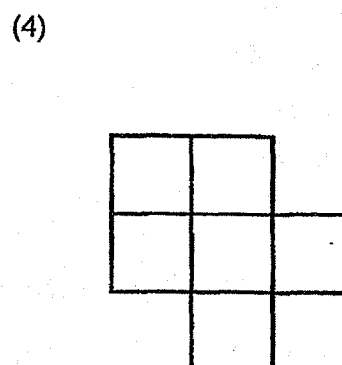
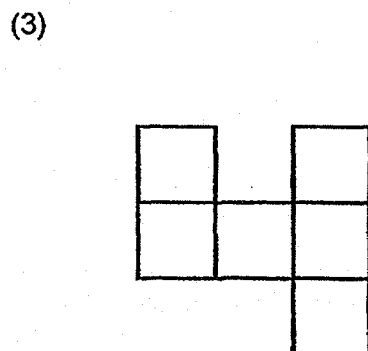
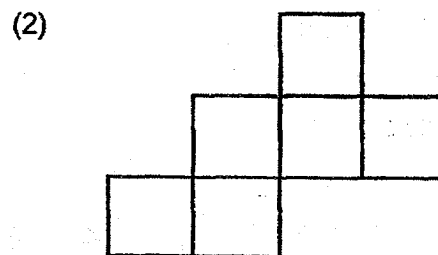
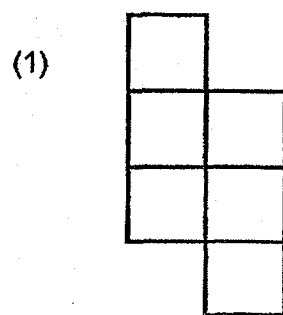
Make your choice (1, 2, 3 or 4) Shade the oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. In 5 689 743, which digit is in the ten thousands place?
  - (1) 6
  - (2) 7
  - (3) 8
  - (4) 9
  
2. Which of the following numbers is the largest?
  - (1) 6.59
  - (2) 6.95
  - (3) 6.509
  - (4) 6.905
  
3. Round \$189 425 to the nearest \$1000.
  - (1) \$180 000
  - (2) \$189 000
  - (3) \$190 000
  - (4) \$200 000
  
4. The number of boys is  $\frac{4}{5}$  the number of girls in a school. What is the ratio of the number of girls to the number of boys?
  - (1) 4 : 5
  - (2) 5 : 4
  - (3) 4 : 9
  - (4) 5 : 9

5.  $1 + \frac{1}{10} + \frac{1}{1000} = \underline{\hspace{2cm}}$ .

- (1) 1.1
- (2) 1.11
- (3) 1.101
- (4) 1.111

6. Which one of the following is a net of a cube?



7. Which one of the following is nearest to 1?

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

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

(3)  $1\frac{1}{6}$

(4)  $1\frac{1}{7}$

8. Ali took 40 min to walk from his house to the library and back home again. If his average speed for the whole journey was 30 m/min, what was the distance between his house and the library?

(1) 10 m

(2) 20 m

(3) 600 m

(4) 1200 m

9. 80% of a number is 160. What is the number?

(1) 40

(2) 128

(3) 200

(4) 640

10. Charis had  $\frac{3}{4}$  m of cloth. She used  $\frac{1}{3}$  of it to sew a handkerchief. How much cloth did she have left?

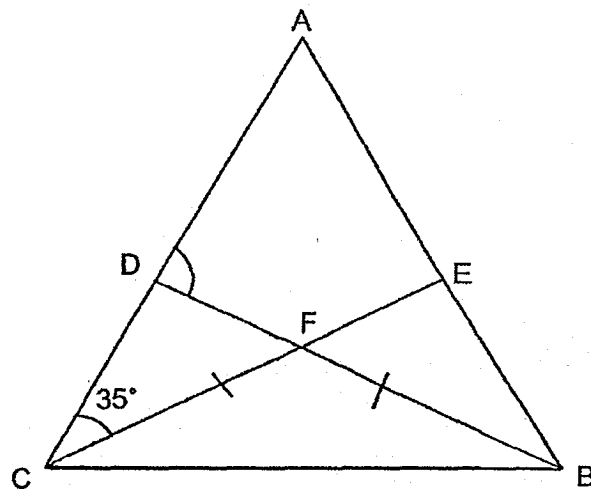
(1)  $\frac{1}{12}$  m

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

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

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

11. In the figure below, not drawn to scale, ABC is an equilateral triangle and CFB is an isosceles triangle such that  $FC = FB$ . Given that  $\angle ACE = 35^\circ$ , and DFB and EFC are straight lines, find  $\angle ADF$ .



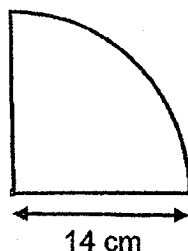
(1)  $50^\circ$

(2)  $85^\circ$

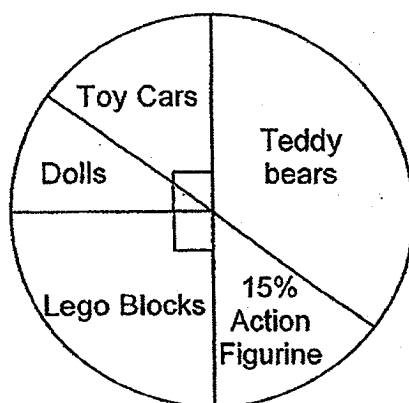
(3)  $95^\circ$

(4)  $130^\circ$

12. A piece of wire is bent to form the figure below which is a quadrant with radius 14 cm. Find the length of the wire. ( Take  $\pi = \frac{22}{7}$  )



- (1) 11 cm  
(2) 22 cm  
(3) 39 cm  
(4) 50 cm
13. The pie chart below shows the different types of toys sold in a toy shop in August. The number of toy cars sold and teddy bears sold is  $\frac{1}{2}$  of the total number of toys sold. 180 more teddy bears than Lego blocks are sold. Find the number of toy cars sold.



- (1) 270  
(2) 300  
(3) 450  
(4) 600

14. Huiling and Aisha had an average number of 140 stickers. After Jason joined in with some stickers, the average number of stickers became 154.  
How many stickers did Jason have?

- (1) 14
- (2) 126
- (3) 182
- (4) 294

15. At Nan Hua Bakery, 40% of the muffins baked is as many as 25% of the cookies baked daily. There are 45 more cookies than muffins baked.  
How many muffins are there?

- (1) 15
- (2) 75
- (3) 120
- (4) 195



**Section B (25 marks)**

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.  
[10 marks]

Do not write  
in this space

16. Express three million, two thousand, five hundred and eighty in numerals.

Ans: \_\_\_\_\_

17. List all the common factors of 8 and 12.

Ans: \_\_\_\_\_

18. Solve  $8 \div \frac{2}{3}$

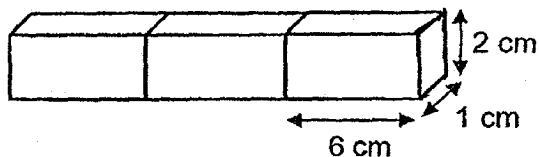
Ans: \_\_\_\_\_

19. Jerry cycled 5 km from his home to office for 15 min. What was his average speed?

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in this space

Ans: \_\_\_\_\_ km/h

20. The solid below is made up of 3 identical blocks, each measuring 6 cm by 1 cm by 2 cm. What is the area of the largest face of this solid?



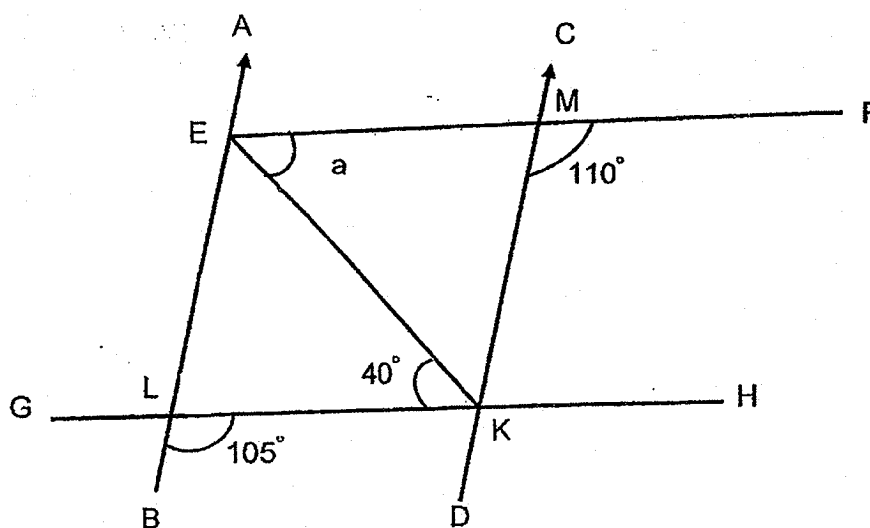
Ans: \_\_\_\_\_  $\text{cm}^2$

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

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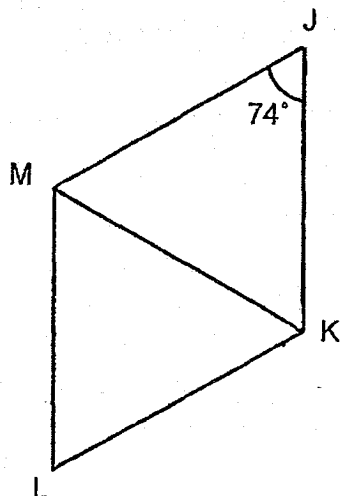
21. In the figure below, AB, CD, EF, GH and EK are straight lines.

$\angle FMK = 110^\circ$ ,  $\angle KLB = 105^\circ$  and  $\angle EKL = 40^\circ$ . Find  $\angle a$ .



Ans: \_\_\_\_\_

22. JKLM is a rhombus. Find  $\angle MKL$ .

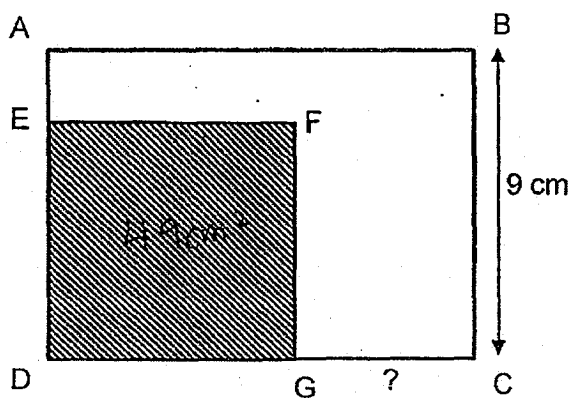


Ans: \_\_\_\_\_

23. Simplify  $8 + 3k \times 6 - 1$

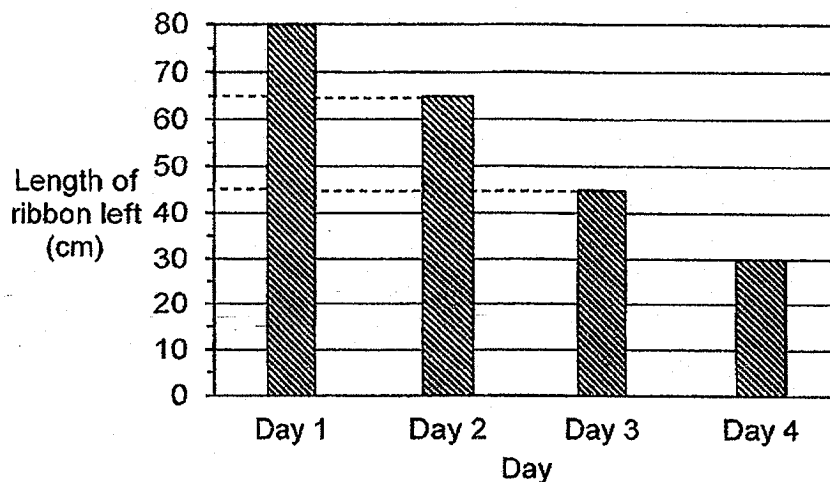
Ans: \_\_\_\_\_

24. The figure below shows a square DEFG inside rectangle ABCD. The area of the square is  $49 \text{ cm}^2$  and the perimeter of the rectangle is 42 cm. Find the length of GC.



Ans: \_\_\_\_\_ cm

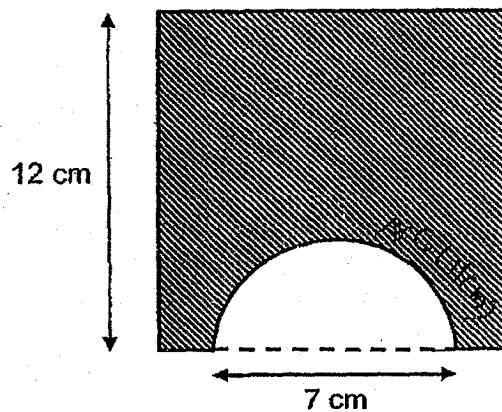
25. Aggie had a roll of ribbon. She used some of it each day for 4 days. At the end of each day, she measured and recorded the length of ribbon left in the bar graph below.



Based on the information above, put a tick in the correct box.

	True	False	Impossible to tell
a) The length of the original roll of ribbon is 80 cm.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) The total length of ribbon used over the 4 days is 60 cm.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

26. The figure below is formed by removing a semicircle of diameter 7 cm from a square. Find the perimeter of the shaded part.  
(Take  $\pi = \frac{22}{7}$ )



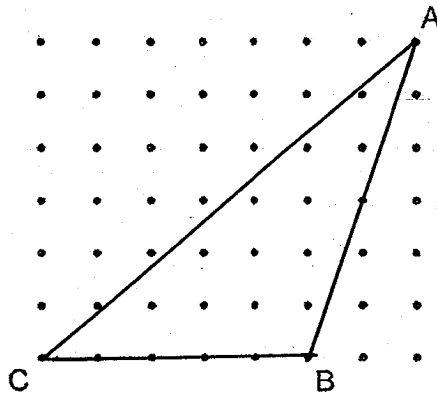
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Ans: \_\_\_\_\_ cm

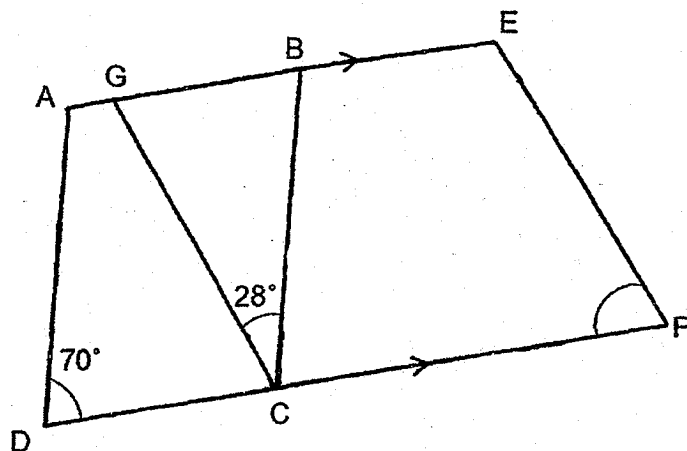


27. A triangle ABC is drawn in the isometric grid below. Draw a right-angled triangle CBD with twice of the area as triangle ABC. Label your diagram clearly.

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in this space



28. In the figure below, ABCD and GEFC are parallelograms. Line AE is parallel to Line DF. Given that  $\angle ADC = 70^\circ$  and  $\angle GCB = 28^\circ$ , find  $\angle EFC$ .



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in this space

Ans : \_\_\_\_\_°

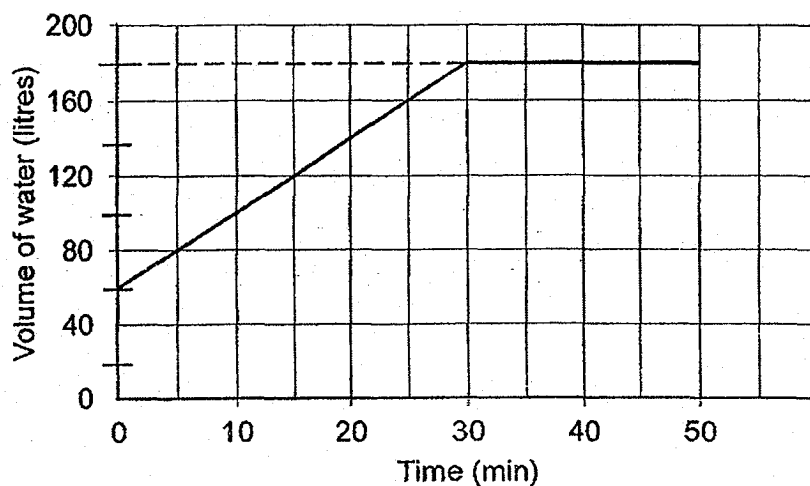
29. There are some marbles in a container. The marbles can be packed into bags of 6 or 8 with no marbles left over. When the marbles are packed into bags of 10, there are 2 marbles left over. What is the smallest possible number of marbles in the container at first?

Ans : \_\_\_\_\_



30. A rectangular tank was partly filled with water. A tap was turned on for 50 min to fill the tank completely. The line graph below shows the volume of water in the tank at regular intervals of time.

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in this space



What was the rate of the flow of water from the tap, in litres per minute?

Ans: \_\_\_\_\_ litres/min

END OF PAPER



Index No.

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**NAN HUA PRIMARY SCHOOL  
PRELIMINARY EXAMINATION – 2018  
PRIMARY 6**

**MATHEMATICS**

**Paper 2**

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

**5 Short Answer Questions (10 marks)**

**12 Structured / Long Answer Questions (45 marks)**

**INSTRUCTION TO CANDIDATES**

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully
4. Answer all questions and show your workings clearly.
5. You are allowed to use a calculator.

**Marks Obtained**

Total		/ 55
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**Name :** \_\_\_\_\_ (       )

**Class :** 6 \_\_\_\_\_

**Date :** 27 Aug 2018

**Parent's Signature :** \_\_\_\_\_

**Paper 2 (55 marks)**

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

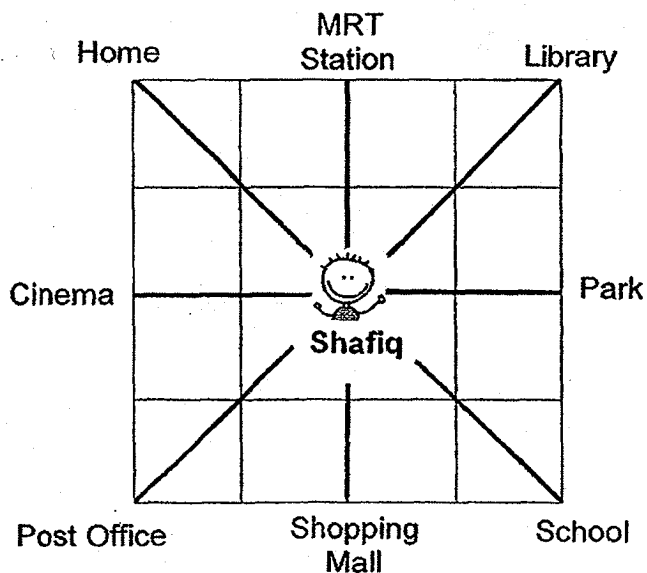
**(10 marks)**

1. Ben is  $10n$  years old now. He is  $3n$  years older than Anne. What is their total age now? Give your answer in terms of  $n$ .

Do not write in this space

Ans: \_\_\_\_\_ years old

2. Shafiq is facing the shopping mall now. Where will he be facing after he makes a  $\frac{3}{4}$  - turn in the clockwise direction?

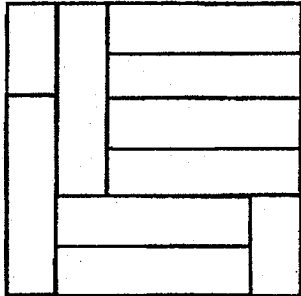


Ans: \_\_\_\_\_

3.

A square is formed using 8 identical big rectangles and 2 identical small rectangles. What fraction of the square is covered by small rectangles? Give your answer in the simplest form.

Do not write in this space

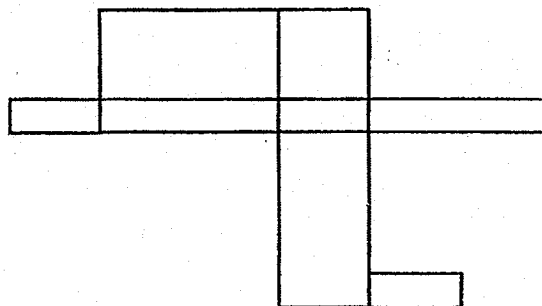


A square

Ans: \_\_\_\_\_

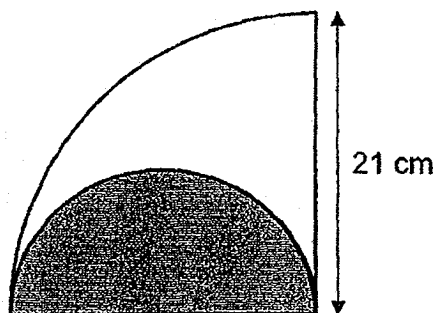
4.

Shade 2 faces to be removed from the net below so that it can be folded into a cuboid.



5. The figure below is made up of a quadrant and a semicircle. The quadrant has a radius of 21 cm. What is the perimeter of the unshaded part?

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



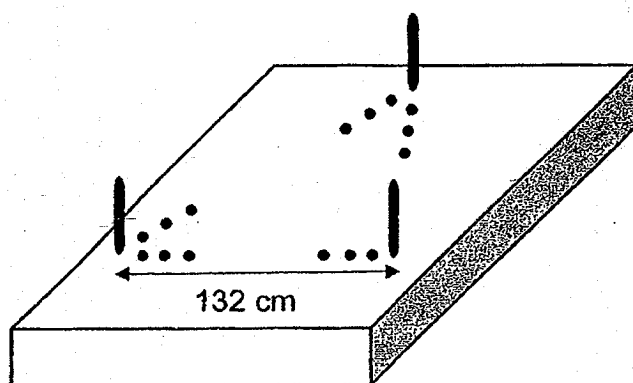
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write in  
this space

Ans: \_\_\_\_\_ cm

For each question from 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)

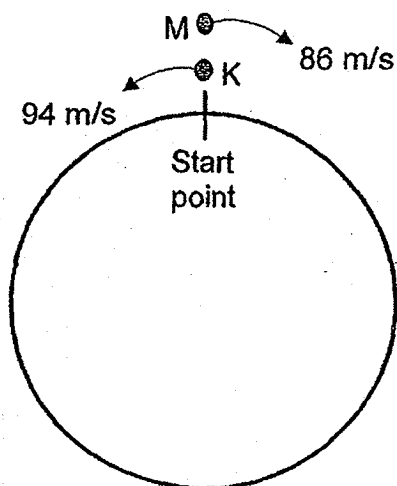
6. Wendy arranged 33 sticks evenly apart to form the outline of an equilateral triangle. Each corner of the triangle contained a stick and each side of the triangle measured 132 cm. Find the distance between one stick to its next.



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Ans: \_\_\_\_\_ [3]

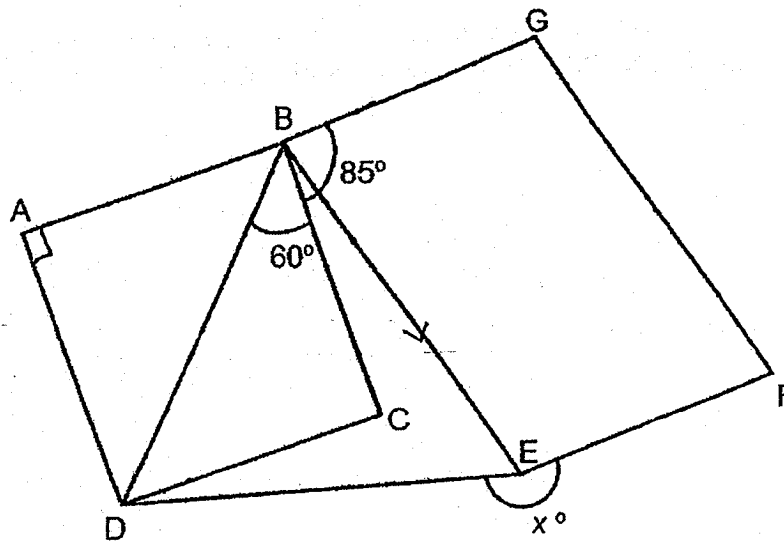
7. Keith and Melissa started cycling at the same time, but in opposite directions around a circular track. The circumference of the track was 2340 m. Keith cycled at 94 m/s while Melissa cycled at 86 m/s. How long would they take to meet for the first time along the track?



Ans: \_\_\_\_\_ [3]



8. The figure below is not drawn to scale. ABCD is a square, BDE is a triangle and BEFG is a parallelogram. Given that  $\angle GBC = 85^\circ$ ,  $\angle EBD = 60^\circ$  and  $DB = DE$ , find  $\angle x$ .



Ans: \_\_\_\_\_ [4]

9. The award system for a Math competition is as shown below.

Type of award	Gold	Silver	Bronze
Average mark out of 4 tests	85 to 100 marks	70 to 84 marks	50 to 69 marks

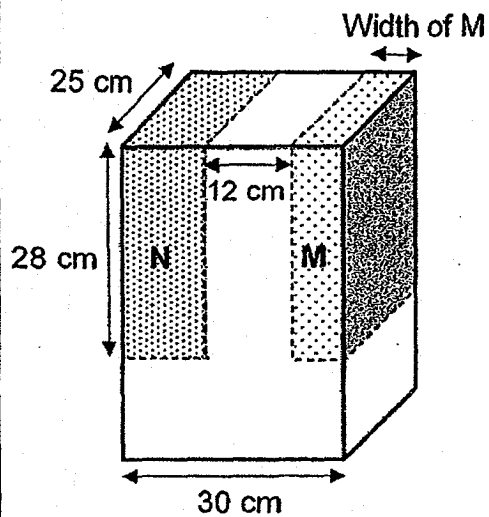
Sue scored 88, 83 and 82 marks for her first three tests. What is the lowest mark Sue must get in the fourth test to get a Gold award?

Ans: \_\_\_\_\_ [3]

10. Donald bought a book. He read an equal number of pages each day. At the end of the 20<sup>th</sup> day, he had read  $\frac{5}{12}$  of it. At the end of the 23<sup>rd</sup> day, there were 225 pages left. How many pages were there in the book?

Ans: \_\_\_\_\_ [4]

11. The figure below shows two rectangular blocks of different sizes, M and N, cut along the dotted lines from a large cuboid. The volume of block N is  $8120 \text{ cm}^3$ . Find the width of block M as indicated in the diagram.



Ans: \_\_\_\_\_ [3]

12. A bakery collected \$1848 from selling some pies and cakes. The ratio of money collected from selling the pies to cakes was 15 : 7. The ratio of the number of pies to cakes sold was 4 : 1. A cake cost \$13 more than a pie. How many cakes were sold?

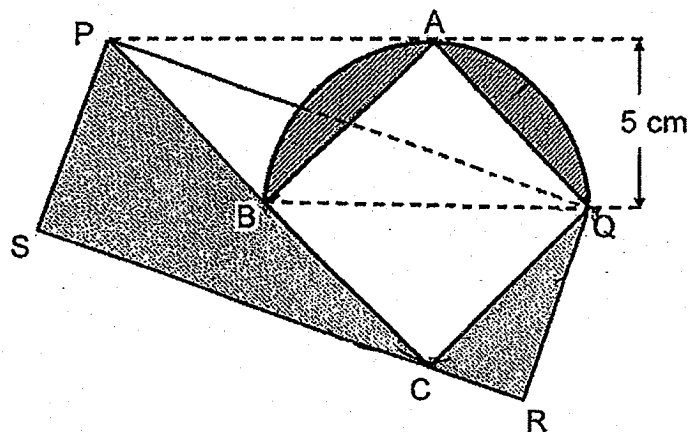
Ans: \_\_\_\_\_ [4]

13. Box A contained 400 fifty-cent coins and 180 one-dollar coins. Box B contained 160 fifty-cent coins and 1100 one-dollar coins. Some coins were transferred from Box A to Box B such that  $\frac{1}{2}$  of the coins in Box A and  $\frac{3}{10}$  of the coins in Box B were fifty-cent coins. Find the total value of fifty-cent coins in Box B in the end.

Ans: \_\_\_\_\_ [4]

14. The figure below is formed by overlapping a rectangle PQRS with a semicircle. The semicircle has a radius of 5 cm. ABCQ is a square and PCQ is a triangle.

- a) Find the area of triangle ABQ.  
b) Find the total area of the shaded parts. Take  $\pi = 3.14$



Ans: a) \_\_\_\_\_ [1]

b) \_\_\_\_\_ [3]

15. On Monday, a total of 2001 men and women attended a business conference. On Tuesday, the number of men decreased by 20% while the number of women increased by 37.5%. The total number of men and women at the conference was the same on each day. How many women attended the conference on Tuesday?

Ans: \_\_\_\_\_ [4]



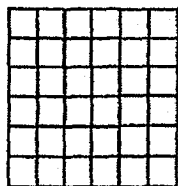
16. Some pupils from school K and school L went on a zoo trip. There were twice as many pupils from school K as school L at the trip. The ratio of the number of boys to girls from school K was 1 : 3. The ratio of the number of boys to girls from school L was 5 : 3. The pupils were grouped into 27 teams of 4 boys and 6 girls, with 1 remaining all-girls team.

- a) What was the ratio of the number of boys to girls at the trip?  
b) How many girls were in the all-girls team?

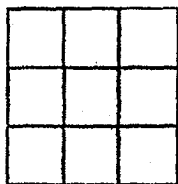
Ans: a) \_\_\_\_\_ [2]

b) \_\_\_\_\_ [3]

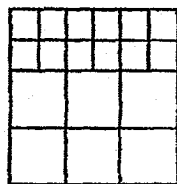
17. Mr Kim had some small and large cubes. He stacked them up neatly to form cube X. Cube X had a volume of  $27000 \text{ cm}^3$ . The top, bottom and one of the four identical side views of cube X were as shown below.



Top view



Bottom view



Side view

- a) What was the height of a small cube?
- b) Mr Kim re-stacked all the cubes used in cube X to form cuboid Y. Given that cuboid Y had the smallest possible square base, what was the height of cuboid Y?

Ans: a) \_\_\_\_\_ [2]

b) \_\_\_\_\_ [2]

– End of Paper 2 –

SCHOOL : NAN HUA 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
3	2	2	2	3	2	4	3	3	4

Q 11	Q12	Q13	Q14	Q15
2	4	1	3	2

**PAPER 1 BOOKLET B**

Q16)	3002580
Q17)	1, 2, 4
Q18)	12
Q19)	20km/h
Q20)	36cm <sup>2</sup>
Q21)	$\angle a = 110^\circ - 65^\circ = 45^\circ$
Q22)	$180^\circ - 74^\circ = 106^\circ$ $(180^\circ - 74^\circ) \div 2 = 53^\circ$
Q23)	$7 + 18k$
Q24)	$7 \times 7 = 49$ $42 - 9 - 9 = 24$ $24 - 7 - 7 = 10$ $10 \div 2 = 5\text{cm}$
Q25)	a) False b) Impossible to tell
Q26)	$AC \rightarrow \frac{1}{2} \times 7 \times \frac{22}{7} = 11$ $p \rightarrow 12 + 12 + 12 + 5 + 11 = 52\text{cm}$
Q27)	

Q28)  $82^\circ$

Q29) 72

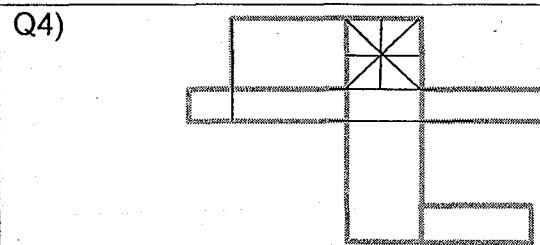
Q30)  $120 \div 30 = 4$

## PAPER 2

Q1)  $A \rightarrow 10n - 3n = 7n$   
 $B + A \rightarrow 7n + 10n = 17n$  years old

Q2) Park

Q3) 1 big = 2 small  
9 big  $\rightarrow$  total  
2 small = 1 big  
Ans: 1/9



Q5)  $A \rightarrow \frac{1}{2} \times 21 \times \frac{22}{7} = 33$   
 $B \rightarrow \frac{1}{4} \times 21 \times 2 \times \frac{22}{7} = 33$   
 $P \rightarrow 33 + 33 + 21 = 87\text{cm}$

Solutions to Word Problems  
Nan Hua 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.     Number of sticks on one side of triangle =  $33 \div 3 = 11$   
       Distance between adjacent sticks =  $132 \div 11 = 12 \text{ cm}$

Ans: 12 cm

---

7.     Let  $t$  = travelling time  
       Total distance =  $94t + 86t = 2340 \text{ km}$   
        $180t = 2340$   
        $t = 2340 \div 180 = 13 \text{ sec} = \text{time they meet each other}$

Ans: 13 sec

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8. Note  $\angle EBD$  in question paper diagram is drawn wrongly

$$\angle ABD = 90 \div 2 = 45^\circ$$

$$\angle ABE = 45 + 60 = 105^\circ$$

$$\angle ABD = 85 + 90 = 175^\circ$$

$$\angle GBE = \angle ABD - \angle ABE = 175 - 105 = 70^\circ$$

$$\angle BEF = 180 - 70 = 110^\circ$$

$$\angle x = 360 - 110 - 60 = 190^\circ$$

Ans:  $190^\circ$

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9. Minimum average marks to get Gold = 85

$$\text{Minimum total marks to get Gold} = 85 \times 4 = 340$$

$$\text{Minimum 4}^{\text{th}} \text{ subject mark} = 340 - 88 - 83 - 82 = 87$$

Ans: 87

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10. 20 days reading  $\rightarrow \frac{5}{12}$  of book

23 days reading  $\rightarrow \frac{23}{20} \times \frac{5}{12} \rightarrow \frac{23}{48}$  of book

Remainder after reading 23 days  $\rightarrow \frac{48}{48} - \frac{23}{48} \rightarrow \frac{25}{48}$  of book  $\rightarrow 225$  pages

$\frac{1}{48}$  of book  $\rightarrow 225 \div 25 = 9$

$\frac{48}{48}$  of book  $\rightarrow 9 \times 48 = 432$  pages

Ans: 432 pages

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11. Cross sectional area of block N =  $25 \times 28 = 700$

Width of block N =  $8120 \div 700 = 11.6$  cm

Width of block M =  $30 - 12 - 11.6 = 6.4$  cm

Ans: 6.4 cm



12. Sales of pies =  $\frac{15}{15+7} \times 1848 = \$1260$

Sales of cakes =  $1848 - 1260 = \$588$

Difference in sales =  $1260 - 588 = \$672$

Ratio of number of pies to cakes  $\rightarrow 4u : 1u$

Cost for 1u pies =  $1260 \div 4 = \$315$

Difference in price of 1u pies vs 1u cakes =  $588 - 315 = 273$

$u = 273 \div 13 = 21$  cakes

Ans: 21 cakes

13. Let a = number of fifty-cents coins in Box A at the end

Let b = number of fifty-cents coins in Box B at the end

$$b \times \frac{10}{3} + 2a = 400 + 160 + 180 + 1100 = 1840 = \text{total coins} \quad (1)$$

$$a + b = 400 + 160 = 560 \quad (2)$$

$$10b + 6a = 1840 \times 3 = 5520 \quad (3) = (1) \times 3$$

$$6a + 6b = 560 \times 6 = 3360 \quad (4) = (2) \times 6$$

$$4b = 2160 \quad (3) - (4)$$

$$b = 2160 \div 4 = 540$$

Value of fifty-cents coins in Box B =  $540 \times 0.5 = \$270$

Ans: \$270

14. a)

$$\text{Area of ABQ} = \frac{1}{2} \times 10 \times 5 = 25 \text{ cm}^2$$

b)

$$\text{Area of semi-circle} = \frac{1}{2} \times 3.14 \times 5 \times 5 = 39.25 \text{ cm}^2$$

$$\text{Area of BPQ} = \text{BCQ} = \text{ABQ} = 25 \text{ cm}^2$$

$$\text{Area of PCQ} = 25 \times 2 = 50 \text{ cm}^2$$

$$\text{Area of PSC} + \text{CRQ} = \text{PCQ} = 50 \text{ cm}^2$$

$$\text{Shaded area} = 39.25 - 25 + 50 = 64.25 \text{ cm}^2$$

Ans: (a)  $25 \text{ cm}^2$

(b)  $64.25 \text{ cm}^2$

15. Let number of men on Monday = u

Number of women on Monday = p

$$\frac{20}{100} u = \frac{37.5}{100} p$$

$$40u = 75p$$

$$u = \frac{75}{40} p$$

On Monday,

$u + p = 2001$  = total Monday attendance

$$\frac{75}{40} p + p = 2001$$

$$\frac{115}{40} p = 2001$$

$$p = 2001 \times \frac{40}{115} = 696$$

$$\text{Number of women on Tuesday} = \frac{137.5}{100} \times 696 = 957$$

Ans: 957

16. a)

Ratio of boys to girls at L school =  $5u : 3u$

Total  $8u$

Total at K school =  $8u \times 2 = 16u$

Ratio of boys to girls at K school =  $4 : 12$

Ratio of boys to girls  $\rightarrow 4 + 5 : 12 + 3 \rightarrow 9 : 15 \rightarrow 3 : 5$

b)

all boys =  $27 \times 4 = 108$

all girls =  $\frac{5}{3} \times 108 = 180$

Number of girls in all girls team =  $180 - 27 \times 6 = 18$

Ans: (a)  $3 : 5$

(b) 18

17. a)

$$\text{Volume of cube X} = 27\,000 = 30 \times 30 \times 30$$

$$\text{Height of cube X} = 30 \text{ cm}$$

$$\text{Height of small cube} = \frac{30}{2 \times 3} = 5 \text{ cm}$$

b)

$$\text{smallest possible base} = \frac{30}{3} \times \frac{30}{3} = 100 \text{ cm}^2$$

$$\text{Height of cuboid Y} = 27\,000 \div 100 = 270 \text{ cm}$$

Ans: (a) 5 cm

(b) 270 cm

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