

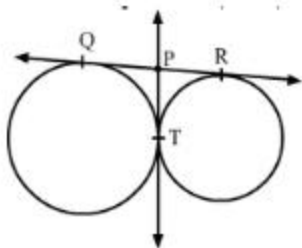
CBSE – CLASS X – Math Paper-2014

Q-1 The first three terms of an AP respectively are $3y - 1$, $3y + 5$ and $5y + 1$. Then y equals

- (A) -3
- (B) 4
- (C) 5
- (D) 2

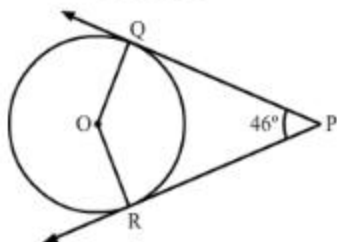
Q-2 In Fig. 1, QR is a common tangent to the given circles, touching externally at the point T.

The tangent at T meets QR at P. If $PT = 3.8$ cm, then the length of QR (in cm) is:



- (A) 3.8
- (B) 7.6
- (C) 5.7
- (D) 1.9

3. In Fig. 2, PQ and PR are two tangents to a circle with centre O. If $\angle QPR = 46^\circ$, then $\angle QOR$ equals:



- (A) 67°
- (B) 134°
- (C) 44°
- (D) 46°

4. A Ladder makes an angle of 60° with the ground when placed against a wall. If the foot of the ladder is 2 m away from the wall, then the length (in meters) is:

- (A) $\frac{4}{\sqrt{3}}$
- (B) $4\sqrt{3}$
- (C) $2\sqrt{2}$
- (D) 4

Q5. If two different dice are rolled together, the probability of getting an even number on both dice, is:

- (A) $1/36$
- (B) $1/2$
- (C) $1/6$
- (D) $1/4$

Q6. A number is selected at random from the numbers 1 to 30. The probability that it is a prime number

- (A) $2/3$
- (B) $1/6$
- (C) $1/3$
- (D) $11/30$

Q7 If the points A(x, 2), B (-3,-4) and C (7, -5) are collinear, then the value of x is:

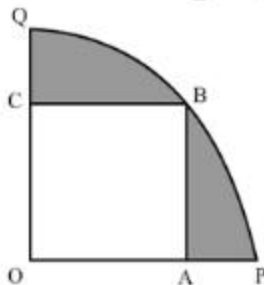
- (A) -63
- (B) 63
- (C) 60
- (D) -60

Q8 The number of solid of solid spheres, each of diameter 6cm that can be made by melting a solid metal cylinder of height 45 cm and diameter 4 cm is:

- (A) 3
 (B) 5
 (C) 4
 (D) 6

SECTION-B

- Q9 Solve the quadratic equation $2x^2 + ax - a^2 = 0$ for x .
- Q10. The first and the last terms of an AP are 5 and 45 respectively. If the sum of all its terms is 400, Find its common difference.
- Q11. Prove that the line segment joining the point of contact of two parallel tangents of a circle passes through its centre.
- Q12 If from an external point P of a circle with centre O , two tangents PQ and PR are drawn such that $\angle QPR = 120^\circ$, prove that $2PQ = PO$.
- Q13 Rahim tosses two different coins simultaneously. Find the probability of getting at least one tail.
- Q14 In fig. 3, a square $OACB$ is inscribed in a quadrant $OPBQ$ of a circle. If $OA = 20$ cm, find the area of the shaded region (Use $\pi = 3.14$)



SECTION-C

- Q15 Solve the equation $\frac{4}{x} - 3 = \frac{5}{2x+3}$, $x \neq 0, -3/2$, for x .
- Q16. If the seventh term of an AP is $1/9$ and its ninth term is $1/7$, find its 63^{rd} term.

Q17. Draw a right triangle ABC in which $AB = 6$ cm, $BC = 8$ cm and $\angle B = 90^\circ$. Draw BD perpendicular from B on AC and draw a circle passing through the points B, C and D.

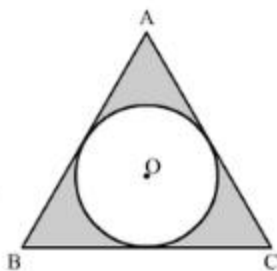
Construct tangents from A to this circle.

Q18. If the point A (0,2) is equidistant from the points B(3, p) and C(p, 5), find P. Also find the length of AB.

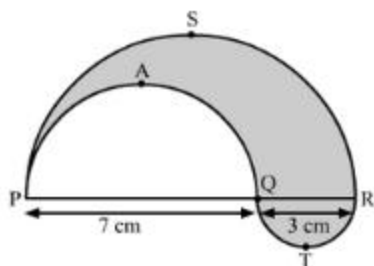
Q19. Two ships are there in the sea on either side of a light house in such a way that the ships and the light house are in the same straight line. The angles of depression of two ships as observed from the top of the light house are 60° and 45° . If the height of the light house is 200 m, find the distance between the two ships. [Use $\sqrt{3} = 1.73$]

Q20 If the points A(-2, 1), B (a, b) and C (4, -1) are collinear and $a-b = 1$, find the values of a and b.

Q21 In Fig 4, a circle is inscribed in an equilateral triangle ABC of side 12 cm. Find the radius of inscribed circle and the area of the shaded region. [Use $\pi = 3.14$ and $\sqrt{3} = 1.73$]



Q22. In Fig.5. PSR, RTQ and PAQ are three semicircles of diameters 10cm, 3cm and 7 cm respectively. Find the perimeter of the shaded region. [Use $\pi = 3.14$]



Q23 A farmer connects a pipe of internal diameter 20 cm from a canal into a cylindrical tank which is 10 m in diameter and 2 m deep? If the water flows through the pipe at the rate of 4 km per hour, in how much time will the tank be filled completely?

Q24. A solid metallic right circular cone 20 cm high and whose vertical angle is 60° , is cut into two parts at the middle of its height by a plane parallel to its base. If the frustum so obtained be drawn into a wire of diameter $\frac{1}{12}$ cm, find the length of the wire.

SECTION -D

Q 25. The difference of two natural number is 5 and the difference of their reciprocals is $\frac{1}{110}$. Find the numbers.

Find the numbers.

Q26. Prove that the length of the tangents drawn from an external point to a circle are equal.

Q27. The angles of elevation and depression of the top and the bottom of a tower from the top of a building, 60 m high, are 30° and 60° respectively. Find the difference between the heights of the building and the tower and the distance between them.

Q28. A bag contains cards numbers from 1 to 49. A card is drawn from the bag at random, after mixing the cards thoroughly. Find the probability that the number on the drawn card is:

- (1) An odd number
- (2) A multiple of 5
- (3) A perfect Square
- (4) An even prime number.

Q29. Find the ratio in which the point P (X, 2) divides the line segment joining the points A (12, 5)

and B (4, -3). Also find the value of X

Q30. Find the values of k for which the quadratic equation $(k + 4)x^2 + (k + 1)x + 1 = 0$ has equal roots. Also find these roots.

Q31. In an AP of 50 terms, the sum of first 10 terms is 210 and the sum of its last 15 terms is 2565.

Find the A.P.

Q32 . Prove that a parallelogram circumscribing a circle is a rhombus.

Q33. Sushant has a vessel, of the form of an inverted cone, open at the top, of height 11 cm and Radius of top as 2.5 cm and is full of water. Metallic spherical balls each of diameter 0.5 cm are put

In the vessel due to which $\frac{2}{5}$ th of the water in the vessel flows out. Find how many balls were put in the vessel. Sushant made the arrangement so that the water that flows out irrigates the

Flower beds. What value has been shown by Sushant?

Q34. From a solid cylinder of height 2.8 cm and diameter 4.2 cm, a conical cavity of the same height and same diameter is hollowed out. Find the total surface area of the remaining solid.

[Take $\pi=22/7$]