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**NAN HUA PRIMARY SCHOOL  
PRIMARY 6 PRELIMINARY EXAMINATION – 2009**

**MATHEMATICS**

**Paper 1**

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

**Section B: 10 Short Answer Questions ( 20 marks )**

**Total Time for Paper 1: 50 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**

<b>Paper 1</b>		<b>/ 40</b>
<b>Paper 2</b>		<b>/ 60</b>
<b>Total</b>		<b>/ 100</b>

**Name :** \_\_\_\_\_

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

**Date : 25 August 2009**

**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. Which of the following is the largest odd number?

- (1) 3 089
- (2) 3 098~~x~~
- (3) 9 803
- (4) 9 830~~x~~

2. The digit 7 in 1.752 is in the \_\_\_\_\_ place.

- (1) ones
- (2) tenths
- (3) hundredths
- (4) thousandths

3. How many quarters are there in  $6\frac{1}{4}$ ?

- (1) 6
- (2) 24
- (3) 25
- (4) 61

4. Simplify  $3a + 6$  +  $4a - 7a$

- (1) 20a
- (2) 27a
- (3) 31a
- (4) 34a

5. What percentage of \$12 is 60 cents?

- (1) 5 %
- (2) 20 %
- (3) 500 %
- (4) 2000 %

6.  $4\frac{5}{8} = \square \times \frac{1}{8}$

- (1) 27
- (2) 32
- (3) 37
- (4) 45

7. A cube has a volume of  $64 \text{ cm}^3$ . Find the length of its side.

- (1) 16 cm
- (2) 8 cm
- (3) 6 cm
- (4) 4 cm

8. A speeding car travelled 24 km in 12 min. Find its average speed.

- (1) 90 km/h
- (2) 96 km/h
- (3) 120 km/h
- (4) 150 km/h

9. The table below shows the record of the number of books Mr Lim's pupils read in a week.

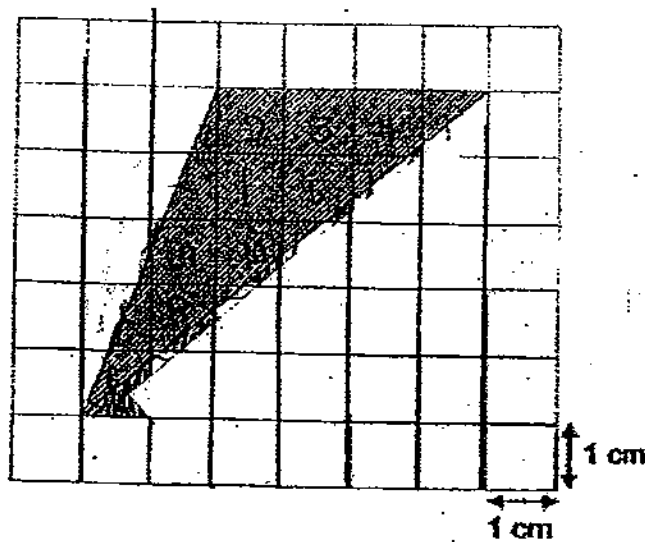
No. of books read	0	1	<u>2</u>	3	<u>4</u>
No. of pupils	5	10	16	<u>6</u>	3

How many pupils read at least 2 books in that week ?

- (1) 9
- (2) 16
- (3) 25
- (4) 40

( )

10. In the figure below, find the area of the shaded triangle.



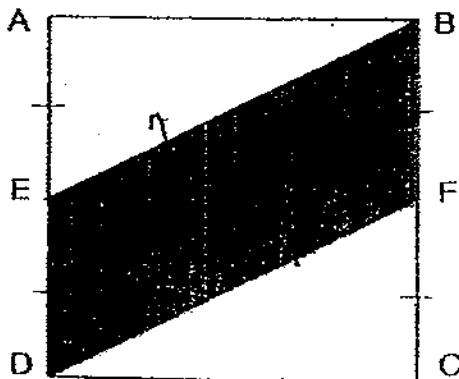
- (1)  $5 \text{ cm}^2$
- (2)  $10 \text{ cm}^2$
- (3)  $12 \text{ cm}^2$
- (4)  $15 \text{ cm}^2$

( )

11. Ida had \$400. She used 50% of it to buy an electronic handheld game and 15% of the remainder to buy a book. How much did the two items cost?

- (1) \$30
- (2) \$170
- (3) \$200
- (4) \$230

12. In the figure below, ABCD is a square and EBFD is a parallelogram. What fraction of ABCD is shaded?

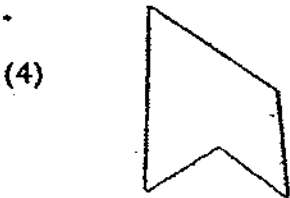
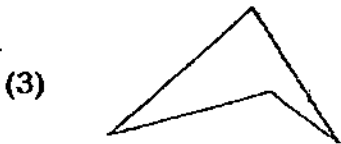
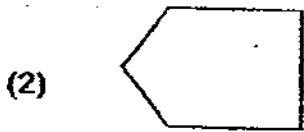


- (1)  $\frac{1}{3}$
- (2)  $\frac{1}{2}$
- (3)  $\frac{2}{3}$
- (4)  $\frac{3}{5}$

13. The value of  $E$  is 4 times of  $F$  and  $F$  is twice of  $G$ . What is the ratio of  $E$  to  $G$ ?

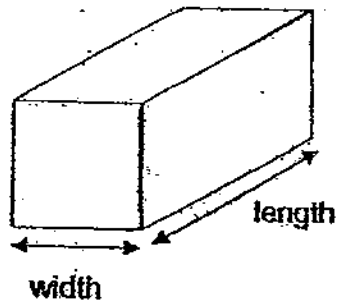
- (1) 2 : 1
- (2) 4 : 1
- (3) 6 : 1
- (4) 8 : 1

14. Which one of the following shapes does not tessellate?



( )

15. The rectangular block below has a square face of  $36 \text{ cm}^2$ . The ratio of its width to its length is  $1 : 3$ . Find its volume.



- (1)  $108 \text{ cm}^3$
- (2)  $243 \text{ cm}^3$
- (3)  $648 \text{ cm}^3$
- (4)  $2147 \text{ cm}^3$

( )

**Section B (20 marks)**

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]

16. Find the missing number in the box

$$1 : 2 = \boxed{\phantom{00}} : 24$$

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

17. When the minute hand of a wall clock travels once from 12 00 to 12 45, it has moved through \_\_\_\_\_ right angles.

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

18. A number when divided by 14 gives a remainder of 9 and a quotient of 12. What is the number?

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

19. Express 1.08 as a mixed number in its simplest form.

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

20. Claudia wants to pack 206 oranges into some boxes. What is the minimum number of boxes that she needs if each box can hold 12 oranges?

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

21. Hamid went on a trip that started at 8.30 a.m. and ended at 1.25 p.m.. How long was his trip? Give your answer in hours and minutes.

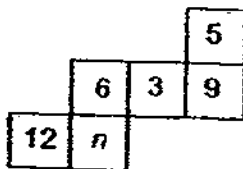
Ans : \_\_\_\_\_ h \_\_\_\_\_ mins

Subtotal	16
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22. Michael ran 4 rounds around his school field at a average speed of 200 m/min. How many minutes did he take if each round was 0.4 km?

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

23. The figure below shows the net of a cube with 6 different numbers printed on each of its faces. The sum of the numbers on opposite faces is 15. Find the value of  $n$ .

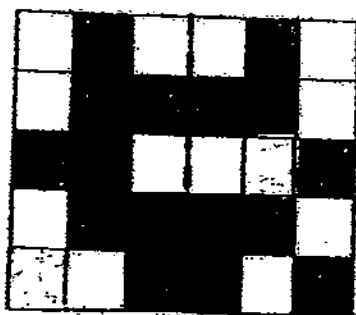


Ans : \_\_\_\_\_

24. In her class, Joyce is the 20<sup>th</sup> pupil from the top and bottom of the class list. How many pupils are there in her class?

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

25. Shade 2 squares in the figure so that it will have only 1 line of symmetry as shown.

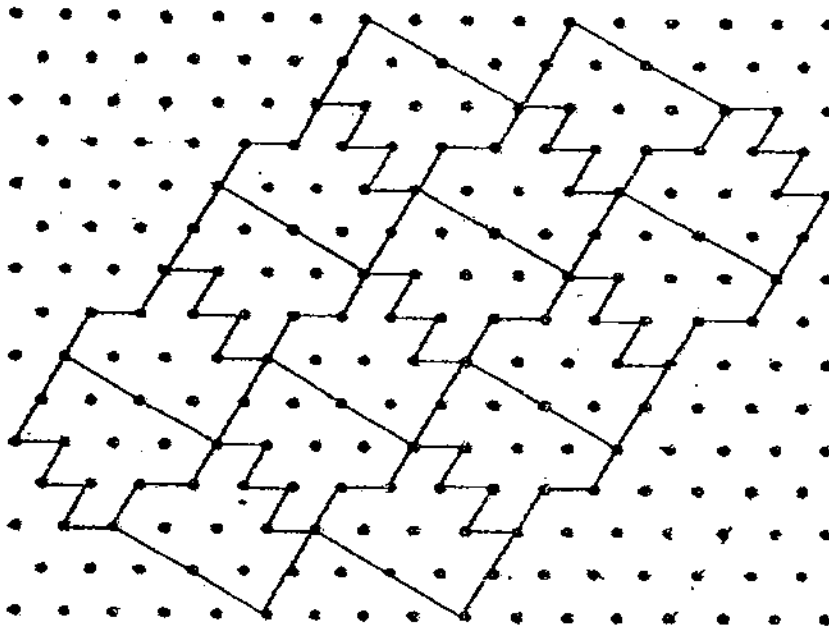


Subtotal	14
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Questions 26 to 30 carry 2 marks each. Show your working clearly in the space provided for each question and write your answers in the spaces provided. For each questions which require units, give your answers in the units stated. [10 marks]

26. Extend the tessellation by drawing 4 more unit shapes in the grid provided.



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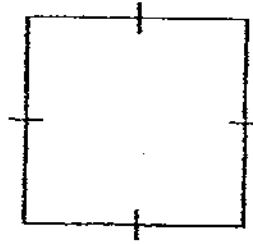
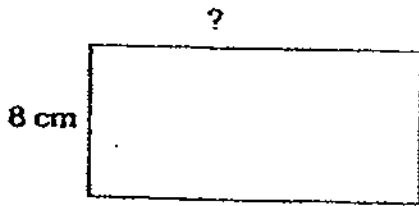
27. Mrs Wee bought 4 boxes of chocolates and 3 boxes of biscuits for \$19. If a box of chocolates cost \$1.25 more than a box of biscuits, how much would one box of biscuits cost?

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

Subtotal	14
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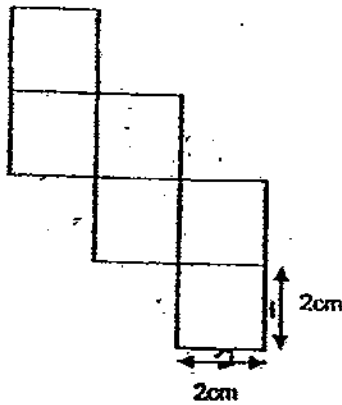
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28. The area of the rectangle is the same as that of the square.  
The length of one side of the square is 12 cm.  
Find the length of the rectangle.



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

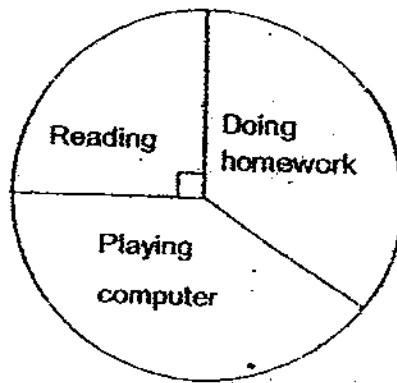
29. The figure below is made up of 6 identical squares.  
What is the perimeter of the figure if the side of each square is 2 cm?



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



30. The pie chart below shows how Tom spends a typical afternoon from 3 p.m. to 7 p.m. The ratio of time he spends doing homework to reading is 5 : 4. How much time does he spend doing homework?



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

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Subtotal	12
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END OF PAPER



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**NAN HUA PRIMARY SCHOOL  
PRIMARY 6 PRELIMINARY EXAMINATION - 2009**

**MATHEMATICS**

**Paper 2**

**Total Time for Paper 2 : 1 hour 40 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 and show your workings clearly.
5. You are allowed to use a calculator.

**Marks Obtained**

<b>Total</b>		<b>/ 60</b>
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**Name :** \_\_\_\_\_ ( )

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

**Date : 25 August 2009**

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

**Section A (10 marks)**

Questions 1 to 5 carry 2 marks each. Show your working clearly in the space provided for each question and write your answers in the spaces provided.

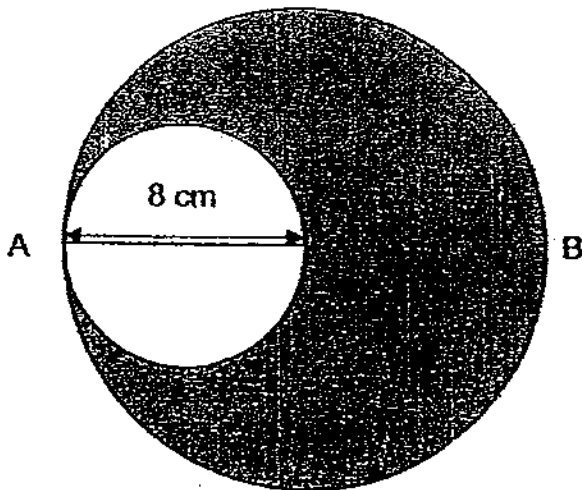
For questions which require units, give your answers in the units stated.

1. Allan's score for Science for the mid-year examination was 80. His Science score for the year-end examination was 90. Find the percentage increase in his Science score.

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Ans : \_\_\_\_\_ % [2m]

2. In the figure below, O is the centre of the big circle. The diameter of the small circle is 8 cm. Find the circumference of the big circle. Give your answer to 1 decimal place. (Take  $\pi = 3.14$ )



Ans : \_\_\_\_\_ cm [2m]

The table below shows the rate of charges for parking at ABC Shopping Mall.

First 1 hour	\$5.50
Every additional half hour or part thereof	\$2.75

If Sally parked her car from 10.00 a.m. to 11.32 a.m., how much did she have to pay?

Ans : \$ \_\_\_\_\_ [2m]

A rectangular tank has a base area of  $15.6 \text{ m}^2$  and a height of 6 m.

What is the volume of water in the tank when it is  $\frac{3}{4}$  full ?

Ans : \_\_\_\_\_  $\text{m}^3$  [2m]

Mr Muthu drove his car at a speed of 80 km/h for 120 km and 60 km/h for a further 60 km. What was his average speed for the whole journey?

Ans : \_\_\_\_\_ km/h [2m]

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**Section B (50 marks)**

For questions 6 to 18, show your working clearly in the space provided for each question and write your answers in the spaces provided. The number of marks available is shown in the brackets [ ] at the end of each question or part question. Remember to include the units wherever possible.

6. Mrs Siva has some sweets. If she gives 5 sweets to each of her pupils, she will have 4 sweets left. If she gives 12 sweets to each of her pupils, she will need 73 more sweets. How many pupils are there?

Do not write in this space

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

7. In a fish tank, the ratio of the number of angelfish to the number of goldfish is  $3:2$ . The ratio of the number of guppies to the number of angelfish is  $5:2$ . How many fish are there altogether if there are 8 goldfish?

8. The average age of a family of five is 26. The total age of the children is 32. What was the average age of the parents 3 years ago?

Do not write  
in this space

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

9. Find the value of

$$\frac{3 + 5 + 7 + \dots + 21}{40 + 60 + 80 + \dots + 360}$$

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

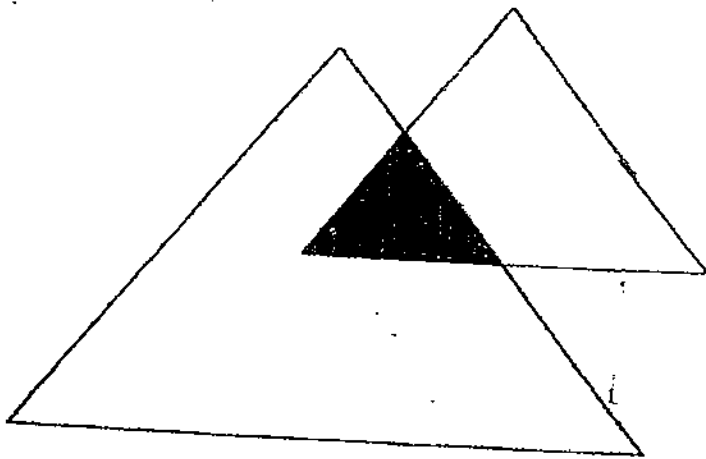


10. A rectangular container of height 12 cm was half filled with water. 3 identical metal balls, each of volume  $600 \text{ cm}^3$  were dropped into the container. The water level then rose by 4 cm. Find the volume of the water in the container (in litres).

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

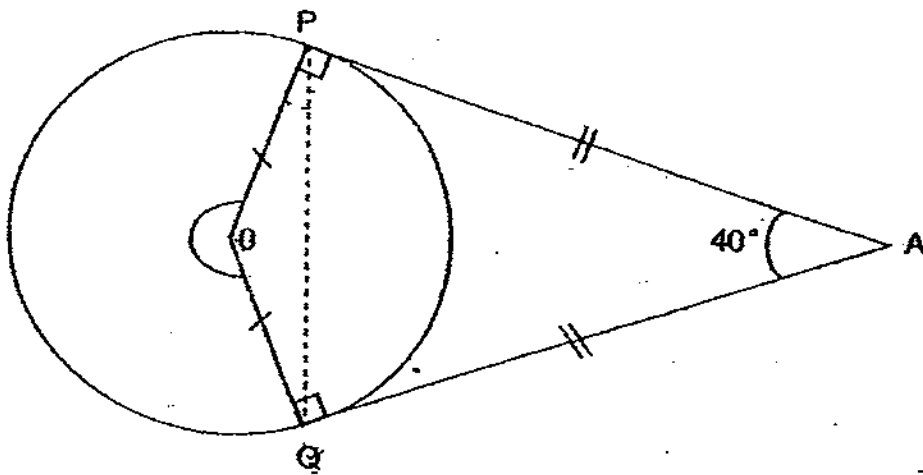
1. The figure below is made up of 2 triangles. The ratio of the area of small triangle to the area of big triangle is 9:16. The shaded area is  $\frac{4}{9}$  of the area of small triangle. The area of the unshaded part is  $68 \text{ cm}^2$ . Find the area of the big triangle.



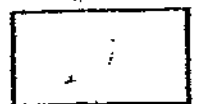
Ans: \_\_\_\_\_ [3m]

12. In the figure below, P and Q are points on the circle. O is the centre of the circle. Length of AP = Length of AQ.  
 Find  
 (a)  $\angle APQ$   
 (b)  $\angle OPQ$

Do not write  
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Answers : (a) \_\_\_\_\_ [2m] [1m]  
 (b) \_\_\_\_\_ [2m] [1m]



13. The ratio of \$2 notes to \$5 notes in Joan's piggy bank was 13:8. She exchanged 20 pieces of \$2 notes for some \$5 notes, after which, the ratio of \$2 notes to \$5 notes became 4:5. What was the (total value) of (\$2 notes and \$5 notes) in the piggy bank (at first)?

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

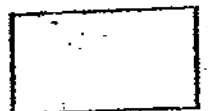


- 4 Ahmad left Town A and drove towards Town C. After driving for  $\frac{1}{4}$  of the journey at an average speed of 72 km/h for 40 minutes, he stopped at Town B to have a break for 20 min. Then he carried on with the journey at an average speed of 80 km/h. He reached Town C at 3.45 p.m.
- (a) What was the distance between Town A and Town C?
- (b) How long did Mr Ahmad take to travel from Town A to Town C?

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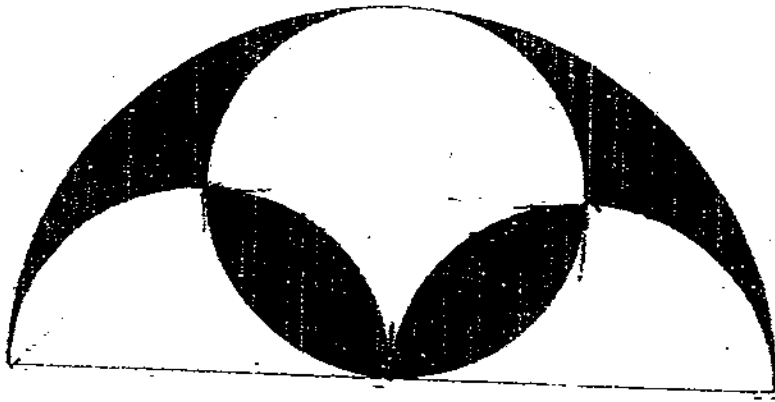
Ans : (a) \_\_\_\_\_ [2m]

(b) \_\_\_\_\_ [2m]



5. The figure below consists of 2 identical semicircles, a larger semicircle and a circle. The diameter of the big semicircle is 40 cm. Find the shaded area. (Take  $\pi = 3.14$ ).

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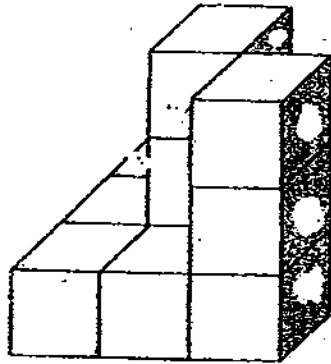


← 40 cm →

Ans : \_\_\_\_\_ [5m]

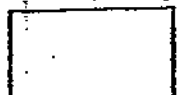
16. The figure below shows a solid made up of 10 identical cubes. When the solid is painted black, the total area being painted is  $360 \text{ cm}^2$ .
- (a) What is the volume of the solid?
- (b) How many more cubes must be added to change this solid into a big cube with a volume of  $729 \text{ cm}^3$ ?

Do not write  
in this space



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

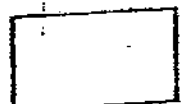
(b) \_\_\_\_\_ [2m]



17. 60% of the people at a water theme park were adults. 75% of the remainder were boys. There were 140 more adults than girls. More children came to the park, after which 60% of the people in the park were children. How many more children came to the park?

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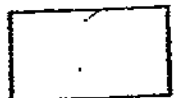
Ans : \_\_\_\_\_ [5m]



18. Mrs Tan had a sum of money to spend. She spent  $\frac{1}{2}$  of her money plus \$5 on a handbag. She then spent  $\frac{1}{2}$  of the remaining money plus \$3 on a pair of shoes. Finally she spent  $\frac{2}{3}$  of what was left plus \$2 on a skirt. She was then left with \$10. How much money did she have at first?

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Ans : \_\_\_\_\_ [5m]



END OF PAPER





# ANSWER SHEET

**EXAM PAPER 2009**

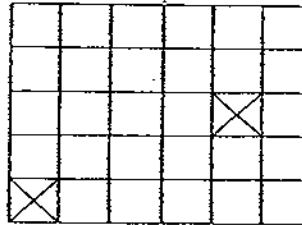
**SCHOOL : NAN HUA PRIMARY**  
**SUBJECT : PRIMARY 6 MATHEMATICS**

**TERM : SA2**

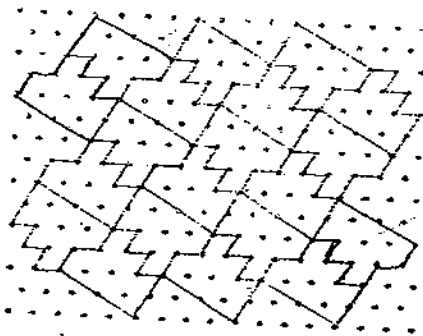
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
3	2	3	1	1	3	4	3	3	2	4	2	4	4	3

16)12    17)3    18)177    19) $1\frac{2}{25}$     20)18    21)4h 55min

22)8 min    23)10    24)39    25)



26)



30) $1\frac{1}{4}$ h

27)\$2

28)18cm

29)28cm

Paper 2

<p>1) Increase <math>\rightarrow 90 - 80 = 10</math>  <math>\% \rightarrow 10 / 80 \times 100\% = 12.5\%</math>  The percentage increase is 12.5%</p>	<p>2) Diameter (big) <math>\rightarrow 8\text{cm} \times 2 = 16\text{cm}</math>  circumference <math>\rightarrow (16 \times 3.14)\text{cm}</math>  <math>= 50.2\text{cm}</math>  The circumference is 50.2cm</p>
<p>3) \$11</p>	<p>4) <math>\frac{3}{4} \rightarrow (15.6 \times 6 \times \frac{3}{4})\text{m}^3 = 70.2\text{m}^3</math>  The volume of water is 70.2m<sup>3</sup></p>
<p>5) Distance <math>\rightarrow 120\text{km} + 60\text{km}</math>  <math>= 180\text{km}</math>  Time <math>\rightarrow (60 \div 60 + 120 \div 80)\text{h}</math>  <math>= 2\frac{1}{2}\text{h}</math>  Average speed <math>\rightarrow (180 \div 2\frac{1}{2})</math>  <math>= 72\text{km/h}</math>  His speed is 72km/h</p>	<p>6) <math>4 + 73 = 77</math>  <math>12 - 5 = 7</math>  Pupils <math>\rightarrow 77 \div 7 = 11</math>  There are 11 pupils.</p>
<p>7) 50</p>	<p>8) Total (aft) <math>\rightarrow 26 \times 5 = 130</math>  Parents (aft) <math>\rightarrow 130 - 32 = 98</math>  Average <math>\rightarrow (98 - 3 - 3) \div 2 = 46</math>  The average age is 46 years.</p>
<p>9) 3/85</p>	<p>10) 3 metal balls <math>\rightarrow 600\text{m}^3 \times 3</math>  <math>= 1800\text{m}^3</math>  Base area <math>\rightarrow (1800 \div 4)\text{cm}^2</math>  <math>= 450\text{cm}^2</math>  Volume <math>\rightarrow (450 \times 12 \times \frac{1}{2})\text{cm}^3</math>  <math>= 2700\text{cm}^3 = 2.7\text{L}</math>  The volume of water is 2.7L</p>
<p>11) <math>4/9 \times 9 = 4</math>  <math>16 - 4 = 12</math>  <math>9 - 4 = 5</math>  <math>12 + 5 = 17</math>  17 units <math>\rightarrow 68\text{cm}^2</math>  16 units <math>\rightarrow 68 / 17 \times 16 = 64\text{cm}^2</math>  The area is 64cm<sup>2</sup></p>	<p>12) a) <math>\angle APQ \rightarrow (180^\circ - 40^\circ) \div 2</math>  <math>= 70^\circ</math>  b) <math>\angle OPQ \rightarrow 90^\circ - 70^\circ = 20^\circ</math>  OPQ is 20°</p>

<p>13) <math>13 \times 5 - 4 \times 8 = 33</math>  <math>20 \times 5 \times 8 \times 4 = 132</math>  33 units <math>\rightarrow 132</math>  13 units <math>\rightarrow 132 / 33 \times 13 = 52</math>  8 units <math>\rightarrow 132 / 33 \times 8 = 32</math>  At first <math>\rightarrow \\$ (2 \times 52 + 5 \times 32)</math>  <math>= \\$264</math>  The total value was \$264  at first.</p>	<p>14) a) <math>40 \text{ min} = 2/3 \text{ h}</math>  <math>1/4 \rightarrow (72 \times 2/3) \text{ km} = 48 \text{ km}</math>  A to C <math>\rightarrow (4 \times 48) \text{ km} = 192 \text{ km}</math>  The distance is 192 km.  b) <math>20 \text{ min} = 1/3 \text{ h}</math>  B to C <math>\rightarrow 192 \text{ km} - 48 \text{ km}</math>  <math>= 144 \text{ km}</math>  <math>(144 \div 80) \text{ h} = 1 \frac{4}{5} \text{ h}</math>  Time <math>\rightarrow (1 \frac{4}{5} + 2/3 + 1/3) \text{ h}</math>  <math>= 2 \frac{4}{5} \text{ h}</math>  He took <math>2 \frac{4}{5} \text{ h}</math>.</p>
<p>15) Radius(big) <math>\rightarrow 40 \text{ cm} \div 2 = 20 \text{ cm}</math>  Radius(small) <math>\rightarrow 20 \text{ cm} \div 2 = 10 \text{ cm}</math>  Big <math>\rightarrow (20 \times 20 \times 3.14 \times 1/2) \text{ cm}^2 = 628 \text{ cm}^2</math>  <math>(1/4 \times 10 \times 10 \times 3.14) \text{ cm}^2 = 78.5 \text{ cm}^2</math>  <math>(10 \times 10) \text{ cm}^2 = 100 \text{ cm}^2</math>  <math>(100 - 78.5) \text{ cm}^2 \times 4 = 86 \text{ cm}^2</math>  <math>1/2 + 1/4 + 1/4 = 1</math>  <math>(10 \times 10 \times 3.14) \text{ cm}^2 = 314 \text{ cm}^2</math>  Shaded <math>\rightarrow (628 - 314 - 86) \text{ cm}^2 = 228 \text{ cm}^2</math>  The shaded area is <math>228 \text{ cm}^2</math></p>	
<p>16) a) 1 square base <math>\rightarrow (360 \div 40) \text{ cm}^2 = 9 \text{ cm}^2</math>  1 side <math>\rightarrow (\sqrt{9}) \text{ cm} = 3 \text{ cm}</math>  Volume <math>\rightarrow (3 \times 3 \times 3 \times 10) \text{ cm}^3 = 270 \text{ cm}^3</math>  The volume is <math>270 \text{ cm}^3</math>  b) 1 cube <math>\rightarrow (3 \times 3 \times 3) \text{ cm}^3 = 27 \text{ cm}^3</math>  <math>729 \text{ cm}^3 - 270 \text{ cm}^3 = 459 \text{ cm}^3</math>  Cubes <math>\rightarrow 459 \div 27 = 17</math>  17 cubes must be added.</p>	
<p>17) <math>100\% - 60\% = 40\%</math>  <math>100\% - 75\% = 25\%</math>  <math>40\% \times 25\% = 10\%</math>  <math>60\% - 10\% = 50\%</math>  <math>50\% (\text{bef}) \rightarrow 140</math>  <math>60\% (\text{bef}) \rightarrow 140 / 50 \times 60 = 168</math>  <math>40\% (\text{bef}) \rightarrow 140 / 50 \times 40 = 112</math></p>	<p><math>40\% (\text{aft}) \rightarrow 168</math>  <math>60\% (\text{aft}) \rightarrow 168 / 40 \times 60</math>  <math>= 252</math>  Came <math>\rightarrow 252 - 112 = 140</math>  140 more children came.</p>

**18)  $1 - 2/3 = 1/3$**

**$\$10 + \$2 = \$12$**

**$\$12 \times 3 = \$36$**

**$\$36 + \$3 = \$39$**

**$\$39 \times 2 = \$78$**

**$1/2 \rightarrow \$78 + \$5 = \$83$**

**At first  $\rightarrow \$83 \times 2 = \$166$**

**She has \$166 at first.**

