

විශාකා විද්‍යාලය - කොළඹ 05  
Visakha Vidyalaya, Colombo 05

අධ්‍යයන පොදු සහතික පත්‍ර (සාමාන්‍ය පෙළ) විභාගය, 2022  
General Certificate of Education (Ordi. Level) Examination, 2022

ගණිතය I  
Mathematics I

1 වාර පරීක්ෂණය  
1<sup>st</sup> Term Test

පැය දෙකයි  
Two hours

11 ශ්‍රේණිය Grade -11

32

E

I

Name / Index Number : .....

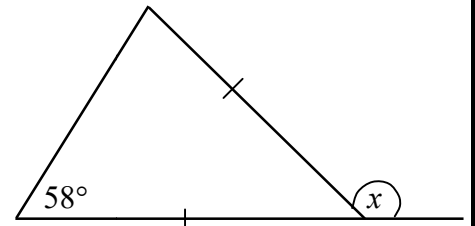
Part A

\* Answer all questions on this paper itself.

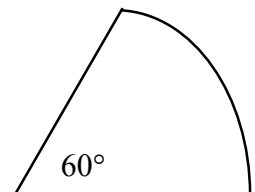
1. A person who borrowed Rs. 5000 paid Rs. 1200 as interest for two years. Find the rate of annual interest.

2. Simplify.  $\frac{x-3}{2} - \frac{x-9}{6}$

3. Find  $x$ .

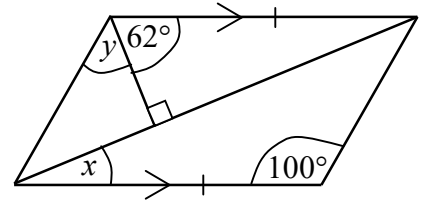


4. The arc length of the sector of a circle is 22 cm. Find the circumference of the circle.



5. Find the value of  $\frac{9}{2\sqrt{3}}$ , if  $\sqrt{3} = 1.732$ .

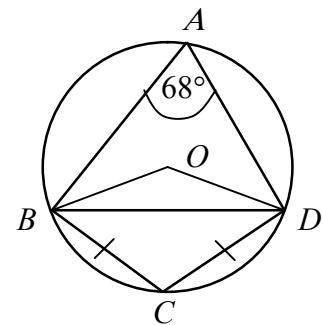
6. Find the value of  $x$  and  $y$  separately according to the data given in the diagram.



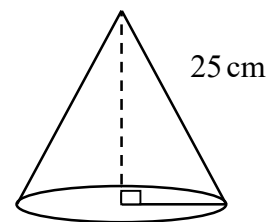
7. Solve  $x^2 - 3x - 18 = 0$

8. 15% of VAT was charged on an electricity bill of Rs. 3600. Calculate the amount to be paid.

9. The point  $A, B, C$  and  $D$  lie on the circle with centre  $O$ . Here  $BC = DC$ . Find the value of  $\widehat{CBD}$ .

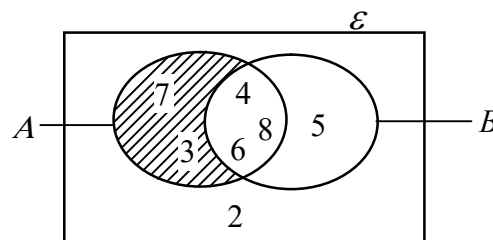


10. The curved surface area of the cone given in the figure is  $1100 \text{ cm}^2$ . Find the radius of the Base. (Radius of the cone is  $r$  slanted height is  $l$ . Curved surface area of the cone is  $\pi rl$ .  $\pi = \frac{22}{7}$ )



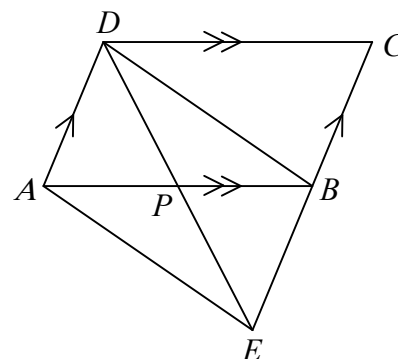
11. Simplify  $\frac{12xy^2}{5b} \div \frac{18xy}{25b}$

12. (i) Write the shaded area in set notation method.



(ii) Find  $n(A \cap B)$ .

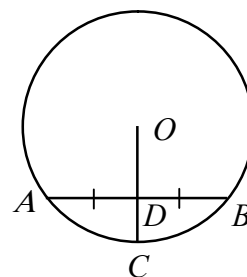
13. Name three triangles which are equal in area according to the diagram.



14. Find  $\lg 0.72$  if  $\lg 720 = 2.8573$ .

15. Find the value of  $x^3 + y^3$  when  $x + y = 8$  and  $xy = 15$ .

16. The mid point of the chord  $AB$  of the circle with centre  $O$  is  $D$ . The radius of the circle is 10 cm.  $CD = 2$  cm Find the length of chord  $AB$ .



17. A vehicle travels at a speed of  $72 \text{ km h}^{-1}$ . Find the distance travelled in 25 minutes.

18. Put a '✓' against the true statement and put a '×' against the false statement.

(i) In a parallelogram the angle at a vertex is bisected by the diagonal.

(ii) Area of the parallelograms on the same base and between the same pair of parallel lines are equal in area.

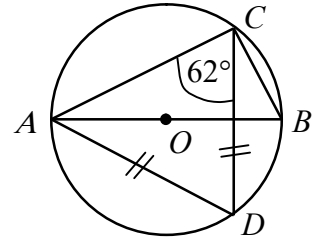
(iii) The diagonals of a rectangle are bisected perpendicularly.

19. 12, 18, 15,  $x$ , 19, 20, 16, 14 the mean of this data is 17. Find the value of  $x$ .

20. The points  $A$ ,  $B$ ,  $C$  and  $D$  lie on the circle with centre  $O$ .

$AB$  is a diameter. Here  $AD = CD$  and  $\angle ACD = 62^\circ$ .

(i) Find the value of  $\angle CBA$ .



(ii) Find the value of  $\angle BAD$ .

21. Find the value.

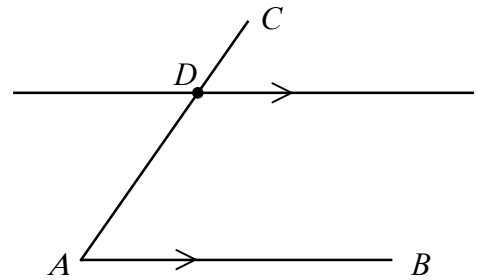
$$(0.125)^{-2/3}$$

22. Write the equation of the straight line which is parallel to the straight line  $2y - 4x = 5$  and passes through the point  $(0, -6)$ .

23. There are ten identical cards numbered from 0 to 9. Find the probability that the number of the drawn card is a prime number.

24. Find the least common multiple of the algebraic terms  $5x^2y$ ,  $15x$ ,  $9y^2$ .

25. Mark the point  $P$  which is equidistant from  $AB$  and  $AC$  on the locus at a constant distance from  $AB$  and passes through point  $D$ . Draw a rough sketch of construction lines and mark point  $P$  on it.



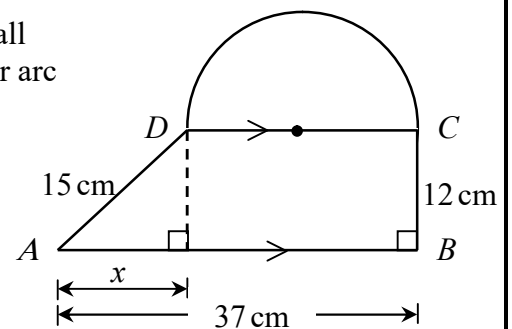
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**Part B**

\* **Answer all questions on this paper itself.**

1. A certain tea factory exported  $\frac{5}{8}$  of what was produced in a certain month and  $\frac{1}{6}$  was issued to the local wholesale market.
- (i) What fraction of the total production that exported and issued to local wholesale market ?
- (ii)  $\frac{1}{4}$  of the remaining amount was distributed among factory workers. What fraction of the total stock that distributed ?
- (iii) Finally the remaining quantity was distributed to the shop in the factory premises. If that given quantity was 600 kg, find the amount of tea exported.
- (iv) If the 1 kg of tea sold at Rs. 850 in the local market. Find the total amount of money from the sale.

2. The figure shows a piece of fabric which was cut to create a wall decoration. It consists of a trapezium  $ABCD$  and a semi circular arc with the diameter  $DC$ .

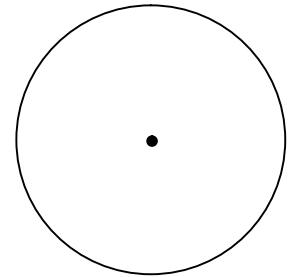


- (i) Find the value of  $x$ .
- (ii) Find the arc length of the semi circle.
- (iii) Find the perimeter of the entire piece of fabric.
- (iv) Find the area of the piece of fabric.

- (v) Flowers are fixed to the fabric, starting from  $D$  to  $C$  along the semi circular arc. Such that the gap between two flowers as 4 cm. Find the number of flowers needed.

3. The four team games, cricket, soccer, rugby and basketball are played between two clubs at a sports club. A member who is in this club can participate only in one game.  $\frac{1}{3}$  of the total players has chosen cricket.  $\frac{4}{15}$  of the players has chosen rugby. Other two games have been chosen by the same number of players.

- (i) Find the angle of the sector which represents the number of players selected for each game and draw the pie chart.



- (ii) The number of players who selected for rugby is 24.  
Find the total number of players?

- (iii) A few months later 4 rugby players and 6 cricketers left the club. Write angles represented by the cricketers and rugby players separately for the updated data.

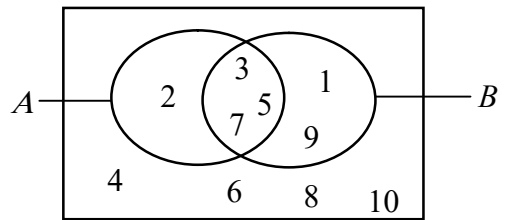
4. (a) A car travelling at a constant speed can cover a distance of 24 km in 20 minutes.

- (i) Find the constant speed of the car in  $\text{km h}^{-1}$ .

- (ii) Find the time taken by a vehicle travelling at a speed of  $54 \text{ km h}^{-1}$  to travel the distance covered in 3 hours under the above constant speed.

- (b) It is estimated that 12 people need 15 days to complete a task.
- (i) Find the amount of work done in mandays.
  
  - (ii) Find the number of people needed to complete 3 times of the above work in 30 days.
  
  - (iii) It is mentioned that a man can gain a salary of Rs. 1600 per day for the above work given in (ii). Find the total amount spent for this whole work.

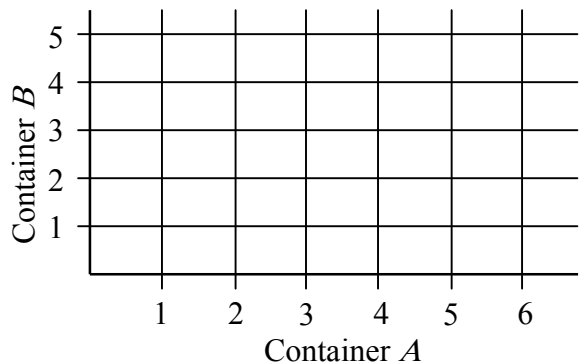
5. (a)  $\varepsilon = \{\text{Integers from 1 to 10}\}$
- (i) Write the set in description form within curly bracket.



- (ii) Write the set  $A \cap B$  in description form.
  
- (iii) Find  $n(A^c \cap B)$ .

- (b) There are six identical cards numbered 1, 2, 3, 4, 5, 6 in container A and five identical cards numbered 1, 2, 3, 4, 5 in container B. A child takes one card from each container and make a number. Here the number which is taken from A is put in the tens place and the number from the other is put to the unit place.

- (i) Represent the sample space in a grid.
- (ii) Find the probability of a number being a multiple of 11.







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අධ්‍යයන පොදු සහතික පත්‍ර (සාමාන්‍ය පෙළ) විභාගය, 2022  
General Certificate of Education (Ordi. Level) Examination, 2022

ගණිතය II  
Mathematics II

1 වාර පරීක්ෂණය  
1<sup>st</sup> Term Test

පැය තුනයි  
Three hours

11 ශ්‍රේණිය Grade -11

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E

II

- Answer ten questions selecting **five questions** from **Part A** and **five questions** from **Part B**.
- Each question carries 10 marks.
- The curved surface area of a cone of the base radius  $r$  and the slanted height  $l$  is  $\pi rl$ , the volume of a sphere of radius  $r$  is  $\frac{4}{3}\pi r^3$ , the volume of a cylinder of radius  $r$  and the height  $h$  is  $\pi r^2 h$ .  $\pi = \frac{22}{7}$ .

**Part A**

\* **Answer five questions only.**

1. The following table is prepared to draw the graph of the function  $y = 2x^2 - 4$

$x$	-3	-2	-1	0	1	2	3
$y$	14	4	.....	-4	.....	4	14

- Fill in the blanks.
  - Draw the graph of the function taking 10 small divisions along  $x$  axis as one unit and 10 small divisions along  $y$  axis as two units.
  - Write the range of  $x$  when the function decreases negatively.
  - Write the value of  $\sqrt{3}$  using the graph.
2. The assessed annual estimated value of a house is Rs. 60000. The provincial council that owns the house charges annual rates of 8%.
- Find the annual rates of the house.  
The land owner rents the house on annual advance. The ratio between the annual rates and the annual rent is 1 : 90.
  - Find the monthly rent for the house.
  - Find the remaining amount of money left in hand after 25% of the annual rent was spent on repairs and the balance was spent to pay the annual rates.
  - If the money left in hand is deposited in a financial institution at the annual simple interest of 9%. Calculate the interest that can be gained at the end of 2 years.

3. (a) Solve  $8 = \left(\frac{1}{4}\right)^{2-x}$

(b) Find the value without using the logarithmic table.

$$\frac{3}{2} \lg 25 + \frac{4}{5} \lg 32 - \lg 2$$

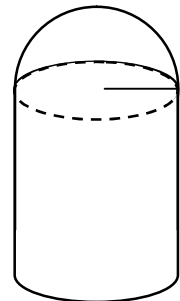
(c) Find the value of P to the nearest first decimal place using logarithmic tables.

$$P = \frac{35.2 \times \sqrt[3]{0.538}}{1.25^2}$$

4. (a) The radius of the base of a right circular cone is 14 cm. The perpendicular height of the cone is 48 cm.

- (i) Find the slanted height of the cone.
- (ii) Find the total surface area of the cone.

(b) The composite solid object shown in the figure consists of a hemisphere and a cylinder with the same radius. The radius of the sphere is  $r$ . The height of the composite solid is  $5r$ . Show that the total volume of the composite solid is equal to the volume of 7 hemispheres with radius  $r$ .



5. (a) Simplify  $\frac{7}{(x-3)} - \frac{x+32}{x^2-x-6}$

(b) The price of a pineapple is Rs. 20 more than the price of 4 mangoes. Rs. 500 were given to the vendor to buy 2 pineapples and 3 mangoes. The balance of that transaction was Rs. 20.00. Find the price of a pineapple and a mango separately by constructing and solving a pair of simultaneous equations.

6. The following data distribution shows the information about the tourists who visited an attractive city in the month of June. (Here 100 – 150 means more than or equal to 100 and less than 150)

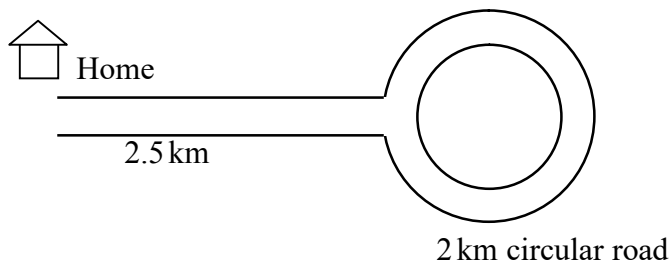
No of tourists	100 - 150	150 - 200	200 - 250	250 - 300	300 - 350	350 - 400	400 - 450
No of days	2	5	4	6	8	3	2

Find the mean number of tourists visited the city per day. One tourists spends at least 200 dollars for one day. Show that the expected amount of dollars received in the month of July is more than 1.7 million.

**Part B**

\* **Answer five questions only.**

7. A sportsman intends to train himself regularly on his bicycle. For this he chose a circular road about 2 km around a lake about 2.5 km away from his house. Everyday he starts from home and rides along the circular road and he returns along the same road.



On the first day 1 round.

On the second day 3 rounds.

On the third day 5 rounds.

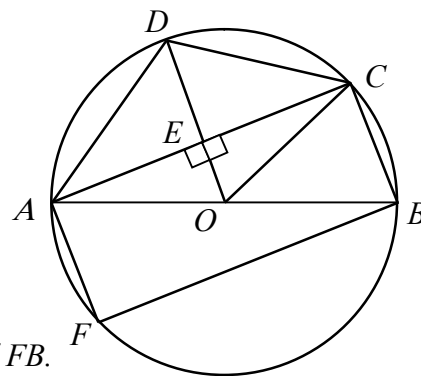
Likewise, he increases the number of rounds by odd numbers everyday.

- (i) Write down the distances covered within the first three days respectively.
- (ii) If he cycled only according to the above pattern, find the distance he covered on the 12<sup>th</sup> day using the formula.
- (iii) On which day does he cover a distance of 59 km ?
- (iv) The sportsman decides to end this training pattern on the 15<sup>th</sup> day. He states that the total distance covered at that time was over 525 km. State whether this statement is true or false.

8. Use the pair of compasses and a straight edge with cm/mm scale for the following constructions.

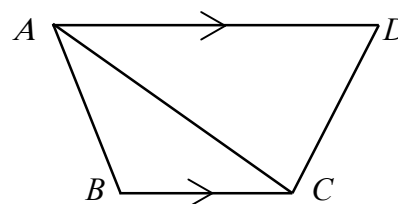
- (i) Construct the triangle  $PQR$  which  $PQ = 8.5$  cm,  $\widehat{PQR} = 60^\circ$  and  $\widehat{QPR} = 45^\circ$ .
- (ii) Construct the locus of the points which passes through  $R$  and at a constant distance from  $PQ$ .
- (iii) Name the point which meets the perpendicular bisector of  $P\widehat{Q}R$  and the locus of (ii) as “ $S$ ”.
- (iv) Construct the perpendicular  $SN$  which is drawn to  $PR$  from  $S$ . Measure and write the length of  $SN$ .

9.  $AB$  is the diameter of a circle with centre  $O$ .  $C$ ,  $D$  and  $F$  are three points on the circle. The straight lines  $OD$  and  $AC$  are intersected perpendicularly at  $E$ .



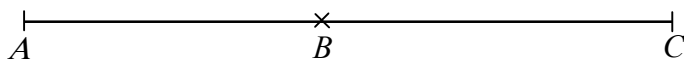
- (i) Write the reason for  $AE = CE$ .
- (ii) Prove that  $AD = DC$ .
- (iii) Prove that  $ADCO$  is a Rhombus if  $DE = OE$ .
- (iv) Write the reasons to show that  $ACBF$  is a rectangle if  $AC \parallel FB$ .

10. In the trapezium  $ABCD$  the diagonal  $AC$  bisected  $B\widehat{A}D$ . The bisector of  $A\widehat{B}C$  meet the diagonal  $AC$  at  $E$ .



- (i) Prove that  $AB = BC$ .
- (ii) Prove that  $A\widehat{E}B = 90^\circ$ .
- (iii) If  $AC = AD$ , then prove that  $B\widehat{C}D = 90 + \frac{1}{2}B\widehat{A}C$

11.



$A$ ,  $B$  and  $C$  are the points on the same straight line.  $AC = 60$  m. Two children are in  $A$  and  $C$  while a right vertical post is at  $B$ . The angle of elevation at the top of the post is  $30^\circ$  as seen from the child in  $A$ . The angle of elevation of the top of the post is  $18^\circ$  as seen from the child in  $C$ . Find the height of the post and the distance of  $BC$  separately by drawing a scale diagram according to a scale  $1 : 1000$ .

12. 78 people who came to a sacred place were dressing white clothes. There were 58 women in that place. The number of men wearing white clothes was 32. There were 42 people dressed in different colours.

- (i) Denote this in a Venn diagram.
- (ii) Find the number of women who were dressing in white.
- (iii) What percentage of the total, the number of men dressed in other colours ?
- (iv) If all the women dressed in white, draw a separate Venn diagram with the relevant numbers.

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