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AUTUMN BREAK HOLIDAY HOME WORK 2024-2025

CLASS: X

SUBJECT: MATHEMATICS

CHAPTER: SOME APPLICATIONS OF TRIGONOMETRY

- 1) The angle of depression of a car, standing on the ground, from the top of a 75 m high tower is 30° . The distance of the car from the base of the tower (in m) is:
- a) $25\sqrt{3}$
b) $50\sqrt{3}$
c) $75\sqrt{3}$
d) 150
- 2) If two towers of heights h_1 and h_2 subtend angles of 60° and 30° respectively at the midpoint of the line joining their feet, then $h_1:h_2$ will be
- a) 1:2
b) 1:3
c) 2:1
d) 3:1
- 3) The ratio of the height of a tower and its shadow on the ground is $\sqrt{3}:1$. the angle of elevation of the sun will be:
- a) 30°
b) 45°
c) 180°
d) 60°
- 4) An observer, 1.5 m tall is 28.5 m away from a 30 m high building. the angle of elevation of the top of the building from the eye of the observer will be:
- a) 30°
b) 60°
c) 75°
d) 45°
- 5) The angles of elevation of two cars, from the car to the top of a tower are 45° and 30° . If the cars are on the same side of the tower and are 50 m apart, the height of the tower will be:
- a) $25(\sqrt{3} - 1)$
b) $25(\sqrt{3} + 1)$
c) $50(\sqrt{3} + 1)$
d) $50(\sqrt{3} - 1)$
- 6) As observed from the top of a light-house, 100 m high above sea level, the angle of depression of a ship, sailing directly towards it, changes from 30° to 60° . Determine the distance travelled by the ship during the period of observation. (use $\sqrt{3} = 1.732$)

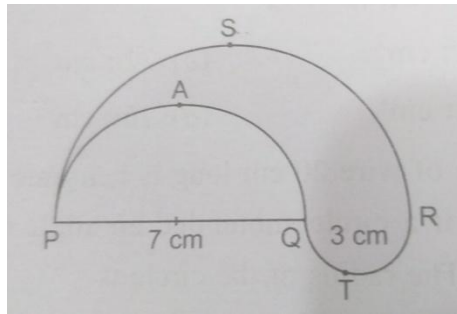
- 7) Two ships are there in the sea on the either side of a light-house in such a way that the ships and the light house are in the straight line. The angles of depression of two ships as observed from the top of the light-house are 60° and 45° . If the height of the light-house is 200m, find the distance between the two ships. (use $\sqrt{3} = 1.732$)
- 8) The angle of elevation of the top of a tower at a distance of 120 m from a point A on the ground is 45° . If the angle of elevation of the flagstaff fixed at the top of the tower, from A is 60° , then find the height of the flagstaff. (use $\sqrt{3} = 1.73$)
- 9) The angle of elevation of the top of a hill at the foot of a tower is 60° and the angle of depression from the top of the tower to the foot of the hill is 30° . If tower is 50 m high, find the height of the hill.
- 10) The length of a string between a kite and a point on the roof of a building 10 m high is 180 m. if the string makes an angle θ with the level ground such that $\tan\theta = \frac{4}{3}$, how high is the kite from the ground?

CHAPTER: AREAS RELATED TO CIRCLES

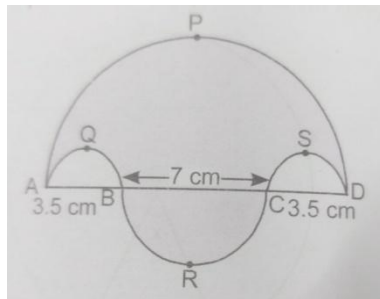
- 1) The perimeter (in cm) of a square circumscribing a circle of radius a cm, is
 - a) 8a
 - b) 4a
 - c) 2a
 - d) 16a
- 2) The diameter of a wheel is 1.26 m. the distance travelled in 500 revolutions is
 - a) 2670m
 - b) 2880m
 - c) 1980m
 - d) 1596m
- 3) The area of a quadrant of a circle whose circumference is 44cm is
 - a) $\frac{35}{2}$ sq cm
 - b) 70 sq cm
 - c) $\frac{77}{2}$ sq cm
 - d) 80 sq cm
- 4) An arc of a circle is of length 5π cm, and the sector it bounds has an area of 20π cm². The radius of the circle is
 - a) 4cm
 - b) 10cm
 - c) 8cm
 - d) 15cm
- 5) If the circumferences of two circles are in the ratio 4:9, then the ratio in their areas is
 - a) 9:4
 - b) 4:9
 - c) 2:3

d) 16:81

- 6) The ratio of the outer and inner perimeters of a circular path is 23:22. If the path is 5 m wide, then find the diameter of the inner circle.
- 7) Area enclosed between the two concentric circles is 770 cm^2 . If the radius of the outer circle is 21 cm. then find the radius of the inner circle.
- 8) In adjoining figure, PSR, RTQ and PAQ are three semicircles of diameters 10cm, 3cm and 7cm respectively. Find the perimeter of the shaded region PATRSP. (USE $\pi = 3.14$)



- 9) Find the area of the shaded region AQBRCSDPA in the figure, where arc APD, arc AQB, arc BRC and arc CSD are semicircles of diameter 14 cm, 3.5 cm, 7 cm and 3.5 cm respectively. (use $\pi = \frac{22}{7}$).



- 10) The diameter of the front and rear wheels of a tractor are 80 m and 2 m find the number of revolutions that rear wheel will make to cover the distance which the front wheel covers in 1400 revolutions. (use $\pi = \frac{22}{7}$).