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CLASS: X- MATHEMATICS

Real Numbers

Q.1 π is

(a) rational

(b) irrational

(c) imaginary

(d) an integer

Q.2 The sum of a rational and an irrational number is_____

(a) an irrational number

(b) a rational number

(c) an integer

(d) a whole number

Q.3 The number $(\sqrt{x} + \sqrt{y})(\sqrt{x} - \sqrt{y})$ where x,y> 0 is

(a) rational

(b) irrational

(c) both a and b

(d) none

Q.4 Which of the following numbers has the terminal decimal representation ?

(a) $\frac{1}{7}$

(b) $\frac{1}{3}$

(c) $\frac{3}{5}$

(d) $\frac{17}{7}$

Q.5 Representation of $3.\overline{6}$ in rational number form is

(a) $\frac{11}{3}$

(b) $\frac{3}{11}$

(c) $\frac{36}{10}$

(d) $\frac{33}{10}$

Q.6 if x,y,z be rational numbers such that x>y and z<y then----------

(a) z>x

(b) z<x

(c) y<z

(d) y>x

Q.7 The sum of the additive inverse and multiplicative inverse of 2is

(a) $\frac{11}{3}$

(b) $\frac{3}{11}$

(c) $\frac{36}{10}$

(d) $\frac{33}{10}$

POLYNOMIALS

Q.1 If one root of the polynomial f(x)=$5x^2 + 13x + k$ is reciprocal of the other, then the value of k is

(a) 0

(b) 5

(c) $\frac{1}{6}$

(d) 6

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

(a) 1

(b) 2

(c) 3

(d) more than 3

Q.3 if α, β are the zeros of the polynomial p(x) = $4x^2 + 3x + 7$, then $\frac{1}{\alpha} + \frac{1}{\beta}$ is equal to

(a) $\frac{7}{3}$

(b) $-\frac{7}{3}$

(c) $\frac{3}{7}$

(d) $-\frac{3}{7}$

Q.4 If the product of zeros of the polynomial f(x)=$ax^3 - 6x^2 + 11x - 6$ is 4,then a=

(a) $\frac{3}{2}$

(b) $-\frac{3}{2}$

(c) $\frac{2}{3}$

(d) $-\frac{2}{3}$

Q.5 If the two zeros of $x^3 + x^2 - 5x - 5$ are $\sqrt{5}$ and $-\sqrt{5}$, then its third zero is

(a) 1

(b) -1

(c) 2

(d) -2

Q.6 The zeroes of the quadratic polynomial $x^2 + ax + a, a \neq 0$,

(a) cannot both be positive

(b) cannot both be negative

(c) are always unequal

(d) are always equal

Q.7 If the polynomial f(x)=$ax^3 + bx - c$ is divisible by the polynomial g(x) = $x^2 + bx + c$, then $ab =$

(a) 1

(b) $\frac{1}{c}$

(c) -1

(d) $-\frac{1}{c}$

QUADRATIC EQUATIONS

Q.1 The values of k for which the quadratic equation $16x^2 + 14x + 9 = 0$ has real and equal roots are

(a) 6, $-\frac{1}{6}$

(b) $36, -36$

(c) $6, -6$

(d) $\frac{3}{4} - \frac{3}{4}$

Q.2 If $y = 1$ is a common root of the equations $ay^2 + ay + 3 = 0$ and $y^2 + y + b = 0, ab$ equals

(a) 3

(b) $-\frac{7}{2}$

(c) 6

(d) -3

Q.3 The value of c for which the equation $ax^2 + 2bx + c = 0$ has equal roots is.

(a) $\frac{b^2}{a}$

(b) $\frac{b^2}{4a}$

(c) $\frac{a^2}{b}$

(d) $\frac{a^2}{4b}$

Q.4 if the equation $x^2 - bx + 1 = 0$ does not possess real roots,then

(a) $-3 < b < 3$

(b) $-2 < b < 2$

(c) $b > 2$

(d) $b < -2$

Q.5 p and q are the roots of the equation x^2-px+q=0, then

(a) p=1. q= -2

(b) p=0 , q=-1

(c) p=-2, q=0

(d) p=-2 , q=1

Q.6 If the equation $x^2 - ax + 1 = 0$ has two distinct roots, then

(a) $|a| = 2$

(b) $|a| < 2$

(c) $|a| > 2$

(d) None of these

Q.7 The value of $\sqrt{6+\sqrt{6+\sqrt{6+\cdots\ldots}}}$ is

(a) 4

(b) 3

(c) -2

(d) 3.5

Q.8 A quadratic equation whose one root is 2 and the sum of whose roots is zero, is

(a) $x^2 + 4 = 0$

(b) $x^2 - 4$=0

(c) $4x^2 - 1 = 0$

(d) $x^2 - 2 = 0$

Q.9 if one root of the equation $ax^2 + bx + c = 0$ is three times of the others,then$b^2 : ac =$

(a) 3:1

(b) 3:16

(c) 16:3

(d) 16:1

Q.10 If $sin \propto$ and $cos \propto$ are the roots of the equation $ax^2 + bx + c = 0$,then $b^2 =$

(a) $a^2 - 2ac$

(b) $a^2 + 2ac$

(c) $a^2 - ac$

(d) $a^2 + ac$

Q.11 If a and b are roots of the equation $x^2 + ax + b = 0$, then a+b=

(a) 1

(b) 2

(c) -2

(d) -1

Q.12 if 2 is a root of the equation $x^2 + ax + 12 = 0$ and the quadratic equation $x^2 + ax + q = 0$ has equal roots, then q=

(a) 12

(b) 8

(c) 20

(d) 16

ARITHEMATICS PROGRESSION

Q.1 If 18 ,a ,b -3 are in A.P. then a+b=

(a) 19

(b) 7

(c) 11

(d) 15

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

(a) $\frac{n(n+1)}{2}$

(b) $2n(n+1)$

(c) $\frac{n(n+1)}{\sqrt{2}}$

(d) 1

Q.3 if $\frac{1}{x+2}, \frac{1}{x+3}, \frac{1}{x+5}$ are in A.P. Then, x=

(a) 5

(b) 3

(c) 1

(d) 2

Q.4 The sum of first n odd natural number is

(a) $2n-1$

(b) $2n+1$

(c) n^2

(d) n^2-1

Q.5 The value of $\sum_{k=1}^{15} 2k-3$is

(a) 390

(b) 195

(c) 210

(d) 420

Q.6 If 3, 4+p, 6-p are in AP,then p must be equal to

(a) 0

(b) $\frac{2}{3}$

(c) $\frac{1}{3}$

(d) $-\frac{1}{3}$

Q.7 If the nth term of an AP is 3n+5,then sum of the n terms equal to

(a) $\frac{3n^2+13n}{2}$

(b) $\frac{3n^2-13n}{2}$

(c) cannot be determined

(d) none of these

Q.8 The three sides of a right triangle have integral lengths which form an A.P.one of the sides could have length

(a) 22

(b) 58

(c) 81

(d) 91

Q.9 If the sum of the first 10 terms and the sum of the first 100 terms of a given A.P are 100 and 10 respectively, then the sum of first 110nterms is

(a) -110

(b) -90

(c) 90

(d) 110

Q.10 The nth term of the series 1^2, (1^2+2^2), $(1^2+2^2+3^2)$,……

(a) n

(b) $\frac{n(n+1)}{2}$

(c) $\frac{n^2(n+1)^2}{2}$

(d) $\frac{n(n+1)(2n+1)}{6}$

Q.11 Which term of the AP ,24,21,18,15…… is first negative term ?

(a) 8

(b) 10

(c) 12

(d) 1

Q.12 The sum of all two digits natural numbers is.

(a) 4950

(b) 4509

(c) 4905

(d) 4590

Q.13 The three sides of a right triangle have integral length which form an AP. One of the sides could have length

(a) 22

(b) 58

(c) 81

(d) 361

Q.14 If 7 times the 7th term of an AP is equal to 11 times the 11th term, then 18th term in that AP is.

(a) 143

(b) 0

(c) 1

(d) cannot be determined

Q.15 The sum of all integers between 50 and 350 which end n 1 is

(a) 4566

(b) 4877

(c) 5539

(d) 5880

Q.16 The AM between $10\frac{1}{2}$and $25\frac{1}{2}$ is

(a) 15

(b) 18

(c) 20

(c) 17.5

Q.17 A circle with area A_1 is contained in the interior of a large circle with area $A_1 + A_2$.If the radius of the larger circle is 3 and A_1, A_2, A_1+A_2, are in AP, then the radius of the smaller circle is

(a) $\frac{\sqrt{3}}{2}$

(b) 1

(c) $\frac{2}{\sqrt{3}}$

(d) $\sqrt{3}$

Q.18 The sum of n terms of an AP is $4n^2 + 5n$. Then the nth term is

(a) 8n+1

(b) 8n-1

(c) 1-8n

(d) none

Q.19 In an AP, the sum of 3 numbers is 15 and their product is 45.then the three numbers are

(a) 1,3,15

(b) 2,4,9

(c) 1,5,9

(d) 0,5,9

PAIR OF LINER EQUATIONS IN TWO VARIABLES

1. Students are asked to stand in the lines. If one student is extra in a line, then there would be two less lines. If one student is less in line, there would be three more lines. Find the number of students in the class.

(a) 40
(b) 50
(c) 60
(d) 70

2. 8 girls and 12 boys can finish work in 10 days while 6 girls and 8 boys can finish it in 14 days. Find the time taken by the one girl alone that by one boy alone to finish the work.

(a) 120, 130
(b) 140,280
(c) 240,280
(d) 100,120

3. The sum of two digits and the number formed by interchanging its digit is 110. If ten is subtracted from the first number, the new number is 4 more than 5 times of the sum of the digits in the first number. Find the first number.

(a) 46
(b) 48
(c) 64
(d) 84

4. 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

5. Five years ago, A was thrice as old as B and ten years later, A shall be twice as old as B. What is the present age of A.

(a) 20
(b) 50
(c) 60
(d) 40

6. 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) $x=1, y=-1$

7. 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

8. Rozly can row downstream 20km in 2 hours, and the upstream 4km in 2 hours. What will be the speed of rowing in still water?

(a) 6km/hr
(b) 4km/hr
(c) 3km/hr
(d) 7km/hr

TRIGONOMENTERY

1. In a triangle PQR, right-angled at Q, PR + QR = 25 cm and PQ = 5 cm, then the value of sin Pis
   (a) $\frac{1}{25}$
   (b) $\frac{12}{25}$
   (c) 1
   (d) None of these
2. In a triangle PQR, right-angled at Q, PQ = 3 cm and PR = 6 cm, then ∠QPR =
   (b)30°
   (c) 45°
   (d)60
3. If sin (A – B) = 1 and cos(A + B) = 1, then the value of A and B, respectivelyare
   (a) 45° and 15°
   (b) (b) 30°and 15°
   (c) (c) 45°and 30°
   (d) (d) none ofthese

5. If Sin (A + B) = 1 = cos(A – B) then
   (a) A = B = 90^0
   (b) A = B= 0^0
   (c) A = B= 45^0
   (d) A =2B

6. The value of $\sin 60^0 \cos 30^0 - \cos 60^0 \sin 30^0$is
   (a) 1
   (b)–1

(c)0

   (d) none ofthese

The valueof $2\sin^2 30^0 - 3\cos^2 45^0 + \tan^2 60^0 + 3\sin^2 90^0$ is

(a) 1

(b)5

(c)0

(d) none ofthese

SIMILAR TRIANGLES

1. A vertical pole of length 20 m casts a shadow 10 m long on the ground and at the same time a tower casts a shadow 50 m long, then the height of thetower.
   (a) 100 m
   (b) 120m
   (c) 25m
   (d) none ofthese

2. The areas of two similar triangles are in the ratio 4 : 9. The corresponding sides of these triangles are in theratio
   (a) 2:3
   (b) 4:9
   (c) 81:16
   (d) 16 :81

3 The areas of two similar triangles ΔABC and ΔDEF are 144 cm^2 and 81 cm^2, respectively. If the longest side oflarger ΔABC be 36 cm, then the longest side of the similar triangle ΔDEF is

   (a) 20 cm
   (b)26cm
   (c)27cm
   (d) 30cm

3. The areas of two similar triangles are in respectively 9 $cm^2$and 16 cm^2. The ratio of their corresponding sidesis
   (a) 2:3
   (b) 3:4
   (c) 4:3
   (d) 4 :5

4. Two isosceles triangles have equal angles and their areas are in the ratio 16 : 25. The ratio of their corresponding heightsis
   (a) 3:2
   (b) 5:4
   (c) 5:7
   (d) 4 :5

5. If ΔABC and ΔDEF are similar such that 2AB = DE and BC = 8 cm, then EF =
   (a) 16cm
   (b) 112cm
   (c) 8cm
   (d) 4cm

4. XY is drawn parallel to the base BC of aΔABC YC = 2 cm, then AY =

cutting AB at X and AC at Y. If AB = 4BX and

(e) 2cm
(f) 6cm
(g) 8cm
(h) 4cm

5. Two poles of height 6 m and 11 m stand vertically upright on a plane ground. If the distance between their foot is 12 m, the distance between their topsis
(a)14cm
(b)12 cm
(c)13cm
(d) 11cm

6. If D, E, F are midpoints of sides BC, CA and AB respectively of ΔABC , then the ratio of the areas of triangles DEF and ABC is
(a) 2:3
(b) 1:4
(c) 1:2
(d) 4 :5

7. In triangles ABC and DEF, $\angle A = \angle E = 40^0$, AB : ED = AC : EF and $\angle F = 65^0$, then $\angle B$ = (a)35^0 (b)65^0 (c)75^0 (d)85^0

8. If ABC and DEF are similar triangles such that $\angle A = 47^0$ and $\angle E = 83^0$, then $\angle C$=

(a)50^0

(b)60^0

(c)70^0

(d)8

9.Which of the following statements is not true?

(a) Any two right angled triangles are similar

(b) A square is similar to a rectangle

(c) Any two rectangles are similar

(d) None of these

10. In Δ ABC , D and E are midpoints of AB and AC then DE: BC =

(a) 2:1

(b) 1:2

(c) 1:1

(d)4:1

MATHEMATICS CLASS X- PROBABILITY

1. 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
2. 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
3. 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
4. What is the probability that a number selected from the numbers (1, 2, 3,.....,15) is a multiple of 4?
a) 1/5
b) 4/5
c) 2/15
d) 1/3
5. What are the total outcomes when we throw three coins?
a) 4
b) 5
c) 8
d) 7

6. The probability that a prime number selected at random from the numbers (1,2,3, ...35) is :
a) 12/35
b) 11/35
c) 13/35
d) none of these
7. The sum of the probability of an event and non eventis :
a) 2
b) 1
c) 0
d) none of these.

8. The following probabilities are given; choose the correct answer for that which is not possible.
a) 0.15
b) 2/7
c) 7/5
d) none of these.
9. If three coins are tossed simultaneously, than the probability of getting at least two heads, is
a) 1/4
b) 3/8

c) 1/2
d) 1/8

10. A letter is chosen at random from the letters of the word ASSASSINATION. The probability that the letter chosen has:

a) 6/13
b) 7/13
c) 1
d) none of these.

11. An unbiased die is thrown. Which of the following is fals

a) P(odd number) =1/2
b) P(even number) =1/2
c) P(square number)=1/3
d) None of these

12. The probability of the events lies between

a)$-1 \leq p \leq 1 - 1 \leq p \leq 1$
b)$0 \leq p \leq 10 \leq p \leq 1$
c)$-1 \leq p \leq 0 - 1 \leq p \leq 0$
d)$-2 \leq p \leq 1 - 2 \leq p \leq 1$

13. A bag contains 40 balls out of which some are red, some are blue and remaining are black. If the probability of drawing a red ball is 11/20 and that of blue ball is 1/5, The number of black ball is

a) 11
b) 10
c)5
d) None of these

14. Probability of an event E + Probability of the event 'not E'

a) 0
b) 1
c) Insufficient data
d) None of these

15. Which of the following cannot be the probability of an event?

a)0
b)1
c)3/2
d)2/3

CIRCLES

1. If PA and PB are tangents from P to a circle with centre O. If ∠AOB = 130°, then find ∠APB.

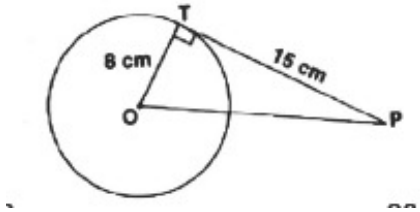
(a) 40°
(b) 55°
(c) 50°
(d) 60°

2. If PT is a tangent to a circle whose centre is O. If PT = 12 cm and PO = 13 cm then find teh radius of the circle.

(a) 5 cm
(b) 4 cm
(c) 6 cm

(d) 4.5 cm

3. If 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. If AB is a chord of length 16 cm, of a circle of radius 10 cm. The tangents at A and B intersect at a point P. Find the length of PA.

(a) $\frac{20}{5}$ cm
(b) $\frac{40}{5}$ cm
(c) $\frac{20}{3}$ cm
(d) $\frac{40}{3}$ cm

5. A line going through midpoint from one side to other side of a circle is called

A. angle
B. area
C. radius
D. diameter

6. A line which connects any two points on a circle is known as

A. perimeter
B. diameter
C. chord
D. radius

7. A line from center to circumference of a circle is known as

A. diameter
B. radius
C. area
D. midpoint

8. In terms of radius, a diameter is equals to

A. 2 + r
B. 2r
C. r/2
D. 2/r

9. Circumference of circle is calculated by

A. $2\pi r$
B. $2\pi/r$
C. $\pi r/2$
D. πr

10. A tangent to a circle intersects it at how many points?

a) 1

b) 2

c) 3

d) None of these

11. A parallelogram circumscribing a circle a _____

a) square

b) rhombus

c) rectangle

d) incircle

12. Two circles having same centres are called_____

a) incentric circles

b) concentric circles

c) centric circles

d) none of these

13. Segments joining the points of contact of two parallel tangents

a) will not pass through the centre.

b) will pass through the centre.

c) May or may not pass through the centre.

d) None of these

14. The length of tangents drawn from an external point to a circle are ____

a) equal

b) unequal

c) always 3 times the other

d) none of these

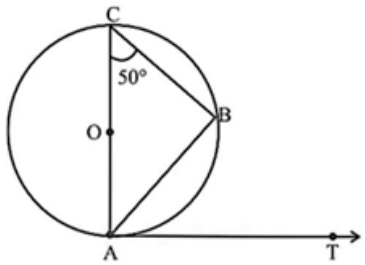
15. If radii of two concentric circles are 4 cm and 5 cm, then length of each chord of one circle which is tangent to the other circle, is
(a) 3 cm

(b) 6 cm

(c) 9 cm

(d) 1 cm

16. In figure, *AB* is a chord of the circle and *AOC* is its diameter such that $\angle ACB = 50°$. If *AT* is the tangent to the circle at the point *A,* then $\angle BAT$ is equal to



(a) 45°

(b) 60°

(c) 50°

(d) 55°

(a) 60 cm^2
(b) 65 cm^2
(c) 30 cm^2
(d) 32.5 cm^2

18. At one end *A* of a diameter *AB* of a circle of radius 5 cm, tangent *XAY* is drawn to the circle. The length of the chord *CD* parallel to *XY* and at a distance 8 cm from *A,* is
(a) 4 cm

(b) 5 cm

(c) 6 cm

(d) 8cm