CBSE 10th Maths Standard SET 1 Answer Key 2024 (30/1/1)

SECTION-A

1. If the sum of zeroes of the polynomial $p(x) = 2x^2 - k\sqrt{2}x + 1$ is $\sqrt{2}$, then value of k is:

(a) $\sqrt{2}$

(b) 2

(c) $2\sqrt{2}$

(d) 1/2

Answer:

(b) 2

2. If the probability of a player winning a game is 0.79, then the probability of his losing the same game is:

(a) 1.79

(b) 0.31

(c) 0.21%

(d) 0.21

Answer:

(d) 0.21

3. If the roots of equation $ax^2 + bx + c = 0$, a ≠ 0 are real and equal, then which of the following relation is true?

(a) a = b2/c

(b) b2 = ac

(c) ac = b2/4

(d) c = b2/a

Answer:

(c) ac = b2/4

4. In an A.P., if the first term a = 7, nth term an = 84 and the sum of first n terms Sn=2093/2, then n is equal to:

(a) 22

(b) 24

(c) 23

(d) 26

Answer:

(c) 23

5. If two positive integers p and q can be expressed as p = 18 a2b4 and q=20a3b2, where a and b are prime numbers, then LCM (p, q) is:

(a) $2a^2b^2$

(b) $180a^2b^2$

(c) $12a^2b^2$

(d) $180a^3b4$

Answer:

(d) $180a^3b4$

6. AD is a median of △ABC with vertices A(5, -6), B(6, 4) and C(0, 0), Length AD is equal to :

(a) √68 units

(b) 2√15 units

(c) √101 units

(d) 10 units

Answer:

(c) √68 units

7. If sec θ – tan θ=m, then the value of sec θ + tan θ is:

(a) 1-1/m

(b) m²-1

(c) 1/m

(d) – m

Answer:

(c) 1/m

8.From the data 1, 4, 7, 9, 16, 21, 25, if all the even numbers are removed, then the probability of getting at random a prime number from the remaining is:

(a) 2/3

(b) 1/5

(c) 1/7

(d) 2/7

Answer:

(b) 1/5

9. For some data x1, x2, ..., xn with respective frequencies f1, f2,.., fn , the value of $\sum_1^n f_i [x_i - \bar{x}]$ **is equal to:**

a) $n\bar{x}$

(b) 1

(c) $\sum f_i$

(d) 0

(d) 0

Answer:

(d) 0

10. The zeroes of a polynomial x^2 + px + q are twice the zeroes of the polynomials 4x2-5x-6. The value of p is:

(a) -5/2

(b) 5/2

(c) -5

(d) 10

Answer:

(a) -5/2

11. If the distance between the points (3,-5) and (x,-5) is 15 units, then the values of x are:

(a) 12,-18

(b) -12, 18

(c) 18, 5

(d) -9,-12

Answer:

(b) -12, 18

12. If cos (α+β) = 0, then value of cos[(α+β)/2] is equal to :
(a) $1/\sqrt{2}$

(b) 1/2

(c) 0

(d) $\sqrt{2}$

Answer:

(a) $1/\sqrt{2}$

13. A solid sphere is cut into two hemispheres. The ratio of the surface areas of sphere to that of two hemispheres taken together, is:
(a) 1:1

(b) 1:4

(c) 2:3

(d) 3:2

Answer:

(c) 2:3

14. The middle most observation of every data arranged in order is called:

(a) mode

(b) median

(c) mean

(d) deviation

Answer:

(b) median

15.The volume of the largest right circular cone that can be carved out from a solid cube of edge 2 cm is:

(a) $4\pi/3$ cu cm

(b) $5\pi/3$ cu cm

(c) 8π/3 cu cm

(d) 2π/3 cu cm

Answer:

(d) 2π/3 cu cm

16.Two dice are rolled together. The probability of getting sum of number so the two dice as 2, 3 or 5 is:

(a) 7/36

(b) 11/36

(c) 5/36

(d) 4/9

Answer:

(a) 7/36

17 . The centre of a circle is at (2,0). If one end of a diameter is at (6,0), then the other end is at :

(a) (0,0)

(b) (4,0)

(c) (-2,0)

(d) (-6,0)

Answer:

(c) (-2,0)

18. In the given figure, graphs of two linear equations are shown. The pairs of these linear equations is:

(a) consistent with unique solution.

(b) consistent with infinitely many solutions.

(c) inconsistent

(d) inconsistent but can be made consistent by extending these lines.

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Answer:

(d) inconsistent but can be made consistent by extending these lines.

Directions :

In QNo. 19 and 20 a statement of Assertion(A) is followed by a statement of Reason (R). Choose the correct option.

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

(b) Both Assertion (A) and Reason (R) are true but Reason (R) i s not correct explanation for Assertion(A).

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

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

19. Assertion (A): The tangents drawn at the end points of a diameter of a circle, are parallel.

Reason (R): Diameter fo a circele is the longest chord.

Answer:

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

20. Assertion (A): If the graph of a polynomial touches x-axis at only one point , then the polynomial cannot be a quadratic polynomial.

Reason (R): A polynomial of degree n (n >1) can have at most n zeroes.

Answer:

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

Section B

21. Solve the following system of linear equations $7x-2y = 5$ and $8x+7y=15$ and verify your answer.

22. In a pack of 52 playing cards one card is lost. From the remaining cards, a card is drawn at random . Find the probability that the drawn card is queen of heart, if the lost card is a black card.

23. (A)Evaluate: 2√2 cos 45° sin 30° + 2√3 cos 30°

OR

23. (B) If A=60° anB =30° ,verify that: sin(A+B)=sin A cos B + cos A sin B

24. In the given figure, ABCD is a quadrilateral. Diagonal BD bisects ∠B and ∠D both. Prove that:

(i) ∆ABD ~ ∆CBD

(ii) AB=BC

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25. (A) Prove that 5-2√3 is an irrational number. It is given that √3 is an irrational number.

OR

25. (B) Show that the number 5 x 11 × 17 + 3 × 11 is a composite number.

Section C

26. (A) Find the ratio in which the point (8/5,y) divides the line segment joining the point (1, 2) and (2, 3). Also, find the value of y.

OR

26. (B) ABCD is a rectangle formed by the points A (– 1 , – 1) , B (– 1 , 6) , C(3, 6) and D(3, -1). P, Q, R and S are mid-points of sides AB, BC, CD and DA respectively. Show that diagonals of the quadrilateral PQRS bisect each other.

27. In a teachers workshop, the number of teacher teaching French , Hindi, English are 48, 80 and 144 respectively. Find the minimum number of rooms required if in each room the same number of teacher are seated and all of them are of the same subject .

28. Prove that: tanθ/ 1- cotθ + cotθ /1- tanθ = 1+ secθ cosecθ.

29. Three years ago , Rashmi was thrice as old as Nazma. Ten years Later, Rashmi will be twice as old Nazma, How old are Rashmi and Nazma now?

30. (A) In the given figure , AB is a diameter of the circle with centre O. AQ , BP, and PQ are tangent to the circle. Prove that ∠POQ=90°.

OR

30. (B) A circle with centre O and radius 8cm is inscribed in a quadrilateral ABCD in which ,P Q, R, S are the points of contact as shown. If AD is perpendicular to DC, BC = 30 cm and BS =42 cm, then find the length DC.

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31. The difference between the outer and inner radii of a hollow right circular cylinder of length 14 cm is 1cm. If the volume of the metal used in making the cylinder is 176 cm, find the outer and inner radii of the cylinder.

Section D

32. An arc of a circle of radius 21 cm subtends an angle of 60° at the centre. Find:

(i) the length of the arc.

(ii) the area of hte minor segment of the circle made by the corresponding chord.

33. (A) The sum of first and eighth terms of an A.P. is 32 and their product is 60. Find the first term and common difference of the A.P. Hence, also find the sum of its first 20 terms.

OR

33. (B)In an AP of 40 Terms the sum of first 9 terms is 153 and the sum of last 6 terms is 687. Determine the first term and common difference of A.P. Also, find the sum of al the terms of the A.P.

34. (A) If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, then prove that the other two sides are divided in the same ratio.

OR

34. (B) In the given figure, PA, QB and RC are each perpendicular to AC If AP=x, BQ=y and RC = z, then prove that $1/x + 1/z = 1/y$.

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35. A pole 6m high is fixed on the top of a tower. The angle of elevation of the top of the pole observed from a point P on the ground is 60° and the angel of

depression of the point P from the top of the tower is 45°. Fnid the height of hte tower and the distance of point P from the foot of the tower.(Use √3 = 1.73)

SECTION – E

36. A rectangular floor area can be completely tiled with 200 square tiles. If the side length of each tile is increased by 1 unit, it would take only 128 tiles to cover the floor.

(i) Assuming the original length of each side of a tile be x units, make a quadratic equation from the above information.

(ii) Write the corresponding quadratic equation in standard form.

(iii) (a) Find the value of x, the length of side of a tile by factorisation.

OR

(iii) (b) Solve the quadratic equation for x, using quadratic formula

37. BINGO is game of chance The host has 75 balls numbered 1 through 75. Each player has a BINGO card with some number written on it . The participant cancels the number on the card when called out a number written on the ball selected at random . whomsoever cancels all the numbers on his/her card, says BINGO and wins the game.

The table given below, shows data of one such game where 48 balls were used before Tara said BINGO.

No. Announced

No. Of times

0-15

8

15-30

9

30-45

10

45-60

12

60-75

9

Based on the above information , answer the following

(i) write the median class.

(ii) When first ball was picked up ,what calling out an even number?

(iii) (a) Find median of the given data.

OR

(b) Find mode of the given data .

38. A backyard is in the shape of a triangle ABC with right angle at B. AB = 7 m and BC = 15 m. A circular pit was dug inside it such that it touches the walls AC, BC and AB at P, Q and R respectively such that AP = x m.

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Based on the above information, answer the following questions :

(i) Find the length of AR in terms of x.

(ii) Write the type of quadrilateral BQOR.

(iii) (a) find the length of PC in terms of x and hence find the value of x.

OR

(iii) (b)Find x and hence find the radius r of circle.