Guess Paper – 2014
Class – X
Subject – Mathematics

SECTION - A

Question numbers 1 to 10 carry 1 mark each. For each of the question 1-10, four alternatives have been provided of which only one is correct. You have to select the correct choice.

1. The roots of the equation $x^2 - \sqrt{3}\,x - x + \sqrt{3} = 0$ are :

(A) $\sqrt{3}, 1$ (B) $-\sqrt{3}, 1$ (C) $-\sqrt{3}, -1$ (D) $\sqrt{3}, -1$

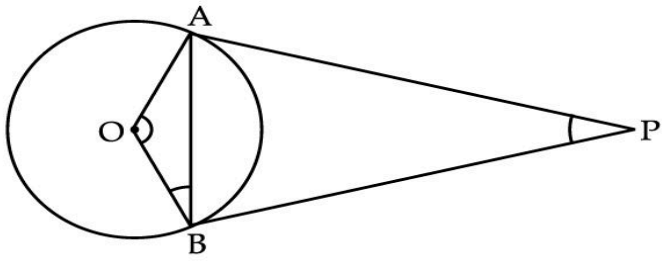
2. What is the sum of all natural numbers from 1 to 100 ?

(A) 5050 (B) 55 (C) 4550 (D) 5150

3. How many parallel tangents can a circle have ?

(A) 1 (B) 2 (C) Infinite (D) None of these

4. Two tangents are drawn from an external point P (as shown in fig.) such that $\angle OBA = 10°$. Then $\angle BPA$ is.



(A) 10° (B) 20° (C) 30° (D) 40°

5. The length of the tangents from a point A at a circle of radius 3 cm is 4 cm. The distance (in cm) of A from the centre of the circle is :

(A) $\sqrt{7}$ (B) 7 (C) 5 (D) 25

6. The radius of the base of a cone is 5 cm and its height is 12 cm. Its curved surface area is :

(A) $60\ \pi\ cm^2$ (B) $65\ \pi\ cm^2$ (C) $30\ \pi\ cm^2$ (D) None of these

7. In a throw of a pair of dice, what is the probability of getting a doublet ?

(A) $\frac{1}{}$ (B) $\frac{1}{}$ (C) $\frac{5}{}$ (D) $\frac{2}{}$

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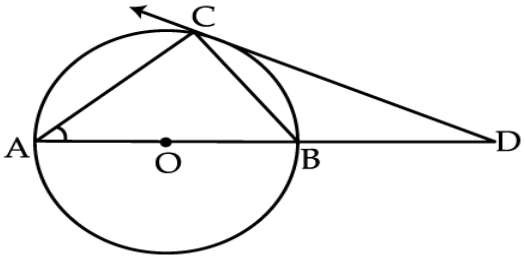
9. In the figure, AB is a diameter and AC is chord of a circle such that $\angle BAC = 30°$. If DC is a tangent, then Δ BCD is.



(A) Isosceles (B) Equilateral (C) Right angled (D) Acute angled

10. If the perimeter of a semicircular protractor is 36 cm, then its diameter is :
(A) 10 cm (B) 12 cm (C) 14 cm (D) 15 cm

SECTION - B

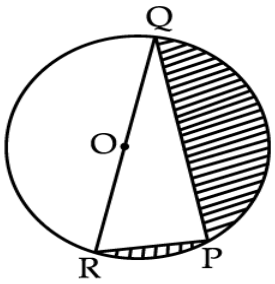
Question numbers 11 to 18 carry 2 marks each.

11. Find the value of k for which the equation $kx\ (x-2)+6=0$ has equal roots.

12. Find the 20^{th} term from the last term (end) of the AP : 3, 8, 13 ....253.

13. Prove that the tangents drawn at the ends of a diameter of a circle are parallel.

14. Find the area of the shaded region, if PQ = 24 cm, PR = 7 cm and O is the centre of the circle.



15. Water in a canal, 6 m wide and 1.5 m deep, is flowing with a speed of 10 km/h. How much area will it irrigate in 30 minutes, if 8 m of standing water is needed ?

16. Find the point on the x-axis which is equidistant from (2, −5) and (−2, 9).

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SECTION - C

Question numbers 19 to 28 carry 3 marks each.

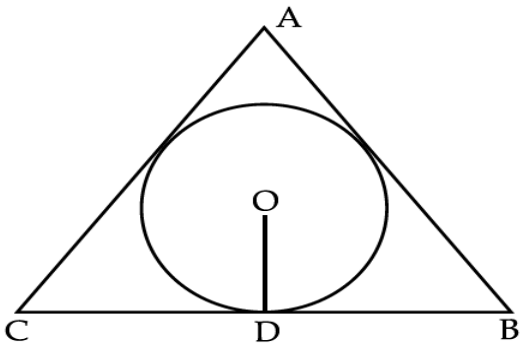
19. Solve for x : $\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$.

OR

The sum of a number and its positive square root is $\frac{6}{25}$. Find the number.

20. The sum of the 5th and 7th terms of an AP is 52 and its 10th term is 46. Find the AP.

21. A triangle ABC is drawn to circumscribe a circle of radius 4 cm such that the segments BD and DC into which BC is divided by the point of contact are of lengths 8 cm and 6 cm respectively. If area of ΔABC is 84 cm^2, then find the sides AB and AC.



OR

Prove that parallelogram circumscribing a circle is a rhombus.

22. Draw a triangle ABC with side BC = 7 cm, $\angle B = 45°$ and $\angle C = 105°$. Then construct a triangle whose sides are $\frac{3}{4}$ times the corresponding sides of ΔABC.

23. A 20 m deep well with diameter 7 m is dug and the earth from digging is spread out to form a platform 22 m by 14 m. Find the height of the platform.

OR

A cone of height 24 cm and radius of base 6 cm is made up of modelling clay. A child reshapes it in the form of a sphere. Find the radius of the sphere.

24. The radii of two circles are 4 cm and 3 cm. Find the radius of the circle whose area is equal to the sum of the areas of the two circles. Also find the circumference of this circle.

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27. Ankita and Nagma are two friends. They were both born in 1990. What is the probability that they have (i) same birth day ? Different birth days ?

28. Find the area of a quadrilateral whose vertices, taken in order are $(-4, -2)$, $(-3, -5)$, $(0, -5)$ and $(2, -2)$.

SECTION - D

Question numbers 29 to 34 carry 4 marks each.

29. Prove that the lengths of tangents drawn from an external point to circle are equal.

30. The angles of depression of the top and the bottom of an 8 m tall building from the top of a multi-storied building are 30° and 45° respectively. Find the height of the multi storied building.

31. A drinking glass open at the top is in the shape of a frustum of a cone of height 24 cm. The diameters of its top and bottom circular ends are 18 cm and 4 cm respectively. Find the capacity and total surface area of the glass.

OR

A solid in the shape of a cone standing on a hemisphere with both their radii being equal to 1 cm and height of the cone is equal to its radius. Find the volume and surface area of the solid.

32. The difference of squares of two numbers is 180. The square of the smaller number is 8 times the larger number. Find the two numbers.

OR

Two Pipes running together can fill a tank in 6 minutes. If one pipe takes 5 minutes more than the other to fill the tank, find the time in which each pipe would fill the tank separately.

33. A spiral is made up of successive semicircles, with centres alternatively at A and B, starting with centre at A of radii 0.5 cm, 1 cm, 1.5 cm, 2 cm ..... as shown in the figure. What is the total length of such spiral made up of thirteen consecutive semicircles ?

(Take $\pi = \frac{22}{7}$)