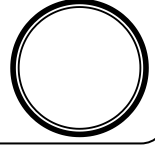




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J/ Hartley College, Point Pedro.



முதலாம் தவணைப் பரீட்சை – 2020 – தரம் 11  
First Term Examination – 2020 – Grade 11

கணிதம் I  
Mathematics I

32

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இரண்டு மணித்தியாலம்  
Two Hours

கட்டெண்  
Index No

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Mathematics I

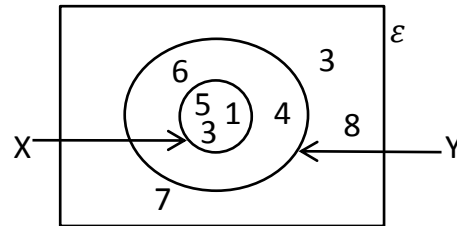
Answer all the questions on this paper itself.

Part – I (A)

1. There are three oranges in a 200g of bag. If the weight of them with bag is 1.4Kg. Find the weight of an orange.

2. Nishan bought 7 marbles Rs.  $x$  per each. If he gave Rs.100 to the shopkeeper. What is the balance he would receive?

3. Find the value of  $n(X^c \cap Y)$   
By using the given diagram.



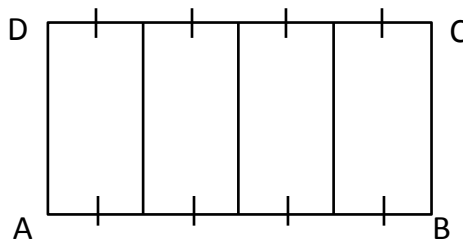
4. Simplify  $(\frac{64}{27})^{-\frac{1}{3}}$

5. Fill in the following blanks with the suitable geometrical words.

..... of chords of a circle to be the ..... from the circle.

6. Solve  $x^2 - 4x = 0$

7. Shade the portion  $\frac{1}{12}$  of given rectangle by dividing the straight lines. Which are parallel to AB?

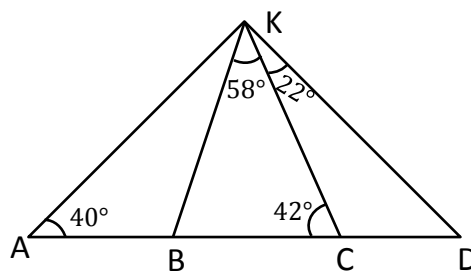


8. Calculate the distance travelled in 6 minutes by a man who walks at uniform speed of  $\frac{5}{9} \text{ms}^{-1}$

9. 2<sup>nd</sup> and third term of a arithmetic progression are respectively 18 and 13. Find the common difference and the first term of the sequence.

10. In the given figure ABCD is a straight line.

Select two pair of isosceles triangles according to the given data.



11. remove the brackets and simplify.

$$7x - 2(5x - 4)$$

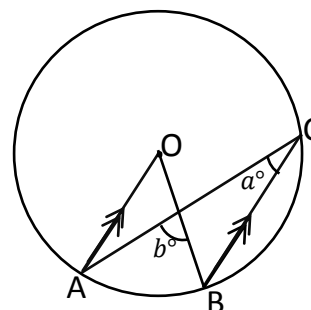
12. 560 students sat a competitive exam, 84 of them got fail. Find the percentage of students who got pass

13. The (external) surface area of a hollow hemisphere of radius  $3R$  cm is  $X$  cm<sup>2</sup> and the area of the curved surface of a right circular cone of base radius  $R$  cm and slant height  $6R$  cm is  $Y$  cm<sup>2</sup>. Evaluate the value of  $\frac{X}{Y}$ .

14. State whether the given statements are correct or incorrect by inserting ( $\checkmark$ ) for correct ones and ( $\times$ ) for incorrect ones.

(1)	The gradient of the straight line is negative. When the angle formed with the positive direction of the $x$ axis is an obtuse angle	
(2)	Turning point of the graph of the function $y = ax^2 + b$ is at origin	

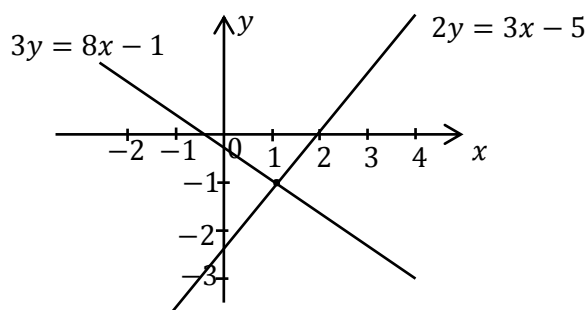
15. In figure  $O$  is the centre of the circle,  $A, B, C$  are points on the circle that is to be  $AO \parallel BC$ . Express  $b$  in terms of  $a$



16. Make  $I$  as a subject of the formula  $E = I^2 R t$

17. If  $lga = 10$  find the value of  $lg10a^2$

18.  $3y = -2x - 1$  and  $2y = 3x - 5$  graphs are drawn in the given co-ordinate plane. Find their solution without solving the equation.

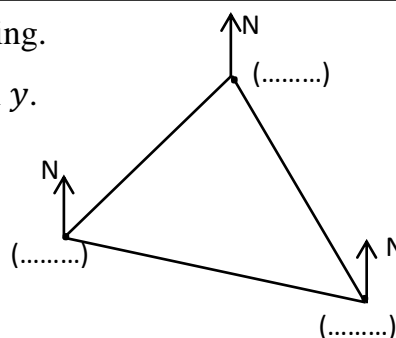


19. If  $x^2 + kx + 36$  can be written as a perfect square. Find the value of  $k$ ?

20. The location of three places  $x, y$  and  $z$  in a ground are following.

$z$  is located  $300^\circ$  bearing from  $x$  and  $x$  is located  $100^\circ$  from  $y$ .

Write their actual places in spaces of the given figure.



21. Describe the locus of the mid points of the chords which go through the fixed point on the circumference of the circle.

22. 3<sup>rd</sup> quartile of a marks distribution is placed 24<sup>th</sup> of marks arranged in ascending order. Find the number of marks in that distribution

23. Find the area of the Rhombus whose perimeter is 40cm and the distance between two parallel lines is 8cm

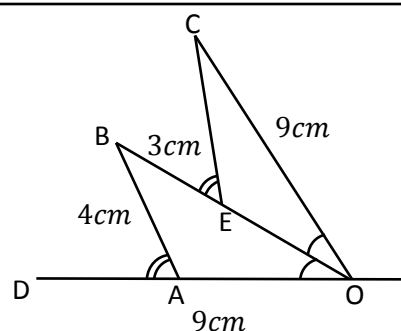
24. Write the whole number solution of  $x$  which are satisfied in equalities  $2x > 5$  and  $x \leq 4$

25. In the given figure  $OAD, OEB$  are straight lines.

$\hat{AOB} = \hat{BOC}, \hat{BAD} = \hat{BEC}, OC = 9cm, EB = 3cm$

and  $AB = 4cm$ . If  $\Delta OAB$  and  $\Delta OEC$  are congruent.

Find the length of  $OE$  and  $EC$ .



**Part – I (B)**

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

**01.** Jaffna district received  $\frac{1}{2}$  part of medicine boxes only out of allocated for Jaffna from this 200 of medicine boxes are allocated for Island; now  $\frac{3}{7}$  part is remaining of whole part.

(i) What is the fraction of whole part allocated for Island?

(ii)  $\frac{2}{3}$  part of remaining medicine boxes are allocated for Jaffna and the rest is allocated for vadamadchy. What is the fraction of whole part allocated for Jaffna?

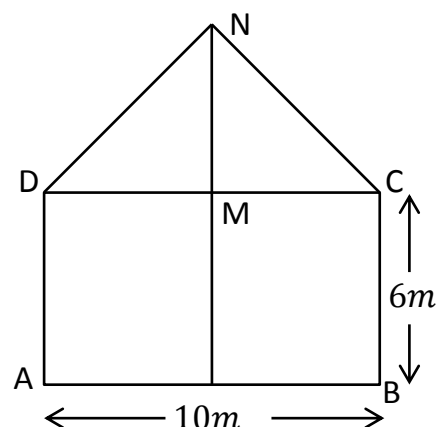
(iii) Find the number of medicine boxes allocated for vadamadchy.

(iv) To protect the 100 medicine boxes in an air conditioning room, 3 refrigerators have to work 6 hours continuously. How many refrigerators are needed for working 4 hour to protect the medicine boxes which are allocated for vadamadchy.

**02.** The figure shown is a frame of paddy repository consisting.

Rectangle ABCD and Isosceles triangle DNC.

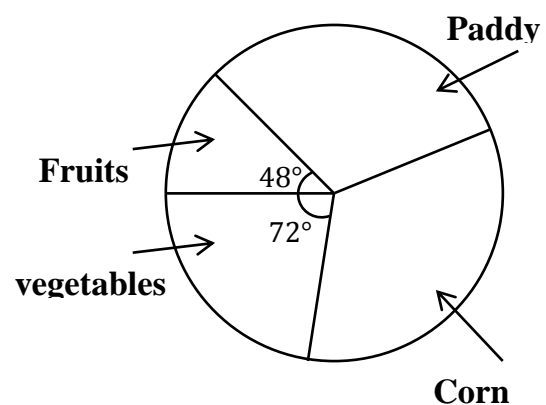
i. Evaluate the area of rectangular shape part.



- ii. If the area of triangular shape is  $\frac{1}{4}$  of the area of rectangular shape part. Calculate the height of MN.
- iii. To protect paddy in paddy repository, semicircular shape iron net have to join in triangular shape part according to the following conditions.
- Centre of the circle should be at M and the diameter should be M horizontal.
  - Arc should face upwards and highest point should be 2m depth from N.
- iv. If  $\pi = 3.14$  find the area of triangular shape part.
- v. Express arc length of the net in first decimal place.

03. The pie chart given below shows the area of cultivation of paddy, corn, vegetables and fruits in a country.

- Find the ratio between the area of fruits and vegetables cultivated.



- ii. Difference between the area of cultivating of vegetable and fruit is  $160 \text{ ha}$ . If cultivating area of paddy is  $640 \text{ ha}$ . Find the magnitude of the area of cultivation of paddy and corn.
- iii. Equal size of cultivating area of fruits and vegetables were added to the cultivating area of the paddy to decrease the food problem in the country. After this addition the ratio between the area of corn and paddy is  $8:7$  respectively. Find the area which was added from the area of fruit cultivation to the area of paddy field.

04.

- a.
- i. Assessed annual value of Sivapalan's house is Rs. 80 000, Rs.1 800 is changed as quarterly rate by urban council. Calculate the percentage that the urban council charges as rates.
- ii. Quarterly rates payable on this house will not be charged when the rate of annual value is increased by  $1\%$  next year. Calculate the new annual value of the house.

b. Charges of water board which provide drinking water is shown in the given table.

- i. Calculate charges for a house using  $80 \text{ l}$  of water in a day.

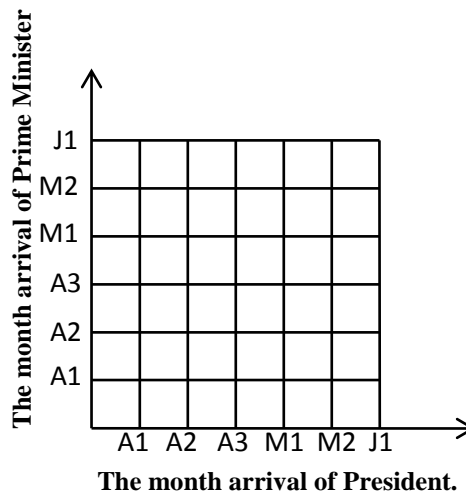
Usage of water ( $l$ )	Charges per $l$
Initial $50 \text{ l}$	Charges free
Next $50 \text{ l}$	Rs.5.00 per $l$
Extra $50 \text{ l}$	Rs.7.50 per $l$

- ii. Evaluate the usage of water of a house paying Rs. 880 as charge for a day.

05.

a) President and prime minister to be visited to the opening ceremony of a new building in a particular place. The DS stated that the arrival of the president and prime minister could be held in three days in April, two days in May and one day in June.

i. Fill in the given grid using ‘×’ by considering their arrival.

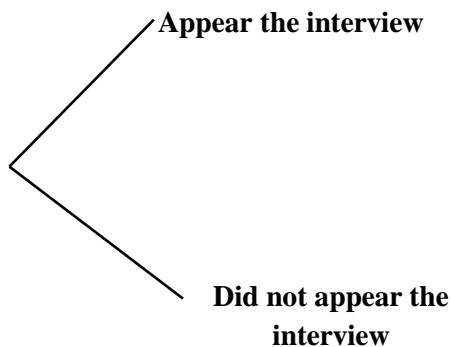


ii. Find the probability of the arrival of the president happens, one month later from the visit of the prime minister.

b) There were sent letters to 90 applicants for an interview to the post graduate trainees but 30 applicants were not appeared for that interview on the particular date. Appointments were given to the persons who appeared the interview.

Probability of the persons getting appointment who did not appear on that day and interviewed another day is  $\frac{3}{5}$

i. According to the given information complete the given tree diagram.



ii. Find the probability of a selecting person interview randomly who got appointment?