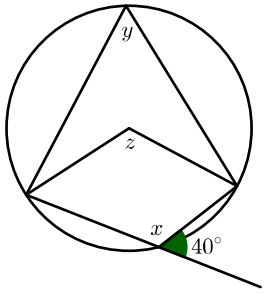
Essentials of Learning Mathematics X Module 2

Worksheet 12

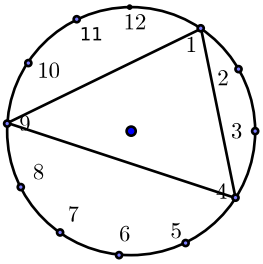
1. The algebraic form of an arithmetic sequence is $7n+3$.Can the difference between two terms of this sequence 357?
2. The seventh term of an arithmetic sequence is 51. What is the sum of first and thirteenth term of this sequence
3. The sum of first and ninth term of an arithmetic sequence is 72. What is its fifth term 9
4. What is the common difference of the sequence $7, 13, 19 \cdots$. What is the remainder obtained by dividing the terms by its common difference? Is 247 a term of this sequence ? If it is a term what is its position in the sequence?
5. Write the formula to find the sum of first n natural numbers ? Using this calculate the sum of natural numbers from 1 to 60

Worksheet 13

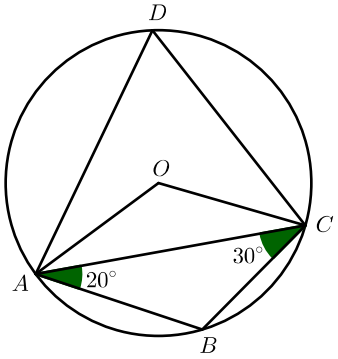
1. Draw an angle of 60° whose vertex comes at the center of a circle. Draw an angle of 30° and 150° whose vertices comes on the circle. write the geometric principle of your construction.
2. Find x, y, z in the figure given below



3. Find the angles of the triangle formed by joining $1, 9, 4$ of a clock face



4. In triangle $ABC \angle A = 40^\circ, \angle B = 80^\circ$.The vertices are the points on a circle of radius 3cm. Construct the triangle
5. In ABC, $\angle A = 20^\circ, \angle C = 30^\circ$. find $\angle B$, $\angle AOC, \angle ADC$



6. Draw a rectangle of diagonal 5cm and one side 4cm such that its vertices lie on a circle

Worksheet 14

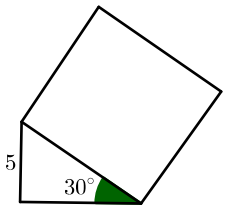
1. The mid points of the sides of a square are joined to make another square and its is shaded. A fine dot is placed into the figure without looking into the figure. What is the probability of falling the dot in the shade ?
2. The numbers $2, 3, 4$ are written in small paper pieces and placed in a box. The farctions $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$are written in another paper pieces and placed in another box. One is taken from each box at random What is the probability of getting the numbers whose product is an integer
3. Write all possible numbers using $1, 2, 3$number. Each of them are written in small paper pieces and placed in a box. One is taking at random . what is the probability of getting an odd number? What is the probability of getting an even number? What is the probability of getting a multiple of 11
4. An equilateral triangle is drawn in a circle with vertices in the circle and it is shaded .A fine dot is placed into the figure . what is the probability of falling the dot in the shade ?
5. A square of maximum size is drawn in a circle and it is shaded. A fine dot is placed into the figure at random . What is the probability of falling the dot in the shade

Worksheet 15

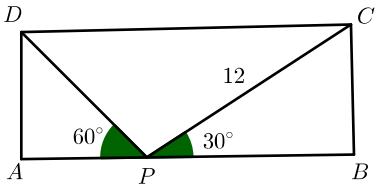
1. Solve the equation $x^2 + 12x + 11 = 0$ using completing the square method
2. The product of a child's age five years ago and 9 years hence is 15. Form an equation by taking x as the present age
3. The sum of two numbers is 27,its product is 182. Form an equation by taking x as a number
4. The area of a square field is 28 square unit. The length is 13 more than twice its breadth. Calculate length and breadth
5. The product of two consecutive natural numbers is 306. Find the numbers

Worksheet 16

1. Find the side , area and length of digonal of the square drawn on the hypotnuese of the right triangle

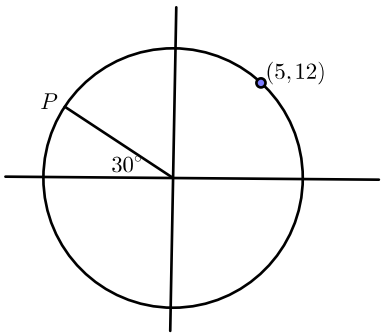


2. Calculate the radius of the circumcircle of an equilateral triangle of side 10cm
3. The perimeter of an equilateral triangle is 30cm. Find the latitude to a side and area of the triangle
4. One angle of a triangle is 30° and opposite side 10cm . Calculate the radius of the circumcircle
5. Find the length and breadth of the rectangle using the following measures



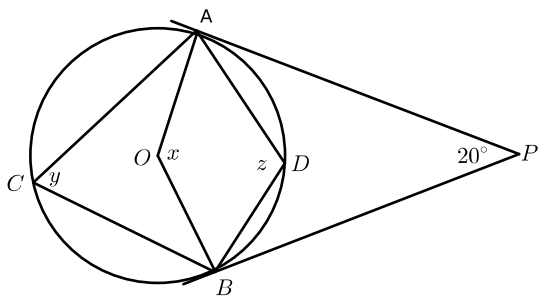
Worksheet 17

1. Suggest a suitable name for the quadrilateral formed by joining the points $A(-4,2), B(4,2), C(1,-4), D(-1,-4)$in an order. Calculate its area
2. Suggest a suitable name to the quadrilateral formed by joining the points $A(-4,4), B(4,4), C(4,-4), D(-4,-4)$in an order.Calculate area and perimeter
3. $(3,4)$ is a point on the circle with center at the origin.Find the radius of the circle. Write the coordinates of the points where the circle intersect coordinate axes. Write three more points on this circle.
4. $(4,3)$ is a point on a circle with center at the origin.Find the coordinates of the vertices of the square which are on this circle and one of them is $(4,3)$
5. In the figure the center of the circle is the origin of coordinates . $(5,12)$ is a point on the circle . Another point P is marked on this circle. Find the coordinates of$P$



Worksheet 18

1. A tangent is from a point at a distance 26cm from the center of a circle . If the length of the tangent is 24cm, calculate the radius of the circle
2. PQ is a tangent from an exterior point Q to a circle of center O and radius 6cm , $\angle PQO = 60^\circ$. Calcualte length of tangent and length of the line OQ
3. Two tangents are drawn from an exterior point to a circle. The angle between the tangents is 40°, find the angle between the radii
4. Find the value of x, y, z in the figure given below



5. An equilateral triangle is drawn on a circle. The tangents to this circle at the vertices of the triangle form another equilateral triangle . Prove!

Worksheet 19

1. A sectoral sheet of central angle 108° is taken from a circle of radius 10cm . It is folded in such a way as to get a cone. What is its slant height? Calculate its radius and height.
2. A cone is made by folding a sector of radius 8cm and central angle 40°. Calcualte the lateral surface area of the cone.Calculate the area of the paper used to cover its base.Calculate the total surface area ofthe cone
3. What is the slant height of the come made by folding a semicircle of radius 10cm . Calculate the radius of the cone
4. The radius of a cone is 5cm, height 12cm . Calculate slant height, lateral area and volume
5. Base perimeter of a cone is 64cm , volume 1280. Calculate total surface area

Worksheet 20

1. Find the quotient and remainder when $x^3-4x^2+5x+10$is divided by $x+1$
2. Find the quotient and remainder when $x^3+x^2+x+1$is divided by $x-1$
3. Find the quotient and remainder $x^3-6x^2+7x+1$is divided by $x+2$
4. Write $x^2+11x+30$as the product of two first degree factors.Then solve the equation $x^2+11x+30=0$
5. Solve the equation $x^2-6x+8=0$ by factorization

Worksheet 21

1. Find the coordinates of the point which divides the line joining $(4,-3)$ and $(9,7)$ in the ratio $3:2$
2. Find the coordinates of the point which divides the line joining the points $(2,10), (6,5)$in the ratio $1:3$
3. The ends of the diameters of a circle are $(1,2), (3,6)$. Find the coordinates of its center
4. $AB$is the diameter of a circle. $B(1,4)$, center of the circle is $O(3,-4)$.Write the coordinates of A
5. In ABC,$A(5,-7), B(4,7), C(6,-5)$, AD is a median .Write the coordinates of D. Determine the coordinates of the centroid of the triangle