ALGEBRA

1. The pair of linear equations $2x = 5y + 6$ and $15y = 6x - 18$ represents two lines which are:

   (a) intersecting
   (b) parallel
   (c) coincident
   (d) either intersecting or parallel

2. The next term of the A.P,: $\sqrt{7}0, \sqrt{2}8, \sqrt{6}3$ is:

   (a) $\sqrt{7}0$
   (b) $\sqrt{8}0$
   (c) $\sqrt{9}7$
   (d) $\sqrt{1}12$

3. The roots of the equation $x^2 + 3x - 10 = 0$ are:

   (a) $2, -5$
   (b) $-2, 5$
   (c) $2, 5$
   (d) $-2, -5$

4. If α, β are zeroes of the polynomial $x^2 - 1$, then the value of $(\alpha + \beta)$ is:

   (a) 2
   (b) 1
   (c) -1
   (d) 0

5. If α, β are the zeroes of the polynomial $p(x) = 4x^2 - 3x - 7$, then $\frac{1}{\alpha} + \frac{1}{\beta}$ is equal to:

   (a) $\frac{7}{3}$
   (b) $-\frac{7}{3}$
   (c) $\frac{3}{7}$
   (d) $-\frac{3}{7}$

GEOMETRY

6. In the given figure, TA is a tangent to the circle with center O such that $OT = 4\text{cm}$, $\angle OTA = 30°$, then the length of TA is:

   (a) $2 \times \sqrt{3}\text{cm}$

   (b) 2cm

   (c) $2 \times \sqrt{2}\text{cm}$

   (d) $\sqrt{3}\text{cm}$

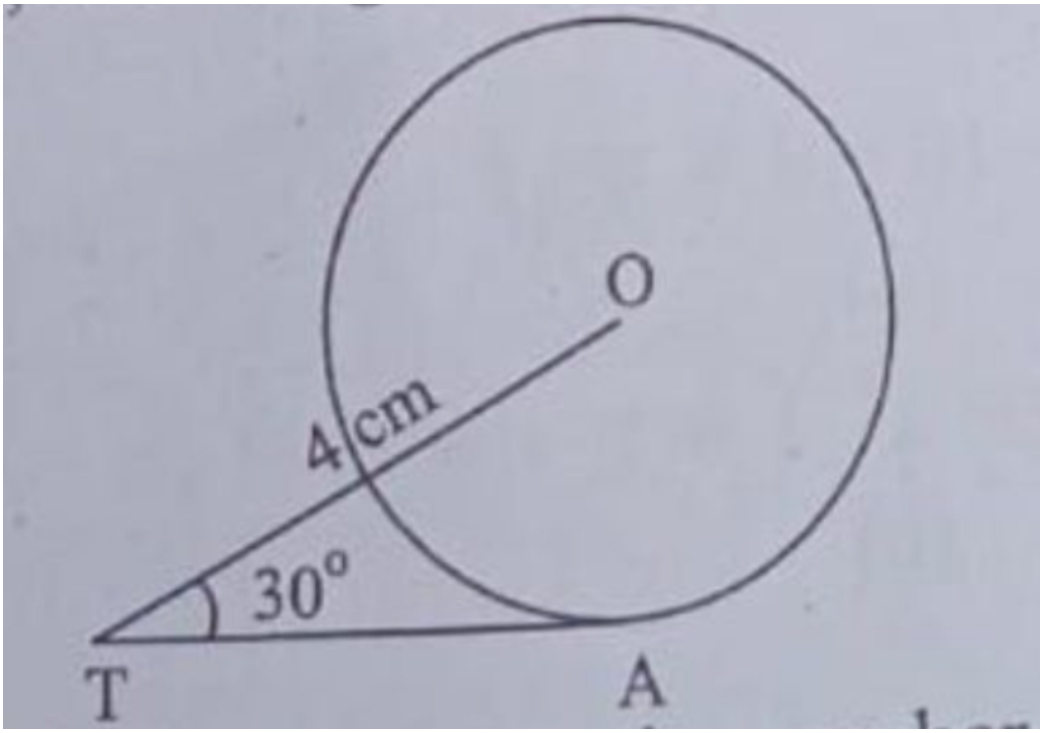

Figure 1: image1

7. In the given figure,$\triangle ABC \sim \triangle QPR$,If $AC = 6$cm, $BC = 5$cm, $QR = 3$cm$and PR = x$;then the value of x is:

   (a) 3.6cm

   (b) 2.5cm

   (c) 10cm

   (d) 3.2cm

8. The distance of the point $(-6, 8)$ from origin is:

   (a) 6

   (b) -6

   (c) 8

   (d) 10

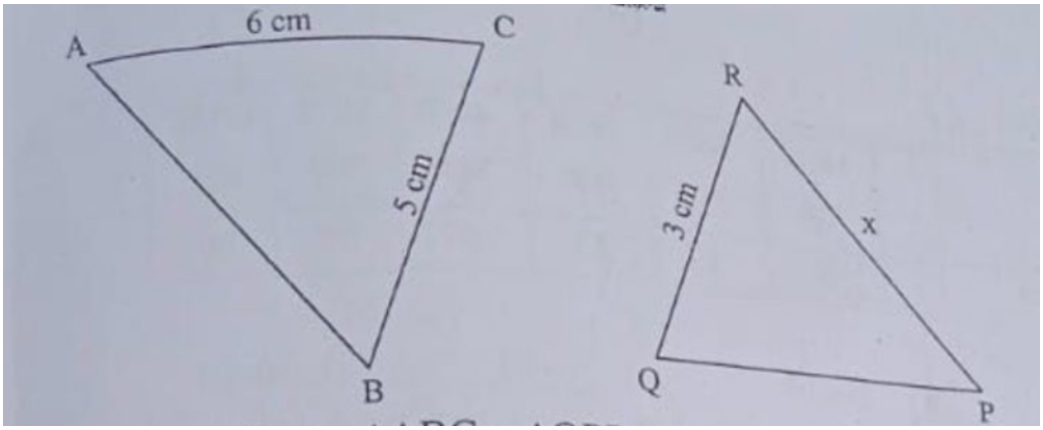

Figure 2: image2

9. What is the area of a semi-circle of diameter (d)?

   (a) $\frac{1}{16} \times \pi \times d^2$

   (b) $\frac{1}{4} \times \pi \times d^2$

   (c) $\frac{1}{8} \times \pi \times d^2$

   (d) $\frac{1}{2} \times \pi \times d^2$

10. In the given figure, PT is a tangent at T to the circle with centre (o). If $\angle TPO = 25°$, then x is equal to:

    (a) 25°

    (b) 65°

    (c) 90°

    (d) 115°

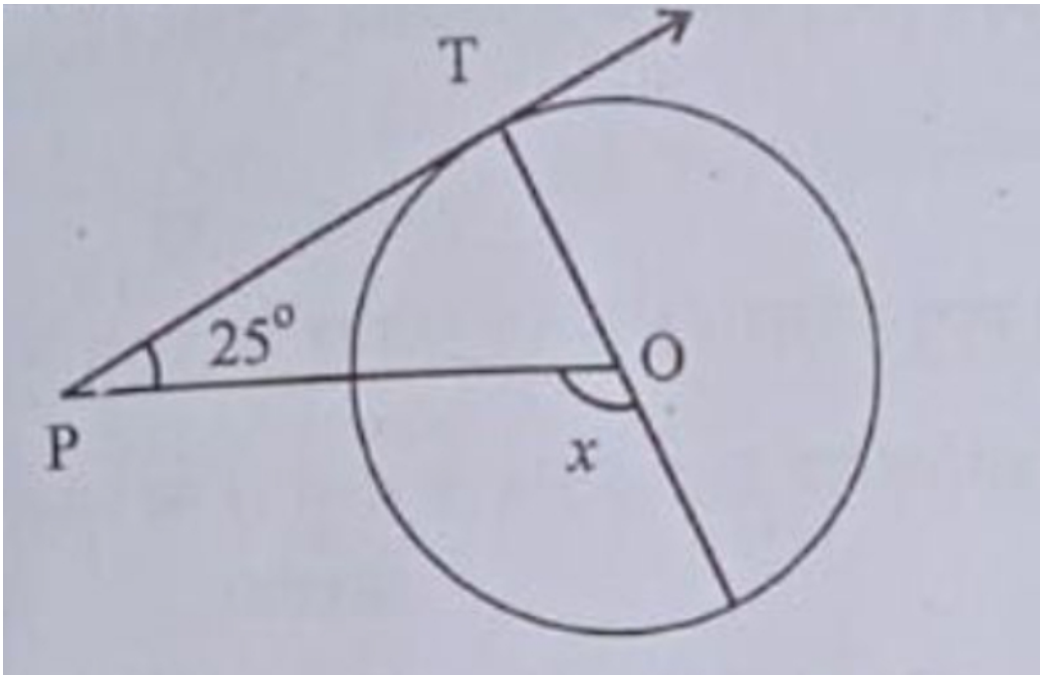

Figure 3: image3

11. In the given figure, $PQ \parallel AC$. If $BP = 4\,\text{cm}$, $AP = 2.4\text{cm}$, and $BQ = 5\,\text{cm}$, then the length of BC is:

    (a) 8cm

    (b) 3cm

    (c) 0.3cm

    (d) $\frac{25}{3}$cm

12. The points $(-4, 0)$, $(4, 0)$, *and* $(0, 3)$ are the vertices of a:

    (a) right triangle

    (b) isosceles triangle

    (c) equilateral triangle

    (d) scalene triangle

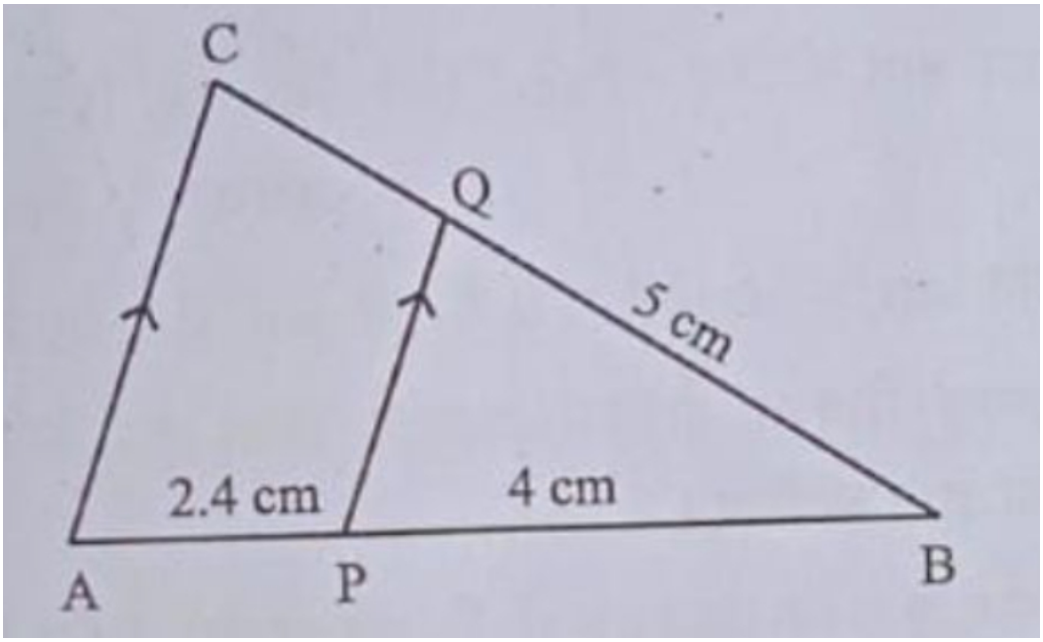

Figure 4: image4

NUMBER SYSTEM

13. The ratio of HCF to LCM of the least composite number and the least prime number is:

    (a) 1 : 2

    (b) 2 : 1

    (c) 1 : 1

    (d) 1 : 3

TRIGONOMETRY

14. If a pole 6 m high casts a shadow $2 \times \sqrt{3}$m long on the ground,then sun's elevation is:

    (a) 60°

(b) $45°$

(c) $30°$

(d) $90°$

15. $(\sec^2\theta - 1)(\operatorname{cosec}^2\theta - 1)$ is equal to:

(a) -1

(b) 1

(c) 0

(d) 2

PROBABILITY

16. Two dice are thrown together. The probability of getting the difference of numbers on their upper faces equal to 3 is:

(a) $\frac{1}{9}$

(b) $\frac{2}{9}$

(c) $\frac{1}{6}$

(d) $\frac{1}{12}$

17. A Card is drawn at random from a well-shuffled pack of 52 cards.The probability that the card drawn is not an ace is:

(a) $\frac{1}{13}$

(b) $\frac{9}{13}$

(c) $\frac{4}{13}$

(d) $\frac{12}{13}$

18. DIRECTIONS: In questions number 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option out of the following: Assertion (A): The probability that a leap year has 53 Sundays is $\frac{2}{7}$.

Reason (R): The probability that a non-leap year has 53 Sundays is $\frac{5}{7}$.

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is true but Reason (R) is false.

(d) Assertion (A) is false but Reason (R) is true.

STATISTICS

19. For the following distribution:

Marks Below	10	20	30	40	50	60
Number of Students	3	12	27	57	75	80

The modal class is:

(a) 10 – 20

(b) 20 – 30

(c) 30 – 40

(d) 50 – 60