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PEI CHUN PUBLIC SCHOOL

PRELIMINARY EXAMINATION, 2012

MATHEMATICS

PAPER 1

(BOOKLET A)

Additional materials: Optical Answer Sheet (OAS)   Total Time For Booklets A & B : 50 min

Name : _____ (   )

Class : Primary 6 ___

Date : 31 July 2012

INSTRUCTIONS TO CANDIDATES

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

ANSWER ALL THE QUESTIONS.

SHADE YOUR ANSWERS IN THE OPTICAL ANSWER SHEET (OAS) PROVIDED.

YOU ARE NOT ALLOWED TO USE A CALCULATOR.

Questions **1** to **10** carry 1 mark each. Questions **11** to **15** carry 2 marks each. For each question, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

(20 marks)

1. What does the digit 6 in 6 712 458 stand for?

 (1) 6 000 000

 (2) 600 000

 (3) 6000

 (4) 6   (   )

2. The length of a school bus is about _____ .

 (1) 9 m

 (2) 9 cm

 (3) 90 m

 (4) 90 cm   (   )

3. What is the value of $(6 + 27) \div 3 - 4 \times 2$?

 (1) 7

 (2) 14

 (3) 3

 (4) 22   (   )

4. A movie started at 20 45 and ended at 22 34. How long was the movie?

 (1) 2 h 49 min

 (2) 2 h 11 min

 (3) 1 h 51 min

 (4) 1 h 49 min   (   )

5. How many eighths are there in $7\frac{1}{4}$

    (1)   29

    (2)   30

    (3)   57

    (4)   58   (   )

6. What is the value of $12.3 \div 600$?

    (1)   0.0205

    (2)   0.205

    (3)   0.025

    (4)   0.25   (   )

7. Hema had $\frac{6}{7}$ ℓ of orange juice. She drank $\frac{2}{7}$ of it. How much orange juice had Hema left?

    (1) $\frac{4}{7}$ ℓ

    (2) $\frac{5}{7}$ ℓ

    (3) $\frac{12}{49}$ ℓ

    (4) $\frac{30}{49}$ ℓ   (   )

8. What is the value of $9 + \dfrac{2y}{4}$ when $y = 8$?

    (1) 16
    (2) 13
    (3) 11
    (4) 5   (   ).

9. Ahmad paid $180 for a watch after a discount of 10%. What was the price of the watch **before** the discount?
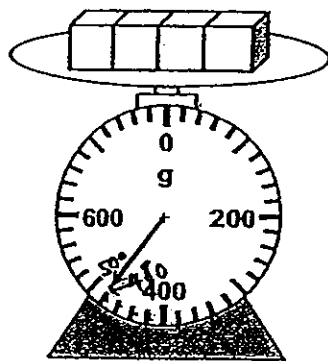
    (1) $162
    (2) $190
    (3) $198
    (4) $200   (   )

10. The figure below shows the total mass of 4 identical cubes.

    What is the mass of each cube?

    (1) 110 g
    (2) 120 g
    (3) 440 g
    (4) 480 g   (   )

11. Jake saves a certain amount of money every day. The table below shows the
     amount of money he saves every day.

Day	Amount of money
Monday to Friday	$3 per day
Saturday and Sunday	$6 per day

What is the least number of days Jake will take to save $60?

(1)   14

(2)   15

(3)   16

(4)   17   (   )

12. The figure below is made up of eight squares of side 6 cm.

What is the perimeter of the figure?

(1)   114 cm

(2)   108 cm

(3)   102 cm

(4)   90 cm   (   )

13. The line graph below shows the number of fishes in a pond from 2005 to 2009.
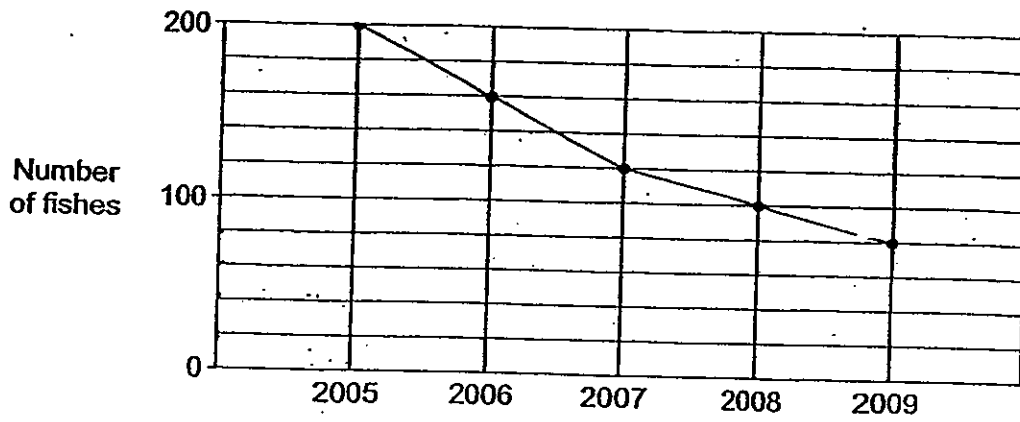
What was the percentage decrease in the number of fishes from 2005 to 2009?

(1)   150%

(2)   120%

(3)   60%

(4)   40%

( )

14. Ken glued 10 identical 2-cm cubes together to form the solid figure as shown below. He painted the whole solid figure, including the base, yellow.
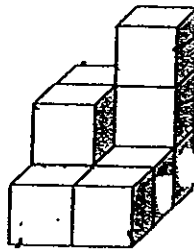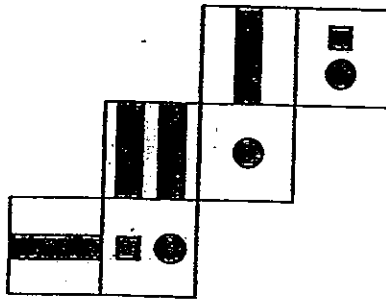

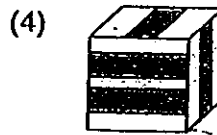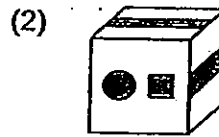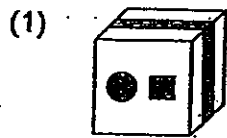What was the total area of the 10 cubes which was painted yellow?

(1)   128 cm²

(2)   132 cm²

(3)   136 cm²

(4)   140 cm²

( )

15. The net of a cube is white on one side and have different patterns on the other side as shown in the figure below.
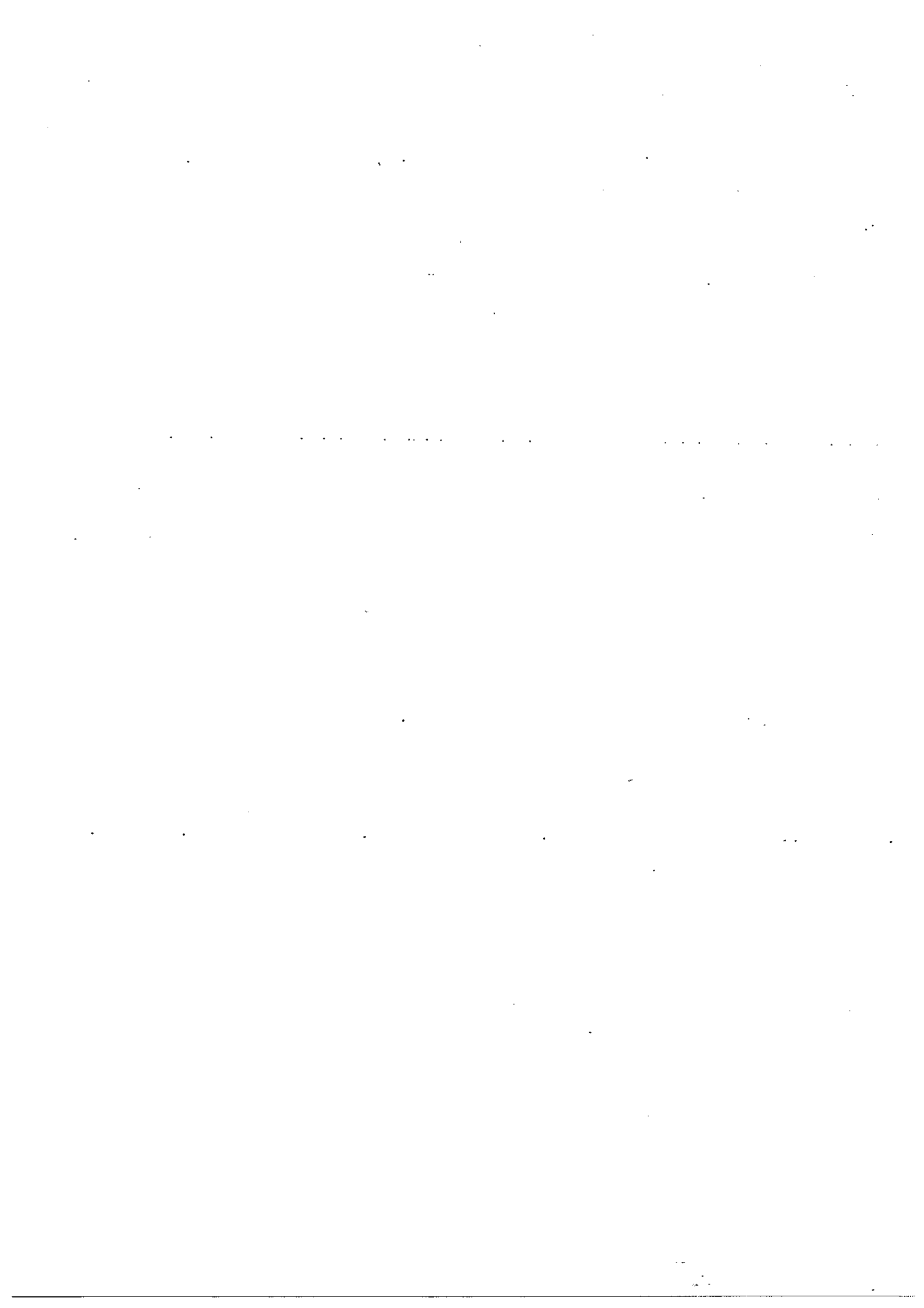

Which of the following could be the cube formed by the net shown above?

(1)

(2)

(3)

(4)

(   )

End of Booklet A

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PEI CHUN PUBLIC SCHOOL
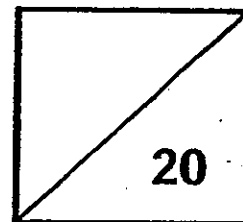
PRELIMINARY EXAMINATION, 2012

MATHEMATICS

PAPER 1

(BOOKLET B)

Total Time For Booklets A & B : 50 min

Name : _____ ( )

Class : Primary 6 ____

Date : 31 July 2012

20

INSTRUCTIONS TO CANDIDATES

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YOU ARE NOT ALLOWED TO USE A CALCULATOR.

16. Write the fraction represented by the letter C in its simplest form.

Ans : _____

17. Express 4 h 45 min in hour.

Ans : _____ h

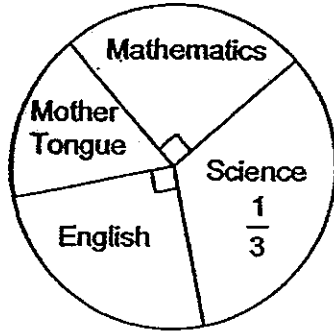18. Find the value of $10 \div \dfrac{2}{5}$.

Ans : _____

19. Find the value of $\dfrac{4}{5} + \dfrac{3}{4}$. Give your answer as a mixed number in its simplest form.
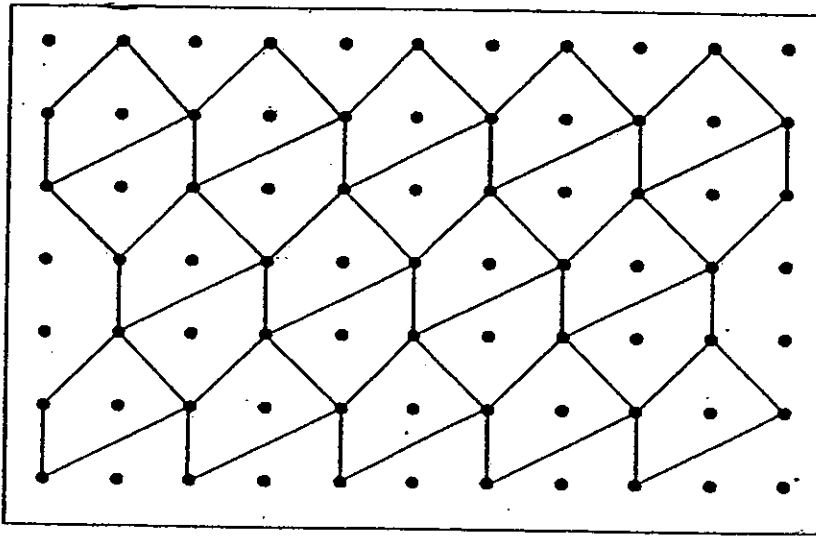
Ans : _____

SCORE

20.   A group of children was asked to choose their favourite subjects. The pie chart
      below shows their choices. What fraction of the children chose Mother Tongue?
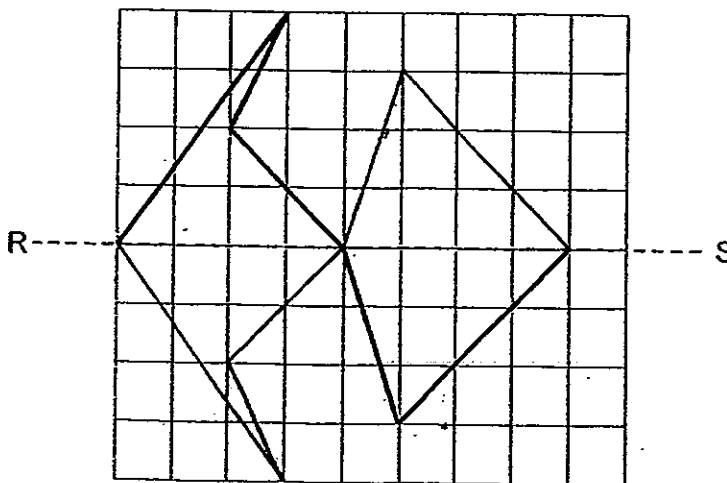
Ans : _____

21.   The pattern in the box below shows part of a tessellation. Extend the tessellation
      by drawing three more unit shapes in the space provided within the box.
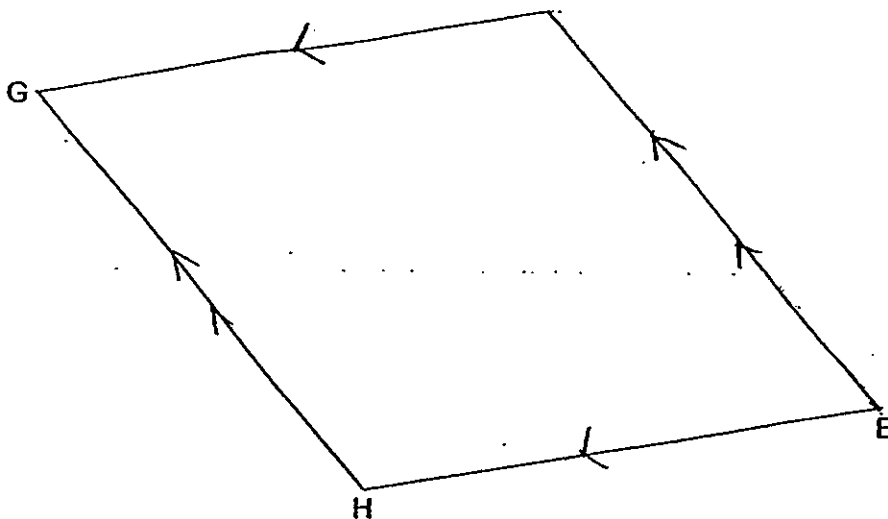

22.   Complete the figure below so that the dotted line RS is a line of symmetry.

SCORE

23. The figure below shows 2 lines GH and EH. Lines GH and EH are two sides of a rhombus EFGH. Draw and label the rhombus by completing the figure below.

24. The table below shows the charges to rent a bicycle.

Rental Charges (per bicycle)	
For the first hour	$5.00
For every additional $\frac{1}{2}$ hour or part thereof	$2.00

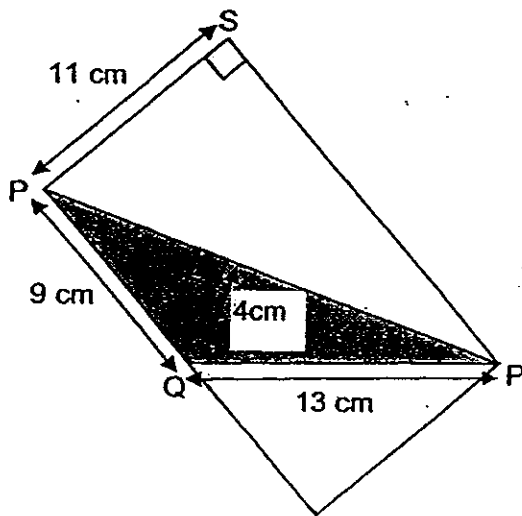Sue rented a bicycle from 1.15 p.m. to 3.15 p.m. How much did she pay?

Sueu

Ans : $ _____

SCORE

(Go on to the next page)

25. The figure below shows a trapezium PQRS. What is the area of the shaded part?

S

11 cm

P

9 cm

4cm

Q

13 cm

P

Ans : _____ cm²

Questions 26 to 30 carry 2 marks each. Show your working clearly in the space below each question and write your answers in the spaces provided. For questions which require units, give your answers in the units stated.   (10 marks)

26. The perimeter of a rectangle is 40 cm. The ratio of its length to its breadth is 3 : 2. What is the area of the rectangle?
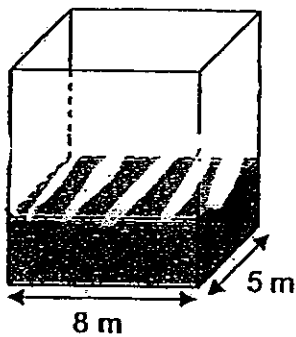
Ans : _____ cm²

SCORE

27. Don had some money. He spent $\frac{1}{4}$ of it on a belt and $\frac{5}{9}$ of the remainder on a watch. He had $68 left How much money had Don at first?

Ans : $ _____

28. A rectangular tank, 8 m long and 5 m wide, was 25% filled with water. When Uma poured another 96 m³ of water into the tank, the tank became 45% filled with water. Find the height of the tank in metres.

5 m

8 m

Ans : _____ m

SCORE

29. The figure below shows a quarter circle of radius 10 cm and two identical quarter circles of radius 7 cm. Find the perimeter of the figure in terms of π.

10 cm

7 cm
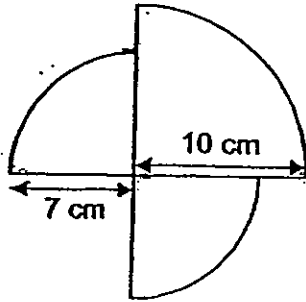
Ans : _____ cm

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30. Jen had 250 stickers more than Ida at first. After Jen gave Ida 180 stickers, Ida had twice as many stickers as Jen. How many stickers did Ida have at first?

Ans : _____

End of Booklet B

SCORE

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PEI CHUN PUBLIC SCHOOL

PRELIMINARY EXAMINATION, 2012

MATHEMATICS

PAPER 2

Time: 1 h 40 min

Name : _____ ( )

Class : Primary 6 _____

Date : 31 July 2012

Parent's Signature: _____

Paper 1 (Booklet A)	20
Paper 1 (Booklet B)	20
Paper 2	60
TOTAL	100

INSTRUCTIONS TO CANDIDATES

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WRITE YOUR ANSWERS IN THIS BOOKLET.

YOU ARE ALLOWED TO USE A CALCULATOR.

Questions 1 to 5 carry 2 marks each. Show your working clearly 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.

(10 marks)

1.   Jim, Ken and Leon were standing on different squares of a grid as shown below.

N
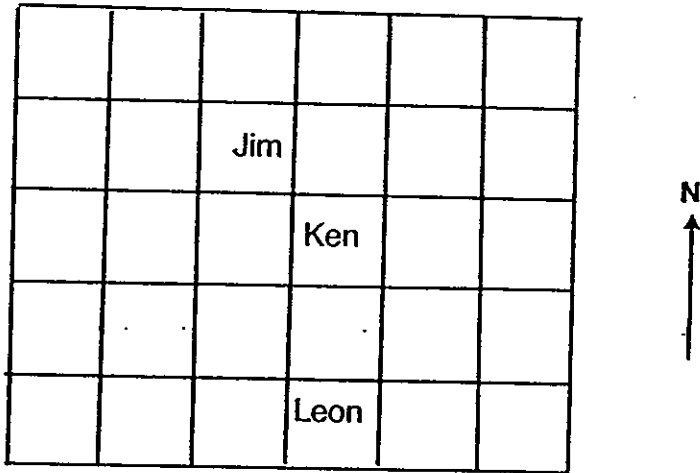
(a)   Marcus was standing to the east of Leon and south-east of Ken. Put a tick (✓) in the square where Marcus was standing.

(b)   After turning 225° in a clockwise direction, Jim faced north-east. Which direction was Jim facing at first?

Ans : (b) _____

2.   Mrs Yong baked 12h cookies at first. She ate 7h cookies and gave each of her 4 children an equal number of cookies. In the end, Mrs Yong had 3 cookies left. How many cookies did each child get?. Give your answers in terms of h.

Ans : _____

SCORE

3. In the figure below, ABD is an equilateral triangle, BCD is an isosceles triangle and BEDF is a rectangle. ∠BCD = 55°, ∠FDC = 20° and BD = CD. Find ∠ABE.
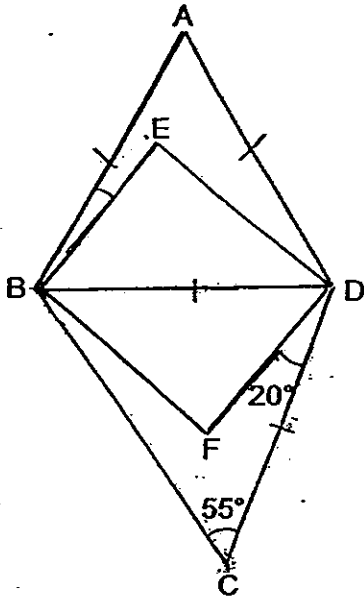
Ans : _____ °

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4. At a zoo, $\frac{4}{7}$ of the children were girls and $\frac{1}{3}$ of the girls wore caps. If $\frac{3}{5}$ of the boys wore caps, what fraction of the children wore caps? Give your answer in its simplest form.
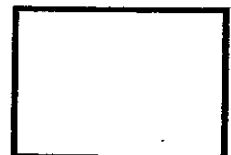
Ans : _____

SCORE

5. Ali and Deepan shared a carton of blue markers and green markers equally. Ali took three times as many blue markers as Deepan. The ratio of the number of green markers Deepan took to the number of the green markers Ali took was 9 : 5.

What was the ratio of the number of blue markers Ali took to the number of green markers Ali took?

Ans : _____

SCORE

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 brackets [ ] at the end of each question or part-question. (Total: 50 marks)

6. John spent $1200 of his monthly salary and saved the rest. If he decreased his spending by 14%, his savings increased by 20%. How much was John's monthly salary?

Ans : _____ [3]

7. The table below shows the marks Peter and Sue scored for 3 tests. Peter and Sue's marks for Test 3 were covered by ink blots.

	Peter's marks	Sue's marks
Test 1	83	78
Test 2	74	75
Test 3		

Peter's average marks for the 3 tests was 5 marks more than Sue's average marks for the 3 tests. How many more marks than Sue did Peter score for Test 3?

Ans : _____ [3]

SCORE

8. At first, Paul had some milk. Each day, he drank an equal amount of milk. At the end of the 6th day, $\frac{3}{8}$ of his milk was left. At the end of the 9th day, he had 0.92 ℓ of milk left. How many litres of milk did Paul have at first?

Ans : _____ . [3]

9. Ben bought some tables and chairs. Each table cost $36 and each chair cost $28 He bought $\frac{3}{5}$ as many tables as chairs. He spent $608 less on the tables than on the chairs. How much money did Ben spend on the tables and chairs altogether?
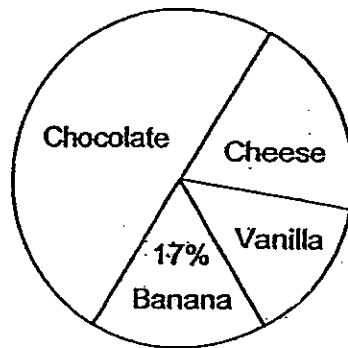
Ans : _____ [4]

SCORE

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10. The pie chart below shows the type of muffins sold at a shop last week. The shop sold 900 muffins in all. Half of the muffins sold were chocolate. The shop sold 20% more cheese muffins than vanilla muffins.

(a) How many banana muffins did the shop sell?

(b) What percentage of the muffins sold last week were cheese muffins?

Ans : (a) _____ [1]
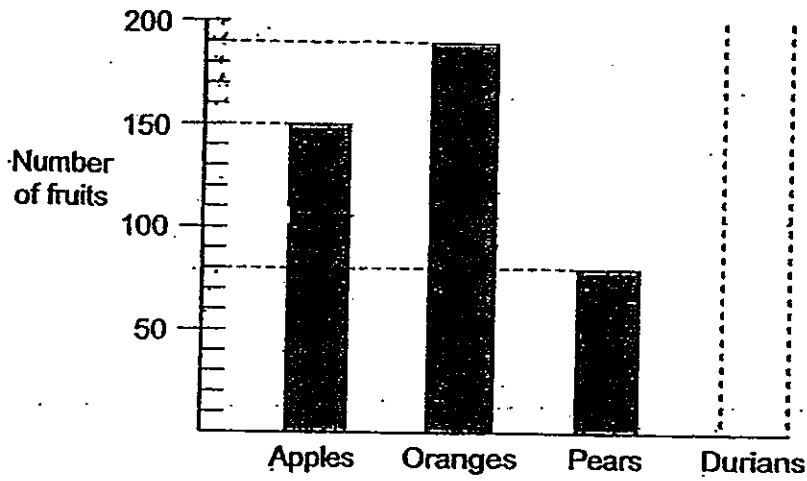
(b) _____ [3]

SCORE

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11. At a fruit stall, there are 4 types of fruits: apples, oranges, pears and durians. The bar graph below shows the number of each type of fruits at the stall. The bar that shows the number of durians has not been drawn.

If 20% of the fruits at the stall are durians, how many durians are there?

Ans : _____ [3]

SCORE

12. Min had 3 times as many beads as Ahmad. Min packed all her beads equally into 42 boxes while Ahmad packed all his beads equally into 56 bags. There are 93 more beads in each box than each bag. How many beads did Min and Ahmad have altogether?

Ans : _____ [4]

SCORE

(Go on to the next page)

13. Jack left Town A and travelled towards Town B at a speed of 90 km/h. 45 min later, Mike left Town B and travelled towards Town A on the same road at a speed of 120 km/h.

Town X was halfway between Town A and Town B. Jack passed Town X half an hour after Mike had passed Town X. Both of them did not change their speeds throughout the journey. If Mike reached Town A at 2.45 p.m., at what time did Jack leave Town A?

Ans : _____

SCORE

In the figure below, Tank J is filled with water to its brim and Tank K is empty. Tap X drains water out of Tank J at a rate of 4.5 ℓ per min and Tap Y fills Tank K with water at a rate of 3 ℓ per min.
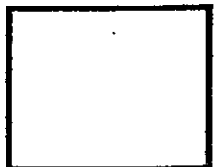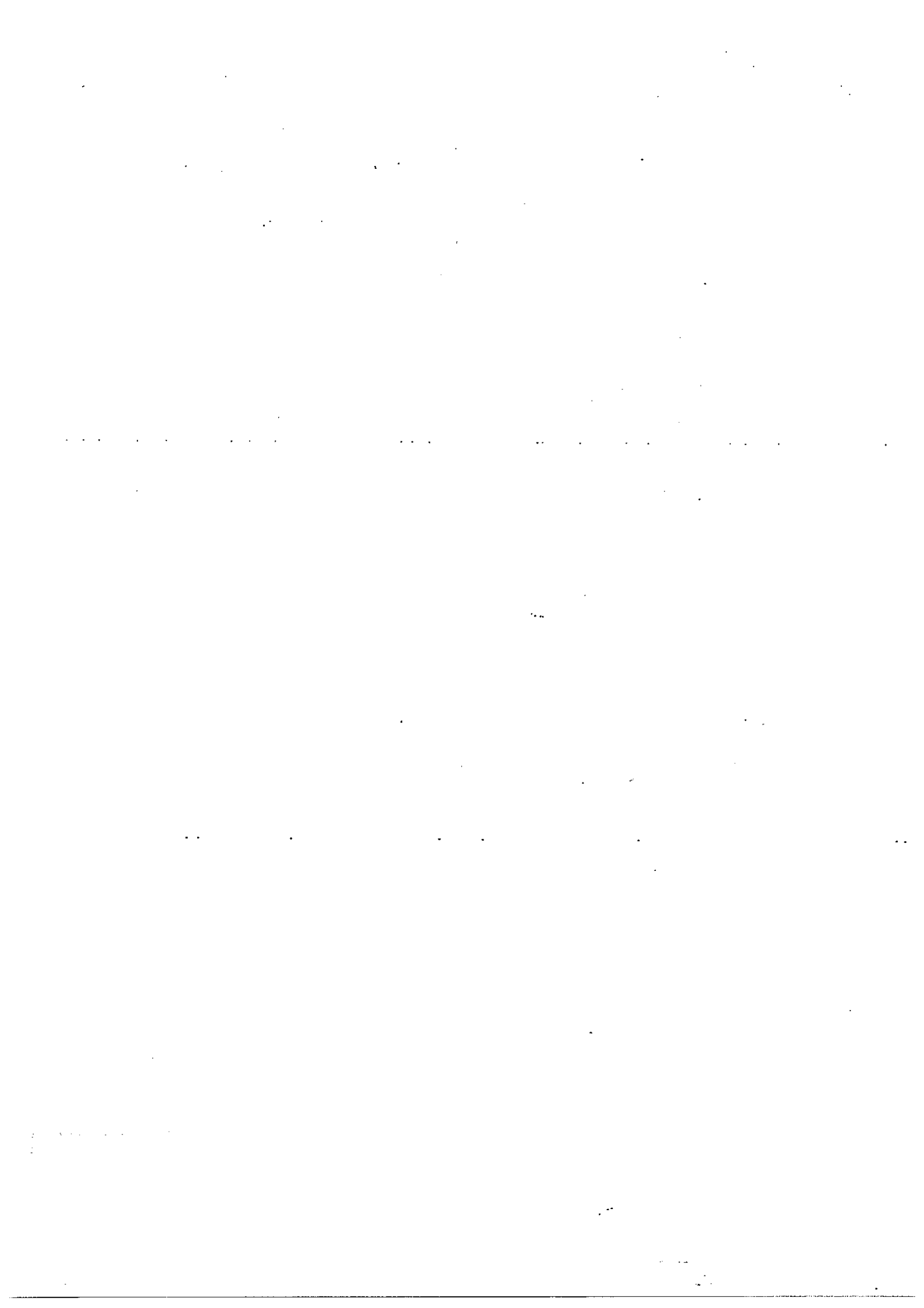
At 11.45 a.m., Tap X is turned on. Tap Y is turned on 12 minutes later. At what time will the heights of the water level in both tanks be the same?

Tap Y

90 cm

70 cm

Tap X

40 cm

30 cm

50 cm
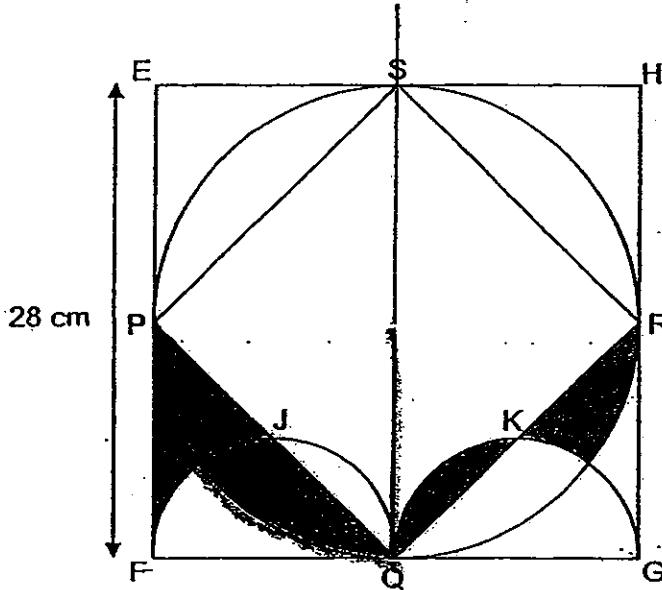
80 cm

Tank J

Tank K
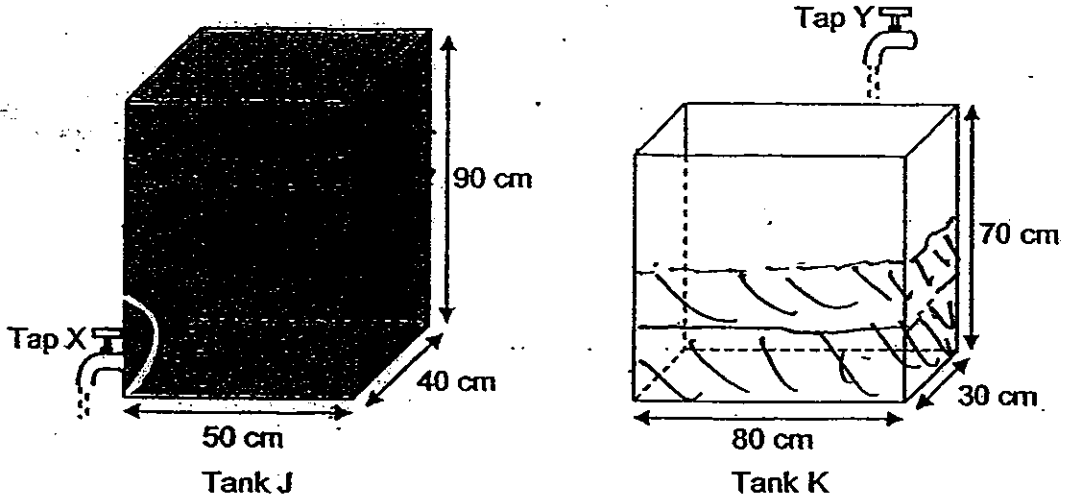
Ans : _____ [4]

15. The figure below is made up of Squares EFGH and PQRS, a circle and two identical semicircles. J and K are the midpoints of PQ and RQ respectively. P, Q, R and S are the midpoints of EF, FG, GH and EH respectively.

Use the calculator value of π to find the total area of the shaded parts, correct to 2 decimal places.
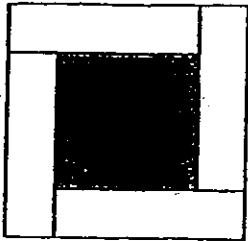
28 cm

Ans : _____ [4]

SCORE

16. **(a)** The figure below is made up of 4 identical rectangles and a shaded square. The perimeter of each rectangle is 84.6 cm. The total area of the 4 rectangles is 646.87 cm^2 more than the area of the shaded square. What is the area of the shaded square?

(b) In the figure below, Square WXYZ overlaps Square ABCD such that its corner W is placed exactly at the center of Square ABCD. The length of CE is 6.5 cm and the length of CF is 4.5 cm. What is the area of the shaded part?
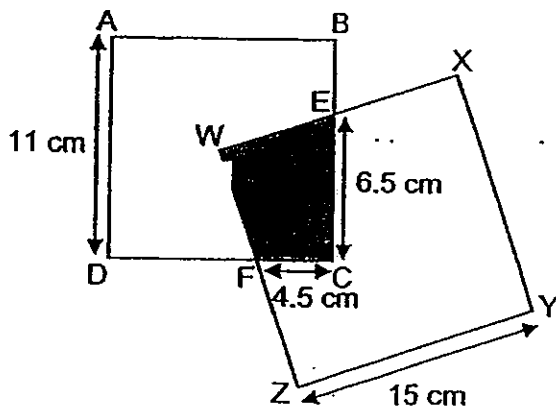
Ans : (a) _____ [3]

(b) _____ [2]

SCORE

17. At first, the ratio of the number of red buttons to the number of blue buttons in a box was 4 : 1. There were 288 more red buttons than blue buttons.

Then, Halim added some red and blue buttons into the box. The number of red buttons added was twice the number of blue buttons added. As a result, the ratio of the number of red buttons to the number of blue buttons in the box became 5 : 2.

(a) How many red buttons did Halim add into the box?

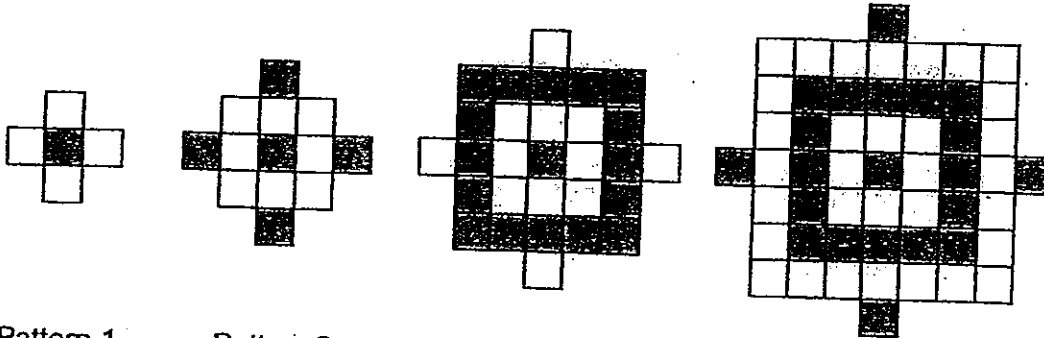(b) How many buttons were there in the box in the end?

Ans : (a) _____ [2]

(b) _____ [2]

SCORE

18. Chandra used some white and grey tiles to form some patterns. The first four patterns are shown below.

Pattern 1   Pattern 2   Pattern 3   Pattern 4

The table below shows the number of grey and white tiles used for each pattern.

Pattern Number	Number of grey tiles	Number of white tiles	Total number of tiles
1		4	5
2		8	13
3		16	29
4		26	6?
5	39	36	8?
6	55	72	12?
7	7?		76	123

(a) Complete the table above for Pattern 7. [1]

(b) How many white tiles were used to form Pattern 30?

(c) How many tiles were used to form Pattern 86?

Ans : (b) _____ [2]

(c) _____ [2]

Pei Chun Public School
Preliminary Examination, 2012
Primary 6, Mathematics
Paper 1, Booklet A & B

1)	1	4)	4	7)	4	10)	2	13)	3
2)	1	5)	4	8)	2	11)	2	14)	3
3)	3	6)	1	9)	4	12)	2	15)	1

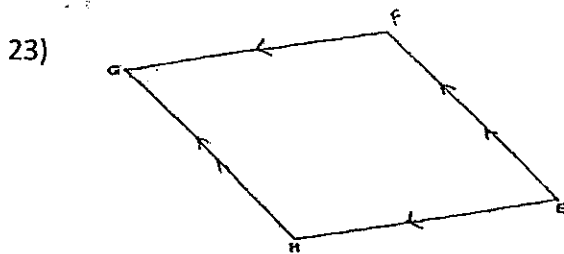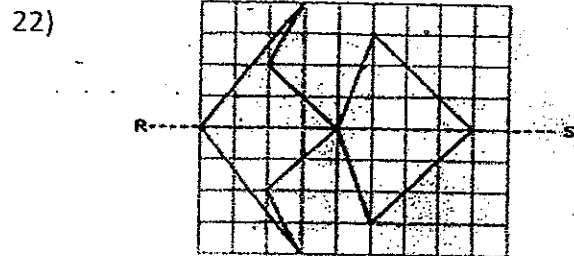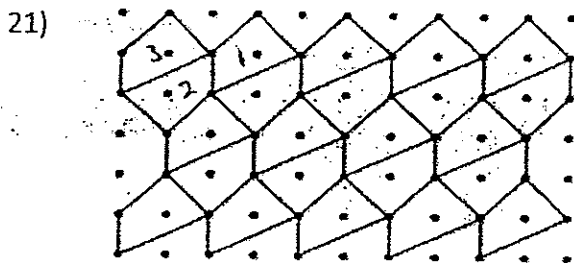16) $\dfrac{7}{9}$ 17) $4\dfrac{3}{4}$ 18) 25   19) $1\dfrac{11}{20}$ 20) $\dfrac{2}{12}$

21)

22)

23)

24)   1st Hr = $5
Hr left = 2 - 1 = 1
Grp of $2 = 1 ÷ ½ 2
Cost = 2 x 2 = $4
Paid = $4 + $5 = **$9**

25)   Area of Shaded Part = ½ x 9 x 11 = **49.5**

26)   Perimeter unit = 3 + 3 + 2 + 2 = 10
10unit = 40cm   1unit = 40 ÷ 10 = 4
Length = 4 x 3 = 12   Breath = 4 x 2 = 12
Area = 12 x 8 = **96**

27)   4units = 68   Remainder (9units) = 68 x 9 = 153
3units = 153   4units = 153 ÷ 3 x 4 = **204**

28)   Difference = 45 - 25 = 20%   20% = 96m³
Volume of tank = 96 x 5 = 480cm³   Height = 480 ÷ 40 = **12**

29)   Diameter of B = 7 x 2 = 14   Diameter of A = 10 x 2 = 20
Perimeter = (¼ x π x 14) + (¼ x π x 14) + (¼ x 20 x π) + 7 + 7 + (10 - 7) + (10 - 7)
= 3.5π + 3.5π + 5π + 20 = **(12π + 20)**

30)   1unit = 180 - 70 - 70 = **40**

Paper 2

1a) **Bottom Right Square**   1b) **South**

2) Cookies given to 4 children = 12h - 7h - 3 = 5h - 3

Cookies each child receives = $\dfrac{5h - 3}{4}$

3) $\angle CBD = 55°$

$\angle BDF = 70° - 20° = 50°$

$\angle EBD = 50°$ (alt. $\angle$ are equal)

$\angle BDC = 180 - 55° - 55° = 70°$

$\angle ABD = 60°$

$\angle ABE = 60° - 50° = \underline{10°}$

4) Girls wearing caps = $\dfrac{4}{7}$ x $\dfrac{1}{3}$ = $\dfrac{4}{21}$

Boys wearing caps = $\dfrac{3}{7}$ x $\dfrac{3}{5}$ = $\dfrac{9}{35}$

Total no. of boys = 1 - $\dfrac{4}{7}$ = $\dfrac{3}{7}$

Fraction of children = $\dfrac{4}{21}$ + $\dfrac{9}{35}$

= $\dfrac{47}{105}$

5) 2 units of blue = 4 units of Green

$\div 2$

1 unit of blue = 2 units of Green

x 3

3 units of blue = 6 units of Green

Ali Blue : Ali Green

6 : 5

6) 20% of savings = $\dfrac{14}{100}$ x 1200 = $168

Monthly Salary = 1200 + 840 = **$2040**

Savings per month = 168 x 5 = $840

7) Peter's Average = (83 + 74) ÷ 2 = 78.5
Difference = 78.5 - 76.5 = 2

Peter's new Average = 3 + 78.5 = 81.5
Sue's test 3 = (76.5 x 3) - 78 - 75 = 76.5

Sue's Average = (78 + 75) ÷ 2 = 76.5
An increase of = 5 - 2 = 3

Peter's test 3 = (81.5 x 3) - 83 - 74 = 87.5
Difference = 87.5 - 76.5 = **11**

8) 6th day = 1 - $\dfrac{3}{8}$ = $\dfrac{5}{8}$ 1st day = $\dfrac{5}{8}$ ÷ 6 = $\dfrac{5}{48}$ 9th day = $\dfrac{5}{48}$ x 9 = $\dfrac{15}{16}$

Remaining milk = 1 - $\dfrac{15}{16}$ = $\dfrac{1}{16}$ $\dfrac{1}{16}$ of milk = 0.92litres

Milk at first = 0.92 x 16 = **14.72 litres**

9) Cost of tables = 3 x 36 = 108
Difference = 140 - 108 = 32
Total = 19 x 108 + 19 x 140 = **$4712**

Cost of chairs = 28 x 5 = 140
No. of groups = 608 ÷ 32 = 19

10)   a) Banana muffins sold = $\frac{17}{100} \times 900 = \underline{\mathbf{153}}$

     b) Cheese & Vanilla = 50% - 17% = 33%

     220units = 33% of pie chart

     Cheese muffins sold = $\frac{33}{220} \times 120 = \underline{\mathbf{18\%}}$

11)   Percentage of apples, orange & pear = 100% - 20% = 80%

     Total fruits = 150 + 190 + 80 = 420   80% = 420

     Durians = $\frac{420}{80} \times 20 = \underline{\mathbf{105\ durians}}$

12)   1bag + 93beads = 1box

     42 ÷ 3 = 14bags

     42bags = 1302

     1box = 31 + 93 = 124beads

     42bags + 93 x 42 = 3906 = 42 boxes

     Ahmad has = 14bags + 3906 ÷ 3 = 1302 = 56bags

     1bag = 1302 ÷ 42 = 31beads

     Beads in total = 31 x 56 + 124 x 42 = $\underline{\mathbf{6944}}$

13)   Jack (45min) = 45 ÷ 60 x 90 = 67.5km

     Mike (more) = 60 + 67.5 = 127.5km

     Time Mike travelled = 127.5 ÷ 30 = 4.25

     Time taken for Mike to reach X = 4.25h - 0.5h = $3\frac{3}{4}$h

     Mike (30min) = 30 ÷ 60 x 120 = 60km

     Difference in speed = 120 - 90 = 30

     Time taken for Mike to travel to A = $3\frac{3}{4} \times 2 = 7\frac{1}{2}$h

     Time Jack left Town A = 2:45pm - 30mins - 1hr - 6hr - 5min - 40min = $\underline{\mathbf{6:30am}}$

14)   Volume of tank J = 50 x 40 x 90 = 180000

     Volume of H_2O in 12min = 4500 x 12 = 54000

     Remaining = 180000 - 54000 = 126000

     Remaining Height = (126000 ÷ 50) ÷ 40 = 63

     Decrease in height in tank J = 4500 ÷ 50x40 = 2.25cm per min

     Increase in height in tank K = 3000 ÷ 80x30 = 1.25cm

     Total water level per min = 2.25cm + 1.25cm = 3.5cm

     63 ÷ 3.5 = 18min

     Time that water level heights will be the same = 11:45am + 12mins + 18mins = $\underline{\mathbf{12:15pm}}$

15)   Area A = (Area of quadrant - area of triangle) ÷ 4 = (π x 14 x 14 x ¼ - ½ x 14 x 14) = 55.94cm²

     Area of triangle = ½ x 14 x 7 = 49cm²

     Total area of shaded parts = 55.94 + 49 = 104.94cm²

16a)   Perimeter = L + B + L + B = 84.6cm

     L + B = 84.6 ÷ 2 = 42.3

     Area of 4 rectangle and 1 square = 42.3 x 42.3 = 1789.29cm²

     4 rectangles + square = 1789.29cm²

     4 rectangles = square + 646.87cm²

     square + 646.87 + square = 1789.29cm²

     2 squares = 1789.29 - 646.87 = 1142.42

     Area of shaded square = 1142.42 ÷ 2 = $\underline{\mathbf{571.21cm^2}}$

16b)   Area of square = 5.5 x 5x5 = $\underline{\mathbf{30.25cm^2}}$

17)　　3units = 288　　　　　　　1unit = 288 ÷ 3 = 96　　　　　　　Red = 96 x 4 = 384
　　　Blue = 288 ÷ 3 = 96
　　　　　　　R : B
　　　　　　　384 : 96
　　　　　　+2unit : +1unit
　　　　　　―――――――――
　　　　　(x2) 5 : 2 (x5)
　　　　　　　768 : 480
　　　　　+4 units : +5 units
　　　　　―――――――――
　　　　　　　10 : 10
　　　768 + 4 units = 480 + 5 units
　　　768 - 480 = 5 units - 4 units
　　　　　　1 unit = 288

a)　　Red buttons added = 288 x 2 = **576**
　　　Red buttons in the end = 384 + 576 = 960
　　　Blue buttons in the end = 96 + 288 = 384
b)　　Total buttons = 384 + 960 = **1344**

18a)　**97**
18b)　White tiles used $(n^2 \times 2) = 30^2 \times 2 =$ **1800**
18c)　Tiles used $(n + n - 1)^2 + 4 = (86 + (86-1)^2 + 4 =$ **29245**