SEMESTRAL EXAMINATION 1 – 2016
PRIMARY 6

MATHEMATICS

Paper 1

Total Time for Paper 1: 50 minutes

Date : 10 May 2016

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. Simplify $12x + 13|+ 3x|- 7$.

   (1) $15x - 20$

   (2) $15x + 20$

   (3) $15x - 6$

   (4) $15x + 6$

2. Round off 728 596 to the nearest thousand.

   (1) 727 000

   (2) 728 000

   (3) 729 000

   (4) 730 000

3. Given that $16 \times 208 = 3\,328$, find 16×0.208

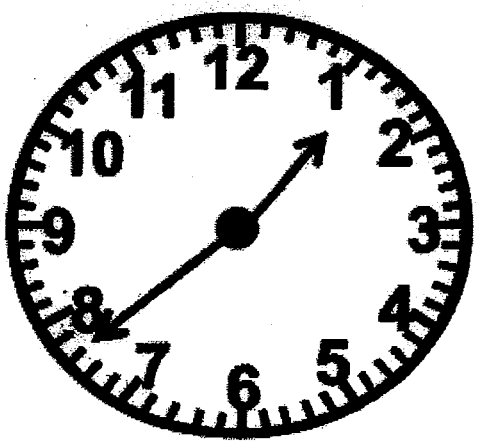
   (1) 3.328

   (2) 33.28

   (3) 332.8

   (4) 33.280

4. The clock below shows the time now.



How long will it take for the clock to show 2.05 p.m.?

(1) 25 min

(2) 27 min

(3) 30 min

(4) 33 min

5. Find the value of $\frac{5}{6} \div \frac{1}{12}$

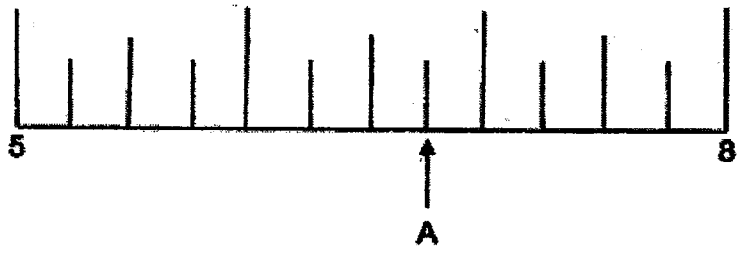
(1) 8

(2) 2

(3) 10

(4) 12

6. In the number line below, what is the number indicated by the letter 'A'?



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

(2) $6\frac{3}{4}$

(3) $7\frac{1}{4}$

(4) $7\frac{1}{2}$

7. What is the missing number in the box?

$$\frac{20}{30} = \frac{30}{\boxed{?}}$$

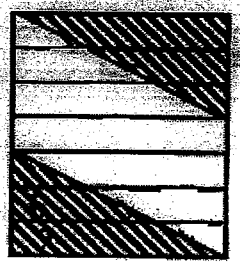
(1) 15

(2) 30

(3) 45

(4) 60

8. What fraction of the entire figure below is unshaded?



(1) $\frac{3}{14}$

(2) $\frac{3}{7}$

(3) $\frac{11}{14}$

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

9. There were 48 rotten eggs in the carton. This was 75% of the eggs in the carton.
What was the total number of eggs in the carton?

(1) 12

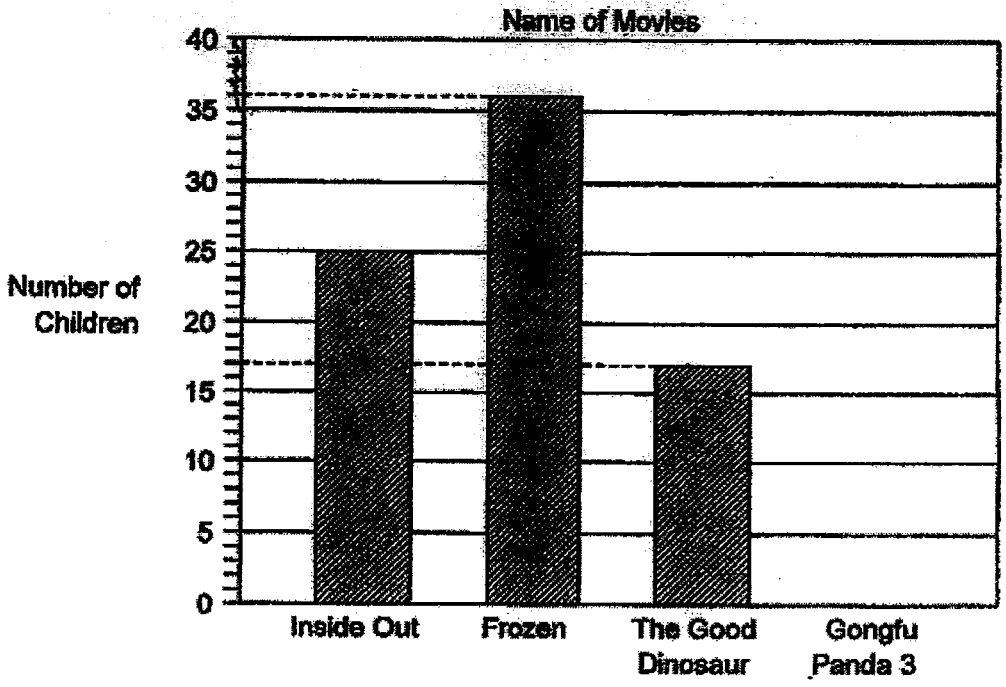
(2) 36

(3) 60

(4) 64

10. The bar graph below shows the favourite movies of a group of children.

The data for 'Gongfu Panda 3' is not shown below.



If $\frac{3}{4}$ of the total number of children like 'Inside Out', 'Frozen' and 'The Good Dinosaur', how many children like 'Gongfu Panda 3'?

(1) 26

(2) 78

(3) 104

(4) 182

11. 40% of Alvin's savings is equal to 25% of Theodore's savings. What is the ratio of Alvin's savings to Theodore's savings?

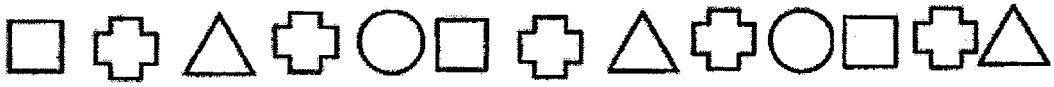
(1) 8 : 5

(2) 5 : 8

(3) 2 : 1

(4) 1 : 2

12. Study the following pattern. What is the 57th shape?



(1) 

(2) 

(3) 

(4) 

13. Flour, raisins and eggs are mixed in the ratio of 6 : 3 : 1 to make cupcakes. Every 100g of the mixture can make 12 cupcakes. Mrs Loo used 480g of flour in her mixture, how many cupcakes did she make?

(1) 40

(2) 48

(3) 80

(4) 96

14. Both Hansel and Gretel are given the same amount of pocket money every month. Every month, Gretel saves $\frac{3}{4}$ of her pocket money while Hansel saves $\frac{1}{2}$ of what Gretel saves. What fraction of their total pocket money did they spend every month?

(1) $\frac{1}{8}$

(2) $\frac{5}{16}$

(3) $\frac{7}{16}$

(4) $\frac{9}{16}$

15. Machine A and Machine B could together produce 150 similar loaves of bread in 6 minutes. Every minute, Machine A produced 15 more loaves of bread than Machine B. How long would it take Machine A to produce 400 loaves of bread by itself?

(1) 16

(2) 20

(3) 62

(4) 80

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]

Do not write in this space

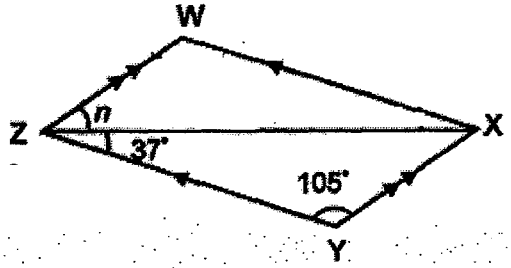
16. 14 identical cakes are to be shared equally by a group of children. Each child receives $\frac{2}{7}$ of a cake. How many children are there in the group?

Ans : _____

17. Ali is w years old. He is five years older than June.
What is their total age in terms of w?

Ans : _____ years

18. Figure WXYZ is a parallelogram (not drawn to scale). Find $\angle n$.



Ans: _____ °

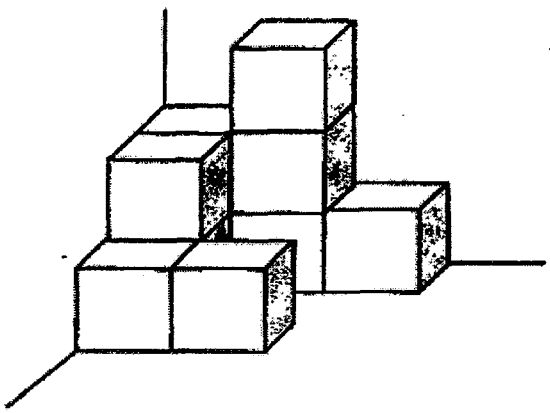
Subtotal	/ 3

19. A motorist can travel 42 km in 30 minutes. Find his speed.

Do not write in this space

Ans : _____km/h

20. The solid below is formed by gluing together some identical unit cubes. What is the least possible number of unit cubes needed to make the solid into a bigger cube?



Ans : _____cubes

21. Ken had $\frac{7}{8}\ell$ of orange juice. He drank $\frac{1}{9}$ of it. How much orange juice had he left?
(Leave your answer as a fraction in its simplest form)

Ans : _____ℓ

Subtotal	/3

22. Miss Nelson bought a bag at $160. The usual price of the bag was $250. Find the percentage discount given to her.

Do not write in this space

Ans : _____%

23. Tom and Dick shared some cards. If the number of Tom's cards is $\frac{5}{6}$ of the total number of their cards, what is the ratio of the number of Dick's cards to the number of Tom's cards?

Ans _____ : _____

24. Mrs Twinkle drove from Town P to Town Q and back to Town P in $1\frac{1}{3}$ h. She travelled at a speed of 90 km/h. What was the distance between Town P and Town Q?

Ans: _____km

25. Fann queued just in front of Zoe to take part in the "Singapore Idol 2016" Contest. The sum of their queue numbers is 4691. What is Fann's queue number?

Ans : _____

Subtotal	/4

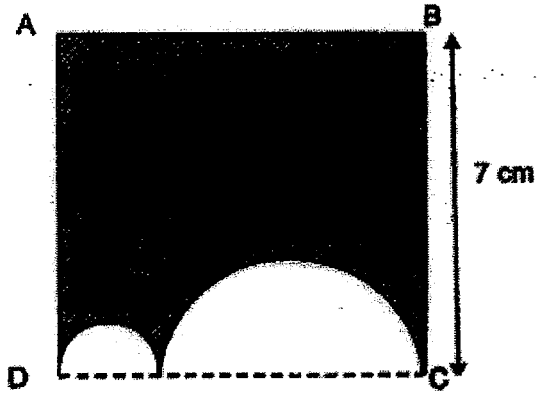
Questions 26 to 30 carry 2 marks each. Show your working clearly in the space provided for each question and write your answers in the spaces provided. For each questions which require units, give your answers in the units stated. [10 marks]

Do not write in this space

26. **5 shirts and 2 jackets cost $408.**
2 shirts and 1 jacket cost $174.
What is the cost of 1 shirt?

Ans :$ _____

27. **In the figure below, two semi-circles were removed from a square of sides 7 cm. Find the perimeter of the shaded part. (Take $\pi = \frac{22}{7}$)**



Ans : _____ cm

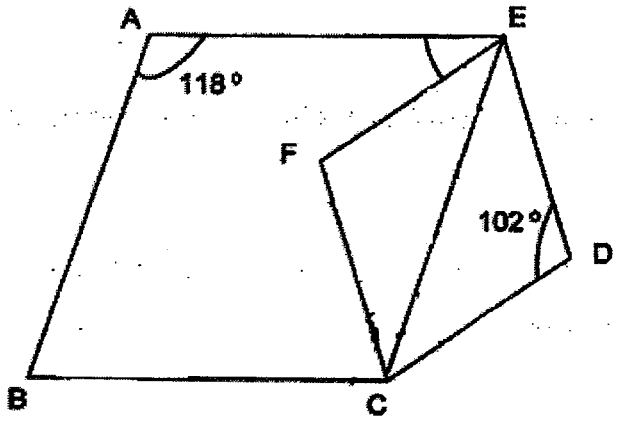
Subtotal	/4

28. A fitness club has a membership of 84 people. The number of female to male members was 4 : 3. When 66 new members joined the fitness club, the ratio of female to male members became 2 : 3.
How many of the new members were males?

Do not write in this space

Ans: _____

29. In the figure below, not drawn to scale, ABCE and CDEF are rhombuses. Find ∠AEF.

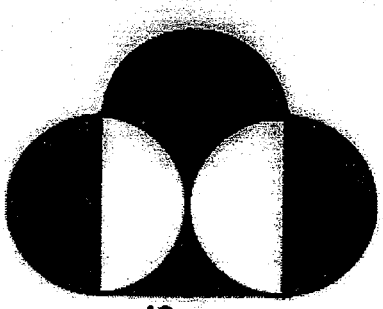


Ans: _____

Subtotal	/4

30. The figure below is made up of 5 identical semicircles overlapping a square. Find the total area of the shaded parts.
(Leave your answer in terms of π)

Do not write in this space



Ans: _____ cm^2

END OF PAPER 1

Subtotal	/2

SEMESTRAL EXAMINATION 1 – 2016
PRIMARY 6

MATHEMATICS

Paper 2

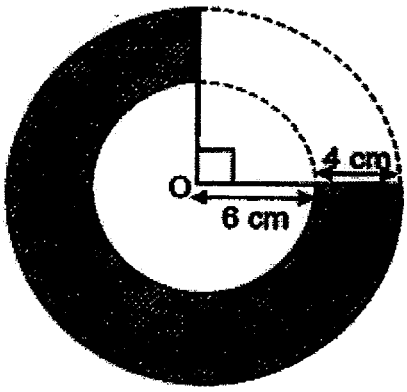
Date : 10 May 2016

Paper 2 (60 marks)

Questions 1 to 5 carry 2 marks each. Show your workings clearly in the space below it and write your answer in the space provided. Give your answers in the units stated.

Do not write in this space

1. The figure below is made up of 2 circles with centre O.
Find the area of the shaded part. Use the calculator value of π and give your answer correct to 2 decimal places.



Ans: _____ cm^2

2. The figures below are made of black and white squares.

Figure Number	Figure	No. of white squares	Total number of squares
1		2	3
2		4	5
3		6	7

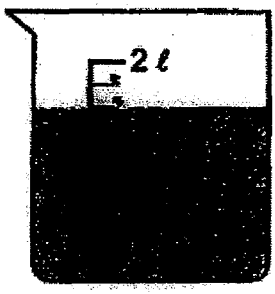
(a) How many white squares are there in Figure n?
(b) What is the total number of squares in Figure n?

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

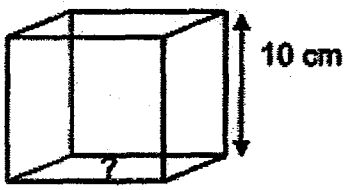
Subtotal	/ 4

Do not write in this space

3. The beaker below shows the amount of water John had at first. He poured all the water from the beaker into an empty container to fill the container to the brim.
What is the base area of the container given that its height is 10 cm?



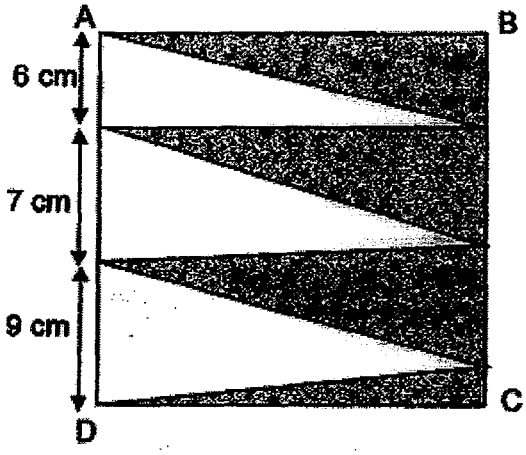
Beaker



Container

Ans:_____ cm^2

4. The figure below, not drawn to scale, shows a square ABCD.
Find the total area of the shaded parts.



Ans:_____ cm^2

Subtotal	/4

5. The ratio of Min Lee's stickers to Jane's stickers was 7 : 4 at first. If Min Lee gives $\frac{1}{3}$ of her stickers to Jane, what will be the ratio of Min Lee's stickers to Jane's stickers in the end?

Do not write in this space

Ans: _____ : _____

Subtotal	f 2

For each question from 6 to 18, **show your workings clearly in the space below** it and **write your answer in the space provided**. The number of marks available is shown in brackets [ ] at the end of each question or part-question.
Remember to include the units wherever possible.

Do not write in this space

6. Riley made $\frac{2}{5}$ as many paper aeroplanes as paper balls. After his brother gave him another 45 paper aeroplanes and 45 paper balls, the number of paper aeroplanes to paper balls became 7:11. What was the total number of paper aeroplanes and paper balls at first?

Ans: _____ [3]

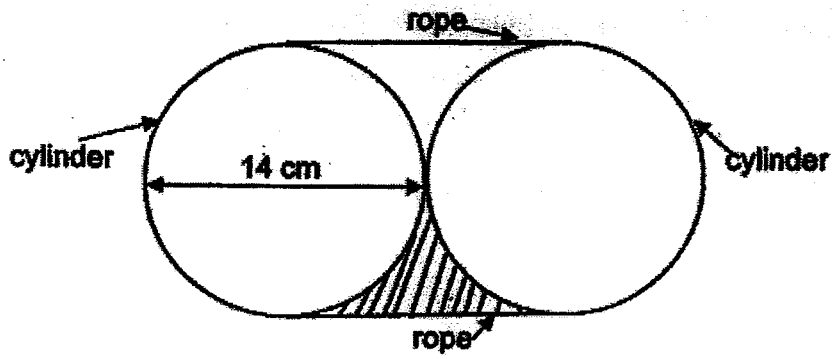
7. Three boys, Alex, Ben and Charlie shared the cost of a toy. The ratio of Alex's share to the total of Ben's and Charlie's share was 1 : 3. The ratio of Ben's share to the total of Alex's and Charlie's share was 1 : 5. Charlie paid $50 more than Ben. Find the cost of the toy.

Ans: _____ [3]

Subtotal	/6

8. A rope was used to wind around 2 identical cylinders. The figure below shows the top view of the 2 cylinders held tightly by the rope. Each cylinder has a diameter of 14 cm.
Find the area of the shaded part. (Take $\pi = 3.14$)

Do not write in this space



Top-view

Ans: _____ [3]

9. In a basket, $\frac{5}{9}$ of the fruits are apples and the rest are oranges.

$\frac{1}{3}$ of the apples are red apples while the rest are green apples.

If there are 130 green apples, how many oranges are there in the basket?

Do not write in this space

Ans: _____ [3]

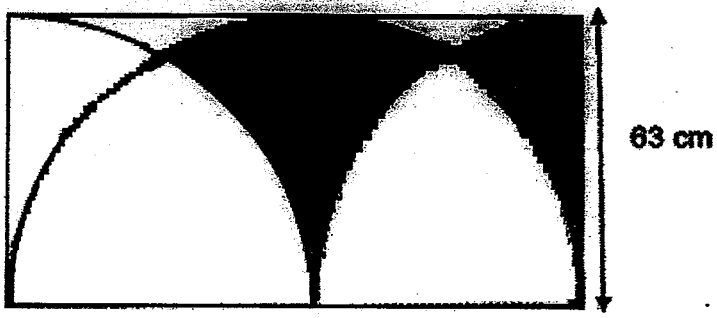
Do not write in this space

10. At 7 a.m., a car started travelling from Town A towards Town B at an average speed of 64 km/h. At 10 a.m., a van started travelling from Town A towards Town B at an average speed of 90 km/h. By then, the car had already covered $\frac{2}{5}$ of the entire journey. At what time did the van reach Town B? (Leave your answer in 12-hour clock.)

Ans:_____ [3]

11. The figure shows two identical quarter circles and a semicircle in a rectangle.

Find the total perimeter of the shaded parts. (Take $\pi = \frac{22}{7}$)



Do not write in this space

Ans: _____ [3]

12. In Factory A, the ratio of the number of male workers to the number of female workers is 3 : 2. In Factory B, the ratio of the male workers to the number of the female workers is 1 : 2. Factory B has three times as many workers as Factory A. If there are 1035 workers in Factory B, how many more female workers are there in Factory B than that in Factory A?

Do not write in this space

Ans: _____ [4]

13. Belle had 450 coins in her collection. 20% were from China while the rest were from Malaysia.

(a) How many coins from China must her father give her to increase the number of coins from China in her collection to 40%?

(b) Find the percentage increase in the number of coins from China. (Give your answer correct to 2 decimal places.)

Do not write in this space

Ans : (a) _____ [2m]

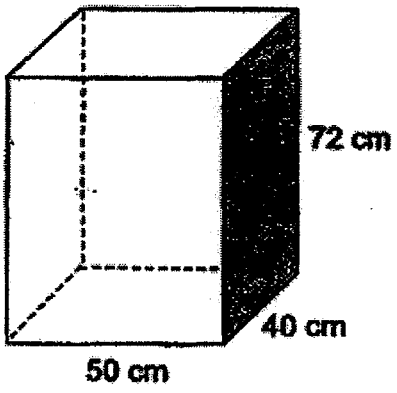
(b) _____ [2m]

14. Tank A is filled with water to its brim while Tank B is empty. Water is then poured from Tank A to Tank B such that the volume of water in Tank A is twice as much as the volume of water in Tank B.

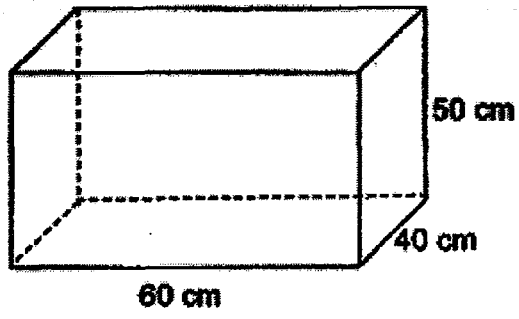
Do not write in this space

(a) What is the volume of water left in Tank A? Give your answer in litres.

(b) Find the height of the water in Tank B.



Tank A



Tank B

Ans :(a) _____[2m]

(b) _____[2m]

15. Car X and Car Y left Brighton Town at the same time, travelling in the opposite direction. Car X headed for Carefree Town while Car Y headed for Arise Town.

The speed of Car Y was 24 km/h faster than Car X. After 30 mins, Car X had completed $\frac{2}{3}$ of its journey while Car Y had completed $\frac{1}{2}$ of its journey. The two cars were then 92 km apart.

a) Calculate the speed of Car X.

b) How far was Car Y from Arise Town when Car X reached its destination?

Do not write in this space

Ans :(a) _____ [2m].

(b) _____ [3m]

16. A box contained red, blue and green pens in the ratio 3 : 2 : 1 respectively. $\frac{3}{4}$ of the red pens were taken out and replaced by the same number of new green pens.
Then 180 blue pens were taken out and replaced by the same number of new green pens.
In the end, the ratio of the number of red pens to blue pens to green pens became 1 : 2 : 5.

Do not write in this space

(a) How many red pens were there at first?

(b) What fraction of the total pens was green pens in the end?
(Leave your answer in the simplest form)

Ans :(a) _____ [3m]

(b) _____ [2m]

17. Tom was asked to guess a fraction. The sum of $\frac{1}{2}$ of the numerator and $\frac{1}{3}$ of its denominator is 30. If Tom subtracts 36 from its denominator, the fraction becomes $\frac{1}{3}$. What is the fraction that Tom was asked to guess? (Leave your answer in the simplest form)

Do not write in this space

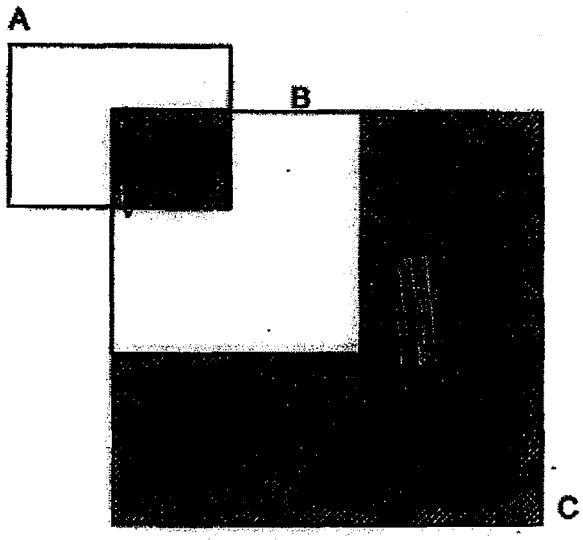
Ans: _____ [5]

18. The figure below is made up of 3 overlapping rectangles A, B and C. The ratio of area A to that of B to that of C is 1 : 2 : 5.

$\frac{1}{6}$ of B is shaded and $\frac{2}{3}$ of C is shaded.

(a) What fraction of the figure is shaded?
(Leave your answer in the simplest form)

(b) If the total area of the unshaded parts is 266 cm^2, what is area of the figure?



Do not write in this space

Ans :(a) _____ [3m]

(b) _____ [2m]

End of Paper 2

Remember to check your work.

ANSWER SHEET

SCHOOL : NAN HUA PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : MATH
TERM : SA1

CONTACT :

PAPER 1 BOOKLET A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
4	3	1	2	3	2	3	4	4	1

Q 11	Q12	Q13	Q14	Q15
2	2	4	3	2

PAPER 1 BOOKLET B

Q16) $14 \div \frac{2}{7} = 49$

Ans: 49

Q17) Ali → w
June → w – 5
Total = 2w – 5

Ans: 2w - 5

Q18) 180° – 105° – 37° = 38°

Ans: 38°

Q19) 42 x 2 = 84

Ans 84 km/h

Q20) 3 x 3 x 3 = 27
27 – 10 = 17

Ans: 17 cubes

Q21) $1 - \frac{1}{9} = \frac{8}{9}$

$\frac{8}{9} \times \frac{7}{8} = \frac{7}{9}$

Ans: $\frac{7}{9}\ell$

Q22) $250 – $160 = $90

$\frac{90}{250}$ x 100% = 36%

Ans: 36%

Q23) Tom → 5 units
Dick → 1 unit
Hence, 1 : 5

Ans: 1 : 5

Q24) P → Q → P = $1\frac{1}{3}h = \frac{4}{3}h$

$\frac{4}{3} \div 2 = \frac{2}{3}h$

Distance → 90 x $\frac{2}{3}$ = 60 km

Ans: 60 km

Q25) 4691 – 1 = 4690
4690 ÷ 2 = 2345

Ans: 2345

Q26) 4S + 2J → $174 x 2 = $348
1S → $408 – $348 = $60

Ans: $60

Q27) $\frac{1}{2}$ x $\frac{22}{7}$ x 7 cm = 11 cm
Perimeter → 11 cm + 7 cm + 7 cm + 7 cm = 32 cm

Ans: 32 cm

Q28) 7 units → 84
1 unit → 12
3 units → 36 (then male members)
84 + 66 = 150
5 units → 150
1 unit → 30
3 units → 90 (now male members)
New male members → 90 – 36 = 54

Ans: 54

Q29) AEC → 180° – 118° = 62°
FEC → (180° – 102°) ÷ 2 = 39°
AEF → 62° – 39° = 23°

Ans: 23°

Q30) Area of square → 12 cm x 12 cm = 144 cm^2

Area of semi-circle → $\frac{1}{2}$ x π x 6 x 6 = 18π

Total area (144 + 18π) cm^2 (144 + 18π) cm^2

Ans: (144 + 18π) cm^2

PAPER 2

Q1) Area of big circle → π x 10 cm x 10 cm = 100π cm^2

Area of small circle → π x 6 cm x 6 cm = 36π cm²
Difference → 100π cm² – 36π cm² = 64π cm²
Quarter of big circle → 100π cm² ÷ 4 = 25π cm²
Quarter of small circle → 36π cm² ÷ 4 = 9π cm²
Difference → 25π cm² – 9π cm² = 16π cm²
64π cm² – 16π cm² = 48π cm² ≈ 150.80 cm²

Ans: 150.80 cm²

Q2) (a) 2n
(b) 2n + 1

Ans: (a) 2n
(b) 2n + 1

Q3) Beaker → 1600 ml = 1600 cm³
Base area → 1600 ÷ 10 = 160 cm²
Ans: 160 cm²

Q4) 6 + 7 + 9 = 22
Area of half a square → (22 x 22) ÷ 2 = 242

Ans : 242 cm²

Q5)

Before	After
M : J	M : J
7 : 4	14 : 19
21 : 12	

x 3

$\frac{1}{3}$ x 21 = 7 units given to Jane

Ans: 14 : 19

Q6)

Before	After
A : B	A : B
2 : 5	7 : 13
4 : 10	

x 2

Difference (Before) → 5 units – 2 units = 3 units
Difference (After) → 13 units – 7 units = 6 units
6 units → 45 + 45 = 90
1 unit → 15
Total (Before): 14 units → 210

x 2

Ans: 210

Q7)

A : (B + C) : Total	B : (A + C) : Total
1 : 3 : 4	1 : 5 : 6
3 : 9 : 12	2 : 10 : 12

x 3 x 2

A → 3 units
B → 2 units
C → 7 units
7 units – 2 units = 5 units
5 units → $50
1 unit → $10
12 units → $120

Ans: $120

Q8) Area of square → 14 cm x 14 cm = 196 cm²
Area of circle → 3.14 x 7 cm x 7 cm = 153.86 cm²
Difference → 196 cm² – 153.86 cm² = 42.14 cm²
Area of shaded part → 42.14 cm² ÷ 2 = 21.07 cm²

Ans: 21.07 cm²

Q9) A : O

x 3 (5 : 4 / 15 : 12)

Red Apples → $\frac{1}{3}$ x 15 = 5

Green Apples → 15 – 5 = 10

10 units → 130

1 unit → 13

12 units → 156 (Oranges)

Ans: 156 oranges

Q10) 7 a.m. to 10 a.m. → 3h

Distance Car covered → 64 km/h x 3h = 192 km

2 units → 192

1 unit → 96

5 units → 480 (Distance from Town A to Town B)

Time taken for Van → 480 km ÷ 90 km/h = $5\frac{1}{3}$ h = 5h 20min

Reaching time for Van → 3.20 p.m.

Ans: 3.20 p.m.

Q11) Perimeter of a quarter circle → $\frac{1}{4}$ x $\frac{22}{7}$ x 63 cm = 99 cm

99 cm x 3 = 297 cm

Total Perimeter = 297 + 63 = 360 cm

Ans: 360 cm

Q12) 3 units → 1035

1 unit → 345

2 units → 690 (Females in Factory B)

Factory A → 5 units

5 units → 345

1 unit → 69

2 units → 138 (Females in Factory A)

Difference → 690 – 138 = 552

Ans: 552 females

Q13) (a) $\frac{20}{100}$ x 450 = 90 (China coins)

450 – 90 = 360 (Malaysia Coins)

China Coins	Increase in number of China coins	Malaysia Coins	Total	Percentage (%)	Check Box
90	10	360	460	21.73	No
90	150	360	600	40	Yes

(b) $\frac{150}{90}$ x 100 = 166.67%

Ans: (a) 150
(b) 166.67%

Q14) (a) Volume A → 50 cm x 40 cm x 72 cm = 144,000 cm³
3 units → 144,000 cm³
1 unit → 48,000 cm³
2 units → 96,000 cm³ = 96 ℓ
(b) Height → 48,000 ÷ (60 x 40) = 20 cm

Ans: (a) 96 ℓ
(b) 20 cm

Q15) (a) 24 km/h x $\frac{1}{2}$ h = 12 km
92 km – 12 km = 80 km
80 km ÷ 2 = 40 km
40 km ÷ $\frac{1}{2}$ h = 80 km/h

(b) Speed of Car Y → 80 km/h + 24 km/h = 104 km/h
Total distance covered by Car Y → 104 km/h x 1 h = 104 km
Distance covered by Car Y → 104 km/h x 45 min = 78 km
Difference = 104 km – 78 km = 26 km

Ans: (a) 80 km/h
(b) 26 km

Q16) (a) Before
R : B : G
x 4 (3 : 2 : 1
12 : 8 : 4)

$\frac{3}{4}$ x 12 units = 9 units (red pens taken out)
After
R : B : G
3 : 8 : 13

In the End
R : B : G
x 3 (1 : 2 : 5
3 : 6 : 15)
Difference → 8 units – 6 units = 2 units (Blue pens)
2 units → 180
1 unit → 90
12 units → 1080 (Red pens)

(b) $\frac{15}{3+6+15} = \frac{5}{8}$

Ans: (a) 1080 red pens
(b) $\frac{5}{8}$

Q17) (a) $\frac{N}{2} + \frac{D}{3} = 30$

$\frac{3N+2D}{6} = 30$

3N + 2D = 180

$\frac{N}{D-36} = \frac{1}{3}$

3N = D – 36

D – 36 + 2D = 180

3D – 36 = 180

3D = 216

D = 72

(b) $\frac{N}{72-36} = \frac{1}{3}$

$\frac{N}{36} = \frac{1}{3}$

3N = 36

N = 12

Therefore, the fraction is $\frac{12}{72} = \frac{1}{6}$

Ans: (a) D = 72

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

Q18) (a) A : B : C

x 3 (1 : 2 : 5 / 3 : 6 : 15)

$\frac{1}{6}$ x 6 = 1 unit (Rectangle B)

$\frac{2}{3}$ x 15 = 10 units (Rectangle C)

Total parts → 2 units (Rectangle A) + 15 units (Rectangle C) = 17 units

Total shaded parts → 5 units (Rectangle B) + 5 units (Rectangle C)

→ 10 units

Hence, $\frac{10}{17}$

(b) 7 units → 266 cm²

1 unit → 38 cm²

17 units → 646 cm²

Ans: (a) $\frac{10}{17}$

(b) 646 cm²