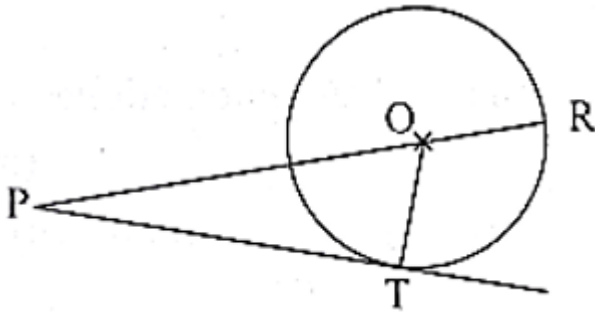1. HCF of 144 and 198 is
     a. 9
     b. 18
     c. 6
     d. 12
2. The median and mode respectively of a frequency distribution are 26 and 29. Then its mean is

     a. 27.5
     b. 24.5
     c. 28.4
     d. 25.8
3. In the figure, on a circle of radius 7 cm, tangent PT is drawn from a point P such that PT = 24 cm. If O is the centre of the circle, then the length of PR is:

     a. 30 cm
     b. 28 cm
     c. 32 cm
     d. 25 cm
4. 225 can be expressed as

     a. 5×3^2
     b. $5^2 \times 3$
     c. $5^2 \times 3^2$
     d. $5^3 \times 3$
5. The probability that a number selected at random from the numbers 1, 2, 3, ..., 15 is a multiple of 4 is
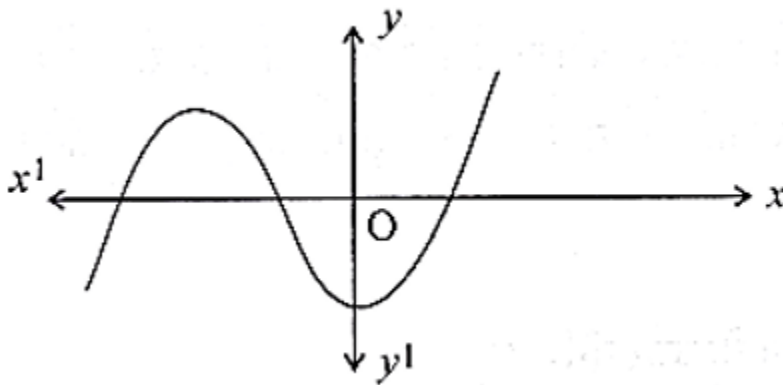
     a. $\frac{4}{15}$
     b. $\frac{2}{15}$
     c. $\frac{1}{15}$
     d. $\frac{1}{5}$

6. If one zero of the quadratic polynomial $kx^2 + 3x + k$ is 2 then the value of k is

    a. $\frac{5}{6}$56
    b. $\frac{-5}{6}$-56
    c. $\frac{6}{5}$65
    d. $\frac{-6}{5}$-65

7. 2.35-----2.35⁻ is

    a. an integer
    b. a rational number
    c. san irrational number
    d. a natural number

8. The graph of a polynomial is shown in Figure, then the number of its zeroes is

    a. 3
    b. 1
    c. 2
    d. 4

9. Distance of point P(3, 4) from x-axis is

    a. 3 units
    b. 4 units
    c. 5 units
    d. 1 units

10.   If the distance between the points A(4, p) and B(1, 0) is 5 units, then the value(s) of p is (are)

    a. 4 only
    b. -4 only
    c. $\pm4\pm4$
    d. 0

In Q. Nos. 11 to 15, fill in the blanks.

11.   If the point C(k, 4) divides the line segment joining two points A(2, 6) and B(5, 1) in ratio 2: 3, the value of k is _____.

or

If points A(-3,12), B(7,6) and C(x, 9) are collinear, then the value of x is _____.

12.   If the equations kx - 2y = 3 and 3x + y = 5 represent two intersecting lines at a unique point, then the value of k is _____.

or

If the equations kx - 2y = 3 and 3x + y = 5 represent two intersecting lines at a unique point, then the value of k is _____.

13.   The value of (sin 20° cos 70° + sin 70° cos 20°) is _____.
14.   If tan(A + B) = $3-\sqrt{3}$ and tan(A - B) = $13\sqrt{13}$, A > B, then the value of A is _____.
15.   The perimeters of two similar triangles are 25 cm and 15 cm respectively. If one side of the first triangle is 9 cm, then the corresponding side of the second triangle is _____.

In Q. Nos. 16 to 20, answer the following.

16.   If 5 tan$\theta\theta$ = 3, then what is the value of $(5\sin\theta-3\cos\theta4\sin\theta+3\cos\theta)$(5sin²θ−3cos²θ4sin²θ+3cos²θ)?
17.   The areas of two circles are in the ratio 9: 4, then what is the ratio of their circumferences?

18. If a pair of dice is thrown once, then what is the probability of getting a sum of 8?

19. In Figure given below in $\triangle\triangle$ ABC, DE || BC such that AD = 2.4 cm, AB = 3.2 cm and AC = 8 cm, then what is the length of AE?
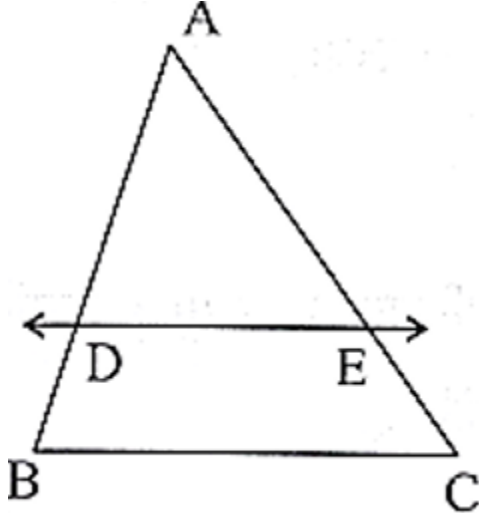
20. The nth term of an A P is (7 - 4n), then what is its common difference?

Section - B

Q. Nos. 21 to 26 carry two marks each.

21. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball at random from the bag is three times that of a red ball, find the number of blue balls in the bag.

22. Prove that $\sqrt{\dfrac{1-\sin\theta}{1+\sin\theta}} = \sec\theta - \tan\theta$

or

Prove that $\dfrac{\tan^2\theta}{1+\tan^2\theta} + \dfrac{\cot^2\theta}{1+\cot^2\theta} = 1$

23. Two different dice are thrown together, find the probability that the sum of the numbers appeared is less than 5.

or

Find the probability that 5 Sundays occur in the month of November of a randomly selected year.

24. In Fig., a circle touches all the four sides of a quadrilateral ABCD. If AB=6 cm, BC = 9 cm and CD = 8 cm, then find the length of AD.
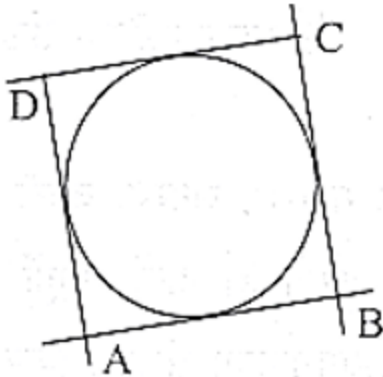
25. The perimeter of a sector of a circle with radius 6.5 cm is 31 cm, then find the area of the sector.

26. Divide the polynomial $(4x^2 + 4x + 5)$ by $(2x + 1)$ and write the quotient and the remainder.

Section - C

Q. Nos. 27 to 34 carry 3 marks each.

27. If α and β are the zeroes of the polynomial $f(x) = x^2 - 4x - 5$ then find the value of $\alpha^2 + \beta^2$.

28. Draw a circle of radius 4 cm. From a point, 7 cm away from the centre of the circle. Construct a pair of tangents to the circle.

or

Draw a line segment of 6 cm and divide it in the ratio 3: 2.

29. A solid metallic cuboid of dimension 24 cm $\times$ 11 cm $\times$ 7 cm is melted and recast into solid cones of base radius 3.5 cm and height 6 cm. Find the number of cones so formed.

30. Prove that $(1 + \tan A - \sec A) \times (1 + \tan A + \sec A) = 2 \tan A$

or

Prove that $\dfrac{\operatorname{cosec}\theta}{\operatorname{cosec}\theta - 1} + \dfrac{\operatorname{cosec}\theta}{\operatorname{cosec}\theta + 1} = 2\sec^2\theta$

31.   Given that $3-\sqrt{3}$ is an irrational number, show that $(5 + 2\ 3-\sqrt{3})$ is an irrational number.

or

An army contingent of 612 members is to march behind an army band of 48 members in a parade. The two groups are to march in the same number of columns. What is the maximum number of columns in which they can march?

32.   Prove that, in a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.

Read the following passage carefully and then answer the questions given at the end.

33.   To conduct Sports Day activities, in your rectangular shaped school ground ABCD, lines have been drawn with chalk powder at a distance of 1 m each. 100 flower pots have been placed at a distance of 1 m from each other along with AD, as shown in Fig. 5. Niharika runs $\frac{1}{4}$ 14 th the distance A D on the 2nd line and posts a green flag. Preet runs $\frac{1}{5}$ 15 the distance A D on the eighth line and posts a red flag.
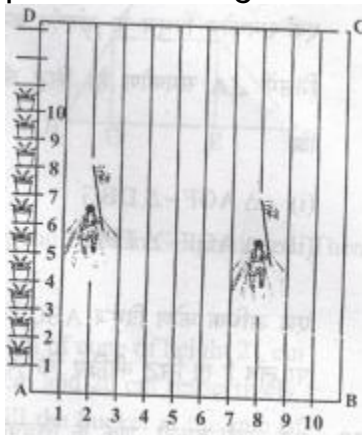
   i.   What is the distance between the two flags?
   ii. If Rashmi has to post a blue flag exactly halfway between the line segment joining the two flags, where should she post the blue flag?

34.   Solve graphically: 2x + 3y = 2, x - 2y = 8

SECTION -D

Q. Nos. 35 to 40 carry 4 marks each.

35. A two-digit number is such that the product of its digits is 14. If 45 is added to the number; the digits interchange their places. Find the number.

36. If 4 times the 4th term of an AP is equal to 18 times the 18th term, then find the 22 nd term.

or

How many terms of the AP : 24, 21, 18, ... must be taken so that their sum
is 78?

37. The angle of elevation of the top of a building from the foot of a tower is 30°. The angle of elevation of the top of the tower from the foot of the building is 60°. If the tower is 60 m high, find the height of the building.

38. In Figure, DEFG is a square in a triangle ABC right angled at A. Prove that
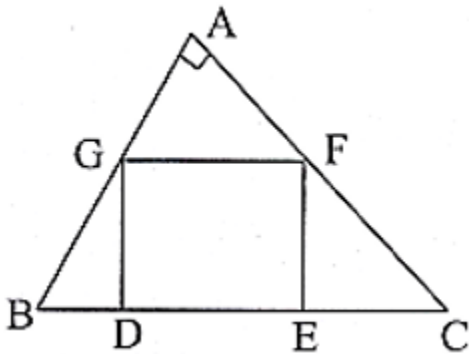
  i. $\triangle$ AGF ~ $\triangle$ DBG
  ii. $\triangle$ AGF ~ $\triangle$ EFC

or

In an obtuse $\triangle$ ABC($\angle$B is obtuse), AD is perpendicular to CB produced. Then prove that $AC^2 = AB^2 + BC^2 + 2BC \times BD$

39.   An open metal bucket is in the shape of a frustum of a cone of height 21 cm with radii of its lower and upper ends are 10 cm and 20 cm respectively. Find the cost of milk which can completely fill the bucket at the rate of ₹ 40 per litre.

or

A solid is in the shape of a cone surmounted on a hemisphere. The radius of each of them is 3.5 cm and the total height of the solid is 9.5 cm. Find the volume of the solid.

40.   Find the mean of the following data:

Classes	0-20	20-40	40-60	60-80	80-100	100-120
Frequency	20	35	52	44	38	31