32 | E | I,II

10 ශ්‍රේණිය – විශේෂ ඇගයීම (පළමු වාරය) - 2022

தரம் 10 - முதலாந் தவணைப் பரீட்சை (முதலாம் தவணை) - 2022

Grade 10 – Special Evaluation (First Term) - 2022

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Mathematics

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Two hours

Part - I

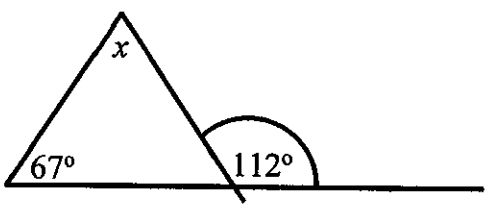
- Answer all questions.

01. How much is $\frac{2}{3}$ of Rs. 1200 ?

02. Find the value of $\sqrt{625}$ using prime factors.

03. What is $\frac{3}{8}$ as a percentage?

04. Find the value of x



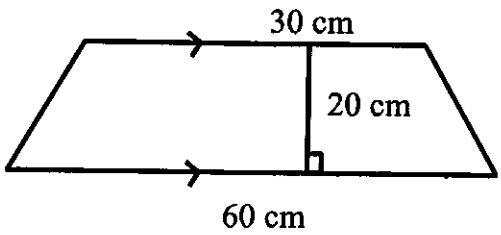
05. What is the circumference of the circle which has a radius of 7 cm.

06. State $\frac{2}{3}$, $\frac{4}{7}$ in ascending order.

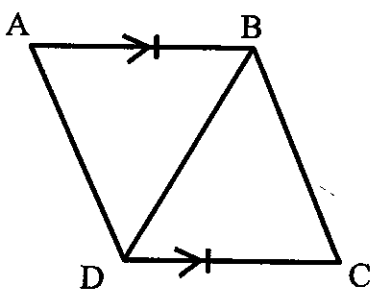
07. If an item represented in a pie chart is 60° angle, state it as a fraction.

08. If 6 men take 5 days to finish a certain task, how many man – days are required to finish this task?

09. What is the area of the square which has the same area as the below trapezium?



10. State the case when the triangles ABD and BDC are congruent in the following diagram.

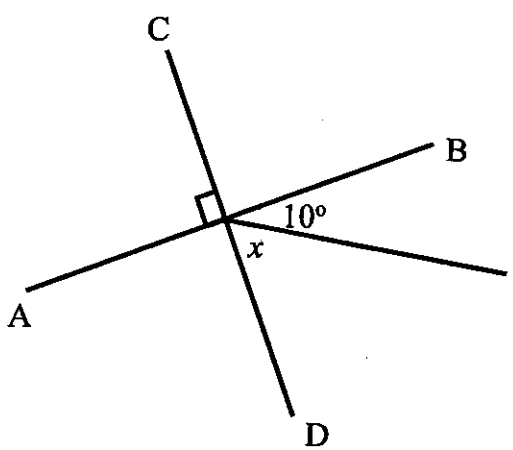


11. Find the gradient and intercept of the straight line $y = 2x - 3$

i. Gradient

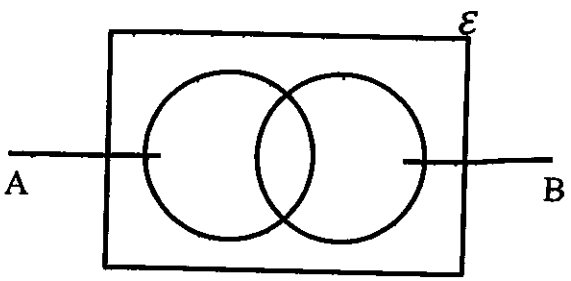
ii. Intercept

12. Find the value of x (AB and CD are straight line)



13. Solve $\frac{5x + 2}{4} = 8$

14. Shade $A \cap B$



15. If the mean is 11, in the set of numbers,
$7, 8, x, 10, 15, x, 19$; then,

i. Find the value of x

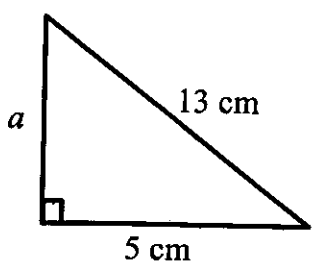
ii. Find the median.

16. Find the capacity of a water tank with , length , breadth and height are 4m , 2m and 1.5m respectively.

17. Factorize $16x^2 - 25$

18. What is the probability of obtaining a blue pebble from a bag which contains 6 red and 3 blue pebbles?

19. Find the value of 'a'



20. A and B are points that lie 8 cm apart. Construct the locus of the point that lies equi-distant to points A and B.

Part - II

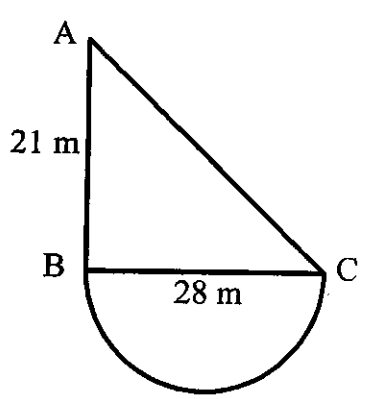
01. a. A certain manufacturing industry which makes products from coconut husks, sends $\frac{2}{5}$ of it's production to retail outlets and exports $\frac{3}{8}$ of it's remaining production.

i. What is the fraction of the export quantity in terms of the total production.

ii. $\frac{1}{3}$ of the remaining production is kept for selling inside the premises. The value of this quantity is Rs. 60,000. Find the total value of full production.

b. If they receive an income of Rs. 1,200,000 by selling those products, find the profit percentage.

02. The following diagram illustrates, the ABC right – angled triangular land area and a semi-circular land area with BC as it's diameter. This is a flower bed.



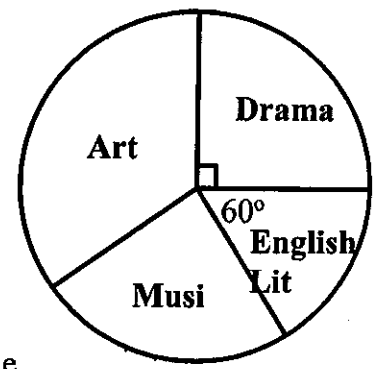
i. Using Pythagorean theorem find the length of AC.

ii. If we need to build a fence around the entire flower bed, what is the total length of the fence?

iii. What is the area of the semi-circular portion of the flower bed?

iv. It is required to attach a rectangular area of land to the flower bed using AB as a side outside of AB and where the area of that rectangular land is equal to the semi-circular area. Re-draw the diagram and include the new attached rectangular part, showing all measurements needed.

03. The following pie chart shows how students in a certain class have chosen the, aesthetic subjects.



i. If the number of students who chose English Lit are 8, Find the total number of students.

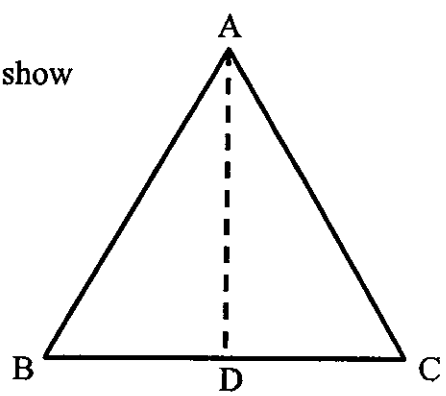
ii. Find the number of students who chose Drama.

iii. If the number of students who chose Music and Art are the same, find the angles that represent each of them and find the number of students correspondingly.

iv. If 3 students who chose Drama switched to Music, illustrate the new categories and their angles in a new pie chart.

04. a. Write the cases when two triangles are congruent.

b. In the triangle ABC, AB = AC. The angle bisector of $B\hat{A}C$ meets side BC at D.



i. Draw the above diagram in your answer script, and show the given data in the diagram.

ii. Show that ABD $\Delta \equiv$ ACD Δ

iii. Prove that $A\hat{B}D = A\hat{C}D$

05. i. Expand and simplify $(x - 5)^2$

ii. Using the above, find the value of 95^2

iii. If the area of a rectangular lamina is $6x^2 + 19x - 7$ and it's length is $(2x + 7)$, Find the width of the rectangular lamina.

iv. If $x = 5$, find the value of the area of the rectangular lamina.

06. It is estimated that it takes 30 days for 5 men to construct the upper floor of a building.

i. Find the magnitude of the task.

ii. After working for 10 days, 3 men left the construction site. How many additional days does it takes for the remaining men to complete the task?

iii. Show that the ratio between the task completed during the first 10 days and the remaining days is $\frac{1}{3}$

iv. If one man is paid Rs. 2000/- per day, find the total labour cost spent to complete the task.

07. By using the compass and cm/mm straight edge construct the following,

i. Construct ABC triangle where AB = 6 cm , BC = 5 cm and $A\hat{B}C = 60^\circ$

ii. Construct the locus of the point equidistant to points A and B.

iii. Construct the locus of the point equidistant to AB and BC.

iv. By taking the interesting point of the above two loci as the center and radius as the distance from that point to A, construct a circle.