Visakha Vidyalaya – Colombo 05

First Term Test – 2022

Mathematics

Grade 10

Time : 2 hours

Name / Index Number : ……..…

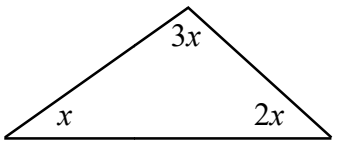
Part A

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

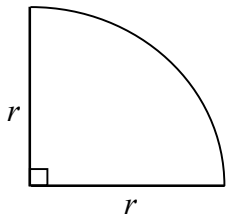
1. In between which whole numbers done $\sqrt{20}$ lie ?

2. Simplify $\frac{3x}{5} + \frac{7x}{5}$

3. Find the value of x.

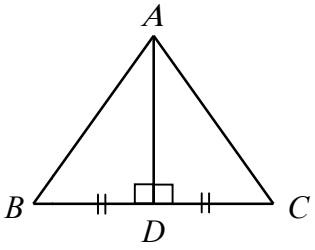


4. The arc length of the given sector of a circle is 22 cm and its perimeter is 50 cm. Find the radius of the sector.



5. The selling price of an item which was bought for Rs. 4000 was marked keeping a profit of 20%. Find the marked price of the item.

6. According to which case the triangle ABD and ACD are congruent ?

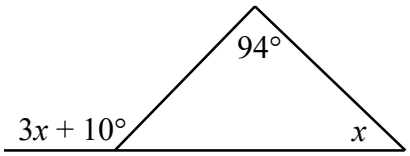


7. Write as a product of two factors. $4x^2 - 9$

See page two]

8. The rate of flow of water from a water tap is 25 ml per second. Calculate the time needed to fell a container with the capacity of 750 ml by using the above tap.

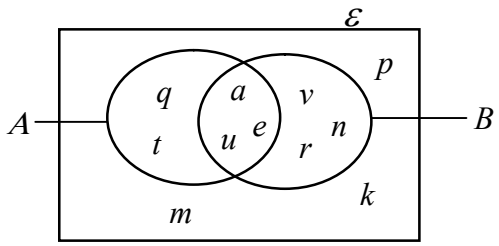
9. Find the value of x.



10. Find the following using the information in the Venn diagram.

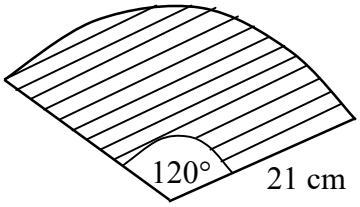
(i) $A \cap B$

(ii) $n(A^{l})$

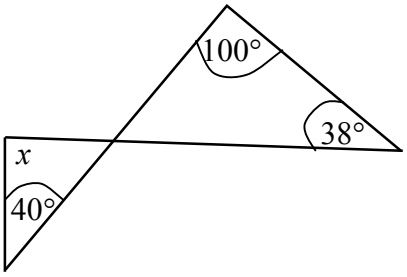


11. Fill in the blanks. $(2x - \ldots\ldots)^2 = 4x^2 - \ldots\ldots + 9$

12. Find the area of the sector in the following figure. $\left(\pi = \frac{22}{7}\right)$



13. Find the value of x.



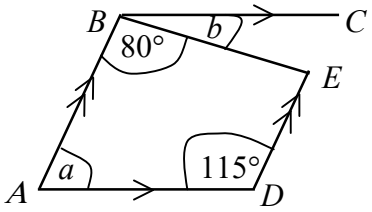
14. Write gradient and the intercept of the graph of $2y - 4x = 7$.

See page three]

15. Simplify. $3 \times 2^{-1} + 3 \times 6^{-1}$

16. Find the probability of obtaining a prime number when randomly selecting a number from the set of S = {1, 2, 3, 4, 5, 6, 7, 8, 9}

17. In the figure *AB // DE* and *AD // BC*. Find the value of *a* and *b*.



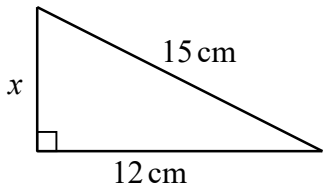
18. Find (i) the mode
(ii) the median of the collection of data
18, 15, 13, 12, 17, 18, 19, 20, 16, 15

19. Simplify. $\frac{7x}{5} + 3 = 17$

20. It takes 15 men 8 days to prepare a drain. How many men are required to complete that task in 6 days?

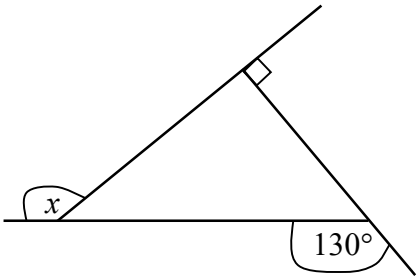
See page four]

21. Find the value of x.



22. Brokerage fee of 3% is charged when a motor car is sold. If the brokerage fee is Rs. 36000, find the selling price.

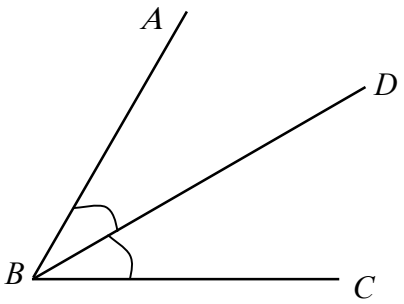
23. Find the value of x.



24. Find x,

$$\begin{aligned} 3x - y &= 11 \\ x + y &= 9 \end{aligned}$$

25. The bisector of $A\hat{B}C$ is BD. Mark the point P which is at equidistant from AB and BC and equidistant from B and C.



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See page five]

Part II

* **Answer all questions.**

1. $\frac{1}{4}$ of the vehicles that arrive at a filling station on a certain day for refueling are motor cycles and $\frac{1}{3}$ are three - wheelers.

(i) What fraction of the total are motor cycles and three – wheelers?

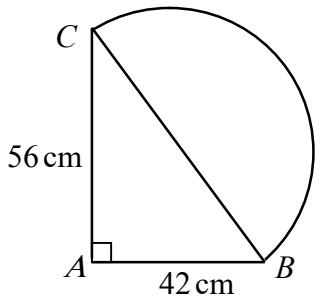
(ii) $\frac{7}{10}$ of the remaining vehicles are motor cars with the engine capacity less than 1000. What fractior of the total is motor cars with the engine capacity less than 1000?

(iii) What fraction of the total are motor cycle, three – wheelers and motor cars with the engine capacity less than 1000?

(iv) All the remaining vehicles are motor cars with the engine capacity more than 1000. If the number of motor cars with the engine capacity more than 1000 is 150, find the total number of vehicles?

2. The given figure shows a flower bed in a garden. It consists of a right – angled triangular part and a semicircular part.

(i) Calculate the length of *BC*.



(ii) Calculate the arc length of the semicircle.

(iii) Find the perimeter of the compound figure.

(iv) Find the area of the semicircle.

(v) It the triangle convert into a rectangle with one side *BC*, so that the area does not change, find the breadth of it.

See page six]

3. It takes 8 men 6 days to paint a house.

(i) How many man days are needed to paint such 15 houses?

(ii) It 24 men are assigned to point 15 houses, how many days will it take them to complete the task?

(iii) After working 10 days it is expected to comlete the task in 8 days. How many more men are required to complete the task?

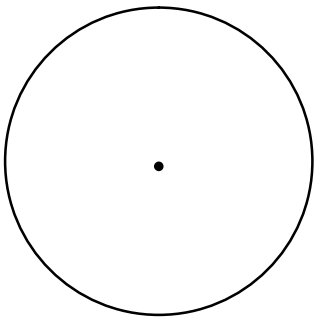
(iv) Rs. 2250 will be paid as daily wages to one man for the above (i) work. Find the labour cost for paining 15 houses.

4. Members of a sports club train under one team sport only. The number of people practicing football is twice as the number of people practicing vollleyball. The number of people who come to practice for cricket and rugby are the same. The number of people practicing cricket is three times the number of people practicing volleyball.

(i) Express the number of people practicing volleyball as a fraction of the total number of people.

(ii) Represent the above information in a pie chart.

(iii) If the number of people practicing football is 36, find the total number of people.

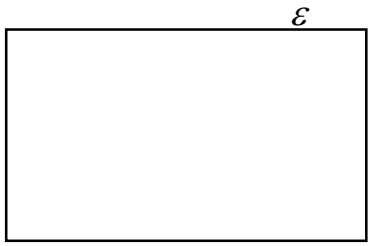


(iv) If 18 rugby players left the club after one month, find the angle at the centre of the sector denoting the cricketers in the pie chart drawn to represent all the above sports.

See page seven]

5. (a) (i) Represent the following sets in a Venn diagram.

ε - {Whole numbers from 1 to 10}
A - {Triangular numbers from 1 to 10}
B - {Multiples of 3 between 1 to 10}



(ii) Express $A \cap B$ in items of its elements.

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

(iii) Write A^{l} in terms of its elements.

(b) There are 9 identical balls numbered from 1 to 9 in a bag. Find the probability of getting a square number when drawing a ball randomly from the bag.

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