**Class-VII**

 **Mathematics**

 **Summative assessment -2 short notes**

**Chapter -4/Topics/Exponent and powers**

**Laws of exponents:**

Let a and b any two rational numbers and let m and n be integers , then we have,

1. amxan=am+n ii) , a
2. iv)
3. , b v)

**Positive rational number as exponent:**

**Negative rational number as exponent:**

**Examples**: [ ]

**Extra questions**: = = = = = =

**Chapter-6/Topics/Algebraic Expression**

**Algebraic expression**: An expression in which contains algebraic terms with operations

 OR

 Combination of terms(combination of variable and constants)

 E.g. x+y+z, x2+y3+z4 +4 etc.

**Monomials:**  Algebraic expression which has single term.

**Binomials:**  Algebraic expression which has two terms.

**Trinomials:**  Algebraic expression which has three terms.

**Like terms**: Those terms whose variables are same. E.g. 2x, 3x

**Unlike terms**: Those terms whose variables are not same E.g. 5x, 5y

**Remarks**: Addition and subtraction can possible of algebraic expressions in like terms otherwise not.

Multiplication of monomial and monomial: First multiply by numeric value or coefficient of monomial then multiply by variables with the help of law of exponents. E.g. 2abx 3a=6a2b

**Multiplication of monomial and binomial**: Breaking binomial into monomial

**Chapter-7/Topics/ Linear equation in one variable**

The standard form of linear equation in one variable x is ax+b=0, where a and b are rational numbers, a.

Examples: 2x+3=4, 7+y=9.

While solving a linear equations:

Add and subtract the same quantity on both sides of an equation.

Multiply both sides of an equation by the same non-zero number.

Divide both sides of an equation by the same non-zero number..

Example:

2x+3=6

2x+3-3=6-3

2x=3

X=3/2

By transposing a term, means simply its sign and taking it to the other side of the equation[ + changes to –(vice-versa), changes to ]

Finding a solution to a word problem

Formation of an equation

Solving an equation.

Interpreting the solution

**Examples:** Anu is four years older than Sunil. Eight years ago, Anu was three times Sunil’s age. Find the ages of Sunil and Anu.

Solution:

Let the present age of Sunil is to be x years

Present age of Anu will be=x+4

Eight years ago , Sunil’s age=x-8, and Anu’s age =x+4-8=x-4

According to questions:

x-4=3(x-8)

x-4=3x-24 that

x-3x=-24+4

-2x=-20

X=20/2=10

Present age of Sunil is 10 years and present age of Anu is 14years

**Chapter-9/Topic/Congruent Triangles**

**Congruence**: If two geometrical figures coincide exactly, by placing one over the other, the figures are said to be congruent to each other. It is denoted as .

1. Two figures are congruent, if they have exactly the same shape and size.
2. Two line segments are congruent, if they have the same length.
3. Two angles are congruent, if they have same measures.
4. Two squares are congruent, if they have the same side length.
5. Two rectangles are congruent, if they have the same length and breadths.
6. Two circles are congruent, if they have the same radii.
7. Two equilateral triangles are congruent, if they have same measurements of side.
8. Two triangles are congruent, if three sides and three angles of one triangle are respectively equal to the corresponding three sides and three angles of the other.

**SSS (side-side-side) congruence condition**: Two triangles are congruent if three sides of one triangle are respectively equal to the three sides of the other.

**SAS (side-angle-side) congruence condition:** Two triangles are congruent if two sides and the included angle of one triangle are respectively equal to the two sides and included angle of the other.

**ASA (angle-side-angle) congruence condition**: Two triangles are congruent if two angles and the included side of one triangle are respectively equal the two angles and the included side of the other.

**RHS (right-hypotenuse-side) congruence condition**: Two right triangles are congruent if the hypotenuse and one side of one triangle are respectively equal to the hypotenuse and corresponding side of the other.

**CPCT** is short form of corresponding parts of congruence triangle. This CPCT is follow when two triangles are congruent to each other.

**Chapter-11/Topics/Perimeter and Area**

**Perimeter**: The lengths of boundary of a closed figure are called the perimeter.

 **Area**: The magnitude of a plane region is called its area.

|  |  |
| --- | --- |
| **Area of triangle= ½ base x height** | **Perimeter of triangle= sum of all sides** |
| **Area of equilateral triangle= x (side)2** | **Perimeter of equilateral triangle=3 x sides** |
| **Area of rectangle= Length x Breadth** | **Perimeter of rectangle=2(length+Breadth)** |
| **Area of square= Side x Side** | **Perimeter of square= 4 x Side** |
| **Area of Parallelogram = Base x Height** | **Perimeter= 2 x Sum of adjacent sides** |
| **Area of rhombus= Base X height** **=1/2 x Length of first diagonal x Second diagonal**  |  **Perimeter=2 x Sum of adjacent sides = 4xsides** |
| **Area of trapezium= x sum of parallel sides x Height** | **Perimeter = sum of all sides** |
| **Area of circle= , where r is the radius of circle, =The constant ratio of the circumference of a circle to its diameter**  | **Perimeter of circle=Circumference of circle=2 r** |
| **Area of a rectangular path inside(or outside) a rectangular field=Area of the outer rectangle-Area of the inner rectangle** | **Area of cross path=Area of all the rectangles making the paths- Area of the common rectangle(or Square)** |

**Chapter: 12/Topics/Data handling**

**Data:** It is a collection of numbers gathered to give some information.

**Range**: It is the difference of the highest and the lowest observation.

**Mean**=

**Median**: It is the value of a given number of observations which divides it into exactly two parts.

**Mode**: it is the value of a given number of observations which occur maximum number of times.

**Bar Graph**: Bar graphs are pictorial representation of data using bars of uniform width and equal spacing between them.

**Chapter:14/Topics/ Visualising solid shapes**

**Solid Shapes**: It is three dimensional figures.

**Face**: it is a plane surface of the solid which is connected with edges

**Edge**: it is a line-segment at which two faces of the solid meet.

**Vertices:** It is a point or corner at which edges meet.

**Euler’s Formula for polyhedron**

F+V= E+2, where F is face , V is the vertices and E is the edges of solid shape(3-d)