Essentials of Learning Mathematics X
Module 1

Worksheet 1

1. The first term of an arithmetic sequence is 10 and common difference 3. Write the sequence and its algebraic form

2. The algebraic form of an arithmetic sequence is $2n + 7$. Write the sequence and its 15 th term

3. Write the first three digit term of the sequence $1, 5, 9, 13 \cdots$

4. If the first term -3 and the common difference 5 then write the sequence and its algebraic form

5. Check whether 97 a term of the sequence $7, 10, 13 \cdots$

Worksheet 2

1. What is the position of the vertex of an equilateral triangle based on a circle with the opposite side as the diameter

2. In triangle ABC ∠A=50°,∠B=100°, ∠C=30° . What is the position of C based on a circle with diameter AB. What is the position of A based on a circle with diameter BC. What is the position of B based on a circle with diameter AC

3. In the quadrilateral $ABCD$, $\angle A = 120°, \angle B = 70°, \angle C = 60°, \angle D = 110°$. What is the position of B and D based on AC as the diameter

4. In triangle ABC , $AB = AC$ and angle $A = 90°$.What is the position of C based on the circle with AB as the base. What is the position of A based on a circle with BC as the base

5. The angles A, B, C of triangle ABC are in the ratio $1 : 2 : 3$. Find the angles .What is the position of C based on the circle with AB as the diameter. What is the position of A based on a circle with diameter BC.What is the position of B based on a circle with diameter AC .

Worksheet 3

1. The natural numbers from 1 to 10 are written in small paper pieces and placed in a box. One paper is taken at random . what is the probability of getting an even number.

2. The numbers from 1 to 10 are written in small paper pieces and placed in a box. One is taken at random . What is the probability of falling of getting an odd number

3. The numbers1, 2, 3 are written in one box , the numbers2, 3, 4, 5 are written in another box in small paper pieces . One is taken from each box at random from each box. How many pairs we get as the output. List the pairs

4. A dice in which the numbers $1, 2, 3, 4, 5, 6$ are written in faces are thrown at random . What is the probability of getting odd face , what is the probability of getting even face

5. Two dice are thrown at random . List the outcomes . What is the probabilty of getting same face in a throw

Worksheet 4

1. The length of a rectangle is 6 more than its breadth. Area of the rectangle is 160 square centimeter. Calculate length and breadth

2. A square is formed by increasing the sides of a square 1cm The area of a new square is 100cm. Calculate the area of the first square

3. When a number is added to its square we get 30. Find the number

4. The sum of the squares of two consecutive natural numbers is 110. Find the numbers

5. The sum of a number and its reciprocal is $\frac{26}{5}$. Find the number

Worksheet 5

1. The length of the diagonal of a square is 12cm Find its side

2. The angle between one side and diagonal of a rectangle is 30°.Find length and breadth

3. One side of an equilateral triangle is 20cm . Find its height and area

4. Two sides of a right triangle are equal . Hypotenuse is 12cm Find the sides and area

5. In triangle ABC, $\angle B = 90°, BC = 6, \angle A = 30°$. Find AB and AC

Worksheet 6

1. Draw co-ordinate axes and mark the points $(1, -3), (-5, 6), (-3, -4), (3, 5)$

2. Draw the coordinate axes and mark the points $(4, 0), (0, 4), (-4, 0), (0, -4)$.Suggest a suitable name to this geometric figure

3. $(3, 4)$ is a point on a line parallel to x axis . Write three more points on this line

4. At which point the line passing through $(4, 0)$ and parallel to y axis and the line passing through $(0, 6)$ and parallel to x axis intersect

5. Suggest a suitable name to the geometric figure formed by joining the points $(-6, 4), (6, 4), (-3, -2), (3, -2)$ in an order. Calculate the area of this quadrilateral

Worksheet 7

1. Draw a circle of radius 3cm , mark a point on this circle. Draw a tangent to this circle at that point

2. Find the radius of the circle on which a tangent of length 12cm is drawn from a point at a distance of 13cm from its center

3. The angle between tangent and the line joining the center and the exterior point at a ditsance 20cm from the center is $30°$. Calcualte the radius of the circle

4. Two angles of a triangle are $40°$ and $70°$.Radius of the incircle is 3cm .Construct the triangle

5. The length of the tangent is 5cm , distance from center to the exterior point is 8cm .Construct the tangent from exterior to the circle

Worksheet 8

1. Write $x^2 - 7x + 12$ as the product of two first degree factors

2. Write $x^2 + 11x + 30$ as the product of two first degree factors

3. Write $2x^2 + 5x + 2$as the product of two first degree factors

4. Find the quotient and the remainder when $p(x) = x^3 - 5x^2 + 7x + 3$is divided by $x + 1$

5. Find the quotient and the remainder when $p(x) = x^3 - 6x^2 + 4x + 11$ is divided by $x - 1$

Worksheet 9

1. The base edge of a square pyramid is 10cm, slant height 13cm . Find the height of the square pyramid

2. The base area of a square pyramid is 400cm, height 12cm . Calculate slant height

3. A wire of length 96cm is divided into equal parts , the ends are joined in such a way as to get a square pyramid. What is the length of one edge of the pyramid . What is its slant height

4. The base edge of a square pyramid is 10cm, height 20cm . Calculate the volume of the pyramid

Worksheet 10

1. Three consecutive vertices of a parallogram are given $A(3, 4), B(7, 4), C(11, 6)$. Find the fourth vertex

2. Three consecutive vertices of a parallogram are given$A(-3, 5), B(7, 5), C(11, 6)$ Find the fourth vertex

3. Three consecutive vertices of a parallogram are given $A(3, 4), B(7, 4), C(11, 6)$. Find the fourth vertex

4. Three consecutive vertices of a parallogram are given$A(3, 4), B(7, 7), C(11, 12)$. Find the fourth vertex

5. Three consecutive vertices of a parallogram are given$A(3, 5), B(7, 6), C(10, 12)$ Find the fourth vertex

Worksheet 11

1. Calculate mean and median of the data $2, 6, 1, 9, 11$

2. Calculate mean and median of the data $1, 2, 3, 4, 5, 6, 7, 8, 9, 10$

3. Write an arithmetic sequence having 6 terms . Calculate mean and median of the numbers in the sequence

4. The atmospheric temperature of a place are given below . Calculate median

$$30°C, 27°C, 31°C, 28°C, 31°C, 27°C, 30°C$$