SAMPLE QUESTION PAPER

1. **A rational number between $\sqrt{2}$ and $\sqrt{3}$ is**

    (A) $\dfrac{\sqrt{2}+\sqrt{3}}{2}$ (B) $\dfrac{\sqrt{2}.\sqrt{3}}{2}$

    (C) 1.5   (D) 1.8

    (E) None of these

2. **If $\sqrt{2}=1.4142$, then $\sqrt{\dfrac{\sqrt{2}-1}{\sqrt{2}+1}}$ is equal to**

    (A) 2.4142   (B) 5.8282

    (C) 0.4142   (D) 0.1718

    (E) None of these

3. **The value of $\sqrt{(81)^{-2}}$ is**

    (A) 1/9   (B) 1/3

    (C) 9   (D) 1/81

    (E) None of these

4. **Which of the following is irrational ?**

    (A) 0.14   (B) $0.14\overline{16}$

    (C) $0.\overline{1416}$ (D) 0.4014001400014....

    (E) None of these

5. **Set of values of x, if $\sqrt{(x+8)}+\sqrt{(2x+2)}=1$, is_____.**

    (A) {1}   (B) {1, 17}

    (C) {17}   (D) ϕ

    (E) None of these

6. Find the remainder when $9x^3 - 3x^2 + x - 5$ is divided by $x - \dfrac{2}{3}$.

    (A) 3   (B) – 3
    (C) 2   (D) – 2
    (E) None of these

7. Find the value of a if $(x - a)$ is a factor of the polynomial,
$$x^6 - ax^5 + x^4 - ax^3 + 3x - a + 2$$
    (A) – 1   (B) 1
    (C) – 2   (D) 2
    (E) None of these

8. $x^{12} - y^{12} =$
    (A) $(x - y)(x^2 + xy + y^2)(x + y)(x^2 - xy + y^2)(x^2 + y^2)(x^4 - x^2y^2 + y^4)$
    (B) $(x + y)(x^2 - xy + y^2)(x + y)(x^2 - xy + y^2)(x^2 + y^2)(x^4 - x^2y^2 + y^4)$
    (C) $(x + y)(x^2 + xy - y^2)(x + y)(x^2 - xy + y^2)(x^2 + y^2)(x^4 - x^2y^2 + y^4)$
    (D) $(x - y)(x^2 - xy + y^2)(x + y)(x^2 - xy + y^2)(x^2 + y^2)(x^4 - x^2y^2 + y^4)$
    (E) None of these

9. The graph of $y = 6$ is a line
    (A) parallel to x-axis at a distance 6 units from the origin
    (B) parallel to y-axis at a distance 6 units from the origin
    (C) making an intercept 6 on the x-axis
    (D) making an intercept 6 on both the axes.
    (E) None of these

10. The graph of the linear equation $y = x$ passes through the point
    (A) $\left(\dfrac{3}{2}, \dfrac{-3}{2}\right)$

    (B) $\left(0, \dfrac{3}{2}\right)$

    (C) $(1, 1)$

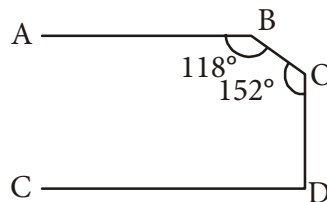   (D) $\left(\dfrac{-1}{2}, \dfrac{1}{2}\right)$

    (E) None of these

11. If a linear equation has solutions $(-2, 2)$, $(0, 0)$ and $(2, -2)$, then it is of the form
   (A) $y - x = 0$
   (B) $x + y = 0$
   (C) $-2x + y = 0$
   (D) $-x + 2y = 0$
   (E) None of these

12. How many linear equations in x and y can be satisfied by $x = 1$ and $y = 2$?
   (A) only one   (B) two
   (C) infinitely many   (D) three
   (E) None of these

13. Three parallel lines are cut by two transversals as shown in the given figure. If AB = 2 cm, BC = 4 cm and DE = 1.5 cm, then the length of EF is _____.
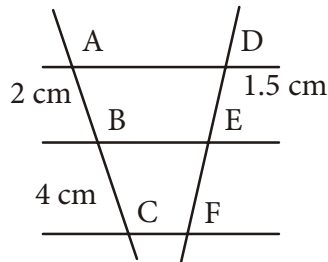
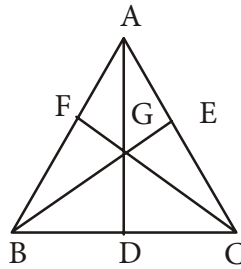   (A) 2 cm   (B) 3 cm
   (C) 3.5 cm   (D) 4 cm
   (E) None of these

14. In the figure, AB || CD, ∠ABO = 118°, ∠BOD = 152°, find ∠ODC.

   (A) 70°   (B) 80°
   (C) 90°   (D) 34°
   (E) None of these

15. In the given figure, BO, CO are angle bisectors of external angles of △ABC. Then ∠BOC is _____.

(A) $90° - \frac{1}{2}\angle A$

(B) $90° + \frac{1}{2}\angle A$

(C) $180° - \frac{1}{2}\angle A$

(D) $180° + \frac{1}{2}\angle A$

(E) None of these

16. In the given figure, AB ∥ CD and ∠F = 30°. Then ∠FCD is _____.

(A) 90°   (B) 120°

(C) 60°   (D) 45°

(E) None of these

17. The orthocentre of a triangle is the point of concurrency of its _____.

(A) Medians   (B) Angle bisectors

(C) Altitudes   (D) Perpendicular bisectors

(E) None of these

18. In the given figure, AD is the bisector of ∠A and AB = AC. Then △ACD, △ABD are congruent by which criterion ?

(A) AAA

(B) SAS

(C) ASA

(D) Both (B) and (C)

(E) None of these
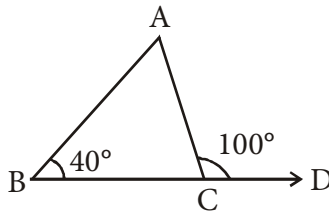
19. In a △ABC, the medians AD, BE and CF meet at G, then _____.

(A) 4 (AD + BE + CF) > 3 (AB + BC + AC)
(B) 2 (AD + BE + CF) > (AB + BC + AC)
(C) 3 (AD + BE + CF) > 4 (AB + BC + AC)

(D) AD + BE + CF > $\dfrac{1}{2}$ (AB + BC + AC)

(E) None of these

20. Answer the questions based on the given figure.

BC is _____ AC and _____ AB respectively.
(A) Greater than, Less than
(B) Equal to, Less than
(C) Greater than, Equal to
(D) Less than, Equal to
(E) None of these

21. The mid-point of the sides of a triangle along with any of the vertices as the fourth point make a parallelogram of area equal to

(A) $\dfrac{1}{2}$ ar(ABC)   (B) $\dfrac{1}{2}$ ar(ABC)

(C) $\dfrac{1}{4}$ ar(ABC)   (D) ar (ABC)

(E) None of these

22. **The figure obtained by joining the mid-points of the adjacent sides of a rectangle of sides 8 cm and 6 cm, is**
    - (A) A rectangle of area 24 cm^2
    - (B) A square of area 25 cm^2
    - (C) A trapezium of area 24 cm^2
    - (D) A rhombus of area 24 cm^2
    - (E) None of these

23. **ABCD is a quadrilateral whose diagonal AC divides it into two parts, equal in area, then ABCD**
    - (A) Is a rectangle
    - (B) Is always a rhombus
    - (C) Is a parallelogram
    - (D) Neet not be any (A), (B) or (C)
    - (E) None of these

24. **ABCD is a trapezium with parallel sides AB = a cm and DC = b cm, E and F are the mid-points of the non-parallel sides. The ratio of ar (ABEF) and ar (EFCD) is**
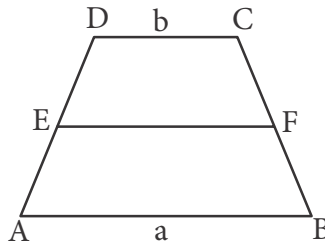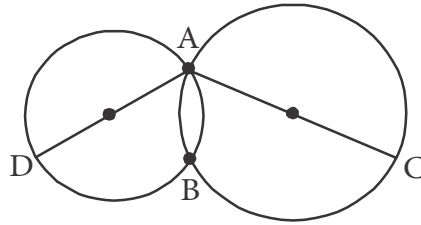

    - (A) a : b
    - (B) (3a + b) : (a + 3b)
    - (C) (a + 3b) (3a + b)
    - (D) (2a + b) : (3a + b)
    - (E) None of these

25. **In the given figure, ∠PQR = 100°, where P, Q and R are points on a circle with centre O. Then ∠OPR is _____ .**
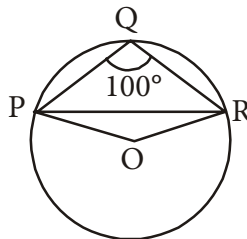
    - (A) 20°
   - (B) 10°
    - (C) 30°
   - (D) 40°
    - (E) None of these

26. Two circles intersect at two points A and B. AD and AC are diameters of the two circles, then which of the following step is wrong in order to prove that B lies on the line segment DC ?

(P) Join AB.
(Q) $\angle ABD = 90°$ and $\angle ABC = 90°$ (Angles in a semi-circle of two circles)
(R) $\angle ABD + \angle ABC = 360°$
(S) DBC is a straight line segment. Hence B lies on the line segment DC.
(A) P   (B) Q   (C) R   (D) S
(E) None of these

27. In the given figure, O is the centre of the circle. If A is any point on minor arc BC, then $\angle BAC - \angle OBC = $ _____.
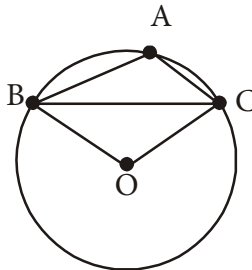
(A) 45°   (B) 135°   (C) 150°   (D) 90°
(E) None of these

28. BC is a chord of a circle with centre O. If A is a point on major arc BC as shown in the figure, then $\angle BAC + \angle OBC = $ _____.
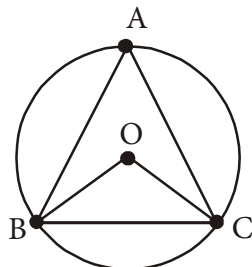
(A) 45°   (B) 90°
(C) 180°   (D) 165°
(E) None of these

29. **A belan is in the form of a cylinder of length 14 cm and diameter 4 cm. It is used to make a chapati (Roti). How much roti, it will flat while rolling once ?**
   (A) 188.57 cm^2 (B) 182.28 cm^2
   (C) 176.00 cm^2 (D) 170.50 cm^2
   (E) None of these

30. **A rectangular pit of dimensions 20 m × 15 m × 10 m is dug and the earth taken out has to be disposed off in truck which can carry a load of 300 m^3 of earth. The number of rounds truck has to make to dispose of the earth are**
   (A) 10   (B) 12
   (C) 15   (D) 20
   (E) None of these

31. **Three cubes are joined end to end forming a cuboid. If side of a cube is 2 cm then dimensions of the cuboid are :**
   (A) $\ell = 2, b = 2, h = 2$ (B) $\ell = 4, b = 4, h = 2$
   (C) $\ell = 4, b = 2, h = 4$ (D) $\ell = 6, b = 2, h = 2$
   (E) None of these

32. **A gift pack is in cuboidal shape of dimensions 1.5 m, 0.75 m, 0.5 m. Tanya didn't like the paper wrapped on the gift pack, so she removed it and wrapped the gift pack with a paper of her choice but left the base, which she says will fill with her name. The difference of area of wrapping papers used is (ignore the extra paper used to mould the corners.)**
   (A) 1.125 cm^2 (B) 0.375 cm^2
   (C) 0.75 cm^2 (D) 2.75 cm^2
   (E) None of these

33. **The mean, median and mode respectively of the following numbers :**
   7, 4, 3, 5, 6, 3, 3, 2, 4, 3, 4, 3, 3, 4, 4, 3, 2, 2, 4, 3, 5, 4, 3, 4, 3, 4, 3, 1, 2, 3 are _____.
   (A) 3.47, 3, 3   (B) 3, 3, 3
   (C) 4, 3, 3   (D) 5, 4, 3
   (E) None of these

34. **Mean of 11 observations is 17.5. If one observation value 15 is deleted, then the mean of remaining observations is _____.**
   (A) 15.75   (B) 16.75
   (C) 17.75   (D) 18.75
   (E) None of these

35. The average of 9 numbers is 8. What should be added as 10th number to make the average 9 ?
    (A) 10   (B) 72
    (C) 18   (D) 90
    (E) None of these

36. The average of 12 students is 15. The marks of a student who scored zero were wrongly taken as 18 and average was determined. The correct average marks is _____.
    (A) 15   (B) 14.5
    (C) 13.5   (D) 12
    (E) None of these

37. A die is thrown once. The probability of getting a number greater than 3 is _____.
    (A) 1/2   (B) 1/3
    (C) 2/3   (D) 0
    (E) None of these

38. One card is drawn from a well-shuffled deck of 52 cards. The probability of drawing an ace is _____.
    (A) 1/12   (B) 1/13
    (C) $\dfrac{1}{50}$ (D) $\dfrac{3}{10}$
    (E) None of these

39. The probability of guessing the correct answer to a certain test question is x/2. If the probability of not guessing the correct answer to this question is 2/3, then x is _____.
    (A) 2   (B) 3
    (C) 2/3   (D) 1/3
    (E) None of these

40. Cards marked with the numbers 2 to 101 are placed in a box and mixed thoroughly. One card is drawn from this bag. The probability that the number on the card is a prime less than 20 is _____.
    (A) 2/25   (B) 3/25
    (C) 4/25   (D) 1/5
    (E) None of these

41. Arpan cut a cake in two equals parts and one of these two pieces is again cut into equal parts. Each small part is of 20 grams. If there are seven parts of the whole cake, what was the weight of the original cake ?
    (A) 140 grams (B) 280 grams
    (C) 240 grams (D) 300 grams
    (E) None of these

42. The simple interest on a sum of money at 8% per annum for 6 years is half the sum. The sum is _____.
    (A) ₹ 4800 (B) ₹ 6000
    (C) ₹ 8000 (D) Data inadequate
    (E) None of these

43. A and B can do a piece of work in 6 days and A alone can do it in 9 days. The time taken by B alone to do the work is _____.
    (A) 18 days (B) 15 days

    (C) 12 days (D) $7\dfrac{1}{2}$ days

    (E) None of these

44. Eight people are planning to share equally the cost of a rental car. If one person withdraws from the arrangement and the others share equally the enitre rental of the car, then the share of each of the remaining persons is increased by _____ of the original share.

    (A) $\dfrac{1}{9}$ (B) $\dfrac{1}{8}$

    (C) $\dfrac{1}{7}$ (D) $\dfrac{7}{8}$

    (E) None of these

45. Bhajan Singh purchased 120 reams of paper at ₹ 80 per ream. He spent ₹ 280 on transportation, paid octroi at the rate of 40 paise per ream and paid ₹ 72 to the coolie. If he wants to have a gain of 8%, what must be the selling price per ream ?
    (A) ₹ 86 (B) ₹ 87.48
    (C) ₹ 89 (D) ₹ 90
    (E) None of these

46. PQRS is a rectangular sheet of cardboard in which PQ = 12 cm and QR = 7 cm. A semicircle with QR as diameter is removed. Then, the perimeter of the remaining portion is _____.

    (A)   11 cm
    (B)   42 cm
    (C)   24 cm
   (D)   62 cm
    (E)   None of these
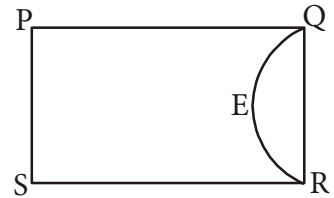
47. A number consist of two digits whose product is 18. When 27 is subtracted from the number, the digits change their places. The ten's digit of the umber is _____.

    (A)   9   (B)   8
    (C)   7   (D)   6
    (E)   None of these

48. Area of the square is _____ the area of the rhombus standing on the same base.

    (A)   Greater than   (B)   Less than
    (C)   Equal to   (D)   Can't be determined
    (E)   None of these

49. In the given diagram, MN and KL are two straight lines. Of the points marked A, B, C and D which point lies on both the perpendicular bisector of MN and KL ?
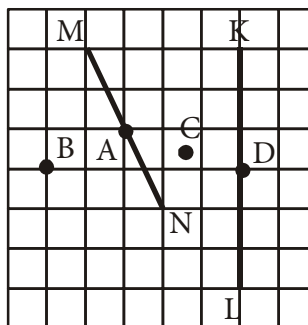
    (A)   A   (B)   B
    (C)   C   (D)   D
    (E)   None of these

50. **Which of the following statements is correct, if a transversal intersects two parallel lines ?**
    (A) Each pair of corresponding angles is equal.
    (B) Each pair of alternate interior angles is equal.
    (C) Each pair of interior angles on the same side of the transversal is supplementary.
    (D) All of these
    (E) None of these

Note: The actual question paper will transclated in Hindi at the time of exam.