

Mathematics

Sample Question Paper 3 (Class 10) (Term – 1) (Session 2021-22)

Time: 1 hour 30 minutes

Number of Questions: 40

General Instructions

1. The Question Paper contains three parts A, B and C.
2. Section A consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.
3. Section B consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.
4. Section C consists of 10 questions based on Two Case Studies. Attempt any 8 questions.
5. There is no negative marking.

SECTION – A

Section - A consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.

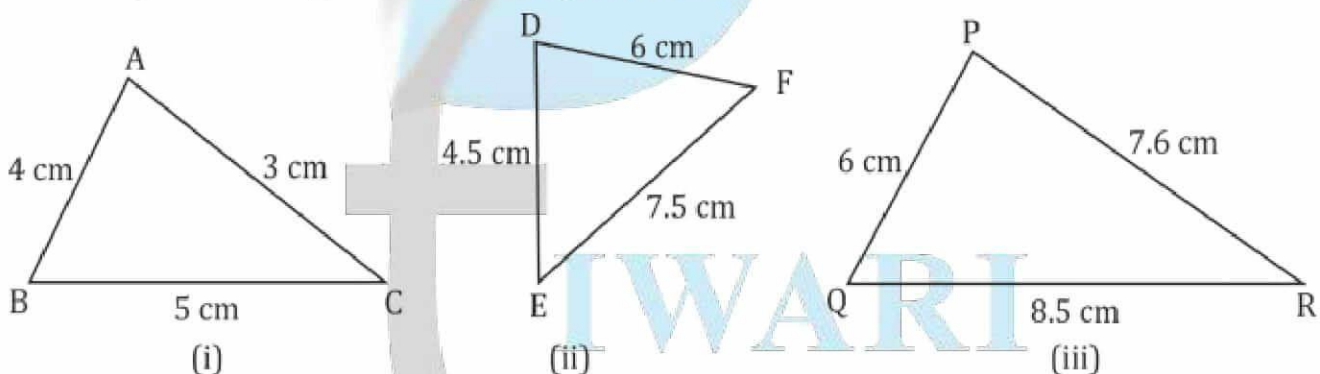
1. 12^h ends with a digit 0 or 5 for natural number "h"

- (A) 2 (B) 3
(C) No value (D) 5

2. $(3 \times 5 \times 7) + 7$ is a

- (A) Prime number (B) Composite number
(C) Can't say (D) None of these.

3. Which pairs of triangles in the given figure are similar?



- (A) (i) and (iii) (B) (ii) and (iii)
(C) (i) and (ii) (D) None of these.

4. Two numbers are in the ratio of 15:11. If their HCF is 13, then number will be

- (A) 195 and 143 (B) 190 and 140
(C) 185 and 163 (D) 185 and 143

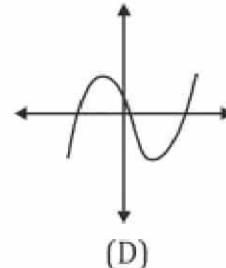
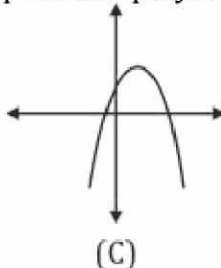
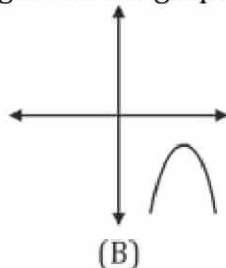
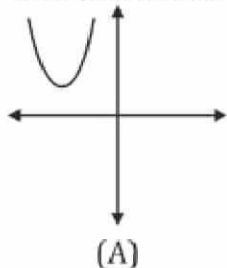
5. If LCM of 12 and 42 is $10m + 4$, the value of "m" is equal to

- (A) 7 (B) 8
(C) 6 (D) 9

6. If $P\left(\frac{a}{3}, 4\right)$ is the mid-point of the line segment joining the points $Q(-6, 5)$ and $R(-2, 3)$, then the value of "a" is:

- (A) -4 (B) -12
(C) 12 (D) -6

7. Which of the following is not the graph of a quadratic polynomial?



8. A bag contains 3 red, 5 black and 7 white balls. A ball is drawn from the bag at random. The probability that the ball drawn is not black, is

- (A) $1/3$
(C) $5/10$

- (B) $9/15$
(D) $2/3$

9. If the lines given by $2x + ky = 1$ and $3x - 5y = 7$ has unique solution, then the value of "k" is

- (A) $-10/3$
(C) $2/3$

- (B) $-5/3$
(D) For all real value except $-10/3$.

10. The difference between two numbers is 26 and one number is three times the other number. The numbers are:

- (A) 39 and 26
(C) 39 and 13

- (B) 39 and 41
(D) None of these.

11. Find the value of "x" and "y" in the following equation: $x - 3y = 8$ and $5x + 3y = 10$.

- (A) $x = 3, y = -5/3$
(C) $x = -3, y = -5/3$

- (B) $x = -3, y = 5/3$
(D) None of these.

12. If P $(9a - 2, -b)$ divides line segment joining A $(3a + 1, -3)$ and B $(8a, 5)$ in the ratio 3:1, then the value of "a" and "b" is

- (A) $a = -1, b = 3$
(C) $a = 0, b = 0$

- (B) $a = -1, b = -3$
(D) $a = 1, b = -3$

13. An umbrella has 8 ribs which are equally spaced. Assuming umbrella to be a flat circle of radius 45 cm, then the area between the two consecutive ribs of the umbrella is



- (A) $22275/56 \text{ cm}^2$
(C) $22285/28 \text{ cm}^2$

- (B) $22275/28 \text{ cm}^2$
(D) None of these

14. $\cot^2 30^\circ + \operatorname{cosec} 30^\circ + 3 \tan^2 30^\circ$ is equal to

- (A) 3
(C) 0

- (B) 1
(D) 6

15. The point $(-4, 6)$ divides the line segment joining the point A $(-6, 10)$ and B $(3, -8)$. The ratio is

- (A) 1:2
(C) 2:7

- (B) 7:2
(D) 4:1

16. There are 24 peaches, 36 apricots and 60 bananas and they have to arrange that in several rows in such a way every row contains the same member of fruits of only one type. What is the minimum number of rows required for this to happen?

- (A) 12
(C) 10

- (B) 9
(D) 14

17. The Genuine graph of a quadratic polynomial is

- (A) Straight line
(C) Hyperbola

- (B) Parabola
(D) None of these

18. The point on "X-axis" which is equidistant from the points $(7, 6)$ and $(-3, 4)$ is

- (A) $(0, 3)$
(C) $(3, 0)$

- (B) $(4, 3)$
(D) None of these.

19. The radius of the circle whose end points of diameter are $(24, 1)$ and $(2, 23)$ is

- (A) $22\sqrt{2}$ units
(C) $11\sqrt{2}$ units

- (B) $23\sqrt{2}$ units
(D) None of these.

20. Tick the correct answer in the following question. Area of a sector of Angle p (in degrees) of a circle with radius r is

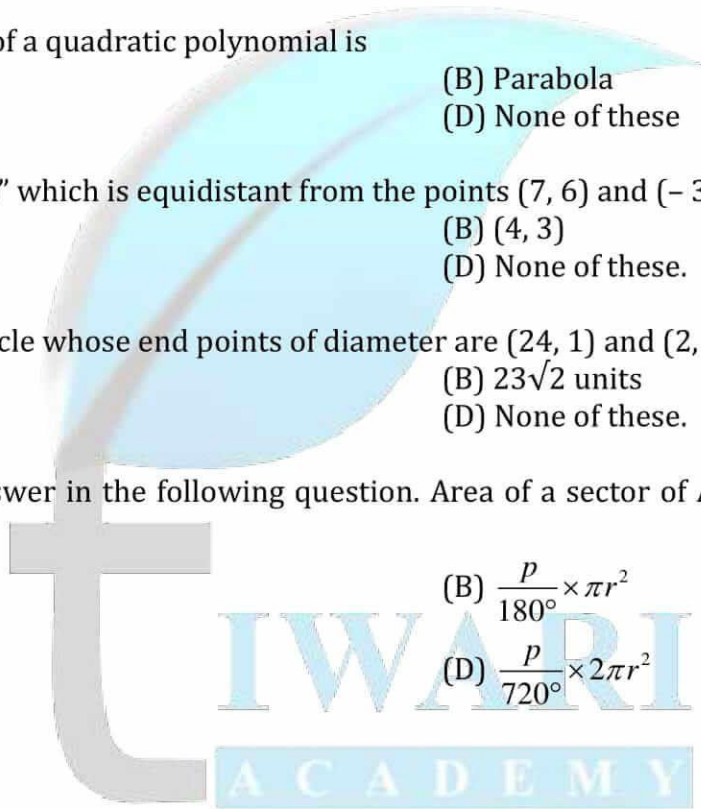
(A) $\frac{p}{180^\circ} \times 2\pi r$

(B) $\frac{p}{180^\circ} \times \pi r^2$

(C) $\frac{p}{360^\circ} \times 2\pi r$

(D) $\frac{p}{720^\circ} \times 2\pi r^2$

ANSWER: [D]



SECTION - B

Section - B consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.

21. The area of a sector of a circle with radius 6 cm, if angle of the sector 60° is

- (A) $132/14 \text{ cm}^2$
(C) $132/7 \text{ cm}^2$

- (B) $36/7 \text{ cm}^2$
(D) None of these.

22. If the points A $(4, 3)$ and B $(x, 5)$ are on the circle with Centre O $(2, 3)$, then the value of "x" is

- (A) 0
(C) 2

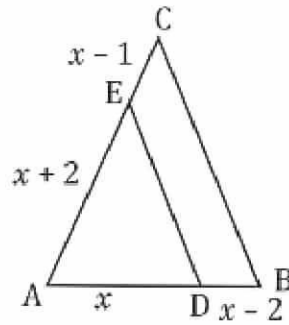
- (B) 1
(D) 3

23. If a line divides any two sides of a triangle in the same ratio, then the line is _____ dash to the third side

- (A) Perpendicular
(C) Equal

- (B) Parallel
(D) None of these

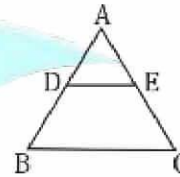
24. In the given figure $DE \parallel BC$. If $AD = x$, $DB = x - 2$, $AE = x + 2$ and $EC = x - 1$, then the value of x is



- (A) 9
(B) 4
(C) 4.5
(D) 8

25. In the given figure $DE \parallel BC$. If $AD = 3$ cm, $DB = 4$ cm, and $AE = 6$ cm, then EC is

- (A) 8 cm
(B) 12 cm
(C) 6 cm
(D) 4 cm



26. Total number of distinct Primes in the prime factorization of number 27300.

- (A) 5
(B) 7
(C) 13
(D) 21

27. If the length of a diagonal of rhombus are 16 cm and 12 cm. Then the length of the sides of the Rhombus is

- (A) 9 cm
(B) 10 cm
(C) 8 cm
(D) 20 cm

28. $\sin 2A = 2 \sin A$ is true, when A is equal to

- (A) 0°
(B) 30°
(C) 45°
(D) 60°

29. The probability of getting a defective bulb in a lot of 500 bulbs is 0.290. Then, the number of defective bulbs in the lot is

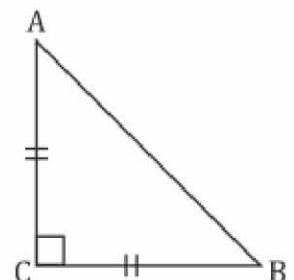
- (A) 140
(B) 145
(C) 50
(D) 100

30. If $\tan \theta + \frac{1}{\tan \theta} = 2$, then the value of $\operatorname{cosec} \theta$ is:

- (A) 1
(B) $\frac{1}{\sqrt{2}}$
(C) $\sqrt{2}$
(D) $\frac{\sqrt{3}}{2}$

31. In the given figure, ABC is an isosceles triangle, right-angle at C . Therefore

- (A) $AB^2 = 2AC^2$
(B) $BC^2 = 2AB^2$
(C) $AC^2 = 2AB^2$
(D) $AB^2 = 4AC^2$



32. If $\tan \theta - \frac{4}{\tan \theta} = 3$, then $\sin^2 \theta$ is

- (A) $4/17$
(C) $16/17$

- (B) $3/17$
(D) $5/17$

33. If a number x is chosen at random from the numbers $-2, -1, 0, 1, 2$. Then, the probability that $x^2 < 2$ is

- (A) $2/5$
(C) $1/5$

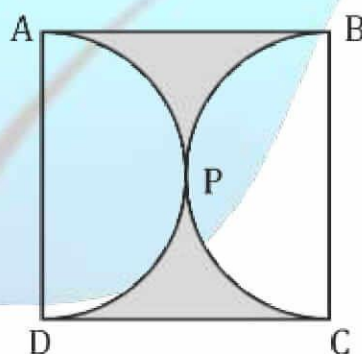
- (B) $4/5$
(D) $3/5$

34. If $\tan A = \frac{1}{\sqrt{3}}$ and $\tan B = \sqrt{3}$, then $\tan (A + B)$ is

- (A) 0
(C) 1

- (B) $\frac{1}{\sqrt{3}}$
(D) ∞

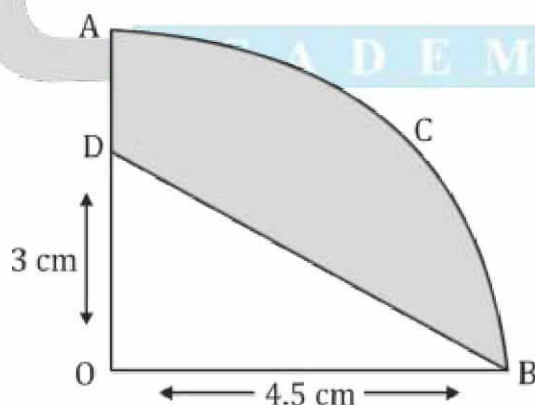
35. The area of the shaded region in the figure, if ABCD is a square of side 14 cm and APD and BPC are semi circles is



- (A) 196 cm^2
(C) 21 cm^2

- (B) 84 cm^2
(D) 42 cm^2

36. In the given figure, OACBO represents a quadrant of a circle of radius 4.5 cm with Centre O. Then, the area of shaded portion is



- (A) 15.91 cm^2
(C) 6.75 cm^2

- (B) 9.16 cm^2
(D) 22.66 cm^2

37. If one zero of polynomial $x^2 + 4x + 1$ is $2 + \sqrt{3}$, then other zero will be

- (A) $-2 + \sqrt{3}$
(C) $2 - \sqrt{3}$

- (B) $-\sqrt{3} - 2$
(D) $\sqrt{3} + 1$

38. Someone is asked to make a number from 1 to 100. The probability that it is a prime is

- (A) $\frac{1}{2}$ (B) $\frac{1}{3}$
(C) $\frac{1}{4}$ (D) $\frac{2}{3}$

39. The ratio in which the points P (m, 6) divides the join A (-4, 3) and B (2, 8) is

- (A) 2:3 (B) 1:2
(C) 3:2 (D) 2:1

40. After how many places, the decimal form of $\frac{125}{2^4 \cdot 5^3}$ will be terminate?

- (A) Three places (B) Four places
(C) Two places (D) None of these.

SECTION - C

Section - C consists of 10 questions of 1 mark each. Any 8 questions are to be attempted.

Q. 41 – Q. 45 are based on Case Study – 1

Case Study – 1

Places A and B are 100 km apart on a highway. One car starts from A and another from B at the same time. If the cars travel in the same direction at different speeds, they meet in 5 hours. If they travel towards each other, they meet in 1 hour.



41. Assuming that the speed of first car and second car be "u km/h" and "v km/h" respectively. What is the relative speed of both cars while they are travelling in the same direction?

- (A) $(u + v)$ km/hr (B) $(u - v)$ km/hr
(C) (u / v) km/hr (D) (uv) km/hr

42. What is the relative speed of both cars while they are travelling towards each other?

- (A) $(u + v)$ km/hr (B) $(u - v)$ km/hr
(C) (u / v) km/hr (D) $(u v)$ km/hr

43. What is the actual speed of one car?

- (A) 60 km/hr (B) 40 km/hr
(C) 100 km/hr (D) 20 km/hr

44. What is the actual speed of another car?

- (A) 60 km/hr (B) 40 km/hr
(C) 100 km/hr (D) 20 km/hr

45. The given problem is based on which mathematical concept

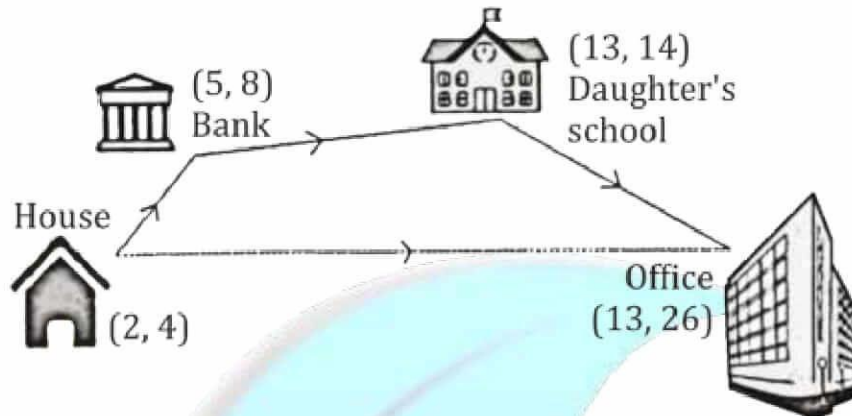
- (A) Pair of linear equations (B) Quadratic equations
(C) Polynomials (D) None of the above.

Q. 46 – Q. 50 are based on Case Study – 2

Case Study – 2

Aayush starts walking from his house to office. Instead of going to the office directly, he goes to a bank first, from there to his daughter's school and then reaches the office.

(Assume that all distances covered are in straight lines). If the house is situated at (2, 4), bank at (5, 8), school at (13, 14) and office at (13, 26) and coordinates are in km.



46. What is the distance between house and bank?

- (A) 5 km (B) 10 km
(C) 12 km (D) 27 km

47. What is the distance between Daughter's School and bank?

- (A) 5 km (B) 10 km
(C) 12 km (D) 27 km

48. What is the distance between house and office?

- (A) 24.6 km (B) 26.4 km
(C) 24 km (D) 26 km

49. What is the total distance travelled by Aayush to reach the office?

- (A) 5 km (B) 10 km
(C) 12 km (D) 27 km

50. What is the extra distance travelled by Aayush?

- (A) 2 km (B) 2.2 km
(C) 2.4 km (D) None of these.