

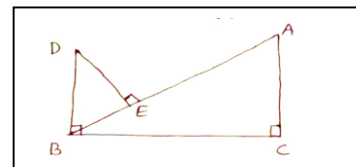
(Class 10, Mathematics Question Paper, Page 1 of 2)

SECTION-C**4X3=12**

16. In the given figure, $BD \perp BC$, $DE \perp AB$ and $AC \perp BC$ Prove that $\frac{BE}{DE} = \frac{AC}{BC}$

OR

ABCD is a trapezium with $AB \parallel DC$. If $\triangle AED$ is similar to $\triangle BEC$, prove that $AD=BC$.



17. Prove that: $(\operatorname{Cosec} \theta - \sin \theta)(\sec \theta - \cos \theta)(\tan \theta + \cot \theta) = 1$
18. The sum of two numbers is 18 and the sum of their reciprocals is $\frac{9}{40}$. Find the numbers.
19. Marbles of diameter 1.4 cm are dropped into a cylindrical beaker of diameter 7cm containing some water. Find the number of marbles that should be dropped into the beaker so that the water level rises by 5.6cm.

SECTION-D**(5X2=10)**

20. Vijay had some bananas and he divided them into two lots A and B. He sold the first lot at the rate of ₹ 2 for 3 bananas and the second lot at the rate of ₹ 1 per banana and got a total of ₹ 400. If he had sold the first lot at the rate of ₹ 1 per banana and second lot at the rate of ₹ 4 for 5 bananas, his total collection would have been ₹ 460. Find the total number of bananas he had.
21. A solid iron pole consists of a solid cylinder of height 200 cm and base diameter 28 cm, which is surmounted by another cylinder of height 50 cm and radius 7 cm. find the mass of the pole, given that 1cm^3 of iron has approximately 8 g mass.

SECTION-E (CASE STUDY)**(4X2=8)**

22. India is competitive manufacturing location due to the low cost of manpower and strong technical engineering capabilities contributing to higher quality production runs. The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6th year and 22600 in 9th year.

- In which year is the production 29,200 sets?
- Find the production during first 3 years.
- Find the difference of production during 7th year and 4th year.

23. In the bustling neighborhood of Vijayanagar colony in Delhi, houses are thoughtfully positioned with a sense of community and space. Each home is carefully situated, maintaining distance from its neighboring abodes, ensuring privacy while fostering a sense of togetherness.

Among many houses, let's consider three residences: P, Q and R. each house is unique, with its distinct character and occupants. Their coordinates are plotted on a graph:

Based on the given information, answer the following questions:

- Find the mid-point of the straight line joining P and Q.
- Find the distance of house R from Y-axis.
- Find the coordinates of next house from P (towards +ve direction) if it is 50 m away in the parallel direction of X-axis.

