



Class 10 Mathematics | Real Numbers

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. The prime factorisation of 180 is:

A. $2^2 \times 3 \times 5$ B. $2^3 \times 3^2 \times 5$ C. $2^2 \times 3^2 \times 5$ D. $2 \times 3^2 \times 5$

2. The HCF of 72 and 120 is:

A. 36 B. 24 C. 48 D. 12

3. The LCM of 18 and 24 is:

A. 6 B. 72 C. 144 D. 48

4. If $\text{HCF}(a,b)=6$ and $\text{LCM}(a,b)=180$, then ab equals:

A. 186 B. 1080 C. 174 D. 30

5. Two positive numbers have HCF 8 and product 960. Their LCM is:

A. 120 B. 128 C. 7680 D. 96

6. The smallest number divisible by 12, 15 and 20 is:

A. 240 B. 60 C. 120 D. 30

7. The HCF of two distinct prime numbers is:

A. 1 B. the larger prime
C. their product D. their sum

8. If n is a positive integer, 6^n ends in:

A. 4 B. 6 C. 2 D. 0

9. Which number is irrational?

A. $\sqrt{11}$ B. $\sqrt{121}$ C. 0.375 D. $7/9$

10. The number $3+2\sqrt{5}$ is:

A. a whole number B. irrational
C. an integer D. rational

11. If $a=2^3 \times 3^2$ and $b=2^2 \times 3 \times 5$, $\text{HCF}(a,b)$ is:

A. 12 B. 36 C. 24 D. 180

12. For the same $a=2^3 \times 3^2$ and $b=2^2 \times 3 \times 5$, $\text{LCM}(a,b)$ is:

A. 72 B. 360 C. 180 D. 60

13. Bells ring every 8, 12 and 18 minutes. Starting together, they next coincide after:

A. 24 min B. 36 min C. 72 min D. 144 min

14. The largest tile size that exactly covers a 144 cm by 96 cm floor with square tiles is:

A. 24 cm B. 72 cm C. 48 cm D. 12 cm

15. Why is $7 \times 11 \times 13 + 13$ composite?

A. It is odd.
B. Its digits sum to 12.
C. It equals 13×78 .
D. It has no prime factors.

ANSWER KEY — check after completing all 15 questions

1.C 2.B 3.B 4.B 5.A 6.B 7.A 8.B 9.A 10.B 11.A 12.B 13.C 14.C 15.C

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Class 10 Mathematics | Polynomials

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. The zeroes of x^2-5x+6 are:

- A. 1 and 6 B. 2 and 3
C. -2 and -3 D. -1 and -6

2. Sum of zeroes of $3x^2-7x+2$ is:

- A. $-7/3$ B. $2/3$ C. $-2/3$ D. $7/3$

3. Product of zeroes of $4x^2+3x-5$ is:

- A. $-3/4$ B. $-5/4$ C. $5/4$ D. $3/4$

4. A monic polynomial with zeroes -2 and 5 is:

- A. $x^2-7x+10$ B. $x^2+3x-10$
C. $x^2-3x-10$ D. $x^2+7x+10$

5. If one zero of x^2-8x+k is 3, then k is:

- A. 24 B. 11 C. 15 D. -15

6. If zeroes of $x^2+px+12$ are 3 and 4, p is:

- A. -12 B. -7 C. 7 D. 12

7. The graph of a polynomial intersects the x-axis at three distinct points. Number of zeroes is:

- A. 3 B. 2 C. 1 D. 0

8. If α, β are zeroes of x^2-6x+5 , then $\alpha^2+\beta^2$ is:

- A. 10 B. 31 C. 26 D. 36

9. If α, β are zeroes of $2x^2-5x+2$, then $1/\alpha+1/\beta$ is:

- A. 1 B. $5/2$ C. 5 D. $2/5$

10. For what k are the real zeroes of x^2+kx-9 opposites of each other?

- A. 9 B. 0 C. -9 D. 3

11. Which polynomial has zeroes 0 and -4?

- A. x^2-4 B. x^2-4x C. x^2+4x D. x^2+4

12. The number of distinct real zeroes of $(x-2)^2$ is:

- A. 1 B. 0 C. 2 D. 3

13. If $\alpha+\beta=-3$ and $\alpha\beta=-4$, a suitable polynomial is:

- A. x^2-4x-3 B. x^2+3x-4
C. x^2+3x+4 D. x^2-3x-4

14. If 2 is a zero of $3x^2+ax-10$, then a is:

- A. 1 B. -2 C. -1 D. 2

15. If α, β are zeroes of x^2-4x+1 , then $(\alpha-\beta)^2$ is:

- A. 8 B. 12 C. 20 D. 16

ANSWER KEY — check after completing all 15 questions

1.B 2.D 3.B 4.C 5.C 6.B 7.A 8.C 9.B 10.B 11.C 12.A 13.B 14.C 15.B

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Class 10 Mathematics | Pair Of Linear Equations In Two Variables

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. The solution of $x+y=7$ and $x-y=1$ is:

A. (3,4) B. (5,2) C. (2,5) D. (4,3)

2. The equations $x+2y=5$ and $2x+4y=10$ have:

A. one solution
B. no solution
C. exactly two solutions
D. infinitely many solutions

3. The equations $2x+3y=7$ and $4x+6y=9$ have:

A. no solution
B. two solutions
C. one solution
D. infinitely many solutions

4. For a unique solution, which condition holds?

A. $a_1/a_2 = b_1/b_2 \neq c_1/c_2$ B. $a_1=b_1=c_1=0$ always
C. $a_1/a_2 = b_1/b_2 = c_1/c_2$ D. $a_1/a_2 \neq b_1/b_2$

5. If $3x+2y=16$ and $x=2$, then y is:

A. 5 B. 3 C. 4 D. 8

6. A pair of distinct parallel lines represents:

A. two solutions
B. a unique solution
C. infinitely many solutions
D. an inconsistent system

7. For $x+ky=4$ and $2x+6y=9$ to have no solution, k is:

A. 3 B. 2 C. 4 D. 6

8. If $2x+y=11$ and $x-y=1$, x is:

A. 5 B. 3 C. 6 D. 4

9. Two pens and one notebook cost ₹50; one pen and one notebook cost ₹35. A pen costs:

A. ₹15 B. ₹10 C. ₹20 D. ₹25

10. The sum of two numbers is 26 and their difference is 8. The larger is:

A. 9 B. 13 C. 18 D. 17

11. For $2x+3y=12$ and $3x-2y=5$, the solution is:

A. (4,1) B. (3,2) C. (1,5) D. (2,3)

12. If $x+y=9$ and $2x+2y=k$ have infinitely many solutions, k is:

A. 18 B. 4.5 C. 0 D. 9

13. The lines $x=3$ and $y=-2$ meet at:

A. (-2,3) B. (-3,-2) C. (3,2) D. (3,-2)

14. Integers n, d satisfy $n/d=1/2$ and $d-n=4$. Find the ordered pair (n, d) .

A. (2,4) B. (3,6) C. (4,8) D. (5,10)

15. Father and son have total age 50; father is 4 times son's age. Son is:

A. 12 years B. 15 years C. 10 years D. 8 years

ANSWER KEY — check after completing all 15 questions

1.D 2.D 3.A 4.D 5.A 6.D 7.A 8.D 9.A 10.D 11.B 12.A 13.D 14.C 15.C

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Class 10 Mathematics | Quadratic Equations

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Which equation is quadratic?

- A. $x^3-1=0$ B. $3x+1=0$
C. $2x^2-3x+1=0$ D. $1/x=2$

2. Roots of $x^2-9=0$ are:

- A. 0 and 9 B. 3 and 3 C. 3 and -3 D. 9 and -9

3. The discriminant of $x^2-6x+8=0$ is:

- A. 4 B. 8 C. 68 D. 36

4. An equation with discriminant -7 has:

- A. one real root
B. no real roots
C. two distinct real roots
D. two equal real roots

5. The roots of $x^2-7x+12=0$ are:

- A. -3 and -4 B. 2 and 6 C. 1 and 12 D. 3 and 4

6. For $x^2-4x+k=0$ to have equal roots, k is:

- A. -4 B. 2 C. 8 D. 4

7. The roots of $2x^2-5x+2=0$ are:

- A. $5/2$ and 1 B. 1 and 2
C. 2 and $1/2$ D. -2 and $-1/2$

8. A positive number exceeds its reciprocal by $3/2$. The number is:

- A. $3/2$ B. 3 C. $1/2$ D. 2

9. A rectangle has width x and length x+3; area 40. Its width is:

- A. 5 B. 8 C. 4 D. 10

10. Which quadratic has roots 1 and -5?

- A. $x^2+6x+5=0$ B. $x^2+4x-5=0$
C. $x^2-6x+5=0$ D. $x^2-4x-5=0$

11. For $3x^2+2x+1=0$, the discriminant is:

- A. -8 B. 16 C. 8 D. -4

12. If 2 is a root of $x^2+kx-6=0$, k is:

- A. -2 B. 1 C. -1 D. 2

13. Two consecutive positive integers have product 56. The smaller is:

- A. 7 B. 6 C. 9 D. 8

14. The equation $(x+1)^2=x^2+5$ reduces to:

- A. a linear equation B. an identity
C. a quadratic equation D. a cubic equation

15. For $kx^2+3x+2=0$ to be quadratic, k must satisfy:

- A. $k>0$ only B. $k\neq 0$ C. $k=0$ D. $k=1$ only

ANSWER KEY — check after completing all 15 questions

1.C 2.C 3.A 4.B 5.D 6.D 7.C 8.D 9.A 10.B 11.A 12.B 13.A 14.A 15.B



Class 10 Mathematics | Arithmetic Progressions

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. The common difference of 7, 3, -1, -5, ... is:

A. -3 B. 4 C. 3 D. -4

2. The 15th term of 2, 5, 8, ... is:

A. 47 B. 44 C. 42 D. 41

3. An AP has $a=12$ and $d=-2$. Its eighth term is:

A. 0 B. -2 C. -4 D. 2

4. Which term of 5, 9, 13, ... is 81?

A. 20th B. 19th C. 18th D. 21st

5. The sum of the first 20 natural numbers is:

A. 190 B. 210 C. 200 D. 420

6. The sum of first 10 terms of 3, 7, 11, ... is:

A. 230 B. 210 C. 190 D. 200

7. If $a_5=18$ and $d=3$, the first term is:

A. 6 B. 15 C. 3 D. 9

8. If $a_4=11$ and $a_9=26$, the common difference is:

A. 3 B. 2 C. 15 D. 5

9. The sum of first n odd natural numbers is:

A. $2n^2$ B. $n(n+1)$ C. n^2 D. $n(n-1)/2$

10. An AP has first term 8 and tenth term 35. Its ten-term sum is:

A. 215 B. 175 C. 180 D. 430

11. Which list is NOT an AP?

A. 8,6,4,2 B. -3,-1,1,3 C. 2,4,8,16 D. 4,9,14,19

12. The middle term of the AP 4, 9, 14, 19, 24 is:

A. 14 B. 12 C. 9 D. 19

13. If $S_n=2n^2+3n$, the n th term is:

A. $4n+3$ B. $2n+3$ C. $4n+1$ D. $2n^2+1$

14. A student saves ₹20 in week 1 and ₹5 more each following week. Week 10 saving is:

A. ₹60 B. ₹70 C. ₹65 D. ₹75

15. In an AP of 21 terms, first+last=50. The middle term is:

A. 50 B. 25 C. 10.5 D. 21

ANSWER KEY — check after completing all 15 questions

1.D 2.B 3.B 4.A 5.B 6.B 7.A 8.A 9.C 10.A 11.C 12.A 13.C 14.C 15.B

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Class 10 Mathematics | Triangles

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Two triangles have equal corresponding angles. They are:

- A. similar B. always equilateral
C. always congruent D. always equal in area

2. Corresponding sides of similar triangles are in ratio 3:5. Their perimeters are in ratio:

- A. 5:3 B. 9:25 C. 6:10.5 D. 3:5

3. In triangle ABC, $DE \parallel BC$ with D on AB, E on AC. If $AD/DB=2/3$, AE/EC is:

- A. $3/2$ B. $2/5$ C. $2/3$ D. $3/5$

4. For $DE \parallel BC$, $AD=3$, $DB=6$, $AE=4$. Find EC.

- A. 2 B. 8 C. 6 D. 12

5. Two triangles have side lengths 3,4,5 and 6,8,10. They are similar by:

- A. ASA congruence
B. RHS only
C. AAA from given angles
D. SSS

6. Two triangles have two proportional sides and equal included angles. Similarity criterion is:

- A. SAS B. SSA
C. RHS congruence D. ASA congruence

7. In similar triangles ABC and PQR, A corresponds to P and B to Q. Side AC corresponds to:

- A. PR B. QP C. PQ D. QR

8. $DE \parallel BC$ in triangle ABC. If $AD/AB=3/5$ and $BC=20$, DE is:

- A. 10 B. 8 C. 12 D. 15

9. If $AD/DB=AE/EC$ for D on AB and E on AC, then:

- A. $D=E$ B. $DE \perp BC$ C. $AB=AC$ D. $DE \parallel BC$

10. Triangles have angles $(40^\circ, 60^\circ, 80^\circ)$ and $(60^\circ, 80^\circ, 40^\circ)$. They are:

- A. not similar
B. necessarily right-angled
C. similar
D. necessarily congruent

11. If corresponding side ratio is 2:3 and a smaller side is 10 cm, matching larger side is:

- A. 12 cm B. 30 cm C. 20 cm D. 15 cm

12. A 1.5 m stick casts a 2 m shadow. Simultaneously a tower casts 12 m. Tower height is:

- A. 8 m B. 9 m C. 16 m D. 18 m

13. Which pair of triangles is always similar?

- A. Any two isosceles triangles
B. Any two equilateral triangles
C. Any two right triangles
D. Any two scalene triangles

14. $DE \parallel BC$, $AD=4$, $AB=10$ and $AC=15$. AE is:

- A. 10 B. 4 C. 6 D. 9

15. In triangle ABC, D and E divide AB and AC in ratio 1:2 from A. If $BC=18$, DE is:

- A. 3 B. 12 C. 9 D. 6

ANSWER KEY — check after completing all 15 questions

1.A 2.D 3.C 4.B 5.D 6.A 7.A 8.C 9.D 10.C 11.D 12.B 13.B 14.C 15.D



Class 10 Mathematics | Coordinate Geometry

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Distance between $(-1,2)$ and $(3,5)$ is:

A. 5 B. $\sqrt{7}$ C. 25 D. 7

2. Midpoint of $(-4,6)$ and $(2,-2)$ is:

A. $(1,-2)$ B. $(-1,2)$ C. $(-2,4)$ D. $(-3,2)$

3. A point divides $(0,0)$ to $(6,9)$ internally in ratio $1:2$. Its coordinates are:

A. $(3,4.5)$ B. $(1,2)$ C. $(2,3)$ D. $(4,6)$

4. Distance of $(8,15)$ from origin is:

A. $\sqrt{161}$ B. 17 C. 23 D. 7

5. Which point is equidistant from $(2,0)$ and $(-2,0)$?

A. $(-1,3)$ B. $(1,0)$ C. $(2,2)$ D. $(0,5)$

6. The midpoint of $A(2,3)$, $B(x,7)$ is $(5,5)$. x equals:

A. 3 B. 8 C. 6 D. 10

7. The ratio in which $(3,0)$ divides $(0,0)$ to $(9,0)$ is:

A. $2:1$ B. $1:2$ C. $1:3$ D. $3:1$

8. The point dividing $(1,2)$ to $(7,8)$ internally in ratio $2:1$ is:

A. $(5,6)$ B. $(4,5)$ C. $(3,4)$ D. $(6,5)$

9. The distance between $(a,0)$ and $(0,a)$, for $a>0$, is:

A. $2a$ B. a C. a^2 D. $a\sqrt{2}$

10. If $(x,0)$ is equally distant from $(2,3)$ and $(6,3)$, x is:

A. 6 B. 3 C. 2 D. 4

11. A diameter has endpoints $(-2,1)$ and $(4,9)$. Radius is:

A. 5 B. 4 C. 10 D. $\sqrt{10}$

12. Points $(1,2)$, $(3,4)$, $(5,6)$ are:

A. vertices of a right triangle
B. non-collinear
C. vertices of an equilateral triangle
D. collinear

13. If $A(0,0)$, $B(4,0)$, $C(4,3)$, then AC is:

A. 4 B. 3 C. 5 D. 7

14. A square has opposite vertices $(0,0)$ and $(6,6)$. Its centre is:

A. $(3,3)$ B. $(6,0)$ C. $(0,6)$ D. $(6,3)$

15. The point $(0,0)$ divides $(-3,-6)$ to $(2,4)$ in ratio:

A. $3:4$ B. $2:3$ C. $3:2$ D. $1:1$

ANSWER KEY — check after completing all 15 questions

1.A 2.B 3.C 4.B 5.D 6.B 7.B 8.A 9.D 10.D 11.A 12.D 13.C 14.A 15.C

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Class 10 Mathematics | Introduction To Trigonometry

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. If θ is acute and $\sin \theta = 3/5$, $\cos \theta$ is:

A. $4/5$ B. $5/3$ C. $3/4$ D. $5/4$

2. The value of $\tan 45^\circ$ is:

A. $1/\sqrt{3}$ B. $\sqrt{3}$ C. 0 D. 1

3. The value of $\sin 30^\circ + \cos 60^\circ$ is:

A. 0 B. $1/2$ C. $\sqrt{3}$ D. 1

4. For acute θ , $\sec \theta$ equals:

A. $1/\cos \theta$ B. $1/\sin \theta$ C. $\cos \theta / \sin \theta$ D. $\sin \theta / \cos \theta$

5. If $\tan \theta = 5/12$ for acute θ , $\sin \theta$ is:

A. $12/13$ B. $5/12$ C. $5/13$ D. $13/5$

6. The identity $1 + \tan^2 \theta$ equals:

A. $\sin^2 \theta$ B. $\cos^2 \theta$ C. $\sec^2 \theta$ D. $\operatorname{cosec}^2 \theta$

7. The value of $2 \sin 30^\circ \cos 60^\circ$ is:

A. $1/4$ B. $1/2$ C. $\sqrt{3}/2$ D. 1

8. For acute θ , $\sin(90^\circ - \theta)$ equals:

A. $\tan \theta$ B. $\sin \theta$ C. $\sec \theta$ D. $\cos \theta$

9. If $\cos \theta = 12/13$ and θ is acute, $\tan \theta$ is:

A. $5/13$ B. $5/12$ C. $12/5$ D. $13/12$

10. The value of $\sec^2 60^\circ - \tan^2 60^\circ$ is:

A. 3 B. 4 C. 1 D. 7

11. If θ is acute and $\sin \theta = \cos \theta$, θ is:

A. 60° B. 90° C. 45° D. 30°

12. The value of $\sin^2 30^\circ + \cos^2 30^\circ$ is:

A. 2 B. 1 C. $1/2$ D. $3/4$

13. For acute θ , $(1 - \cos^2 \theta) / \sin^2 \theta$ is:

A. 1 B. $\sin \theta$ C. $\cos \theta$ D. 0

14. If $\cot \theta = 7/24$ and θ is acute, $\operatorname{cosec} \theta$ is:

A. $7/25$ B. $25/7$ C. $25/24$ D. $24/25$

15. Which value is impossible for $\sin \theta$ of an acute angle?

A. $5/4$ B. $3/5$ C. $\sqrt{3}/2$ D. $1/2$

ANSWER KEY — check after completing all 15 questions

1.A 2.D 3.D 4.A 5.C 6.C 7.B 8.D 9.B 10.C 11.C 12.B 13.A 14.C 15.A

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Class 10 Mathematics | Some Applications Of Trigonometry

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. A tower casts a 10 m shadow when sun elevation is 45° . Its height is:

A. $10\sqrt{3}$ m B. 10 m C. 5 m D. 20 m

2. A 12 m pole is viewed at elevation 30° from ground. Horizontal distance is:

A. $4\sqrt{3}$ m B. 6 m C. 12 m D. $12\sqrt{3}$ m

3. A tower is 20 m away horizontally and its top has elevation 60° . Height is:

A. 40 m B. $20\sqrt{3}$ m C. $20/\sqrt{3}$ m D. $10\sqrt{3}$ m

4. A 10 m ladder makes 60° with level ground. Height reached is:

A. $10\sqrt{3}$ m B. 5 m C. 10 m D. $5\sqrt{3}$ m

5. A 13 m ladder touches a wall 12 m high. Its foot is from the wall by:

A. 1 m B. 25 m C. 5 m D. $\sqrt{313}$ m

6. The angle of depression from a roof to a car equals the car's angle of:

A. inclination to vertical
B. elevation to the roof
C. depression to the roof
D. reflection

7. A kite's taut string is 40 m long and makes 30° with ground. Height above its ground anchor is:

A. 40 m B. $20\sqrt{3}$ m C. 20 m D. $40\sqrt{3}$ m

8. A 30 m tower has elevation 45° from a ground point. Distance from its base is:

A. 60 m B. 30 m C. $30\sqrt{3}$ m D. 15 m

9. From a point 15 m from a building, elevation is 60° . Moving farther away makes elevation:

A. smaller B. unchanged
C. always 90° D. larger

10. A 6 m pole casts a $6\sqrt{3}$ m shadow. Sun elevation is:

A. 30° B. 60° C. 90° D. 45°

11. A person with eye level 1.6 m sees a building top at 45° from 20 m away. Building height is:

A. 40 m B. 18.4 m C. 20 m D. 21.6 m

12. A tower has height $10\sqrt{3}$ m and its top is viewed at 60° . Horizontal distance is:

A. 30 m B. 20 m C. 10 m D. $10\sqrt{3}$ m

13. From a roof 15 m high, a ground point has depression 45° . Horizontal distance is:

A. 30 m B. $5\sqrt{3}$ m C. $15\sqrt{3}$ m D. 15 m

14. A vertical pole is h m high. At horizontal distance $h\sqrt{3}$ m, elevation is:

A. 30° B. 45° C. 15° D. 60°

15. From a 20 m tower, a car on level ground has depression 30° . Car-to-top distance is:

A. $20\sqrt{3}$ m B. $40\sqrt{3}$ m C. 10 m D. 40 m

ANSWER KEY — check after completing all 15 questions

1.B 2.D 3.B 4.D 5.C 6.B 7.C 8.B 9.A 10.A 11.D 12.C 13.D 14.A 15.D

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Class 10 Mathematics | Circles

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. A tangent to a circle is perpendicular to the radius at:

- A. every point on the tangent
- B. the opposite diameter endpoint
- C. the circle's centre
- D. the point of contact

2. How many tangents can be drawn from a point outside a circle?

- A. 3 B. 2 C. 1 D. 0

3. How many tangents can be drawn from a point inside a circle?

- A. 1 B. 2 C. 0 D. Infinitely many

4. PA and PB are tangents from P. If PA=9 cm, PB is:

- A. 18 cm B. 9 cm C. 3 cm D. 4.5 cm

5. A circle has radius 5 cm, and OP=13 cm. Tangent length from P is:

- A. 8 cm B. $\sqrt{194}$ cm C. 12 cm D. 18 cm

6. Two tangents from P touch at A and B. If angle APB=70°, angle AOB is:

- A. 140° B. 70° C. 110° D. 55°

7. If angle AOB=130° for contact points A,B, angle between tangents is:

- A. 50° B. 65° C. 130° D. 230°

8. A line is 7 cm from the centre of a circle of radius 7 cm. It is a:

- A. secant B. tangent
C. non-intersecting line D. diameter

9. A line lies 4 cm from centre of a radius 6 cm circle. It intersects at:

- A. infinitely many points
B. no points
C. two points
D. one point

10. A quadrilateral circumscribes a circle. If AB=5, BC=7, CD=8, then DA is:

- A. 6 B. 20 C. 4 D. 10

11. From P, tangent PT=24 cm and radius OT=7 cm. OP is:

- A. $\sqrt{527}$ cm B. 25 cm C. 17 cm D. 31 cm

12. Tangents PA and PB are drawn. OP bisects angle APB. If angle APO=25°, APB is:

- A. 100° B. 50° C. 75° D. 25°

13. A tangent at A and diameter AB form an angle of:

- A. 90° B. 60° C. 45° D. 180°

14. Two parallel tangents touch a circle of radius 4 cm. Their separation is:

- A. 2 cm B. 16 cm C. 8 cm D. 4 cm

15. A circle touches sides AB, BC, CA at D,E,F. If AD=4 and BD=6, AF is:

- A. 6 B. 2 C. 10 D. 4

ANSWER KEY — check after completing all 15 questions

1.D 2.B 3.C 4.B 5.C 6.C 7.A 8.B 9.C 10.A 11.B 12.B 13.A 14.C 15.D

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Class 10 Mathematics | Areas Related To Circles

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Area of a circle of radius 7 cm, using $\pi=22/7$, is:

A. 44 cm^2 B. 49 cm^2 C. 308 cm^2 D. 154 cm^2

2. A sector has radius 6 cm and angle 60° . Its area is:

A. $36\pi \text{ cm}^2$ B. $12\pi \text{ cm}^2$ C. $6\pi \text{ cm}^2$ D. $3\pi \text{ cm}^2$

3. A 90° arc of radius 8 cm has length:

A. $16\pi \text{ cm}$ B. $2\pi \text{ cm}$ C. $4\pi \text{ cm}$ D. $8\pi \text{ cm}$

4. Perimeter of a semicircle of radius 7 cm ($\pi=22/7$) is:

A. 29 cm B. 36 cm C. 22 cm D. 44 cm

5. Area of a quadrant of radius 10 cm is:

A. $25\pi \text{ cm}^2$ B. $10\pi \text{ cm}^2$ C. $50\pi \text{ cm}^2$ D. $100\pi \text{ cm}^2$

6. An annulus has outer radius 5 cm, inner radius 3 cm. Area is:

A. $8\pi \text{ cm}^2$ B. $16\pi \text{ cm}^2$ C. $34\pi \text{ cm}^2$ D. $4\pi \text{ cm}^2$

7. An arc of radius 12 cm has length $4\pi \text{ cm}$. Central angle is:

A. 90° B. 60° C. 30° D. 120°

8. A sector angle is 120° and radius 9 cm. Area is:

A. $81\pi \text{ cm}^2$ B. $27\pi \text{ cm}^2$ C. $9\pi \text{ cm}^2$ D. $54\pi \text{ cm}^2$

9. A 90° segment of a radius 4 cm circle has area:

A. $4\pi-8 \text{ cm}^2$ B. $16\pi-8 \text{ cm}^2$

C. $4\pi+8 \text{ cm}^2$ D. $8\pi-8 \text{ cm}^2$

10. A circular track has radius 14 m. One lap length, using $\pi=22/7$, is:

A. 616 m B. 44 m C. 28 m D. 88 m

11. If circumference doubles, the area becomes:

A. 2 times B. 8 times C. unchanged D. 4 times

12. A circle has area $49\pi \text{ cm}^2$. Its circumference is:

A. $49\pi \text{ cm}$ B. $7\pi \text{ cm}$ C. $28\pi \text{ cm}$ D. $14\pi \text{ cm}$

13. A sector's radius is 5 cm and arc length is 6 cm. Its perimeter is:

A. 21 cm B. 30 cm C. 11 cm D. 16 cm

14. A circle is inscribed in a square of side 10 cm. Uncovered area is:

A. $25-10\pi \text{ cm}^2$ B. $100-25\pi \text{ cm}^2$

C. $100-100\pi \text{ cm}^2$ D. $100-50\pi \text{ cm}^2$

15. A minute hand is 7 cm long. Area swept in 20 minutes is:

A. $98\pi/3 \text{ cm}^2$ B. $49\pi \text{ cm}^2$

C. $49\pi/3 \text{ cm}^2$ D. $14\pi/3 \text{ cm}^2$

ANSWER KEY — check after completing all 15 questions

1.D 2.C 3.C 4.B 5.A 6.B 7.B 8.B 9.A 10.D 11.D 12.D 13.D 14.B 15.C

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Class 10 Mathematics | Surface Areas And Volumes

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. A cone and cylinder have the same radius and height. Their volume ratio cone:cylinder is:

A. 1:3 B. 2:3 C. 1:2 D. 3:1

2. A cylinder of radius 3 cm and height 10 cm has volume:

A. $60\pi \text{ cm}^3$ B. $300\pi \text{ cm}^3$ C. $30\pi \text{ cm}^3$ D. $90\pi \text{ cm}^3$

3. A cone of radius 6 cm and height 8 cm has slant height:

A. 14 cm B. 10 cm C. 2 cm D. $\sqrt{28}$ cm

4. A sphere of radius 6 cm is melted into spheres of radius 2 cm. Number formed is:

A. 9 B. 3 C. 27 D. 18

5. A hemisphere of radius 3 cm has volume:

A. $27\pi \text{ cm}^3$ B. $36\pi \text{ cm}^3$ C. $9\pi \text{ cm}^3$ D. $18\pi \text{ cm}^3$

6. A cylinder and hemisphere share radius r ; cylinder height is h . Combined solid volume is:

A. $\pi r^2 h + 4\pi r^3/3$ B. $\pi r^2 h + \pi r^3/3$
C. $\pi r^2 h + 2\pi r^3/3$ D. $2\pi r h + 2\pi r^2$

7. A cone is joined to a cylinder at equal circular bases. The common base contributes to external area:

A. two base areas B. one base area
C. half a base area D. zero

8. A cube of edge 6 cm is melted into cubes of edge 2 cm. Number formed is:

A. 9 B. 3 C. 18 D. 27

9. Cylinder radius is doubled and height halved. Volume becomes:

A. 4 times B. unchanged C. half D. 2 times

10. A cone has radius 3 cm and slant height 5 cm. Curved surface area is:

A. $24\pi \text{ cm}^2$ B. $15\pi \text{ cm}^2$ C. $30\pi \text{ cm}^2$ D. $9\pi \text{ cm}^2$

11. A solid hemisphere of radius 4 cm has total area:

A. $32\pi \text{ cm}^2$ B. $48\pi \text{ cm}^2$ C. $16\pi \text{ cm}^2$ D. $64\pi \text{ cm}^2$

12. A cylindrical tank has base area 50 cm^2 and water depth 12 cm. Water volume is:

A. 62 cm^3 B. 1200 cm^3 C. 600 cm^3 D. 300 cm^3

13. Two identical hemispheres joined at bases form a sphere. Its exposed area is:

A. $4\pi r^2$ B. $6\pi r^2$ C. $8\pi r^2$ D. $2\pi r^2$

14. A 3 cm radius sphere is melted into a cone of radius 3 cm. Cone height is:

A. 12 cm B. 9 cm C. 6 cm D. 4 cm

15. A cylinder of radius 2 cm and height 6 cm surmounted by a hemisphere of radius 2 cm has volume:

A. $88\pi/3 \text{ cm}^3$ B. $32\pi \text{ cm}^3$
C. $24\pi \text{ cm}^3$ D. $80\pi/3 \text{ cm}^3$

ANSWER KEY — check after completing all 15 questions

1.A 2.D 3.B 4.C 5.D 6.C 7.D 8.D 9.D 10.B 11.B 12.C 13.A 14.A 15.A

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Class 10 Mathematics | Statistics

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. The class mark of 20-30 is:

A. 30 B. 10 C. 25 D. 20

2. Values 2,4,6 have frequencies 1,2,1. Their mean is:

A. 12 B. 3 C. 6 D. 4

3. The cumulative frequency for frequencies 3,5,7 up to the third class is:

A. 12 B. 7 C. 15 D. 8

4. The modal class is the class with:

- A. highest frequency
- B. largest upper limit
- C. largest class mark always
- D. lowest frequency

5. For classes 0-10,10-20,20-30 with frequencies 4,9,7, modal class is:

A. 0-10 B. 10-20 C. all three D. 20-30

6. Total frequency is 50. The median class is located using:

- A. the 25th observation
- B. the 50th observation
- C. the largest observation
- D. the 10th observation

7. For classes 0-10,10-20,20-30 with frequencies 3,5,2, the mean is:

A. 13 B. 15 C. 14 D. 16

8. Median class lower limit is 20, width 10, $N=40$, preceding cumulative frequency 12, class frequency 16. Median is:

A. 28 B. 30 C. 25 D. 24

9. If mean=18 and median=20, the empirical mode is:

A. 24 B. 19 C. 16 D. 22

10. Modal class lower limit 10, width 10; $f_1=12, f_0=8, f_2=8$. Mode is:

A. 12 B. 15 C. 20 D. 18

11. If each observation increases by 5, the mean:

- A. increases by 25
- B. is unchanged
- C. increases by 5
- D. doubles

12. Class marks are 5,15,25,35 for equal-width contiguous classes. Class width is:

A. 15 B. 5 C. 20 D. 10

13. Values 10 and 20 have frequencies 3 and 2. Their mean is:

A. 12 B. 14 C. 15 D. 16

14. The sum of all class frequencies equals:

- A. total number of observations
- B. mean
- C. median
- D. class width

15. For classes 0-10,10-20,20-30,30-40 and frequencies 2,6,10,2, median class is:

A. 30-40 B. 20-30 C. 10-20 D. 0-10

ANSWER KEY — check after completing all 15 questions

1.C 2.D 3.C 4.A 5.B 6.A 7.C 8.C 9.A 10.B 11.C 12.D 13.B 14.A 15.B



Class 10 Mathematics | Probability

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. A fair die is rolled. Probability of a prime number is:

A. $1/3$ B. $1/6$ C. $2/3$ D. $1/2$

2. A fair coin is tossed three times. P(all heads) is:

A. $1/2$ B. $1/3$ C. $1/8$ D. $3/8$

3. Two fair dice are rolled. P(sum 7) is:

A. $1/3$ B. $1/12$ C. $7/36$ D. $1/6$

4. A card is drawn from a standard 52-card deck. P(a king) is:

A. $1/13$ B. $4/13$ C. $1/4$ D. $1/52$

5. A bag has 4 red, 3 blue and 5 green balls. P(not green) is:

A. $7/12$ B. $1/4$ C. $1/3$ D. $5/12$

6. If $P(E)=0.72$, P(not E) is:

A. 0.28 B. 1.72 C. 0.38 D. 0.72

7. An integer is chosen uniformly from 1 to 20. P(a multiple of 4) is:

A. $1/5$ B. $3/10$ C. $1/2$ D. $1/4$

8. A letter is selected uniformly from SCIENCE. P(E) is:

A. $2/7$ B. $3/7$ C. $1/7$ D. $2/5$

9. Two fair dice are rolled. P(a double) is:

A. $1/3$ B. $1/36$ C. $1/6$ D. $1/2$

10. Two fair dice are rolled. P(sum 2) is:

A. $1/36$ B. $1/18$ C. $1/6$ D. $1/12$

11. A card is drawn from a standard deck. P(a red face card) is:

A. $1/2$ B. $1/13$ C. $3/13$ D. $3/26$

12. A box has 20 bulbs, of which 3 are defective. P(a good bulb) is:

A. $1/5$ B. $3/20$ C. $7/20$ D. $17/20$

13. An event has probability 1. It is:

A. necessarily rare B. impossible
C. certain D. equally likely to fail

14. A random integer from 1 to 30 is chosen. P(a perfect square) is:

A. $1/6$ B. $2/15$ C. $1/3$ D. $1/5$

15. A bag contains 5 white and x black balls. If $P(\text{white})=1/3$, x is:

A. 5 B. 15 C. 20 D. 10

ANSWER KEY — check after completing all 15 questions

1.D 2.C 3.D 4.A 5.A 6.A 7.D 8.A 9.C 10.A 11.D 12.D 13.C 14.A 15.D

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