

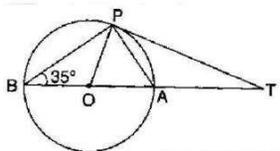
North Ex Public School
ASSIGNMENT
MATHEMATICS
Class - X

Section A(1 mark each)

1. If $P(E) = 0.07$, then the probability of 'not E' is:
2. A point on y -axis equidistant from the points A (6, 5) and B -4, 3 is:
3. 12th term of the AP 5, ~~8~~_√11, 14, is:
4. If the string of a kite is 75 m long and it makes an angle of 60 with the ground, then the height of kite is:

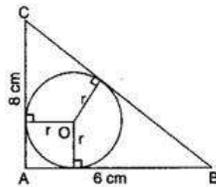
Section B(2 marks each)

5. The radii of two circles are 3 cm and 4 cm. Find the radius of the circle whose area is equal to the sum of areas of two circles.
6. A solid metallic sphere of radius 12 cm is melted and recast into a number of small cones, each of radius 4 cm and height 3 cm. Find the number of cones so formed.
7. Water is flowing at the rate of 15 km per hour through a pipe of diameter 14 cm into a rectangular tank which is 50 m long and 44 m wide. Find the time in which the level of water in the tank will rise by 21 m.
8. Show that $x = -3$ is a solution of the equation $x^2 + 6x + 9 = 0$.
9. Which term of the AP 21, 42, 63, 84, is 420?
10. In figure, BOA is a diameter of the circle and the tangent at a point P meets BA extended at T. If angle PBO = 35°, then find angle PTA.



Section C (3 marks each)

11. Find the value of p for which the points $(-1, 3)$, $(2, p)$ and $(5, -1)$ are collinear.
12. Prove that the points $(3, 0)$, $(6, 4)$ and $(-1, 3)$ are vertices of a right angled triangle. Also, prove that the vertices of an isosceles triangle.
13. A copper wire when bent in the form of a square encloses an area of 121 cm^2 . If the same wire is bent into the form of a circle, then find the area of the circle. (use $\pi=22/7$)
14. The circumference of a circular plot is 220 m. A 15 m wide concrete track runs around the plot. Find the area of the track. Use $(\pi=22/7)$.
15. A hemispherical bowl of internal radius 9 cm is full of liquid. The liquid is to be filled into cylindrical shaped small bottles each of diameter 3 m and height 4 cm. How many bottles are needed to empty the bowl?
16. Find the value of k for which the roots of the quadratic equation $kx^2 - 10x + 5 = 0$ are equal.
17. Find the sum of all two digit natural numbers which when divided by 3 yield 1 as remainder.
18. In figure, ABC is a right angled triangle with $AB = 6 \text{ cm}$ and $AC = 8 \text{ cm}$. A circle with center O has been inscribed inside the triangle. Calculate the value of r , the radius of the inscribed circle.

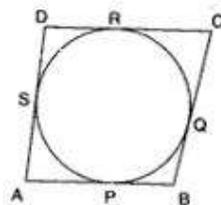


19. From the top of a hill 200 m high, the angles of depression of the top and the bottom of a pillar are 30° and 60° respectively. Find the height of the pillar and its distance from the hill.
20. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball from the bag is four times that of a red ball, then find the number of blue balls in the bag.

Section D

21. Prove that the length of tangents drawn from an external point to a circle are equal. Using the above result, prove the following:

If a circle touches all the four sides of a quadrilateral ABCD, then prove that: $AB + CD = BC + DA$



22. An aeroplane flying at a height of 4000 m from the ground passes vertically above another aeroplane at an instant when the angle of elevation of the two planes from the same point as the ground are 60 and 45 respectively. Find the vertical distance between the aeroplane at that instant.

23. A bag contains 4 white balls, 6 red balls, 7 black balls and 3 blue balls. One ball is drawn at random from the bag. Find the probability that the ball drawn is:

(i) white

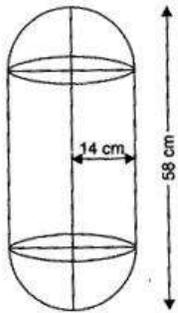
(ii) not black

(iii)

neither white nor black (iv) red or white

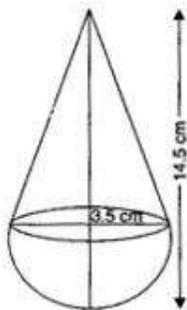
24. If 'a' is the length of one of the sides of an equilateral triangle ABC, base BC lies on x - axis and vertex B is at the origin, then find the coordinates of the vertices of the triangle ABC.

25. A solid is in the form of a right circular cylinder with hemispherical ends. The total height of the solid is 28 cm. Find the total surface area of the solid.(use $\pi = 22/7$)



26. Solve for x : $\frac{1}{p+q+x} = \frac{1}{p} + \frac{1}{q} + \frac{1}{x}$

27. A toy is in the form of a cone mounted on a hemisphere with same radius. The diameter of the base of the conical portion is 7 cm and the total height of the toy is 14.5 cm. Find the volume of the toy.

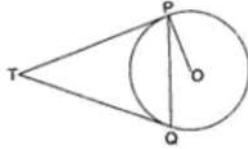


28. Nidhi saves Rs. 2 on first day of the month, Rs. 4 on second day, Rs. 6 on third day and so on. Read the above passage and answer the following questions:

(i) What will be her saving in the month of February?

(ii) What value is depicted by Nidhi?

29. Two tangents TP and TQ are drawn to a circle with center O from an external point T. Prove that $\text{angle PTQ} = 2 \text{ angle(OPQ)}$.



30. The sum of three numbers in an AP is (-3) and their product is 8. Find the numbers.
31. Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact. Using the above result, find the length of PQ, if a tangent PQ at a point P of a circle of radius 5 cm meets a line through the center O at a point Q so that $OQ = 12$ cm.