

27. If the perimeter of one face of a cube is 20cm, then its surface area is.....s
28. Arrange the following in ascending order $\frac{17}{18}, \frac{43}{45}, \frac{59}{60}$ and $\frac{31}{36}$.
- a) $\frac{17}{18} < \frac{59}{60} < \frac{43}{45} < \frac{31}{36}$ b) $\frac{31}{36} < \frac{17}{18} < \frac{43}{45} < \frac{59}{60}$ c) $\frac{43}{45} < \frac{59}{60} < \frac{31}{36} < \frac{17}{18}$ d) $\frac{59}{60} < \frac{43}{45} < \frac{31}{36} < \frac{17}{18}$
29. If the perimeter of a semi-circle protector is 36cm, then its diameter is.
a) 7cm b)14cm c)12cm d)16cm
30. ABC is an isosceles triangle with AC=BC, if $AC^2 = 2BC^2$, then triangle ABC is right angle at...
a) $\angle A$ b) $\angle B$ c) $\angle C$ D) None of these.
31. If $\sqrt{3} \tan \theta = 1$ then the value of $\sin^2 \theta - \cos^2 \theta$ is.....
a) $\frac{1}{3}$ b) $-\frac{1}{3}$ c) $-\frac{1}{2}$ d) $-\frac{3}{2}$
32. The area of incircle of an equilateral triangle is 154cm^2 . The perimeter of the triangle is...
a)71.5 cm b)71.7 cm c)72.3 cm d)72.6 cm.
33. The number of zeroes in a cubic polynomial may be at most.
a)1 b)2 c)3 d)4
34. The point on X-axis equidistant from points A(2,4) and B(-4,8) is.
a)(-5,0) b) (5,0) c) (0,0) d) None of these.
35. If the product of Zeros of the polynomial $f(x) = ax^3 - 6x^2 + 11x - 6$ is 4, then a is equal to..
a) $\frac{3}{2}$ b) $-\frac{3}{2}$ c) $\frac{2}{3}$ d) $-\frac{2}{3}$
36. The minute hand of a clock is 10cm long. The area swept by the minute hand between 8:00am to 8:25am is..... a) 120.95cm^2 b) 130.95cm^2 c) 140.95cm^2 d) 150.95cm^2 .
37. Distance between two parallel tangents of a circle of radius 3 cm is...
a) 4cm b)5cm c)6 cm d)8 cm
38. Value of $\tan 5 \tan 10 \tan 45 \tan 80 \tan 85$ is..
a) 0 b)1 c)2 d)3
39. The smallest odd composite number is.....
a)5 b)3 c)7 d)9
40. Which term of the AP 20,17,14,.....is first negative term?
a)8th b)6th c)9th d)7th
41. Find the distance between the two points (0,0) and $(a \cos \theta, a \sin \theta)$.
42. Two dice thrown together. Find the probability that sum of the two numbers will be multiple of 4
43. A number when divided by 53 gives 34 as quotient and 21 as a remainder. Find the number.
44. All equilateral triangle are.....
45. The class in which mode lies is called the.....
46. The coefficient of x and the constant term in a linear poly nomial are 5 and -3, respectively, find its zero.
47. Find the area of the area of the largest triangle that can be inscribed in a semi-circle of radius r unit.
48. The common point of a tangent to a circle and the circle is called.....
49. The decimal representation of $\frac{11}{2^8 \times 5}$ will.....
a) terminate after 1 decimal place
b) terminate after 2 decimal places
c) terminate after 3 decimal place
d) not terminate.

Lion's DAV PS

MCQ/FILL IN THE BLANKS/SHORT ANSWER CLASS X

Q.1. The product of HCF and LCM of 18 and 16 is

- (a) 240 (b) 144 (c) 288 (d) 230

Q.2. Find the value of K for which the pair of linear equation $4x+6y-1=0$ and $2x-ky=7$ represent parallel

Parallel lines:

- (a) 2 (b) -3 (c) 4 (d) -2

Q.3. If the difference of the roots of the equation $x^2-6x+c=0$ be 1, then

- (a) $b^2-4c+1=0$ (b) $b^2+4c=0$ (c) $b^2-4c-1=0$ (d) $b^2-4c=0$

Q.4. 10th term of the sequence $\sqrt{3}, \sqrt{12}, \sqrt{27}$ is.....

- (a) $\sqrt{243}$ (b) $\sqrt{300}$ (c) $\sqrt{363}$ (d) $\sqrt{432}$

Q.5. Sides of two similar triangles are in the ratio 4:9. Areas of those triangles are in the ratio

- (a) 2:3 (b) 4:9 (c) 81:16 (d) 16:81

Q.6. If $\sec A = 2$ where A is an acute angle, then find the value of $\tan A$.

- (a) $\frac{1}{\sqrt{3}}$ (b) 1 (c) $\sqrt{3}$ (d) 0

Q.7. If tangent PA and PB from a point P to a circle with centre O are inclined to each other at angle of 80° , then $\angle POA$ is equal to

- (a) 50° (b) 60° (c) 70° (d) 80°

Q.8. All _____ triangle are similar.

- (a) Isosceles (b) Equilateral (c) Scalene (d) Equal

Q.9. Area of a sector of angle p (in degrees) of a circle with radius R is

- (a) $\frac{p}{180} \times 2\pi R$ (b) $\frac{p}{180} \times \pi R^2$ (c) $\frac{p}{360} \times 2\pi R$ (d) $\frac{p}{720} \times 2\pi R^2$

Q.10. The class mark of the class 10-25 is –

- (a) 16.5 (b) 18.5 (c) 19.5 (d) 17.5

Q.11. The probability of throwing a number greater than 2 with a fair dice is

- (a) $\frac{2}{3}$ (b) $\frac{5}{6}$ (c) $\frac{1}{3}$ (d) $\frac{2}{5}$

Q.12. The pair of equation $2x-5y+4=0$ and $2x+y-8=0$ has

- (a) a unique solution (b) exactly two solution (c) infinitely many solution (d) no solution

Q.13. If a pair of linear equation is consistent, then the lines will be _____.

Q.14. If the length of shadow of a tower is increasing than angle of elevation of the sun is _____.

Q.15. The common point of a tangent to a circle and the circle is called _____.

Q.16. Cumulative frequency curve is also called _____.

Q17. Are the points (0,5), (0,-9) and (3,6) collinear. ? Justify your answer.

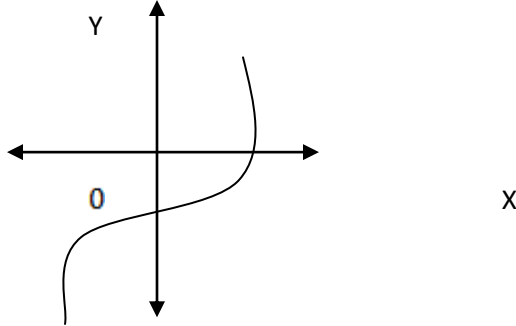
Q18. Examine $\frac{77}{210}$ is a terminating decimal or not?

Q.19. Determine the values of m and n so that the prime factorization of 1000 is expressible as $2^m \times 5^n$.

Q.20. Find the zeroes of the polynomial $t^2 - 15$.

Q21. Find a quadratic polynomial if the sum and product of zeros are -3 and 2 respectively.

Q22. Find the number of zeroes of the polynomial depicted in the figure.



Q.23. The pair of equations $x+3y=6$ and $2x-3y=12$ is consistent or inconsistent?

Q.24. Find the nature of roots of the equation $2x^2 - 6x + 3 = 0$

Q.25. Find the discriminant of the equation $x^2 - 3x - 10 = 0$

Q.26. Find number of terms in A.P 10, 7, 4 -----

Q27. Find the sum of the first five prime numbers.

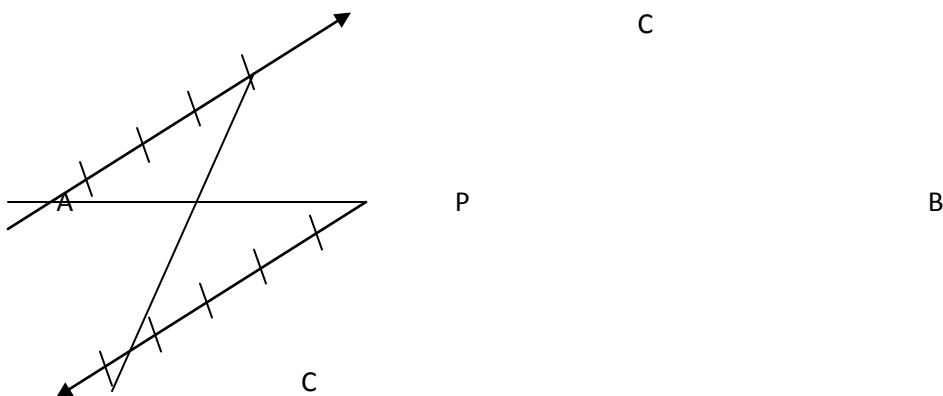
Q28. Find the common difference of the A.P $3, 3+\sqrt{2}, 3+2\sqrt{2}$.

Q29. Find the distance between the points (0,0) and (36,15)

Q.30. At the same time of the day the length of the shadow of a tower is equal to its height. Find the sun's altitude at that time.

Q.31. If $15 \cot A = 8$, find $\sin A$ and $\sec A$.

Q32. In the given figure, P divides AB internally. Find the ratio



Q33. A chord of a circle of radius 14 cm subtends a right angle at the centre. What is the area of the minor sector? ($\pi = \frac{22}{7}$)

Q34. 2 cubes each of volume 64 cm^3 are joined end to end. Find the surface area of the resulting cuboid.

Q35. A metallic sphere of radius 4.2 cm is melted and recast into the shape of a cylinder of radius 6 cm.

Find the height of cylinder.

Q36. Find the ratio of volume of a cone and cylinder of equal diameter and of equal height.

Q37. The radii of two circles are 19cm and 9 cm respectively. Find the radius of the circle which has circumference equal to the sum of the circumferences of the two circles.

Q38. If the mode of a distribution is 8 and its mean is also 8, then find the median.

Q39. A card is drawn from a well shuffled deck of 52 cards. Find the probability of getting the Jack of Hearts.

Q40 If $P(E)=0.05$, what is the probability of 'not E' .?

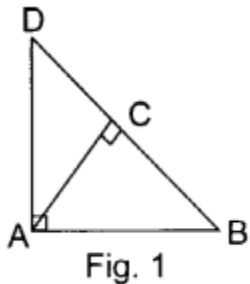
DAV PUBLIC SCHOOL , GEVRA PROJECT

Class : X

Question Bank 2019-20

MATHS

1. Find the [HCF x LCM] for the numbers 100 and 190.
2. If $\sec^2 \theta (1 + \sin \theta) (1 - \sin \theta) = k$, then find the value of k
3. Find the discriminant of the quadratic equation $3\sqrt{3}x^2 + 10x + \sqrt{3} = 0$.
4. If $\frac{4}{5}$, a, 2 are three consecutive terms of an AP, then find the value of a.
5. $\triangle ABC$ with vertices A (-2, 0), B(2, 0) and C (0, 2) is similar to ADEF with vertices D (-4, 0), E (4, 0) and F (0, 4). State true or false and justify your answer.
6. In Figure (1), $\triangle ABD$ is a right triangle, right angled at A and $AC \perp BD$. Prove that $AB^2 = BC \cdot BD$.



7. Which term of the AP 3, 15, 27, 39, ... will be 120 more than its 21st term?
8. If the points A(4,3) and B(x, 5) are on the circle with the centre O(2,3), find the value of x
9. Find the sum of $0.68 + 0.73$.
10. If $x - a$, $y - b$ is the solution of the pair of equations $x - y = 2$ and $x + y = 4$, then find the value of a and b.
11. Two dice are thrown simultaneously. What is the probability that
a) 5 will not come up on either of them
b) 5 will come up on at least one
12. For what value of k will $k + 9$, $2k - 1$ and $2k + 7$ are the consecutive terms of an A.P.?
13. Given that $\tan \theta = \frac{1}{\sqrt{5}}$. What is the value of $\frac{\operatorname{cosec}^2 \theta - \sec^2 \theta}{\operatorname{cosec}^2 \theta + \sec^2 \theta}$?
14. Find a point on the y-axis which is equidistant from the points A (6,5) and B (-4, 3).
15. One card is drawn from a well shuffled deck of 52 playing cards. Find the probability of getting
a) a non-face card. b) a black king or a red queen.
16. For what value of k the quadratic equation $x^2 - kx + 4 = 0$ has equal roots?
17. If $\tan A = \frac{3}{4}$ and $A + B = 90^\circ$, then what is the value of $\cot B$?
18. Write 98 as product of its prime factors.
19. Show that $x = -2$ is a solution of $3x^2 + 13x + 14 = 0$.
20. Find distance between the points (0,5) and (-5, 0).
21. If it is given that $\triangle ABC \sim \triangle PQR$ with $\frac{BC}{QR} = \frac{1}{3}$ then find $\frac{\operatorname{ar}(\triangle PQR)}{\operatorname{ar}(\triangle ABC)}$
22. State the Fundamental Theorem of Arithmetic.

23. What is the nature of roots of the quadratic equation $4x^2 - 12x - 9 = 0$?
24. Express $\sin 67^\circ + \cos 75^\circ$ in terms of trigonometric ratios of angles between 0° and 45° .
25. A and B are respectively the points on the sides PQ and PR of a ΔPQR such that $PQ = 12.5$ cm, $PA = 5$ cm, $BR = 6$ cm and $PB = 4$ cm. Is $AB \parallel QR$? Give reason.
26. If the points A (1, 2), B (0, 0) and C (a, b) are collinear, then what is the relation between a and b?
27. Find the common difference of an AP in which $a_{18} - a_{14} = 32$.
28. If the sum of the areas of two circles with radii R_1 and R_2 is equal to the area of a circle of radius R, then
- (a) $R_1 + R_2 = R$ (b) $R_1^2 + R_2^2 = R^2$
(c) $R_1 + R_2 < R$ (d) $R_1^2 + R_2^2 < R^2$
29. If the sum of the circumferences of two circles with radii R_1 and R_2 is equal to the circumference of a circle of radius R, then
- (a) $R_1 + R_2 = R$
(b) $R_1 + R_2 > R$
(c) $R_1 + R_2 < R$
(d) Nothing definite can be said about the relation among R_1, R_2 and R
30. Area of the largest triangle that can be inscribed in a semi-circle of radius r units is
- (a) r^2 sq units (b) $\frac{1}{2} r^2$ sq units (c) $2r^2$ sq units (d) $\sqrt{2} r^2$ sq units
31. The area of the circle that can be inscribed in a square of side 6 cm is
- (a) 36π cm² (b) 18π cm² (c) 12π cm² (d) 9π cm²
32. The shadow of a 5m long stick is 2m long. At the same time the length of the shadow of a 12.5m high tree (in m) is
- a. 3.0 b. 3.5 c. 4.5 d. 5.0
33. In ΔABC , $AB = 6\sqrt{3}$ cm, $AC = 12$ cm & $BC = 6$ cm, then $\angle B$ is
- a. 45° b. 60° c. 90° d. 120°
34. Corresponding sides of two similar triangles are in the ratio 4:9. Areas of these triangles are in the ratio
- a. 2:3 b. 4:9 c. 9:4 d. 16:81
35. The height of an equilateral triangle having each side 12 cm is
- a. $6\sqrt{2}$ cm b. $6\sqrt{3}$ cm c. $3\sqrt{6}$ cm d. $6\sqrt{6}$ cm
36. The distance of the point (-3,4) from x-axis is
- a. 3 b. -3 c. 4 d. 5
37. If A(-6,7) and B(-1,-5) are two given points then the distance 2AB is
- a. 13 b. 26 c. 169 d. 238
38. If P(-1,1) is the midpoint of the line segment joining A(-3,b) and B(1,b+4) then b=?
- a. 1 b. -1 c. 2 d. 0
39. If the points A(1,2), O(0,0) and C(a,b) are collinear then
- a. $a=b$ b. $a=2b$ c. $2a=b$ d. $a+b=0$
40. $\sec 30^\circ / \operatorname{cosec} 60^\circ = ?$
- a. $2/\sqrt{3}$ b. $\sqrt{3}/2$ c. $\sqrt{3}$ d. 1
41. $\sec^2 10^\circ - \cot^2 80^\circ = ?$
- a. 1 b. 0 c. $3/2$ d. $1/2$
42. $\sec^2 60^\circ - 1 = ?$
- a. 2 b. 3 c. 4 d. 0
43. If $\tan \theta = \sqrt{3}$ then $\sec \theta = ?$
- a. $2/\sqrt{3}$ b. $\sqrt{3}/2$ c. $1/2$ d. 2
44. If the height of a vertical pole is $\sqrt{3}$ times the length of its shadow on the ground then the angle of elevation of the sun at that time is
- a. 30° b. 45° c. 60° d. 75°
45. If a pole 12 m high casts a shadow $4\sqrt{3}$ m long on the ground then the sun's elevation is
- a. 60° b. 45° c. 30° d. 90°

46. the shadow of a 5m long stick is 2m long. At the same time, the length of the shadow of a 12.5m high tree is
 a.3m b.3.5m c.4.5m d.5m
47. From a point on the ground ,30m away from the foot of a tower, the angle of elevation of the top is 30° . The height of the tower is
 a. 30m b. $10\sqrt{3}$ c. 10m d. $30\sqrt{3}$ m
48. The number of tangents that can be drawn from an external point to a circle is
 a. 1 b. 2 c. 3 d. 4
49. Which of the following pairs of lines in a circle cannot be parallel
 a. two chords b. a chord and a tangent c. two tangents d. two diameters
50. If a chord AB subtends an angle of 60° at the centre of a circle, then the angle between the tangents to the circle drawn from A and B is
 a. 30° b. 60° c. 90° d. 120°
51. If two tangents inclined at an angle of 60° are drawn to a circle of radius 3 cm then the length of each tangent is
 a. 3 cm b. $3\sqrt{3}/2$ cm c. $3\sqrt{3}$ cm d. 6 cm

D.A.V. PUBLIC SCHOOL, ACC JAMUL
SUBJECT-MATHS CLASS (X)
MULTIPLE CHOICE QUESTIONS

1. The HCF and LCM of two numbers are 33 and 264 respectively. When the first number is completely divided by 2 the quotient is 33. The other number is:
 (a) 66 (b) 130 (c) 132 (d) 196
2. 4 Bells toll together at 9.00 am. They toll after 7, 8, 11 and 12 seconds respectively. How many times will they toll together again in the next 3 hours?
 (a) 3 (b) 4 (c) 5 (d) 6
3. $\pi - \frac{22}{7}$
 (a) a rational number (b) an irrational number (c) a prime number (d) an even number
4. 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
5. The quadratic polynomial whose sum of zeroes is 3 and product of zeroes is -2 is :
 (a) $x^2 + 3x - 2$ (b) $x^2 - 2x + 3$ (c) $x^2 - 3x + 2$ (d) $x^2 - 3x - 2$
6. If $p(x) = ax + b$, then zero of $p(x)$
 (a) a (b) b (c) $\frac{-a}{b}$ (d) $\frac{-b}{a}$
7. Graph of a quadratic polynomial is a

- (a) Straight line (b) Circle (c) Parabola (d) Ellipse

8. A quadratic polynomial whose one zero is 6 and sum of the zeroes is 0, is (a) $x^2 - 6x + 2$
 (b) $x^2 - 36$ (c) $x^2 - 6$ (d) $x^2 - 3$

9. If $(x + 1)$ is a factor of $2x^3 + ax^2 + 2bx + 1$, then find the values of a and b given that $2a - 3b = 4$

- (a) $a = -1, b = -2$ (b) $a = 2, b = 5$ (c) $a = 5, b = 2$ (d) $a = 2, b = 0$

10. The number of zeroes that polynomial $f(x) = (x - 2)^2 + 4$ can have is: (a) 1
 (b) 2 (c) 0 (d) 3

11. What will be the solution of these equations $ax + by = a - b$, $bx - ay = a + b$ (a) $x = 1, y = 2$
 (b) $x = 2, y = -1$ (c) $x = -2, y = -2$ (d) $x = 1, y = -1$

12. A fraction becomes. When subtracted from the numerator and it becomes. When 8 is added to its denominator. Find the fraction.

- (a) $4/12$ (b) $3/13$ (c) $5/12$ (d) $11/7$

13. If $x = a, y = b$ is the solution of the pair of equation $x - y = 2$ and $x + y = 4$ then what will be value of a and b

- (a) 2,1 (b) 3,1 (c) 4,6 (d) 1,2

14. If the sum of n terms of an A.P. is then its n th term is

- (a) $4n - 3$ (b) $3n - 4$ (c) $4n + 3$ (d) $3n + 4$

15. Sum of n terms of the series $\sqrt{2} + \sqrt{8} + \sqrt{18} + \sqrt{32} \dots$ is

- (a) 1 (b) $\frac{n(n+1)}{\sqrt{2}}$
 (c) $\frac{n(n+1)}{2}$ (d) $2n(n+1)$

16. Sum of first n natural number is

- (a) $\frac{n(n-1)}{2}$ (b) $\frac{n(n+1)}{2}$
 (c) $\frac{n(n+1)(2n+1)}{6}$ (d) $\left[\frac{n(n+1)}{2}\right]^2$

17. In an A.P., $a_{m+n} + a_{m-n}$ is equal to

- (a) 0 (b) 1 (c) $2a_m$ (d) a_m

18. Every quadratic polynomial can have at most

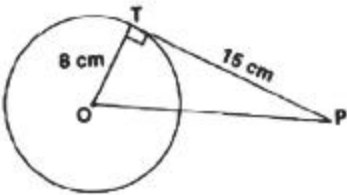
- (a) three zeros (b) one zero (c) two zeros (d) none of these

19. If $x^2 + 5px + 16$ have no real roots, then

- (a) $p > \frac{8}{5}$ (b) $\frac{-8}{5} < p < \frac{8}{5}$ (c) $p < \frac{-8}{5}$ (d) none of these

- 20 For $ax^2 + bx + c = 0$, which of the following statement is wrong?
 (a) If $b^2 - 4ac$ is a perfect square, the roots are rational.
 (b) If $b^2 = 4ac$, the roots are real and equal.
 (c) If $b^2 - 4ac$ is negative, no real roots exist.
 (d) If $b^2 = 4ac$, the roots are real and unequal.
- 21 The roots of the equation $9x^2 - bx + 81 = 0$ will be equal, if the value of b is
 (a) ± 9 (b) ± 18 (c) ± 27 (d) ± 54
- 22 Which of the following is not a quadratic equation?
 (a) $3x^2 - 5x + 9$ (b) $x + \frac{1}{x} = 1$ (c) $x^2 - 9x = 0$ (d) $x^3 - 2x - \sqrt{5} = 0$
22. If the equation $x^2 - kx + 1$, have no real roots, then
 (a) $-2 < k < 2$ (b) $-3 < k < 3$ (c) $k > 2$ (d) $k < -2$
23. Roots of quadratic equation $x^2 - 3x = 0$, will be
 (a) 3 (b) 0, -3 (c) 0, 3 (d) none of these
24. Value of D when root of $ax^2 + bx + c = 0$ are real and unequal will be
 (a) $D \geq 0$ (b) $D > 0$ (c) $D < 0$ (d) $D = 0$
25. Find the distance of the point $(-6, 8)$ from the origin.
 (a) 8 (b) 11 (c) 10 (d) 9
26. Find the ratio in which the line joining the points $(6, 4)$ and $(1, -7)$ is divided by x-axis.
 (a) 1 : 3 (b) 2 : 7 (c) 4 : 7 (d) 6 : 7
27. Find the value of k if the points $A(2, 3)$, $B(4, k)$ and $C(6, -3)$ are collinear.
 (a) 2 (b) 3 (c) 0 (d) 1

28.



1. In the given figure, PA and PB are tangents from P to a circle with centre O. If $\angle AOB = 130^\circ$, then find $\angle APB$.
 (a) 40° (b) 55° (c) 50° (d) 60°
2. In the given figure, PT is a tangent to a circle whose centre is O. If $PT = 12$ cm and $PO = 13$ cm then find the radius of the circle.
 (a) 5 cm (b) 4 cm (c) 6 cm (d) 4.5 cm
3. In the given figure, PT is a tangent to the circle and O is its centre. Find OP.
 (a) 16 cm (b) 15 cm (c) 18 cm (d) 17 cm
4. In the given figure, ABC is a right \diamond right angled at B such that $BC = 6$ cm and $AB = 8$ cm. Find the radius of the circle.
 (a) 3 cm (b) 2 cm (c) 4 cm (d) 5 cm
29. The probability of a leap year selected at random contain 53 Sunday is:

(a) 53/366

(b) 1/7

(c) 2/7

(d) 53/365

30. A bag contains 3 red and 2 blue marbles. A marble is drawn at random. The probability of drawing a black ball is :

(a) 3/5

(b) 2/5

(c) 0/5

(d) 1/5

31. The probability that it will rain tomorrow is 0.85. What is the probability that it will not rain tomorrow

(a) 0.25

(b) 0.145

(c) 3/20

(d) none of these

32. The sum of the probability of an event and non event is:

(a) 2

(b) 1

(c) 0

(d) none of these.

33. What is the area of a semi-circle of radius 5 cm?

(a) 78.57 cm

(b) 71.42 cm

(c) 63.18 cm

(d) 79.86 cm

34. Centroid of triangle whose vertices are A (-4, 6), B (2, -2) and C (2, 5) is.

a) (0, 2)

b) (0, 3)

c) (1, 3)

d) (1, 2)

35. If first term of an AP is a and nth term is b, then its common difference is

a) $(b-a)/n+1$

b) $(b-a)/n-1$

c) $(b-a)/n$

d) none of these

36. If k, $2k-1$ and $2k+1$ are three consecutive terms of an A.P. Find the value of k.

37. A funnel is the combination of

a). Cone and a cylinder

b). Frustum of a cone and cylinder

c). Hemisphere and cylinder

d). Hemisphere and cone

38. If the point (x, y) is equidistant from the points $(a + b, b - a)$ and $(a - b, a + b)$, prove that $bx = ay$.

39. If the n^{th} term of the A.P. -1, 4, 9, 14, is 129, find the value of n.

40. The shadow of a 30 m high tower on the ground at some time of the day is $10\sqrt{3}$ m long. Find the angle of elevation of the sun at that time.

41. If three different coins are tossed together, then find the probability of getting two heads.

42. A number is chosen at random from the numbers -3, -2, -1, 0, 1, 2, 3. What will be the probability that square of this number is less than or equal to 1?

43. If the distance between the points $(4, k)$ and $(1, 0)$ is 5, then what can be the possible values of k?

44. The ratio of the height of a tower and the length of its shadow on the ground is 3:1. What is the angle of elevation of the sun?

45. Volume and surface area of a solid hemisphere are numerically equal. What is the diameter of hemisphere?

46. If the angle between two tangents drawn from an external point P to a circle of radius a and centre O, is 60° , then find the length of OP.

47. What is the common difference of an A.P. in which $a_{21} - a_7 = 84$?

48. The probability of selecting a rotten apple randomly from a heap of

900 apples is 0.18. What is the number of rotten apples in the heap ?

49. Find the value of a, for which point P (a, 2) is the mid-point of the line segment joining the points Q(-5,4) and R(-1,0)

50. If nth term of an A.P. is $(2n+1)$, what is the sum of its first three terms?

DAV PS, Chhal

Mathematics (041)

Q1. The ratio between the HCF and LCM of 5,15,20 is

- (a) 9:1 (b) 4:3 (c) 11:1 (d) 12:1

Q2. If $A = 2n + 13$, $B = n + 7$, where n is a natural number, then HCF of A and B is

- (a) 2 (b) 1 (c) 3 (d) 4

Q3. If two positive integers p and q can be expressed as $p = ab^2$ and $q = a^3b$;

Where a, b being numbers, then LCM(p,q) is equal to

- (a) ab (b) a^2b^2 (c) a^3b^2 (d) a^2b^3

Q4. Which of the following rational numbers have a terminating decimal expansion.

- (a) 125/441 (b) 77/210 (c) 15/1600 (d) 129/300

Q5. The decimal expansion of number $\frac{441}{2^2 5^3 7^2}$ has _____ decimal expansion.

Q6. The decimal expansion of 17/8 will terminate after how many places of decimal.

- (a) 1 (b) 2 (c) 3 (d) will not terminate

Q7. If one of the zeros of the quadratic polynomial $(k-1)x^2 + kx + 1$ is -3, then the

Value of k is

- (a) 4/3 (b) -4/3 (c) 2/3 (d) -2/3

Q8. If the zeroes of the quadratic polynomial $x^2 + (a+1)x + b$ are 2 and -3 then

- (a) $a = -7, b = -1$ (b) $a = 5, b = -1$ (c) $a = 2, b = -6$ (d) $a = 0, b = -6$

Q9. If $p(x) = ax^2 + bx + c$, then $-b/a$ is equal to

- (a) 0 (b) 1 (c) product of zeros (d) sum of zero

Q10. if $p(x) = ax^2 + bx + c$ and $a + b + c$, then one zero is

- (a) $-b/a$ (b) c/a (c) b/c (d) none of these

Q11. The number of polynomials having zeroes as -2 and 5 is

- (a) 1 (b) 2 (c) 3 (d) more than 3

Q12. If the product of the zeroes of $x^2 - 3kx + 2k^2 - 1$ is 7, then the Values of k are _____ and _____.

Q13. The pair of linear equations $2x+3y = 5$ and $4x + 6y = 10$ is

- (a) Inconsistent (b) consistent (c) dependent consistent (d) none of these

Q.13 The pair of equations $y = 0$ and $y = -7$ has

- (a) one solution (b) two solution (c) no solution (d) infinite solution

Q.14 The pair of equations $x = a$ and $y = b$ graphically represents lines which are

- (a) Parallel (b) coincident (c) intersecting at (a,b) (d) intersecting at (b,a)

Q15 On solving the pair of linear equations $2x-y = 2$ and $5x + 2y = 14$ by substitution method, values of x and y are _____ and _____.

Q.16 If $x = 2$ is a solution of the equation $x^2 - 5x + 6k = 0$, then the value of k is _____.

Q.17 $(x^2 + 1)^2 - x^2 = 0$ has

- (a) four real roots (b) two real roots (c) one real roots (d) no real roots

Q.18 If α, β are roots of $x^2 + 5x + a = 0$ and $2\alpha + 5\beta = -1$ then α is equal to _____.

Q.19 If p, q, r are in A.P, then $p^3 + r^3 - 8q^3$ is equal to

- (a) 4pqr (b) -6pqr (c) 2pqr (d) 8pqr

Q. 20 If the nth term of an A.P. is $(2n + 1)$, then the sum of its three terms is

- (a) $6n+3$ (b) 15 (c) 12 (d) 21

Q.21 All circle are _____. (congruent / similar).

- Q.22 In triangle ABC and DEF, $\angle B = \angle E$, $\angle F = \angle C$ and $AB = 3 DE$. Then the two triangles are
 (a) Congruent but not similar. (b) similar but not congruent.
 (c) neither congruent nor similar (d) congruent and similar.
- Q.23 In triangle ABC, $AB = 6\sqrt{3}$ cm, $AC = 12$ cm and $BC = 6$ cm. Then the angle B is _____.
- Q.24 The lengths of diagonals of a rhombus are 16 cm and 12 cm. Then the length of the side of the rhombus is.
 (a) 9cm (b) 10cm (c) 8 cm (d) 20 cm
- Q.25 A triangle with vertices (4, 0), (-1, -1) and (3, 5) is an
 (a) equilateral triangle. (b) right angled triangle
 (c) isosceles right angled triangle. (d) none of these.
- Q.26 The points (-4,0), (4,0) and (0,3) are the vertices of a/an
 (a) right angled triangle (b) isosceles triangle
 (c) equilateral triangle (d) scalene triangle.
- Q.27 If the distance between the points (4,p) and (1,0) is 5 units, then the value of p is
 (a) 4 only (b) ± 4 (c) -4 only (d) 0
- Q.28 If P(a/3,4) 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
- Q.29 A straight line is drawn joining the points (3,4) and (5,6). If the line is extended, the ordinate of the point on the line, whose abscissa is -1 is _____.
- Q.30 The line $3x + 4y = 24$ cuts the x-axis at A and y-axis at B. If O is the origin, The area of triangle AOB is _____.
- Q.31 Reciprocal of $\cot A$ is _____.
- Q.32 $\frac{2\tan 30^\circ}{1+\tan^2 30^\circ}$ is equal to
 (a) $\sin 60^\circ$ (b) $\cos 60^\circ$ (c) $\tan 60^\circ$ (d) $\sin 30^\circ$
- Q.33 $\sin 2A = 2\sin A$ is true when A is equal to
 (a) 0° (b) 30° (c) 45° (d) 60°
- Q.34 If triangle ABC is right angled at C, then the value of $\cos(A+B)$ is
 (a) 0 (b) 1 (c) $\frac{1}{2}$ (d) $\frac{3}{2}$
- Q.35 If $\sin A = \cos A$, $0^\circ < A < 90^\circ$, then A is equal to _____.
- Q.36 The angle of elevation of the Sun, if the length of the shadow of a tower of height 20m is $20\sqrt{3}$ m is
 (a) 30° (b) 45° (c) 60° (d) 75°
- Q.37 A tangent to a circle intersects it in _____ points.
- Q.38 If the area of the circle is numerically equal to twice its circumference, Then the diameter of the circle is
 (a) 4 units (b) 8 units (c) 2 units (d) π units.
- Q.39 During the conversion of a solid from one shape to another, the volume of the new shape will
 (a) Increase (b) decrease (c) remain unaltered (d) be doubled.
- Q.40 The mean of first n natural numbers is _____.

D.A.V PUBLIC SCHOOL, HUDCO, BHILAI
 CLASS- 10 SUBJECT- MATHEMATICS
 SHORT ANSWER QUESTIONS

- Q.1. The decimal expansion of $\frac{21}{24}$ will terminate after how many places of decimal?
 a) 1 b) 2 c) 3 d) 4
 (Ans. c)
- Q.2. The rational number whose decimal expansion is $0.\bar{6}$ is

- a) $\frac{33}{50}$ b) $\frac{2}{3}$ c) $\frac{111}{167}$ d) $\frac{1}{3}$

(Ans. b)

Q.3. Euclid's Division Lemma states that for any two positive integers a and b, there exists unique integers q and r such that $a = bq + r$, where r must satisfy

- a) $0 < r < b$ b) $0 \leq r < b$ c) $0 < r \leq b$ d) $0 \leq r \leq b$

(Ans. b)

Q.4. If $d = \text{LCM}(36, 198)$, then the value of d is

- a) 396 b) 198 c) 36 d) 1

(Ans. a)

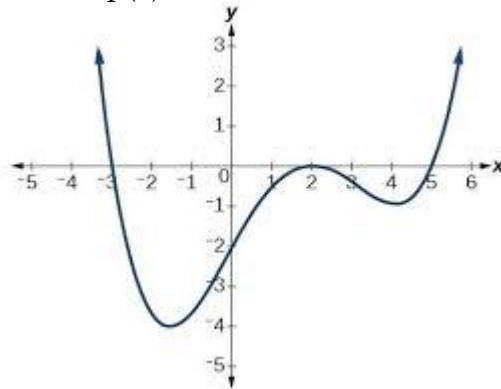
Q.5. Which one of the following is an irrational number?

- a) 0.371371371..... b) 2.39 c) 2.4 d) 4.010010001.....

(Ans. d)

Q.6. What will be the maximum number of zeroes of a polynomial of degree n ? (Ans. n)

Q.7. The graph of a polynomial p(x) is shown. The number of zeroes of p(x) is.....



(Ans. 3)

Q.8. If $x + 1$ is a factor of $x^2 - 3ax + 3a - 7$, then the value of a is

- a) 1 b) -1 c) 0 d) 2

(Ans. a)

Q.9. If one zero of the polynomial $9x^2 + 13x + 6a$ is reciprocal of the other, then a is equal to

- a) $\frac{1}{9}$ b) $\frac{2}{3}$ c) $\frac{3}{2}$ d) $\frac{1}{6}$

(Ans. c)

Q.10. A quadratic polynomial whose sum and product of zeroes 3 and 0 respectively is

- a) $x^2 + 2x$ b) $x^2 + 3x$ c) $x^2 - 3x + 5$ d) $x(x - 3)$

(Ans. d)

Q.11. The pair of linear equations $3x - 5y = 7$ and $6x - 10y = 7$ has

- a) one solution b) two solutions c) infinitely many solutions d) no solution

(Ans. d)

Q.12. If a pair of linear equations is consistent, then its graphs will be

- a) coincident b) parallel c) intersecting d) coincident or intersecting

(Ans. d)

Q.13. The value of k for which the pair of linear equations $4x + 6y - 1 = 0$ and $2x + ky - 7 = 0$ represents parallel lines is

- a) $k = 3$ b) $k = 2$ c) $k = 4$ d) $k = -2$

(Ans. a)

Q.14. If one root of the equation $px^2 - 14x + 8 = 0$ is 6 times the other, then p is equal to

- a) 2 b) 3 c) 1 d) none of these

(Ans. b)

Q.15. The quadratic equation $2x^2 - \sqrt{5}x + 1 = 0$ has

- Q. 49. The area of the largest triangle that can be inscribed in a semi-circle of radius r is
 a) r^2 b) $2r^2$ c) r^3 d) $2r^3$
 (Ans a) r^2)
- Q. 50. If the difference between the circumference and radius of a circle is 37 cm, then the circumference of the circle is-
 a) 154cm b) 44cm c) 14cm d) 7cm
 (Ans b) 44)
- Q. 51. The probability that a non-leap year has 53 Sundays is _____. (Ans $\frac{1}{7}$)
- Q. 52. The probability of getting a non-face card from a well shuffled deck of 52 cards is _____. (Ans $\frac{10}{13}$)
- Q. 53. If the arithmetic mean of 7, 8, x , 11, 14 is x , then $x =$ _____. (Ans 10)
- Q. 54. The diameter of a sphere is 6cm. It is melted and drawn into a wire of diameter 2mm. The length of the wire is _____.
 (Ans 36m)
- Q. 55. Volumes of two cubes are in the ratio 1: 27, the ratio of their surface areas is _____.
 (Ans 1:9)
- Q. 56. If the numerical value of the area of a circle is equal to the numerical value of its circumference, then its radius = _____.
 (Ans 2 units)
- Q. 57. If the perimeter of a semi-circular protractor is 36cm, then its diameter is _____.
 (Ans 14 cm)
- Q. 58. If a square is inscribed in a circle, the ratio of the areas of the circle and the square is _____.
 (Ans $\pi:2$)
- Q. 59. Find the class-mark of the classes 10-25 and 35-55. (Ans 17.5 and 45)
- Q. 60. The radii of two cylinders are in the ratio 3:5. If their heights are in the ratio 2:3 then find the ratio of their curved surface areas.
 (Ans 2:5)

DAV PS, Rajhara Math -Basic

Objective Type Questions For Class X

Subject : Mathematics (Basic)

Que.01. MCQ problems :

- Euclid's division lemma states that for two positive integers a and b , there exists unique integer q and r such that $a = bq + r$, where r satisfy
 (a) $1 < r < b$ (b) $0 < r \leq b$ (c) $0 \leq r < b$ (d) $0 < r < b$
- If p, q are two consecutive natural numbers, then H.C.F. (p, q) is
 (a) q (b) p (c) 1 (d) pq
- If p, q are two prime numbers, then L.C.M. (p, q) is
 (a) 1 (b) p (c) q (d) pq
- The decimal expansion of $\frac{141}{120}$ will terminate after how many places of decimals ?
 (a) 1 (b) 2 (c) 3 (d) will not terminate
- If the LCM of 4 and 18 is 36 and HCF of 4 and 18 is x , then x is equal to -
 (a) 3 (b) 2 (c) 4 (d)
- If $d =$ HCF of 48 and 72, the value of d is equal to -
 (a) 48 (b) 12 (c) 72 (d) 48
- If the zeroes of the quadratic polynomial $ax^2 + bx + c, c \neq 0$ are equal, then

- (a) c and a have opposite signs (b) c and b have opposite signs
(c) c and a have the same signs (d) c and b have the same signs
8. If the product of zeroes of the polynomial $f(x) = ax^3 - 6x^2 + 11x - 6$ is 4, then a is equal to -
(a) $\frac{-3}{2}$ (b) $\frac{3}{2}$ (c) $\frac{2}{3}$ (d) $\frac{-2}{3s}$
9. If the lines represented by $3x + 2ky = 2$ and $2x + 5y + 1 = 0$ are parallel, then the value of k is -
(a) $\frac{-5}{4}$ (b) $\frac{2}{5}$ (c) $\frac{15}{4}$ (d) $\frac{3}{2}$
10. For what value of k will the equation $x + 2y + 7 = 0$ and $2x + ky + 14 = 0$, represents coincident lines ?
(a) 2 (b) 4 (c) 6 (d) 3
11. If a pair of linear equation in two variables is inconsistent, then the lines represented by these equations are -
(a) coincident (b) parallel (c) intersecting (d) None
12. Which constant should be added or subtracted to solve the quadratic equation $9x^2 + \frac{9}{4}x - \sqrt{2} = 0$, by the method of completing squares ?
(a) $\frac{1}{8}$ (b) $\frac{9}{64}$ (c) $\frac{1}{4}$ (d) $\frac{1}{64}$
13. The roots of the equation $x^2 + x - p(p + 1) = 0$, Where p is a constant, are -
(a) p, p + 1 (b) -p, -p+1 (c) p, -p+1 (d) -p, -(p+1)
14. If $y = 1$ is a common root of the equation $ay^2 + ay + 3 = 0$ and $y^2 + y + b = 0$, then $a - b$ is equal to :
(a) $\frac{1}{2}$ (b) $\frac{-7}{2}$ (c) $\frac{3}{2}$ (d) $\frac{-3}{2}$
15. If $ax^2 + bx + c = 0$, has equal roots, then their sum is -
(a) $\frac{b}{a}$ (b) $\frac{-b}{a}$ (c) $\frac{b}{2}$ (d) $\frac{-3}{2}$
16. Sum of n terms of the series $\sqrt{2} + \sqrt{8} + \sqrt{18} + \sqrt{32} + \dots$ is
(a) $\frac{n(n+1)}{2}$ (b) $\frac{n(n+1)}{\sqrt{2}}$ (c) $2n(n + 1)$ (d) 1
17. In an A.P., If $a = 3.5, d = 0, n = 101$, then a_n will be -
(a) 0 (b) 3.5 (c) 103.5 (d) 104.5
18. The sum of first 4 terms of the A.P., whose nth term is given by $a_n = 2n + 1$ is (a) $6n+3$ (b) 15 (c) 12 (d) 21
19. If the sum of three terms in A.P. is 24, then middle term is -
(a) 6 (b) 8 (c) 3 (d) 2
20. The sum of n terms of an A.P. is $3n^2 + 5n$, then 164 is its
(a) 24th term (b) 27th term (c) 26th term (d) 25th term
21. The distance of the point P(4, 3) from the y-axis is -
(a) 2 (b) 4 (c) 1 (d) 5
22. The perimeter of triangle whose vertices are (0, 4), (0, 0) and (3, 0) is -
(a) 5 (b) 12 (c) 11 (d) 17
23. If the points (1, 2), (0, 0) and (a, b) are collinear, then -
(a) a = b (b) a = 2b (c) 2a = b (d) a = -b
24. The area of the triangle whose vertices are (5, 0), (8, 0) and (8, 4) is-
(a) 20 (b) 12 (c) 6 (d) 16
25. The ratio in which the x-axis divides the line segment joining (3, 6) and (12, -3) is -
(a) 2 : 1 (b) 1 : 2 (c) -2 : 1 (d) none of these
26. The ratio in which the y-axis divides the line segment joining (3, 6) and (12, -3) is -
(a) 2 : 1 (b) 1 : 4 (c) -2 : 1 (d) none of these
27. Sides of two triangles are in the ratio 4 : 9. Area of these triangles are in the ratio -
(a) 2 : 3 (b) 4 : 9 (c) 81 : 16 (d) 16 : 81
28. ABCD is a trapezium such that $BC \parallel AD$ and $AB = 4\text{cm}$. If the diagonals AC and BD intersect at O such that $\frac{AO}{OC} = \frac{DO}{OB} = \frac{1}{2}$, then DC =
(a) 7cm (b) 8cm (c) 9cm (d) 6 cm
29. The perimeter of two similar triangles ABC and PQR are respectively 60cm and 36cm. If PQ = 9cm, then AB =
(a) 6cm (b) 10cm (c) 15cm (d) 24cm
30. If angle between two radii of a circle is 130° , the angle between the tangents at the ends of radii is -
(a) 90° (b) 50° (c) 70° (d) 40°

31. The distance between two parallel tangents of a circle of radius 3cm is –
 (a) 6cm (b) 3cm (c) 4.5cm (d) 12cm
32. If four sides of quadrilateral ABCD are tangential to a circle, then
 (a) $AC+AD = BD + CD$ (b) $AB + CD = BC + AD$
 (c) $AB + CD = AC + BC$ (d) $AC + AD = BC + DB$
33. If $\sin\theta = \frac{1}{2}$, then the value of $\sin\theta(\sin\theta - \operatorname{cosec}\theta)$ is –
 (a) $\frac{3}{4}$ (b) $\frac{-3}{4}$ (c) $\frac{\sqrt{3}}{2}$ (d) $\frac{-\sqrt{3}}{2}$
34. If $\sec\theta - \tan\theta = \alpha$ then $\sec\theta + \tan\theta$ is equal to –
 (a) $\frac{\alpha}{2}$ (b) $\frac{1}{\alpha}$ (c) α (d) none of these
35. $\cot 10^\circ \cot 75^\circ \cot 80^\circ \cot 15^\circ$ is equal to –
 (a) 1 (b) 0 (c) -1 (d) cannot be determined
36. The value of $(1 + \cot\theta - \operatorname{cosec}\theta)(1 + \tan\theta + \sec\theta)$ is –
 (a) 1 (b) 2 (c) 4 (d) 0
37. If the height of a vertical pole is $\sqrt{3}$ times the length of its shadow on the ground, then the angle of the elevation of the sun at that time is –
 (a) 30° (b) 60° (c) 45° (d) 75°
38. If the area of a circle is 100 sq.cm., the area of a square inscribed in this circle is –
 (a) $\frac{200}{\pi}$ sq. cm (b) 100π sq.cm (c) $\frac{50}{\pi}$ cm² (d) 50π sq. cm
39. If the area of the circle is 154 sq. cm, then the perimeter is –
 (a) 11cm (b) 22cm (c) 44cm (d) 55cm
40. Area of the largest triangle that can be inscribed in a semi circle of radius r units is –
 (a) $r^2 \text{unit}^2$ (b) $\frac{1}{2}r^2 \text{unit}^2$ (c) $2r^2 \text{unit}^2$ (d) r unit
41. The volume of a hemisphere is $2425\frac{1}{2}$ cu.cm., then its curved surface area is-
 (a) 693 sq cm (b) 793sq cm (c) 893 sq.cm. (d) 1000 sq.cm.
42. The number of spherical bullets of radii 1 mm each that can be made out of a cylindrical solid of radius 4 cm and height 6 cm are –
 (a) 72000 (b) 64000 (c) 96000 (d) none of these
43. Construction of cumulative frequency table is required to determine –
 (a) Mean (b) Median (c) Mode (d) none of these
44. If mode of 2,5,x, 6, 9, 3, 4, 6, 5, 5 is 5 then x is equal to –
 (a) 5 (b) 6 (c) 3 (d) none of these
45. If $\sum f_i = 17, \sum f_i x_i = 4p + 63$ and mean = 7, then p is equal to –
 (a) 15 (b) 12 (c) 14 (d) 13
46. A single letter is selected at random from the word “PROBABILITY”. The probability that it is a vowel is
 (a) $\frac{3}{11}$ (b) $\frac{4}{11}$ (c) $\frac{2}{11}$ (d) $\frac{0}{11}$
47. A number is selected at random from 1 to 30. Probability that it is a prime number is –
 (a) $\frac{2}{3}$ (b) $\frac{1}{6}$ (c) $\frac{1}{3}$ (d) $\frac{11}{30}$

Que.02. Fill in the blanks :

- A line intersecting a circle in two distinct points is called a
- A circle havetangents.
- A line meets a circle in one point is called ato the circle.
- If the total number of observations in n, then the class whose cumulative frequency is greater than $\frac{n}{2}$ and nearest to it is called the
- The class with maximum frequency is called
- The median of a statistical data is the value ofobservation
If the data is arranged in ascending or descending order.
- The graph drawn using the lower class limits and their corresponding cumulative frequency is called a
- The graph drawn using the upper class limits and their corresponding cumulative frequency is called a

Que. 03. True/False Type problems :

1. “The product of three consecutive positive integers is divisible by 6^n ” “ Is this statement true or false ? Justify your answer.
2. If all the zeroes of cubic polynomial are negative , then all the coefficients and the constant term of the polynomial have the same sign.
3. Is the following statement true ? Why ?
“Two quadrilaterals are similar, if their corresponding angles are equal”.
4. The value of $\sin\theta + \cos\theta$ is always greater than 1.
5. $\tan\theta$ increases faster than $\sin\theta$ as θ increases.

ANSWERS

Que.01.

1. (c) 2. (c) 3.(d) 4. (c) 5. (b) 6. (d) 7. (c) 8. (b) 9. (c) 10. (b) 11. (b)
 12. (b) 13. (c) 14.(a) 15 (b) 16. (c) 17. (b) 18. (b) 19. (b) 20. (b) 21. (b) 22. (b)
 23. (c) 24. (c) 25. (a) 26. (b) 27. (d) 28. (b) 29. (c) 30. (b) 31. (a) 32.(b) 33. (b)
 34. (b) 35. (c) 36. (b) 37.(b) 38.(a) 39. (c) 40. (a) 41. (a) 42. (c) 43.(b) 44.(a)
 45.(c) 46. (b) 47. (c)

Que. 02.

1. Secant
2. Infinitely many
3. Tangent
4. Median class
5. Modal class
6. Middle most
7. More than ogive
8. Less than ogive

Que. 03.

1. True
2. True
3. False
4. False
5. True

DAV PS, Rajhara Maths-

Objective Type Questions For Class X Subject : Mathematics (Standard)

Que.01. MCQ problems :

2. Euclid’s division lemma states that for two positive integers a and b, there exists unique integer q and r such that $a = bq + r$, where r satisfy

(b) $1 < r < b$	(b) $0 < r \leq b$
(c) $0 \leq r < b$	(d) $0 < r < b$
2. If p, q are two consecutive natural numbers, then H.C.F.(p, q) is

(a) q	(b) p	(c) 1	(d) pq
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3. If p, q are two prime numbers, then L.C.M.(p, q) is

(a) 1	(b) p	(c) q	(d) pq
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4. The decimal expansion of $\frac{141}{120}$ will terminate after how many places of decimals ?
 (a) 1 (b) 2 (c) 3 (d) will not terminate
5. $(-1)^n + (-1)^{8n} = 0$, where n is :
 (a) any positive integer (b) any odd natural number
 (c) any even natural number (d) any negative integer
6. The least number which divides by all the numbers from 1 to 10 (both inclusive) is
 (a) 10 (b) 100 (c) 504 (d) 2520
7. If the zeroes of the quadratic polynomial $ax^2 + bx + c, c \neq 0$ are equal, then
 (a) c and a have opposite signs (b) c and b have opposite signs
 (c) c and a have the same signs (d) c and b have the same signs
8. If the sum of zeroes of $p(x) = (k^2 - 14)x^2 - 2x - 4$ is 1, then find k :
 (a) $\pm\sqrt{18}$ (b) ± 4 (c) ± 2 (d) 9
9. If the lines represented by $3x + 2ky = 2$ and $2x + 5y + 1 = 0$ are parallel, then the value of k is -
 (a) $-\frac{5}{4}$ (b) $\frac{2}{5}$ (c) $\frac{15}{4}$ (d) $\frac{3}{2}$
10. For what value of k will the equation $x + 2y + 7 = 0$ and $2x + ky + 14 = 0$, represents coincident lines ?
 (a) 2 (b) 4 (c) 6 (d) 3
11. If a pair of linear equation in two variables is inconsistent, then the lines represented by these equations are -
 (a) coincident (b) parallel (c) intersecting (d) None
12. Which constant should be added or subtracted to solve the quadratic equation $9x^2 + \frac{9}{4}x - \sqrt{2} = 0$, by the method of completing squares ?
 (a) $\frac{1}{8}$ (b) $\frac{9}{64}$ (c) $\frac{1}{4}$ (d) $\frac{1}{64}$
13. The roots of the equation $x^2 + x - p(p + 1) = 0$, Where p is a constant, are -
 (b) p, p + 1 (b) -p, -p+1 (c) p, -p+1 (d) -p, -(p+1)
14. If $y = 1$ is a common root of the equation $ay^2 + ay + 3 = 0$ and $y^2 + y + b = 0$, then $a - b$ is equal to :
 (a) $\frac{1}{2}$ (b) $-\frac{7}{2}$ (c) $\frac{3}{2}$ (d) $-\frac{3}{2}$
15. If $\sin\theta$ and $\cos\theta$ are the roots of the equation $ax^2 + bx + c = 0$, then b^2 is Equal to -
 (a) $a^2 - 2ac$ (b) $a^2 + 2ac$ (c) $a^2 - ac$ (d) $a^2 + ac$
16. Sum of n terms of the series $\sqrt{2} + \sqrt{8} + \sqrt{18} + \sqrt{32} + \dots$ is
 (a) $\frac{n(n+1)}{2}$ (b) $\frac{n(n+1)}{\sqrt{2}}$ (c) $2n(n+1)$ (d) 1
17. In an A.P., If $a = 3.5, d = 0, n = 101$, then a_n will be -
 (a) 0 (b) 3.5 (c) 103.5 (d) 104.5
18. The sum of first 4 terms of the A.P., whose nth term is given by $a_n = 2n + 1$ is (a) $6n+3$ (b) 15 (c) 12 (d) 21
19. If the sum of three terms in A.P. is 24, then middle term is -
 (a) 6 (b) 8 (c) 3 (d) 2
20. The sum of n terms of an A.P. is $3n^2 + 5n$, then 164 is its
 (a) 24th term (b) 27th term (c) 26th term (d) 25th term
21. The distance of the point P(4, 3) from the x-axis is -
 (a) 2 (b) 3 (c) 1 (d) 5
22. The perimeter of triangle whose vertices are (0, 4), (0, 0) and (3, 0) is -
 (a) 5 (b) 12 (c) 11 (d) 17
23. If the points (1, 2), (0, 0) and (a, b) are collinear, then -
 (a) $a = b$ (b) $a = 2b$ (c) $2a = b$ (d) $a = -b$
24. The area of the triangle whose vertices are (5, 0), (8, 0) and (8, 4) is-
 (a) 20 (b) 12 (c) 6 (d) 16
25. The ratio in which the x-axis divides the line segment joining (3, 6) and (12, -3) is -
 (a) 2 : 1 (b) 1 : 2 (c) -2 : 1 (d) none of these
26. The ratio in which the y-axis divides the line segment joining (3, 6) and (12, -3) is -
 (a) 2 : 1 (b) 1 : 4 (c) -2 : 1 (d) none of these

27. Sides of two triangles are in the ratio 4 : 9. Area of these triangles are in the ratio –
 (a) 2 : 3 (b) 4 : 9 (c) 81:16 (d) 16 :81
28. ABCD is a trapezium such that $BC \parallel AD$ and $AB = 4\text{cm}$. If the diagonals AC and BD intersect at O such that $\frac{AO}{OC} = \frac{DO}{OB} = \frac{1}{2}$, then DC =
 (a) 7cm (b) 8cm (c) 9cm (d) 6 cm
29. The perimeter of two similar triangles ABC and PQR are respectively 60cm and 36cm. If PQ = 9cm, then AB =
 (a) 6cm (b) 10cm (c) 15cm (d) 24cm
30. If angle between two radii of a circle is 130° , the angle between the tangents at the ends of radii is –
 (a) 90° (b) 50° (c) 70° (d) 40°
31. The distance between two parallel tangents of a circle of radius 3cm is –
 (a) 6cm (b) 3cm (c) 4.5cm (d) 12cm
32. If four sides of quadrilateral ABCD are tangential to a circle, then
 (a) $AC+AD = BD + CD$ (b) $AB + CD = BC + AD$
 (c) $AB + CD = AC + BC$ (d) $AC + AD = BC + DB$
33. If $\sin\theta = \frac{1}{2}$, then the value of $\sin\theta(\sin\theta - \operatorname{cosec}\theta)$ is –
 (a) $\frac{3}{4}$ (b) $-\frac{3}{4}$ (c) $\frac{\sqrt{3}}{2}$ (d) $-\frac{\sqrt{3}}{2}$
34. If $\sec\theta - \tan\theta = \alpha$ then $\sec\theta + \tan\theta$ is equal to –
 (a) $\frac{\alpha}{2}$ (b) $\frac{1}{\alpha}$ (c) α (d) none of these
35. $\cot 10^\circ \cot 75^\circ \cot 80^\circ \cot 15^\circ$ is equal to –
 (a) 1 (b) 0 (c) -1 (d) cannot be determined
36. The value of $(1 + \cot\theta - \operatorname{cosec}\theta)(1 + \tan\theta + \sec\theta)$ is –
 (a) 1 (b) 2 (c) 4 (d) 0
37. If the height of a vertical pole is $\sqrt{3}$ times the length of its shadow on the ground, then the angle of the elevation of the sun at that time is –
 (a) 30° (b) 60° (c) 45° (d) 75°
38. If the area of a circle is 100 sq.cm., the area of a square inscribed in this circle is –
 (a) $\frac{200}{\pi}$ sq. cm (b) 100π sq. cm (c) $\frac{50}{\pi}$ cm^2 (d) 50π sq. cm
39. If the area of the circle is 154 sq. cm, then the perimeter is –
 (a) 11cm (b) 22cm (c) 44cm (d) 55cm
40. Area of the largest triangle that can be inscribed in a semi circle of radius r units is –
 (a) $r^2 \text{unit}^2$ (b) $\frac{1}{2}r^2 \text{unit}^2$ (c) $2r^2 \text{unit}^2$ (d) r unit
41. The volume of a hemisphere is $2425\frac{1}{2}$ cu.cm., then its curved surface area is–
 (a) 693 sq cm (b) 793sq cm (c) 893 sq.cm. (d) 1000 sq.cm.
42. The number of spherical bullets of radii 1 mm each that can be made out of a cylindrical solid of radius 4 cm and height 6 cm are –
 (a) 72000 (b) 64000 (c) 96000 (d) none of these
43. Construction of cumulative frequency table is required to determine –
 (a) Mean (b) Median (c) Mode (d) none of these
44. If mode of 2,5,x, 6, 9, 3, 4, 6, 5, 5 is 5 then x is equal to –
 (a) 5 (b) 6 (c) 3 (d) none of these
45. If $\sum f_i = 17, \sum f_i x_i = 4p + 63$ and mean = 7, then p is equal to –
 (a) 15 (b) 12 (c) 14 (d) 13
46. A single letter is selected at random from the word “PROBABILITY”. The probability that it is a vowel is
 (a) $\frac{3}{11}$ (b) $\frac{4}{11}$ (c) $\frac{2}{11}$ (d) $\frac{0}{11}$
47. A number is selected at random from 1 to 30. Probability that it is a prime number is –
 (a) $\frac{2}{3}$ (b) $\frac{1}{6}$ (c) $\frac{1}{3}$ (d) $\frac{11}{30}$

Que.02. Fill in the blanks :

9. A line intersecting a circle in two distinct points is called a
10. A circle havetangents.
11. A line meets a circle in one point is called ato the circle.

12. If the total number of observations in n , then the class whose cumulative frequency is greater than $\frac{n}{2}$ and nearest to it is called the
13. The class with maximum frequency is called
14. The median of a statistical data is the value ofobservation
If the data is arranged in ascending or descending order.
15. The graph drawn using the lower class limits and their corresponding cumulative frequency is called a
16. The graph drawn using the upper class limits and their corresponding cumulative frequency is called a

Que. 03. True/False Type problems :

6. "The product of three consecutive positive integers is divisible by 6^n " Is this statement true or false ? Justify your answer.
7. If all the zeroes of cubic polynomial are negative , then all the coefficients and the constant term of the polynomial have the same sign.
8. Is the following statement true ? Why ?
"Two quadrilaterals are similar, if their corresponding angles are equal".
9. The value of $\sin\theta + \cos\theta$ is always greater than 1.
10. $\tan\theta$ increases faster than $\sin\theta$ as θ increases.

ANSWERS

Que.01.

1. (c) 2. (c) 3.(d) 4. (c) 5. (b) 6. (d) 7. (c) 8. (b) 9. (c) 10. (b) 11. (b)
 12. (b) 13. (c) 14.(a) 15 (b) 16. (c) 17. (b) 18. (b) 19. (b) 20. (b) 21. (b) 22. (b) 23. (c) 24. (c) 25. (a) 26.
 (b) 27. (d) 28. (b) 29. (c) 30. (b) 31. (a) 32.(b) 33. (b) 34. (b) 35. (c) 36. (b) 37.(b) 38.(a) 39. (c) 40.
 (a) 41. (a) 42. (c) 43.(b) 44.(a) 45.(c) 46. (b) 47. (c)

Que. 02.

9. Secant
10. Infinitely many
11. Tangent
12. Median class
13. Modal class
14. Middle most
15. More than ogive
16. Less than ogive

Que. 03.

6. True
7. True
8. False
9. False
10. True

DAV PS, Chirimiri

Real Numbers

1. The decimal expansion of $\frac{63}{72 \times 175}$ is
 a) Terminating b) Non terminating c) Non terminating and repeating d) an irrational number.
2. If the HCF and LCM of two numbers are 4 and 9696, then the product of the two numbers is
 a) 9696 b) 24242 c) 38784 d) 4848.
3. For some integer q , every odd integers is of the form a) q b) $q + 1$ c) $2q$ d) none of these.

4. The HCF of two consecutive even numbers is a) 1 b) 2 c) 4 d) 8.
 5. Any one of the numbers $a, a+2, a+4$, for any positive integer a , is a multiple of a) 2 b) 3 c) 5 d) 7.
 6. The least number that is divisible by all the numbers from 1 to 100 is a) 10 b) 100 c) 504 d) 2520.

Polynomials

7. The value of k for which (-4) is a zero of the polynomial $x^2 - x - (2k + 2)$ is a) 3 b) 9 c) 6 d) -1.
 8. If α and β are zeroes of the 3 polynomials $f(x) = x^2 + 5x + 8$, then $\alpha + \beta$ is a) 5 b) -5 c) 8 d) none of these.
 9. The number of polynomials having zeroes as -2 and 5 is a) 1 b) 2 c) 3 d) more than 3.
 10. If the zeroes of the quadratic polynomial $x^2 + kx + k, k \neq 0$, a) cannot both be positive b) cannot both be negative c) are always equal d) are always unequal.
 11. A quadratic polynomial can have at most _____ zeroes. a) 0 b) 1 c) 2 d) 3.
 12. A quadratic polynomial whose sum and product of zeroes are -3 and 2 is a) $x^2 - 3x + 2$ b) $x^2 + 3x + 2$ c) $x^2 + 2x - 3$ d) $x^2 + 2x + 3$.

Pairs of Linear Equations

13. The value of c for which the pairs of equations $cx - y = 2$ and $6x - 2y = 3$ will have no solution is a) 3 b) -3 c) -12 d) no value.
 14. The pair of equations $x + 2y + 5 = 0$ and $-3x - 6y + 1 = 0$ have a) infinitely many solutions b) unique solutions c) no solution d) one solution.
 15. If $2x + 3y = 0$ and $4x - 3y = 0$, then $x + y$ equals a) 0 b) -1 c) 1 d) 2.
 16. If the pairs of equations $2x + 3y = 5$ and $5x + \frac{15}{2}y = k$ represents two coincident lines, then the value of k is a) -5 b) $-\frac{25}{2}$ c) $\frac{25}{2}$ d) $-\frac{5}{2}$.
 17. The pairs of equations $y = 0$ and $y = -7$ has a) one solution b) two solutions c) infinitely many solutions d) no solutions.

Quadratic Equations

18. If the equation $x^2 + 4x + k = 0$ has real and distinct roots then a) $k < 4$ b) $k > 4$ c) $k \geq 4$ d) $k \leq 4$.
 19. If $x = 1$ is a common roots of the equations $ax^2 + ax + 3 = 0$ and $x^2 + x + b = 0$ then $ab =$ a) 6 b) 3 c) -3 d) $\frac{7}{2}$.
 20. If the equations $ax^2 + 2x + a = 0$ has two distinct roots if a) $a = \pm 1$ b) $a = 0$ c) $a = 0, 1$ d) $a = -1, 0$.
 21. If α and β are the roots of the quadratic equation $4x^2 + 3x + 7 = 0$, then $\frac{1}{\alpha} + \frac{1}{\beta}$ a) $\frac{7}{3}$ b) $-\frac{7}{3}$ c) $\frac{3}{7}$ d) $-\frac{3}{7}$.
 22. Values of k for which the quadratic equation $2x^2 - kx + k = 0$ has equal roots is a) 0 only b) 4 c) 8 only d) 0, 8.

Arithmetic Progression

23. The 10th term of the AP $5, 8, 11, 14, \dots$ Is a) 32 b) 35 c) 38, d) 185
 24. In an AP $a = -7.2, d = 3.6, an = 7.2$ then n is a) 1 b) 3 c) 4 d) 5
 25. In an AP, if $d = -4, n = 7, an = 4$ then a is a) 6 b) 7 c) 20 d) 28
 26. Which term of the AP $21, 42, 63, 84, \dots$ Is 210. a) 9th b) 10th c) 11th d) 12th.
 27. The common difference of an AP in which $a_{18} - a_{14} = 32$ is a) 8 b) -8 c) 4 d) -4
 28. The sum of first 16 terms of the AP $10, 6, 2, \dots$ is a) -320 b) 320 c) -352 d) -400

Coordinate Geometry

29. If the distance between the points $(2, -2)$ and $(-1, x)$ is 5, one of the value of the x is a) -2 b) 2 c) -1 d) 1
 30. The mid points of the line segment joining the points $(-2, 8)$ and $(-6, -4)$ is a) $(-4, -6)$ b) $(2, 6)$ c) $(-4, -2)$ d) $(4, 2)$
 31. Find the distance of the point $(2, 3)$ from the X-axis.
 32. Find the distance of the point $(-6, 8)$ from the origin.
 33. Find the perimeter of the triangle whose vertices are $(0, 4), (0, 0)$ and $(3, 0)$.
 34. If the points $(1, 2), (0, 0)$ and (a, b) are collinear, then a) $a = b$ b) $a = 2b$ c) $2a = b$ d) $a = -b$.

Circle

35. If the angle between two radii of a circle is 130° , then find the angle between the tangents at the ends of the radii.
 36. If the radii of two concentric circles are 4cm and 5cm, then find the length of each chord of one circle which is tangent to other circle.

Statistics

37. Construction of cumulative frequency table is useful in determining the
 all above a) mean b) median c) mode
 38. Write the empirical relationship between mean, median and mode.

Probability

39. Which of the following can be the probability of an event? A)-0.04 b)1.004 c) $\frac{18}{23}$ d) $\frac{8}{7}$
 40. A card is drawn from a well-shuffled deck of 52 cards. What is the probability of getting a face card?
 41. If an event can not occur, then what is its probability?
 42. If a die is thrown, what is the probability of getting an odd number less than 3?
 43. If the probability of occurrence of an event is 0.063, what is the probability of its non-occurrence?

Triangle

44. What will be the length of sides of a rhombus, if its diagonals are 16cm and 12 cm?
 45. If $\triangle ABC \sim \triangle PQR$ with $\frac{BC}{QR} = \frac{1}{3}$, then find $\frac{\text{ar}(\triangle PQR)}{\text{ar}(\triangle ABC)}$.
 46. If the areas of two similar triangles are 9 cm^2 and 16 cm^2 , find the ratio of their corresponding sides.
 47. Two poles of height 6m and 11 m stand vertically on a plane, if the distance between their feet is 12m, find the distance between their tops.

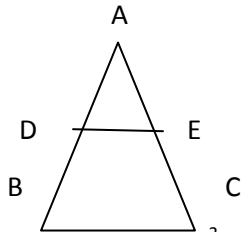
Trigonometry

48. If $\cos A = \frac{4}{5}$, then find the value of $\tan A$.
 49. If $\cos 9A = \sin A$, $A < 90^\circ$, then find the value of $\tan 5A$.
 50. Find the value of $\sin 45^\circ + \cos 45^\circ$.

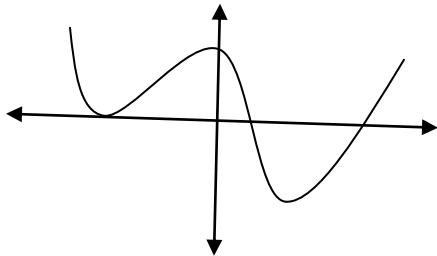
DAV PS, BISHRAMPUR

1. HCF of smallest prime number and smallest composite number is
 a) 1 b) 2 c) 3 d) 4
 2. If the graph of the polynomial does not intersect x-axis, then number of zeroes of the polynomial is:
 a) 1 b) 2 c) 3 d) zero
 3. If a polynomial of degree 5 is divided by a polynomial of degree 3, then the degree of the quotient is:
 a) less than 2 b) equal to 2 c) equal to 4 d) more than 4
 4. $(\alpha - \beta), \alpha, (\alpha + \beta)$ are zeroes of the polynomial $2x^3 - 16x^2 + 15x - 2$, value of α is
 a) 8 b) 0 c) $\frac{3}{8}$ d) $\frac{8}{3}$
 5. The graph of a quadratic polynomial is a
 a) Straight line b) circle c) spiral d) parabola
 6. The pair of linear equations $2x + 7y = k$, $kx + 21y = 18$ has infinitely many solutions if:
 a) $k = 3$ b) $k = 6$ c) $k = 9$ d) $k = 19$
 7. The value of k for which the pair of linear equations $4x + 6y - 1 = 0$ and $2x - ky = 7$ represents parallel lines is
 a) -2 b) 2 c) -3 d) 4
 8. If 1 is root of equations $ax^2 + ax + 3 = 0$ and $x^2 + x + b = 0$ then ab equals:
 a) -2 b) 3 c) -3 d) 4
 9. If k, $2k - 1$ and $2k + 1$ are three consecutive terms of an A.P., then find the value k is:
 a) 2 b) 3 c) -3 d) 5
 10. The sum of first 20 odd natural numbers is:
 a) 100 b) 300 c) 400 d) 420
 11. If $\triangle ABC \sim \triangle DEF$ and $BC = 3\text{cm}$, $EF = 4\text{cm}$, $\text{ar}(\triangle ABC) = 54 \text{ cm}^2$, then find $\text{ar}(\triangle DEF)$.
 12. Find the value of a for which point P($a/3$, 2) is the mid-point of the line segment joining the points Q(-5, 4) and R(-1, 0).
 13. Find the distance of the point P(x, y) from origin.

14. What is next term of an A.P. $\sqrt{8}, \sqrt{18}, \sqrt{32}, \dots$?
15. After how many places $\frac{23}{2^4 \times 5^3}$ terminate?
16. Has the rational number $\frac{441}{2^2 \times 5^7 \times 7^2}$ terminating or non-terminating decimal expansion?
17. If α and β are of $p(x) = 2x^2 - x - 6$, then find the value of $\frac{1}{\alpha} + \frac{1}{\beta}$.
18. If $(x + a)$ is a zero of the polynomial $2x^2 + 3ax + 1$, find the value of a .
19. If $x = a$, $y = b$ is the solution of the pair of equations $x - y = 2$ and $x + y = 4$ find the values of a and b .
20. Write equation of line parallel to
i) x-axis ii) y-axis
21. In figure, DE||BC. If $AD = 2\text{cm}$, $AB = 5\text{cm}$ and $AE = 1.5\text{ cm}$. Find EC.



22. Find the value of k for which the equation $x^2 + 5kx + 16 = 0$ has real and equal roots.
23. If quadratic equation $px^2 - 2\sqrt{5}px + 15 = 0$, has two equal roots, then find the value of k .
24. Find eleventh term from the last of the AP : 27, 23, 19, ..., -65.
25. The graph of $y = p(x)$ is shown in the figure below. How many zeroes does $p(x)$ have?



26. The point $P(1,2)$ divides the join of $A(-2, 1)$ and $B(7,4)$ in the ratio
a) 1:2 b) 2:1 c) 3:1 d) 1:3
27. If the tangents PA and PB from a point P to a circle with centre O are inclined to each other at an angle of 80° , then $\angle POA$ is
a) 50° b) 60° c) 70° d) 80°
28. The probability of guessing the correct answer to a certain question in a test is $\frac{x}{12}$. If the probability of guessing the incorrect answer is $\frac{2}{3}$, then x is equal to
a) 2 b) 3 c) 4 d) 6
29. If $\operatorname{cosec} \theta - \cot \theta = \frac{1}{2}$, then $\cos \theta =$ _____
a) $\frac{5}{3}$ b) $\frac{3}{5}$ c) $\frac{-3}{5}$ d) $\frac{-5}{3}$
30. Value of $\tan 5^\circ \times \tan 5^\circ \times \tan 45^\circ \times \tan 80^\circ \times \tan 85^\circ$ is
a) 0 b) 1 c) 2 d) 3
31. If A and B are acute angles such that $\sin A = \cos B$, then $A + B$ is
a) 60° b) 30° c) 90° d) 120°
32. The altitude of an equilateral triangle having the length of its side 10cm is
a) $5\sqrt{2}\text{ cm}$ b) $5\sqrt{3}\text{ cm}$ c) $6\sqrt{2}\text{ cm}$ d) $6\sqrt{3}\text{ cm}$

33. The distance between two parallel tangents to a circle of radius 7 cm is
 a) 49 cm b) 7 cm c) 14 cm d) 28 cm
34. The length of the tangent drawn from a point 5 cm away from the centre of a circle of radius 3 cm is
 a) 2 cm b) 4 cm c) 6 cm d) 8 cm
35. The point on X- axis equidistant from points A(2,4) and B(-4,8) is
 a) (5, 0) b) (-5,0) c) (0,0) d) none of these
36. If two tangents inclined at an angle of 60° are drawn to a circle of radius 5 cm, then the length of each tangent is
 a) 12 cm b) 10 cm c) 15 cm d) 18 cm
37. $3 \tan \theta = 5$, then $\frac{3 \sin \theta - 5 \cos \theta}{3 \sin \theta + 5 \cos \theta}$ is equal to
 a) $\frac{3}{5}$ b) $\frac{3}{5}$ c) 1 d) 0
38. Area swept by the minute hand of a clock of length 15 cm in 20 minutes is
 a) 60π b) 65π c) 70π d) 75π
39. If mode of a data is 45, mean is 27 then the median is _____
40. If θ increases from 0 to $1/2$, then the value of $\cos \theta$ _____
41. The class in which mode lies is called _____
42. The sum of the probabilities of all the elementary events of an experiment is _____
43. If three points (x_1, y_1) , (x_2, y_2) , (x_3, y_3) are such that $x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2) = 0$ then these points are _____
44. The probability of getting a face card from a pack of cards is _____
45. The distance of a point (x,y) from origin is _____
46. Rahul made a toy in which he placed 4 cubes of edge 10 cm one above the other. Find the surface area of the resulting cuboid.
47. Find the area of the quadrant of a circle whose circumference is 20 cm
48. Find the probability of getting a sum 9 if two dice are thrown simultaneously
49. A wire is bent in the form of a circle of radius 28 cm. It is rebent in the form of a square. Find the length of the side of the square.
50. For a grouped data, which measure of central tendency is the abscissa of the point of intersection of the 'less than ogive' and of the 'more than ogive'?

DAV PS, PANDAVPARA
OBJECTIVE TYPE QUESTION:2019-20

CLASS -X

SUBJECT-MATHEMATICS

1. Which of the following are the root of the quadratic equation, $x^2 - 9x + 20 = 0$ by factorization?
 (a) 3, 4 (b) 4, 5 (c) 5, 6 (d) 6, 7
2. If α, β are the root of the equation $x^2 + 5x + 5 = 0$, then equation whose roots are $\alpha + 1$ and $\beta + 1$ is
 (a) $x^2 + 5x - 5 = 0$ (b) $x^2 + 3x + 5 = 0$ (c) $x^2 + 3x + 1 = 0$ (d) none of this
3. Which of the following equation has two distinct real root?
 (a) $2x^2 - 3\sqrt{2}x + \frac{9}{4} = 0$ (b) $x^2 + x - 5 = 0$ (c) $x^2 + 3x + 2\sqrt{2} = 0$ (d) $5x^2 - 3x + 1 = 0$
4. $(x^2 + 1)^2 - x^2 = 0$ has
 (a) four real root (b) two real root (c) no real root (d) one real root
5. If α, β are root of $x^2 + 5x + a = 0$ and $2\alpha + 5\beta = -1$, then a is equal to _____.
 (a) -24 (b) +24 (c) 0 (d) none of this

6. α, β are roots of the equation

$$(a + 1)x^2 + (2a + 3)x + (3a + 4) = 0.$$

If $\alpha \cdot \beta = 2$, then $\alpha + \beta =$ _____ .

- (a) -1 (b) +1 (c) 0 (d) None of this

7. An AP consists of 31 terms. If its 16th term is m , then sum of all the terms of this AP is

- (a) $16m$ (b) $47m$ (c) $31m$ (d) $52m$

8. Two APs have the same common differences. The first term of one of these is -1 and that of the other is -8 . Then the difference between their 4th term is

- (a) -1 (b) -8 (c) 7 (d) -9

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

- (a) $2 : 1$ (b) $1 : 4$ (c) $1 : 2$ (d) $4 : 1$

10. $\triangle ABC \sim \triangle PQR$. Area of $\triangle ABC = 81 \text{ cm}^2$, $\triangle PQR = 121 \text{ cm}^2$. If $AD = 9 \text{ cm}$, $PM = ?$

- a) 10 cm b) 11 cm c) 12 cm d) None of these

11. If $\sin x + \operatorname{cosec} x = 2$ then $\sin^{19} x + \operatorname{cosec}^{20} x = ?$

- (a) 2^{19} (b) 2^{20} (c) 2^{39} (d) 2

12. If $\tan A + \cot A = 4$, then $\tan^4 A + \cot^4 A =$

- (a) 194 (b) 196 (c) 0 (d) ∞

13. $\tan A =$

- (a) $\frac{\cos A}{\sqrt{1 - \cos^2 A}}$ (b) $\frac{\sec A}{\sqrt{1 - \sec^2 A}}$ (c) $\frac{\sin A}{\sqrt{1 - \sin^2 A}}$ (d) $\frac{1}{\sqrt{1 - \sin^2 A}}$

14. The pair of linear equation $2x + 3y = 5$ and $4x + 6y = 10$ is

- a) consistent b) inconsistent c) dependent consistent d) none of these

15. The pair of equations $x = a$, $y = b$ graphically represents lines which are –

- a) parallel b) intersecting at b, a c) coincide d) intersecting at a, b

16. The numbers of polynomials having zeroes as -2 and 5 is–

- a) 1 b) 2 c) 3 d) more than 3

17. If $p(x) = ax^2 + bx + c$ and $a+c = b$ then one of the zero is –

- a) b/a b) c/a c) $-c/a$ d) $-b/a$

18. The ratio between LCM and HCF of $5, 15, 20$ is –

- a) $9:1$ b) $4:3$ c) $11:1$ d) $12:1$

19. If $A = 2n + 13$, $B = n + 7$, where n is natural number, then HCF of A and B is–

- a) 1 b) 2 c) 3 d) 4

20. If $\operatorname{cosec} A - \cot A = 4/5$ then $\operatorname{cosec} A = ?$

- a) $47/40$ b) $59/40$ c) $51/40$ d) $41/40$

21. Zeros of a polynomial can be determined graphically. No. of zeroes of a polynomial is equal to no. of points where the graph of polynomial -----

- (a) intersects y -axis (b) intersect x -axis (c) intersects y -axis or intersect x -axis (d) none of these.

22. The perimeter of a triangle with vertices $(0,4), (0,0)$ and $(3,0)$ is _____.

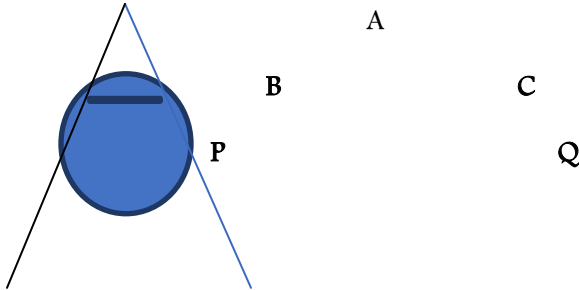
23. The centroid of a triangle whose vertices $(0,0), (3,0)$ and $(0,4)$ is _____.

(b) 1 - B, 2 - A, 3 - C

(C) 1 - B, 2 - C, 3 - A

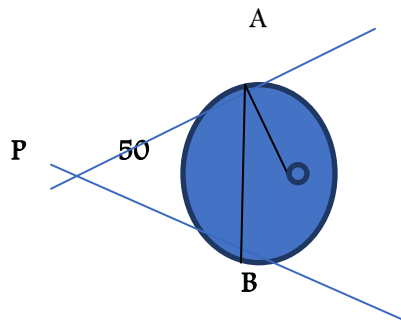
(C) 1 - C, 2 - A, 3 - B

34. AP, AQ, AND DC are the tangents of the circle . AB=5 CM , AC= 6CM , BC = 4CM , THEN THE LENGTH OF AP (IN CM) is



- (a) 7.5 cm b) 15cm c) 10cm d) 9cm

35. In figure . PA , and PB are the tangents to the circle with centre O such that $\angle APB = 50^\circ$. Write the measure of $\angle OAB$.



36. The diameter of a wheel is 1.26 m . The distance travelled in 500 revolution is

- (a) 2670 m (b) 2880 m (c) 1980 m (d) 1596 m

37. Area of the triangle formed by (1, -4) and (3, -2) (-3, 16) is ----- .

38. The value of $\sin^2 30^\circ - \cos^2 30^\circ$ is

- (a) $-1/2$ (b) $\sqrt{3}/2$ (c) $3/2$ (d) $2/3$

39. If $3 \cot \theta = 2$, then the value of $\tan \theta$

- (a) $2/3$ (b) $3/2$ (c) $3/\sqrt{13}$ (d) $2/\sqrt{13}$

40. If $\triangle ABC$ is right angled at C, then the value of $\cos(A + B)$

- (a) 0 (b) 1 (c) $1/2$ (d) $\sqrt{3}/2$