



**DELHI PUBLIC SCHOOL:: SURAT**  
**MATHEMATICS (SAMPLE PAPER)**  
**SUMMATIVE ASSESSMENT-2**

Roll No: 

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Class: X

Marks: 80

Time: 3 Hours

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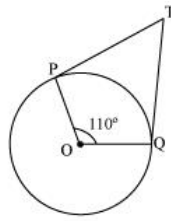
**General Instructions**

- (i) All questions are compulsory.
- (ii) The question paper consists of 34 questions divided into four sections A,B,C and D. Section A comprises of 10 questions of 1 mark each, Section B comprises of 8 questions of 2 marks each, Section C comprises of 10 questions of 3 marks each and Section D comprises of 6 questions of 4 marks each.
- (iii) Question numbers 1 to 10 in section A are multiple choice questions where you are to select one correct option out of the given four.
- (iv) There is no overall choice. However, internal choice has been provided in 1 question of two marks, 3 questions of three marks each and 2 questions of four marks each. You have to attempt only one of the alternatives in all such questions.
- (v) Use of calculator is not permitted.

**Section-A****Question number 1 to 10 carry 1 mark each.**

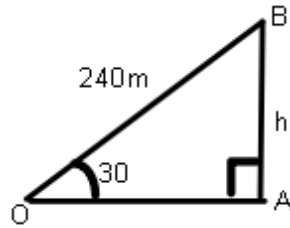
1. If  $ax^2 + bx + c = 0$  has equal roots, then  $c =$   
(A)  $-\frac{b}{2a}$       (B)  $\frac{b}{2a}$       (C)  $-\frac{b}{4a}$       (D)  $\frac{b}{4a}$
2. If the  $n$ th term of a pattern of numbers is  $7n+5$ , then common difference of this A.P is  
(A) 5      (B) 6      (C) 7      (D) 8

3. In the given figure, if TP and TQ are the two tangents to a circle with centre O so that  $\angle POQ = 110^\circ$ , then find  $\angle PTQ$ .



- (A)  $110^\circ$                       (B)  $70^\circ$                       (C)  $90^\circ$                       (D)  $250^\circ$
4. How many balls, each of radius 1cm can be made from a solid sphere of lead of radius 8cm?
- (A) 256                      (B) 512                      (C) 1024                      (D) 576
5. If the perimeter and the area of a circle are numerically equal, then the radius of the circle is
- (A) 1                      (B) 0                      (C) 2                      (D) -1
6. A ladder of 20m long touches the wall at a height of 10m. The angle made by its horizontal is
- (A)  $30^\circ$                       (B)  $60^\circ$                       (C)  $45^\circ$                       (D)  $75^\circ$
7. A solid sphere of radius  $r$  cm is melted and recast into the shape of a solid cone of height  $r$  and radius 1cm. Then the number of small sphere is
- (A)  $2r$                       (B)  $r$                       (C)  $4r$                       (D)  $3r$
8. From a point Q, the length of the tangent to a circle is 24 cm and the distance of Q from the centre is 25 cm. The radius of the circle is
- (A)  $7cm$                       (B)  $12cm$                       (C)  $15cm$                       (D)  $24.5cm$
9. The probability of an impossible event is
- (A) 0                      (B) 1                      (C) less than 0                      (D) more than 1

10. From the figure, find h

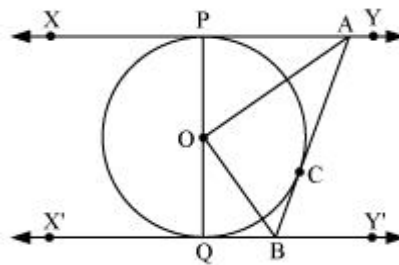


- (A) 120m                      (B) 60m                      (C) 180m                      (D) 200m

**Section-B**

Question number 11 to 18 carry 2 marks each.

11. The sum of two numbers p and q is 18 and the sum of their reciprocal is  $\frac{1}{4}$ . Find the numbers.
12. How many terms are there in A.P. whose first term is  $-14$ , common difference is 4 and sum of terms is 40.
13. In the given figure, XY and X'Y' are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting XY at A and X'Y' at B. Prove that  $\angle AOB = 90^\circ$ .



**OR**

Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line-segment joining the points of contact at the centre.

14. A solid iron pole consists of a cylinder of height 220 cm and base diameter 24 cm, which is surmounted by another cylinder of height 60 cm and radius 8 cm. Find the mass of the pole, given that  $1 \text{ cm}^3$  of iron has approximately 8 g mass. [Use  $\pi = 3.14$ ]
15. The difference between circumference and diameter of a circular plot is 105m. Find the area of the circular plot.
16. Find a point on X-axis which is equidistant from A(5,4) and B(-2,3)
17. A card is drawn from a well shuffled deck of playing cards. Find the probability of drawing
- A black face card.
  - A diamond face card
18. Find the values of y for which the distance between the points P(2,-3) and Q(10,y) is 10 units.

### Section-C

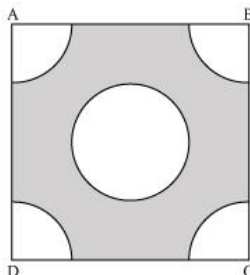
**Question number 19 to 28 carry 3 marks each.**

19. An aeroplane takes 1 hour less than for a journey of 1200 km if its speed is increased by 100 km/hr from its usual speed. Find the usual speed.
20. How many three digit numbers are divisible by 7?
21. A quadrilateral ABCD is drawn to circumscribe a circle.  
Prove that:  $AB + CD = AD + BC$

**OR**

A circle is touching the sides BC of a  $\Delta ABC$  at P and is touching AB and AC when produced at Q and R respectively. Prove that  $AQ = \frac{1}{2}$  (perimeter of  $\Delta ABC$ )

22. From each corner of a square of side 4 cm a quadrant of a circle of radius 1 cm is cut and also a circle of diameter 2 cm is cut as shown in the given figure. Find the area of the remaining portion of the square.



23. Construct a triangle with sides 5cm, 6cm and 7cm and then another triangle whose sides are  $\frac{6}{5}$  of the corresponding sides of the first triangle. Write the justification for the construction.

**OR**

Draw two tangents to a circle of radius 3.5 cm from a point P at a distance of 5.5 cm from its centre.

24. The cost of leveling a circular field at Rs. 2 per sq. metre is Rs.33957. Calculate the area of the field and the radius of the field.
25. Two men on the same side of a tall building notice the angle of elevation to the top of building to be  $30^\circ$  and  $60^\circ$  respectively. If the height of the building is 120m, find the distance between two men.
26. Find the area of a rhombus if its vertices are (3, 0), (4, 5), (-1, 4) and (-2, -1) taken in order.

**OR**

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

27. A bag contains 6 red balls, 5 white balls, 8 green balls and 6 black balls. One ball is drawn at random from the bag. Find the probability that the ball is
- White
  - Red or black
  - Not green
28. If the point C(-1,2) divides line segment AB in the ratio 3:4, where the coordinates of A are (2,5), find the coordinates of B.

### **Section-D**

**Question number 29 to 34 carry 4 marks each.**

29. A sum of Rs.280 is to be used to award four prizes. If each prize after the first prize is Rs. 20 less than its preceding prize, find the value of each of the prizes.

30. The length of the minute hand of a clock is 14 cm .Find the area swept by the minute hand in 15 minutes.
31. A bucket made up of a metal sheet is in the form of a frustum of a cone of height 16 cm with radii of its lower and upper ends as 8 cm and 20 cm respectively. Find the cost of the bucket if the cost of metal sheet used is Rs. 15 per  $100\text{cm}^2$  .
32. Let ABC be a right triangle in which  $AB = 6$  cm,  $BC = 8$  cm and  $\angle B = 90^\circ$ . BD is the perpendicular from B on AC. The circle through B, C, and D is drawn. Construct the tangents from A to this circle. Give the justification of the construction.
33. Two pipes running together can fill a cistern in  $3\frac{1}{13}$  minutes. If one pipe takes 3 minutes more than the other to fill it, find the time in which each pipe would fill the cistern.

**OR**

The sides of a square exceeds the side of the another square by 4 cm and the sum of the areas of the two squares is 400 sq. cm.Find the dimensions of the squares.

34. A man is standing on the deck of a ship which is 25m above water level. He observes the angle of depression of the base of the light house as  $45^\circ$ .Calculate the height of the light house.

**OR**

Two towers face each other separated by a distance of 45m.As seen from the top of the first tower ,the angle of depression of the second tower's base is  $60^\circ$  and that of the top is  $30^\circ$  What is the height of the second tower.

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