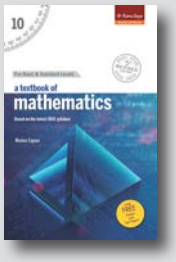


Sample Question Paper 1

Term 1

BASIC

Time Allowed: 90 minutes | Maximum Marks: 40

General Instructions:

1. The question paper contains three sections A, B and C.
2. Section A consists of 20 questions of 1 mark each. Attempt any 16 questions.
3. Section B consists of 20 questions of 1 mark each. Attempt any 16 questions.
4. Section C consists of 10 questions based on two Case Studies. Attempt any 8 questions.
5. There is no negative marking.

SECTION A

1. The value of $5 \tan^2 \theta - 5 \sec^2 \theta$ is

(*a*) 1 (*b*) -5 (*c*) 0 (*d*) 5

2. $3 + \sqrt{5}$ is

(*a*) a rational number (*b*) an irrational number
(*c*) an integer (*d*) not real

3. If a die is thrown once, the probability of getting a perfect square is

(*a*) $\frac{1}{3}$ (*b*) $\frac{1}{4}$ (*c*) $\frac{2}{3}$ (*d*) $\frac{3}{4}$

4. If the area of a circle is 154 cm^2, then its perimeter is

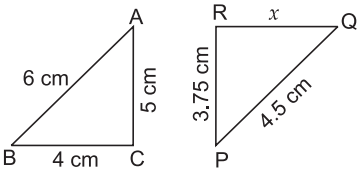
(*a*) 33 cm (*b*) 21 cm (*c*) 42 cm (*d*) 44 cm

5. The pair of equations $2x - 3y = 2$ and $3x - 2y = 4$ has

(*a*) one solution (*b*) two solutions
(*c*) no solution (*d*) many solutions

6. $\Delta ABC \sim \Delta PQR$. The value of x is

(*a*) 2.5 cm
(*b*) 3 cm
(*c*) 2.75 cm
(*d*) 3.5 cm



7. In ΔABC, if $\angle B = 90°$, $\sin A = \frac{3}{5}$, then the value of $\cos C$ is

(*a*) $\frac{5}{4}$ (*b*) $\frac{4}{5}$ (*c*) $\frac{3}{5}$ (*d*) $\frac{5}{3}$

8. The decimal expression of $\frac{63}{72 \times 175}$ is

(*a*) terminating (*b*) non-terminating

(*c*) non-terminating and repeating (*d*) none of these

9. If the graphs of the equations $2x + \alpha y = 10$ and $3x + 6y = 12$ are parallel lines, then

(*a*) $\alpha = 4$ (*b*) $\alpha = 3$ (*c*) $\alpha = 6$ (*d*) $\alpha = 2$

10. The decimal expression of $\frac{17}{8}$ will terminate after how many places of decimals?

(*a*) 1 (*b*) 2

(*c*) 3 (*d*) will not terminate

11. If HCF $(a, 8) = 4$, LCM $(a, 8) = 24$, then a is

(*a*) 8 (*b*) 10 (*c*) 12 (*d*) 14

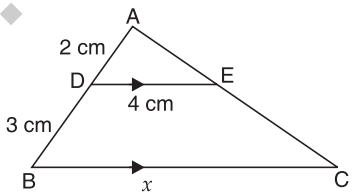
12. In the given figure DE || BC, then x equals

(*a*) 6 cm

(*b*) 8 cm

(*c*) 12 cm

(*d*) 10 cm



13. If an event is very unlikely to happen, then its probability is closest to

(*a*) 0.1 (*b*) 0.0001 (*c*) 0.1 (*d*) 0.001

14. If $\left(\frac{a}{2}, 4\right)$ is the mid-point of the line segment joining the points A(– 6, 5) and B(– 2, 3), then the value of a is

(*a*) – 8 (*b*) 3 (*c*) – 4 (*d*) 4

15. The other two zeroes of the polynomial $x^3 - 8x^2 + 19x - 12$ if its one zero is $x = 1$, are

(*a*) 3, 4 (*b*) 3, –4 (*c*) –1, –4 (*d*) –1, 4

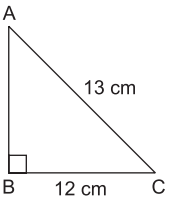
16. If $\sin \theta + \sin^2 \theta = 1$, then the value of the expression $(\cos^2 \theta + \cos^4 \theta)$ is

(*a*) 1 (*b*) 3 (*c*) 2 (*d*) $\frac{1}{3}$

17. If $\sin \theta = \frac{p}{q}$, then the value of $\tan \theta + \sec \theta$ is

(*a*) $\sqrt{\frac{q-p}{q+p}}$ (*b*) $\sqrt{\frac{q+p}{q-p}}$ (*c*) $\sqrt{\frac{q^2+p^2}{q^2-p^2}}$ (*d*) $\sqrt{\frac{q^2-p^2}{q^2+p^2}}$

18. In the figure, AC = 13 cm, BC = 12 cm, then sec C is equal to



(*a*) $\frac{13}{12}$ (*b*) $\frac{5}{12}$

(*c*) $\frac{12}{13}$ (*d*) $\frac{5}{13}$

19. The prime factors of the denominator of the fraction $\frac{3}{80}$ are

(*a*) 5 and 8 (*b*) 2 and 5 (*c*) 2, 4 and 5 (*d*) 1, 2 and 5

20. If the product of two numbers is 5780 and their HCF is 17, then their LCM is

(*a*) 9826 (*b*) 680 (*c*) 340 (*d*) 425

SECTION B

21. 4 pens and 10 pencils together cost ₹ 107, while 8 pens and 6 pencils cost ₹ 151. The cost of each pen will be

(*a*) ₹ 4.50 (*b*) ₹ 10.50

(*c*) ₹ 15.50 (*d*) ₹ 20.50

22. ABC and BDE are two equilateral triangles such that D is the mid-point of BC. Ratio of areas of triangles ABC and BDE is

(*a*) 2 : 1 (*b*) 1 : 2

(*c*) 4 : 1 (*d*) 1 : 4

23. If sec $\theta = \frac{3}{2}$, then $\tan^2 \theta$ is equal to

(*a*) $\frac{5}{4}$ (*b*) $\frac{9}{4}$ (*c*) $\frac{3}{4}$ (*d*) $\frac{1}{4}$

24. If the circumference of a circle increases from 2π to 4π then its area is

(*a*) halved (*b*) doubled (*c*) tripled (*d*) four times

25. The value of $\frac{\tan 45°}{\sin 30° + \cos 60°}$ is

(*a*) $\frac{1}{\sqrt{2}}$ (*b*) 2 (*c*) $\sqrt{2}$ (*d*) 1

26. If a letter is drawn at random from the letters in word 'ERROR', then the letters which have equal probability of being drawn are

(*a*) E and O (*b*) R and E (*c*) O and R (*d*) E, R and O

27. In a circle of radius 21 cm, if the angle subtended by the arc at the centre is 60°, then the area of the sector is

(*a*) 250 cm^2 (*b*) 231 cm^2 (*c*) 230 cm^2 (*d*) 131 cm^2

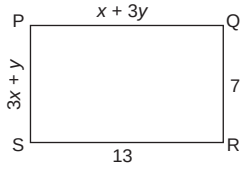
28. If *p* and *q* are two prime numbers, then their HCF is

(*a*) 2 (*b*) 0 (*c*) either 1 or 2 (*d*) 1

29. If the daughter's age is added to twice her mother's age, the sum is 92 years whereas twice the daughter's age added to the mother's age results in 64 years. The age of daughter is

(*a*) 13 years (*b*) 12 years (*c*) 42 years (*d*) 40 years

30. If PQRS is a rectangle, find the values of x and y.



(*a*) $x = 4, y = 1$ (*b*) $x = -1, y = 4$

(*c*) $x = 1, y = 4$ (*d*) $x = -4, y = 1$

31. The decimal expansion of number $\frac{441}{2^2 \times 5^3 \times 7}$ has

(*a*) a terminating decimal (*b*) non-terminating but repeating

(*c*) non-terminating non-repeating (*d*) terminating after two places of decimal

32. The coordinates of the point P dividing the line segment joining the points A(1, 3) and B(4, 6) in the ratio 2 : 1 are

(*a*) (2, 4) (*b*) (3, 5) (*c*) (4, 2) (*d*) (5, 3)

33. The length of the hypotenuse of an isosceles right triangle whose one side is $4\sqrt{2}$ cm is

(*a*) 12 cm (*b*) 8 cm

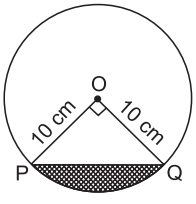
(*c*) $8\sqrt{2}$ cm (*d*) $12\sqrt{2}$ cm

34. If $x = 3 \sec^2 \theta - 1$ and $y = 3 \tan^2 \theta - 2$, then $x - y$ is equal to

(*a*) 4 (*b*) 2

(*c*) 3 (*d*) 1

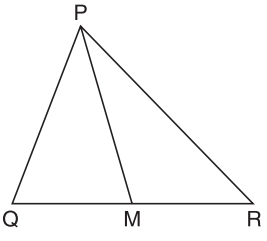
35. If chord PQ of a circle of radius 10 cm makes a right angle at the centre of the circle, then the area of the minor segment is [Take $\pi = 3.14$]



(*a*) 29.5 cm^2 (*b*) 30.5 cm^2

(*c*) 32.5 cm^2 (*d*) 28.5 cm^2

36. In ΔPQR, if $\frac{PQ}{PR} = \frac{QM}{MR}$, $\angle Q = 75°$ and $\angle R = 45°$, then the measure of $\angle QPM$ is



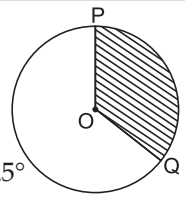
(*a*) 22.5°

(*b*) 30°

(*c*) 60°

(*d*) 45°

37. In the given figure if the area of the shaded sector POQ is $\frac{7}{20}$ of the area of the whole circle, then the measure of $\angle POQ$ is



(*a*) 100° (*b*) 120° (*c*) 126° (*d*) 125°

38. 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*) $\frac{2}{13}$ (*d*) $\frac{1}{3}$

39. A quadratic polynomial, one of whose zero is $2 + \sqrt{5}$ and the sum of whose zeroes is 4 is

(*a*) $x^2 + 4x - 1$ (*b*) $x^2 - 4x - 1$

(*c*) $x^2 - 4x + 1$ (*d*) $x^2 + 4x + 1$

40. $\Delta PQR \sim \Delta XYZ$ and the perimeters of ΔPQR and ΔXYZ are 30 cm and 18 cm respectively. If QR = 9 cm, then YZ is equal to

(*a*) 12.5 cm (*b*) 9.5 cm (*c*) 5.4 cm (*d*) 4.5 cm

SECTION C

Case Study 1

When Keya's father got a satellite dish installed, she asked him about the shape of the dish. Her father replied that it was a parabolic shape which facilitated the reflection and focus of the radio-waves. To satisfy Keya's curiosity her father showed her pictures of bridges with cables and car headlights. He then asked her to hold the ends of a skipping rope in her two raised hands (as shown) and observe the shape being formed with the rope.

41. The shape of the rope being held by Keya as shown in the adjacent picture is

(*a*) hyperbola (*b*) linear

(*c*) parabola (*c*) spiral

42. Maximum number of zeroes a quadratic polynomial can have is/are

(*a*) 1 (*b*) 2

(*c*) 4 (*d*) 3

43. If the graph of a quadratic polynomial does not intersect/touch the *x*-axis, then the number of zeroes it has is/are

(*a*) 1 (*b*) 2

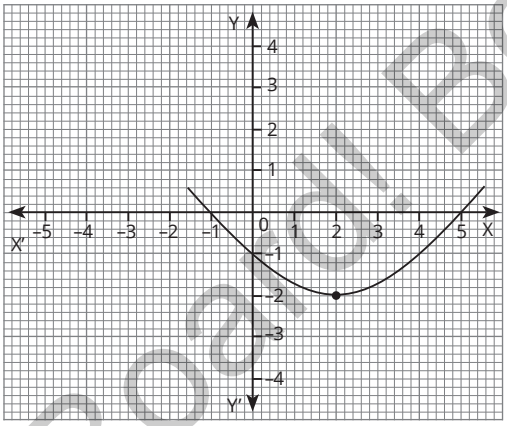
(*c*) 0 (*d*) 0 or 1

44. A real number *a* is called a zero of the polynomial $f(a)$ when

(*a*) $f(a) = 2$ (*b*) $f(a) = 0$

(*c*) $f(a) = 1$ (*d*) $f(a) = -1$

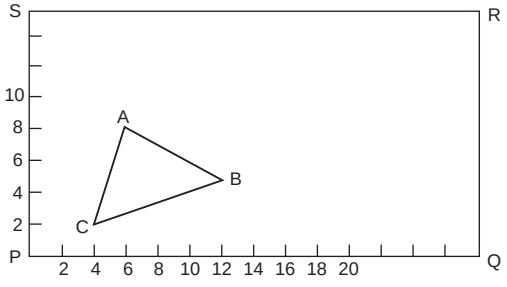
45. The coordinates of the vertex of the given parabola are



(*a*) (–1, 0) (*b*) (2, –2) (*c*) (4, 0) (*d*) (0, 0)

Case Study 2

Students of Class X have been allotted a plot which is in the shape of rectangle for gardening activity. Roses are planted on the boundary at a distance of 2 m from each other. As shown in the figure, there is a triangular lawn and the students are to plant roses in the remaining area of the plot.



Considering P as origin, answer the following questions.

46. What are the coordinates of B?

(*a*) (2, 4) (*b*) (12, 5)

(*c*) (5, 12) (*d*) (4, 2)

47. What are the coordinates of A?

(*a*) (8, 6) (*b*) (8, 4)

(*c*) (6, 8) (*d*) (4, 8)

48. What are the coordinates of mid-point of the line segment AC?

(*a*) (7, 5) (*b*) (4, 5)

(*c*) (5, 5) (*d*) (5, 7)

49. What are the coordinates of S?

(*a*) (16, 0) (*b*) (0, 16)

(*c*) (0, 14) (*d*) (14, 4)

50. What is the distance between the points A and B?

(*a*) $5\sqrt{3}$ (*b*) $9\sqrt{5}$

(*c*) $3\sqrt{5}$ (*d*) $5\sqrt{15}$