X-MATHEMATICS - WORKSHEETS

QUADRATIC EQUATIONS

1. The roots of the equation $pqx^2 - (p-q)x - 1 = 0$ are
   a) $-\frac{1}{p}, -\frac{1}{q}$ b) $\frac{1}{p}, -\frac{1}{q}$
   c) $-\frac{1}{p}, \frac{1}{q}$ d) $\frac{1}{p}, \frac{1}{q}$
2. If α and β are roots of $x^2 + px + q = 0$, then the value of $\alpha^2+\beta^2$ is
   a) P^2+q^2 b) q^2+2p
   c) P^2+2q d) p^2-2q
3. If one root of the equation $x^2 + 12x - k = 0$ is thrice the other, then the value of k is
   a) 27 b) -27
   c) 9 d) -9
4. If the equation $3x^2 - kx + 4 = 0$ has equal roots, then the values of k are
   a) $2\sqrt{3}, -2\sqrt{3}$ b) 4, -4
   c) $4\sqrt{3}, -4\sqrt{3}$ d) $\sqrt{3}, -\sqrt{3}$
5. Using the quadratic formula, solve the equation:
   $a^2b^2x^2 - (4b^4-3a^4)x-12a^2b^2 = 0$
6. Solve for x :$\left(\frac{4x-3}{2x+1}\right) - 10\left(\frac{2x+1}{4x-3}\right) = 3, x \neq -\frac{1}{2}, \frac{3}{4}$.
7. A two digit number is such that the product of its digits is 35. When 18 is added to the number, the digits interchange their places. Find the number.
8. A motor boat whose speed is 18 km/hr in still water takes 1 hour more to go 24 km upstream than to return to the same spot. Find the speed of the stream.

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9. The roots of the equation $x^2 + x - (p+1)(p+2) = 0$ are
   a) *P+1 , p+2* b) *–(p+1),-(p+2)*
   c) *–(p+1), p+2*d)*p+1, -(p+2)*

10. If -2 and 5 are roots of the equation $2x^2 - 3mx + 5n = 0$, then the values of m and n are
    a) *m =1,n = -2* b) *m = -1, n =2*
    c) *m = 2,n= -4* d) *m = -2, n = 4*

11. If p and q (≠ 0) are roots of the equation $x^2 + px - q = 0$, then the values of p and q are
    a) P = 0, q =1 b) p = 1,q = -2
    c) P = -2,q=1 d) p =-1,q = 2

12. If k is a natural number and the roots of the equation $x^2 + 11x + 6k = 0$ are rational numbers then the smallest value of k is
    a) 3 b) 4
    c) 5 d) 6

13. If one root of the equation $(p^2 + 2)x^2 + 13x + 3p = 0$ is the reciprocal of the other, then the values of p are
    a) -1 , -2 b) -1, 2
    c) 1, -2 d) 1, 2

14. If the equation $(m^2 + n^2)x^2 - 2(mp + nq)x + p^2 + q^2 = 0$ has equal roots, then
    a) $mp = nq$ b) $mq = np$
    c) $mn = pq$ d) $mq = \sqrt{np}$

15. A pole has to be erected at a point on the boundary of a circular park of diameters 13 metres in such a way that the differences of its distances from two diametrically opposite fixed gates A and B on the boundary is 7 metres. Is it possible to do it so. If yes, at what distances from the two gates should the pole be erected.

16. Seven years ago Varun's age was five times the square of Swati's age. Three years hence Swati's age will be two-fifth of Varun's age. Find their present ages.

17. A trader bought a number of articles for Rs.900, five were damaged and he sold

each of the rest at Rs.2 more than what he paid for it, thus getting a profit of Rs.80 on the whole transaction. Find the number of articles he bought.

18. The distance between Mumbai and Pune is 192 km. Travelling by Deccan Queen, it takes 48 minutes less than another train. Calculate the speed of Deccan Queen if the speeds of the two trains differ by 20 km/hr.

19. Two water taps together can fill a tank in $9\frac{3}{8}$ hours. The tap of larger diameter takes 10 hours less than the smaller one to fill the tank separately. Find the time in which each tap can fill the tank separately.

ARITHMETIC PROGRESSIONS

1. The 20^{th} term from the end of the A.P. 3,8,13,….,253 is
   a) 98 b) 103
   c) 153 d) 158

2. If $3, 4 + p$ and $6 - p$ are in A.P., then the value of p is
   a) $\frac{2}{3}$ b) $\frac{1}{3}$
   c) 0 d) $-\frac{1}{3}$

3. The sum of all two digit natural numbers is
   a) 4509 b) 4590
   c) 4905 d) 4950

4. If 5 times the 5^{th} term of an A.P. is equal to 9 times its 9^{th} term, then find its 14^{th} term.

5. Check whether 301 is a term of the list of numbers 5, 11, 17, 23…

6. The sum of first six terms of an A.P. is 42. The ratio of its 10^{th} term to its 30^{th} term is 1: 3. Calculate its thirteenth term.

7. The houses of a row are numbered consecutively from 1 to 49. Show that there is a value of m such that the sum of numbers of the houses preceding the house marked m is equal to the sum of numbers of the houses following it. Find this value of m.

8. Rekha saves Rs.10000 in a certain year and in each year thereafter she saves Rs.4000 more than the preceding year. In how many years her total savings amount to Rs.1560000.

9. The number of numbers which have 2,3,4,5 and 6 as factors between 1 and 1000 is
   a) 150 b) 50
   c) 33 d) 16

10. In an A.P., if the sum of three numbers is 15 and their product is 45, then the numbers are
    a) 3,5,7 b) 2,4,7
    c) 1,5,9 d) 0,5,9
11. If the sum of first n terms of an A.P is $4n^2 + 5n$, then its nth term is
    a) 8n-1 b) 8n+1
    c) 8n+3 d) 8n+5
12. The sum of n terms of a,3a,5a,7a,… is
    a) *Na* b) *2na*
    c) N^2a d) $2n^2a$
13. Two A.P.'s have the same common difference. The difference between their 100th terms is 100, what is the difference between their 1000th terms.
14. The sum of the 4th and 8th terms of an A.P. is 24 and the sum of 6th and 10th terms is 44. Find the 15th term of the A.P.
15. In an A.P., if $a_n = 4, d = 2\ and\ S_n$=-14, then find n and a.
16. Find the sum of all three digit numbers which leave the remainder 2 when divided by 5.

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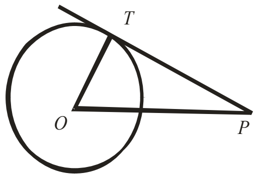
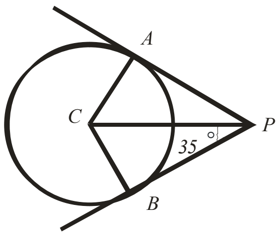
17. In a potato race, a bucket is placed at the starting point, which is 5 m from the first potato, and the other potatoes are placed 3 m apart in a straight line. There are 10 potatoes in the line. A competitor starts from the bucket, picks up the nearest potato, runs back with it, drops it's in the bucket, runs back to pick up the next potato, runs back to drop it in and continues in the same way until all the potatoes are in the bucket. What is the total distance the competitor has to run.

CIRCLES & CONSTRUCTIONS

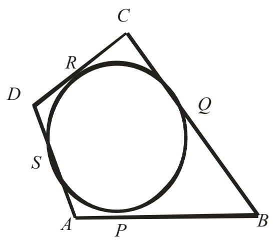
1. Which of the following statements is false
   a) The common point of a tangent to a circle and the circle is called the point of contact
   b) There cannot be more than two tangents to a circle parallel to a given line.
   c) Only one tangent can be drawn to a circle from a point in the exterior of the circle
   d) The tangents at the end points of a diameter of a circle are parallel
2. In the adjoining figure, PT is a tangent to a circle whose centre is O. If OP = 5 cm and PT = 4 cm, then he diameter of the circle is
   a) $\sqrt{41}\ cm$ b) 3 cm
   c) $4.5\ cm$ d) 6 cm
3. In the adjoining figure, PA and PB are



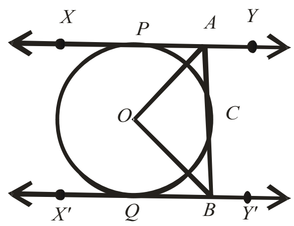
tangents to a circle with centre C. If ∠BPC = 35°, then find ∠ACP.



4. In the adjoining figure, a quadrilateral ABCD circumscribes a circle. Prove that
AB+CD = AD+BC

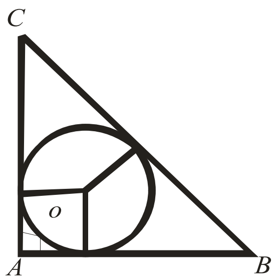


5. In the adjoining figure XY and X'Y' are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersects XY at A and X'Y' at B. Prove that ∠AOB = 90°



6. In the adjoining figure, ABC is a right angled triangle with AB = 6 cm and AC = 8 cm. A circle with centre O has

been inscribed inside the triangle.Calculate the radius of the inscribed circle.

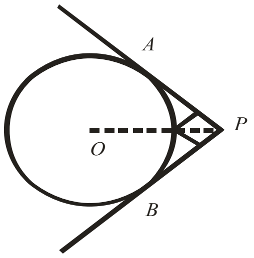


7. Draw a triangle ABC with sides BC = 6 cm, AB = 5 cm and $\angle ABC = 60°$. Construct another triangle similar to ΔABC whose sides are $\frac{3}{4}$ of the corresponding sides of the triangle ABC. Justify your construction.

8. In the adjoining figure, PA and PB are tangents from P to a circle with centre O. If the radius of the circle is 5 cm and $AP \perp BP$, then the length of OP is
   a) 5 cm b) $5\sqrt{2}$ cm

c) 8 cm d) 10 cm

9. A point P is at a distance of 13 cm from the centre C of a circle, and PT is tangent to the given circle. If the diameter of the circle is 10 cm, then the length of the tangent PT is



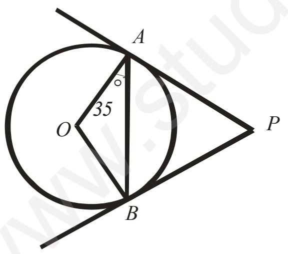
a) $\sqrt{69}$ cm b) 11.5 cm

c) 12 cm d) $\sqrt{194}$ cm

10. In the adjoining figure, PA and PB are tangents to a circle with O. If ∠OAB = 35°, then ∠APB is equal to

a) 70 ° b) 55°

c) 90° d) 65°



11. Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact.

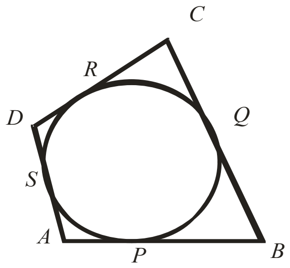
12. If two tangents are drawn from an external point to a circle, then prove the following:

(i) The lengths of the tangents are equal

(ii) The tangents subtend equal angles at the centre

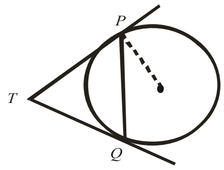
(iii) The tangents are equally inclined to the line joining the point and the centre of the circle.

13. In the adjoining figure, a circle touches all the four sides of a quadrilateral ABCD whose three sides are AB = 6 cm , BC = 7 cm and CD = 4 cm. Find AD.

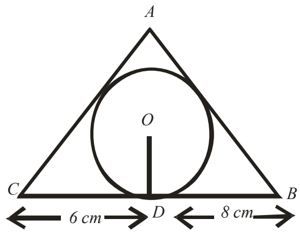


14. In the adjoining figure, PQ is a chord of length 8 cm of a circle with centre O.

The tangents at P and Q intersect at T. If the radius of the circle is 5 cm, find the length PT.



15. In the adjoining figure, a triangle ABC is drawn to circumscribe a circle with centre O of radius 4 cm such that the segments BD and DC into which BC is divided by the point of contact D are of lengths 8 cm and 6 cm respectively. Find the sides AB and AC.



16. Construct an isosceles triangle whose base is 6 cm and altitude 4 cm and then construct another similar triangle

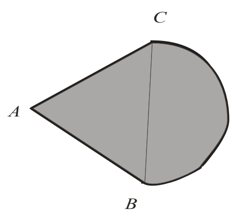
whose sides are $1\frac{1}{2}$ times the corresponding sides of the isosceles triangle.

17. Let ABC be a right triangle in which AB = 6 cm, BC = 8 cm and $\angle B = 90°$. BD is the perpendicular from B on AC. The circle through B,C and D is drawn.

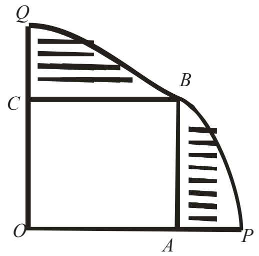
Construct the tangents from A to this circle.

AREA RELATED TO CIRCLES

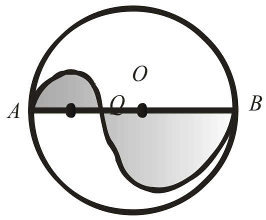
1. If the circumference and the area of a circle are numerically equal, then the diameter of the circle is
   a) 2 units b) π units
   c) 4 units d) 2π units
2. The adjoining figure shows an isosceles triangle with AB = AC = 5 cm and base BC = 5.6 cm, and a semicircle with mid-point of BC as its centre. The perimeter of the shaded region is
   a) 15.6 cm b) 18.8 cm
   c) 20.4 cm d) 24.4 cm



3. The radius of a circle is 20 cm. Three more concentric circles are drawn inside it in such a way that it is divided into four parts of equal area. The radius (in cm) of the largest of the three concentric circles is
   a) $5\sqrt{2}$ b) $5\sqrt{3}$
   c) $8\sqrt{3}$ d) $10\sqrt{3}$
4. If the length of an arc of a sector of a circle with radius r is l, then show that the area of the sector is $\frac{1}{2}lr$.
5. A wire bent in the form of a circle of radius 42 cm is cut and again bent in the form of a square. Find the ratio of the areas of the regions enclosed by the circle and the square.
6. In the adjoining figure, a square OABC is inscribed in a quadrant OPBQ of a circle. If OA = 20 cm, find the area of the shaded region. (Use $\pi = 3.14$)



7. In the adjoining figure, the diameter of the circle with centre O is 28 cm. Semicircles are drawn on AQ and BQ as diameters. If AQ = $\frac{1}{4}$ AB, find the area of the shaded region.

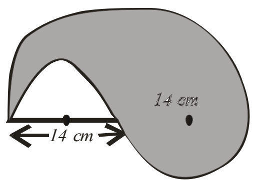


8. The area of the equilateral triangle is $49\sqrt{4}cm^2$. Taking each angular point as centre, circles are drawn with radius equal to half the length of the side of the triangle. Find the area of triangle not included in the circles. (Take $\sqrt{3} = 1.73$)

9. If the diameter of a semicircle is d, then its area is
   a) $\frac{1}{2}\pi d^2$ b) $\frac{1}{4}\pi d^2$
   c) $\frac{1}{8}\pi d^2$ d) $\frac{1}{16}\pi d^2$

10. If the radii of two circles are 19 cm and 9 cm, then the diameter of the circle which has circumference equal to the sum of circumferences of the two circles is
    a) 56 cm b) 28 cm
    c) 14 cm d) 112 cm

11. In the adjoining figure, the boundary of the shaded region consists of semicircular arcs. The area of the shaded region is equal to
    a) 616 cm^2 b) 385 cm^2
    c) 231 cm^2 d) 308 cm^2



12. The perimeter of the shaded region shown in Q.11(above) is
    a) 44 cm b) 88 cm

c) 66 cm d) 132 cm

13. If the length of the arc of a sector of a circle of radius 16 cm is 18.5 cm, then the area of the sector is equal to

a) 148 cm^2 b) 154 cm^2

c) 176 cm^2 d) 296 cm^2

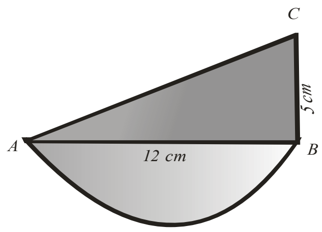
14. In the adjoining figure, ABC is a right angled triangle at B. A semicircle is drawn on AB as diameter. If AB = 12 cm and BC = 5 cm, then the area of the shaded region is

a) $(60 + 18\,\pi)cm^2$

b) $(30 + 36\,\pi)cm^2$

c) $(30 + 18\,\pi)cm^2$

d) $(30 + 9\pi)cm^2$



15. The perimeter of the shaded region shown in Q.14(above) is

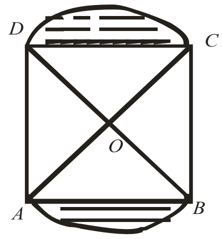
a) $(30 + 6\,\pi)$ cm

b) $(30 + 12\,\pi)$ cm

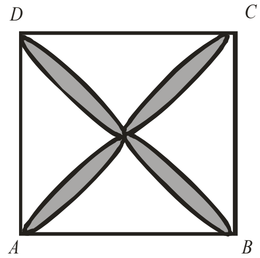
c) $(18 + 12\,\pi)$ cm

d) $(18 + 6\,\pi)$ cm

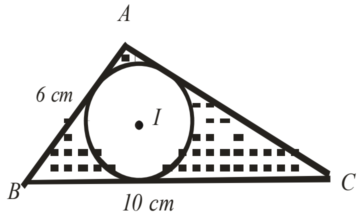
16. In the adjoining figure, two circular flower beds have been shown on the two sides of a square lawn ABCD of side 56 m. If the centre of each circular flower bed is the point of intersection O of the diagonals of the square lawn, find the sum of the areas of the lawn and the flower beds.



17. In the adjoining figure, ABCD is a square of side 10 cm and semicircle are drawn with each side of the square as diameter. Find the area of the shaded region. (use $\pi = 3.14$)



18. In the adjoining figure, ABC is a right angled triangle at A. Find the area of the shaded region if AB = 6 cm, BC = 10 cm and I is the centre of incircle of ΔABC.



SURFACE AREAS AND VOLUMES

1. If the height of a cylinder is 4 times the circumference © of its base,

then the volume of the cylinder in terms of circumference (in cubic units) is

a) $\frac{4C^3}{\pi}$ b) $\frac{2C^3}{\pi}$

c) $\frac{C^3}{\pi}$ d) $\frac{C^3}{4\pi}$

2. If the volume of a sphere is 4851 cm^3, then its surface area is

a) 1286 cm^2 b) 13386 cm^2

c) 1486 cm^2 d) 2460 cm^2

3. A hemispherical bowl of inner radius 9 cm is full of a liquid. If this liquid is to be poured into cylindrical bottles of diameter 3 cm and height 4 cm, then the number of bottles required is

a) 27 b) 45

c) 48 d) 54

4. If the area of the circular base of a cone is 616 cm^2 and its height is 48 cm, then find its whole surface area.

5. The radii of the circular ends of a solid frustum of a cone are 33 cm and 27 cm and its slant height is 10 cm. Find its total surface area.

6. A toy is in the form of a cone mounted on a hemisphere with same radius. The diameter of the base of the conical portion is 7 cm and the total height of the toy is 14.5 cm. Find the volume of the toy.

7. A solid metallic sphere of diameter 21 cm is melted and recast into a number of smaller cones, each of diameter 7 cm and height 3 cm.

Find the number of cones so formed.

8. From a solid cylinder whose height is 8 cm and radius 6 cm, a conical cavity of height 8 cm and of base radius 6 cm, is hollowed out. Find the volume of the remaining solid. Also find the total surface area of the remaining solid. (Take π=3.1416)

9. The cost of canvas required for a conical tent of height 8 m and slant height 10 m at the rate of Rs.10.5 per m2 is
   a) Rs.1800 b) Rs.1860
   c) Rs.1920 d) Rs.1980

10. If the radius of a hemisphere is increased by 20%, then its volume increases by
    a) 20% b) 40%
    c) 72.8% d) 80%

11. If a spherical shell of internal and external diameters 4 cm and 8 cm respectively is melted and recast into a cone of base radius 4 cm, then the height of the cone is
    a) 12 cm b) 14 cm
    c) 21 cm d) 24 cm

12. A toy is made in the form of a hemisphere surmounted by a right cone whose circular base coincides with the plane surface of the hemisphere. The radius of the base of the cone is 3.5 cm and its volume is $\frac{2}{3}$ of the hemisphere. Calculate the height of the cone and the surface area of the toy correct to 2 places of decimal.

13. A right angled triangle, with sides 15 cm and 20 cm, is made to revolve about its hypotenuse. Find the volume and the surface area of

the double cone so formed. Take $\pi = 3.14$.

14. The radius of a cone is 10 cm. A sphere has the same radius and volume as the cone. Find the curved surface area of the cone correct to one place of decimal.

CO-ORDINATE GEOMETRY

1. Prove that the points (3,0),(6,4) and (-1,3) are the vertices of a right angled triangle. Also, prove that these are the vertices of an isosceles triangle.

2. Find the ratio in which the line segment joining A(1,-5) and B(-4,5) is divided by the x-axis. Also find the coordinates of the point of division.

3. The line segment joining A $\left(-1, \frac{5}{3}\right)$ and B $(a, 5)$ is divided in the ratio 1 : 3 at P, the point where the line segment AB intersects y-axis. Find

(i) The value of a
(ii) The coordinates of P.

4. It two vertices of a parallelogram are (3, 2) , (-1,0) and its diagonals meet at (2,-5), find the other two vertices of the parallelogram.

5. If the vertices of a triangle are (1,k),(4,-3),(-9,7) and its area is 15 sq. units, find the values of k.

6. The distance of the point (36, -15) from the origin is
   a) 21 units b) 39 units
   c) 50 units d) 51 units
7. The distance of the point (-3,-4) from the x-axis is
   a) -3 units b) 3 units
   c) -4 units d) 4 units
8. If the distance between the points (3,k) and (4,1) is $\sqrt{10}$ units, then the values of k are
   a) 2,4 b) -2,4
   c) 2,-4 d) -2,-4
9. If the mid-point of the line segment joining (2a,4) and (-2,3b) is (1,2a+1), then the values of a and b are
   a) a = 2, b = 2 b) a = 2, b = -2
   c) a = 1, b =1 d) a = -2, b = 2

10. The ratio in which the line segment joining the points (-3,2) and (6,1) is divided by the y-axis is
   a) 1 : 3 b) 3 : 1
   c) 1 : 2 d) 2 : 1

APPLICATION OF TRIGONOMETRY

1. A pole 6 m high is fixed on the top of a tower. The angle of elevation of the top of the pole observed from a point P on the ground is 60° and the angles of depression of the point P from the top of the tower are 45°. Find the height of the tower (Take $\sqrt{3} = 1.73$) .

2. The angles of depression of the top and the bottom of a building 50 m high as observed from the top of a tower are 30° and 60° respectively. Find the height of the tower and also the horizontal distance between the building and the tower.

3. The angle of elevation of a jet plane from a point A on the ground is 60°. After a flight of 15 seconds, the angle of elevation changes to 30°. If the jet plane is flying at a constant height of $1500\sqrt{3}$ m, find the speed of the jet plane.

4. A boy standing on a horizontal plane finds a bird flying at a distance of 100 m from him at an elevation of 30°. A girl standing on the roof of 20 metre high building finds the angle of elevation of the same bird to be 45°. If the boy and the girl are on opposite sides of the part, findthe distance of the bird from the girl.

5. A straight highway leads to the foot of a tower. A man standing at the top of the tower observes a car at an angle of depression of 30°, which is approaching the foot of the tower with a uniform speed. Six seconds later, the angle of depression of the car is found to be 60°. Find the time taken by the car to reach the foot of the tower from this point.

6. A 1.2 m tall girl spots a balloon moving with the wind in a horizontal line at a height of 88.2 m from the ground. The angle of elevation of the balloon from the eyes of the girl at that instant is 60°. After some time, the angle of elevation reduces to 30°. Find the distance travelled by the balloon during the interval.

7. An aeroplane when flying at a height of 3125 m from the ground passes vertically below another plane at an instant when the angles of elevation of the two planes from the same point on the ground are 30° and 60° respectively. Find the distance between the two planes at that instant.

8. From a point P on the ground the angle of elevation of the top of a 10 m tall building is 30°. A flag is hoisted at the top of the building and the angle of elevation of the top of the flagstaff from P is 45°. Find the length of the flagstaff and the distance of the building from the point P. (Take $\sqrt{3} = 1.732$)

9. The angle of elevation of the top of a tower from a point on the same level as the foot of the tower is 30°. On advancing 150 metres towards the foot of the tower, the angle of elevation becomes 60°. Find the height of the tower.

10. From a point on a bridge across a river, the angles of depression of the banks on opposite sides of the river are 30° and 45° respectively. If the bridge is at a height of 3 m from the bank, find the width of the river.

11. There is a small island in between a river 100 metres wide. A tall tree stands on the island P and Q are points directly opposite each other on the two banks, and in line with the tree. If the angles of elevation of the top of the tree from P and Q are 30° and 45° respectively, find the height of the tree.

12. The angles of elevation of the top of a tower from two points P and Q at distances of a and b respectively from the base and in the same straight line with it are complementary. Prove that the height of the tower is $\sqrt{ab}$.

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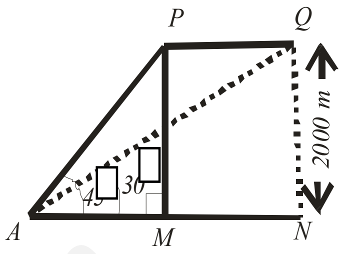
13. A man standing on the deck of a ship, which is 10 m above water level, observes the angle of elevation of the top of a hill as 60° and angle of depression of the base of the hill as 30°. Find the distance of the hill from the ship and the height of the hill.

14. In the adjoining figure, the angle of elevation of a helicopter from a point A on the ground is 45°. After 15 seconds flight, the angle of elevation changes to 30°. If the helicopter is flying at a height of 2000 m, find the speed of the helicopter. (Take $\sqrt{3} = 1.732$)



PROBABILITY

1. Which of the following cannot be the probability of an event
   a) 0.7 b) $\frac{2}{3}$
   c) -1.2 d) 18%
2. Out of vowels of the English alphabet, one letter is selected at random. The probability of selecting 'e' is
   a) $\frac{1}{26}$ b) $\frac{5}{26}$
   c) $\frac{1}{4}$ d) $\frac{1}{5}$
3. A card is drawn from a well shuffled pack of 52 playing cards. The event E is that the card drawn is not a face card. The number of outcomes favourable to the event E is
   a) 51 b) 40
   c) 36 d) 12
4. A bag contains 5 red, 4 white and 3 black balls. If a ball is drawn from the bag at random, then the probability of the ball being not black is

a) $\frac{5}{12}$ b) $\frac{1}{3}$

c) $\frac{3}{4}$ d) $\frac{1}{4}$

5. If a letter is chosen at random from the letter of English alphabet, then the probability that it is a letter of the word 'DELHI' is

a) $\frac{1}{5}$ b) $\frac{1}{26}$

c) $\frac{5}{26}$ d) $\frac{21}{26}$

6. If a (fair) coin is tossed twice, then the probability of getting two heads is

a) $\frac{1}{4}$ b) $\frac{1}{2}$

c) $\frac{3}{4}$ d) 0

7. The probability that a non-leap year selected at random has 53 Sundays is

a) $\frac{1}{365}$ b) $\frac{2}{365}$

c) $\frac{2}{7}$ d) $\frac{1}{7}$

8. Tickets numbered 3, 5, 7, 9… 29 are placed in a box and mixed thoroughly. One ticket is drawn at random from the box. Find the probability that the number on the ticket is

a) a prime number

b) a number less than 16

c) a number divisible by 3

9. One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting

(i) An ace

(ii) not an ace

(iii) A king of red colour

(iv) A face card

(v) A red face card

(vi) A spade

(vii) The queen of diamonds

(viii) Either a king or a queen

10. Three coins are tossed simultaneously. Find the probability of getting
    (i) Three heads
    (ii) Two heads
    (iii) One head
    (iv) Atleast one head
    (v) Atleast two heads
    (vi) Atmost two heads

11. Cards marked with all 2-digit numbers are placed in a box and are mixed thoroughly. One card is drawn at random. Find the probability that the number on the card is
    (i) Divisible by 10
    (ii) A perfect square number
    (iii) A prime number less than 25

12. Out of the families having 3 children, a family is chosen at random. Find the probability that the family has
    (i) Exactly one girl
    (ii) Atleast one girl
    (iii) Atmost one girl

13. Two dice are thrown simultaneously. What is the probability that
    (i) 5 will not come up on either of them
    (ii) 5 will come up on atleast one
    (iii) 5 will come up at both dice
    (iv) 5 will come up atmost once

14. If a card is drawn from a well-shuffled pack of 52 cards, then the probability of getting a black face card is
   a) $\frac{4}{13}$ b) $\frac{3}{13}$
   c) $\frac{3}{52}$ d) $\frac{3}{26}$
15. Cards marked with all 2-digit numbers are placed in a box and are mixed thoroughly. One card is drawn at random. Find the probability that the number on the card is
   (i) Divisible by 10
   (ii) A perfect square number
   (iii) A prime number less than 25