SAINIK SCHOOL IMPHAL

SUMMER VACATION

2024-25

ASSIGNMENT/PROJECTS

CLASS VIII

COMPUTER SCIENCE

SAINIK SCHOOL IMPHAL

SUMMER VACATION ASSIGNMENT: 2024-25

SUBJECT: COMPUTER SCIENCE – CLASS VIII

Instructions:

- Question I should be written in the Computer Homework Notebook.
- Question II should be done in A4 size paper. Please write only on one side of the page.
- Minimum no. of pages required is 13 pages.

I. Answer the following questions based on Chapter 1: Operating System and Graphical User Interface

1. Explain the difference between a hardware and a software.
2. Name the various types of software.
3. How does an application software differ from a system software?
4. Write a short note on your understanding of an operating system.
5. Why do we need an operating system?
6. What are the various functions of an operating system?
7. Name the various types of operating systems.
8. What do you understand by the term user interface? Name its various types.
9. Explain the following with reference to a computer system.
   (a) Input (b) Process (c) Output (d) Store

II. Answer the following questions based on Chapter 2: Spreadsheets – Functions and charts

1. Define MS Excel.
2. Describe the process of Entering data in a worksheet.
3. How do you enter a formula in a worksheet?
4. Define the copying of a formula.
5. Explain various operators in MS Excel.
6. What do you mean by a cell reference?
7. What are charts? Explain its various components.
8. Name the various types of charts in MS Excel.
9. How do you create a chart in MS Excel?
10. Explain the term Formatting Charts.

III. Write an assignment on the various Operating Systems. The following operating systems should be included:

- MS DOS
- Windows Operating System
- Linux Operating Systems
- Solaris Operating Systems
- Symbian Operating Systems
- Android Mobile Operating Systems
- iOS Mobile Operating Systems

- Apple macOS
- BOSS
- Ubuntu Operating System

The sequence of the assignment should be as follows:

- Cover Page
- Contents
- Introduction
- Explaining the various topics

Details are given below.

Cover Page

“Operating Systems”

An assignment submitted
for Term 1 Examination: 2024-25

Submitted By:
Cdt ….
Adm No ….
Class… Section …

Submitted To:
Sir Tiken
TGT Computer Science

SAINIK SCHOOL IMPHAL

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Introduction

Introduction

(Write a short note on Computer and Mobile Operating Systems in about 200 words)

MS DOS

(Explain in detail about the MS DOS in this page in about 200 words.)

Windows Operating System

(Explain in detail about the Windows Operating System in this page in about 200 words.)

Linux Operating System

(Explain in detail about the Linux Operating System in this page in about 200 words.)

Solaris Operating System

(Explain in detail about the Solaris Operating System in this page in about 200 words.)

Symbian Operating System

(Explain in detail about the Symbian Operating System in this page in about 200 words.)

Android Mobile Operating System

(Explain in detail about the Android Mobile Operating System in this page in about 200 words.)

iOS Mobile Operating System

(Explain in detail about the iOS Mobile Operating System in this page in about 200 words.)

Apple macOS

(Explain in detail about the Apple macOS in this page in about 200 words.)

BOSS

(Explain in detail about the BOSS in this page in about 200 words.)

Ubuntu Operating System

(Explain in detail about the Ubuntu Operating System in this page in about 200 words.)

ENGLISH

Class 8

SUBJECT: English vacation Homework

Do it in your homework copy

1. In reported speech write all the change of tenses while converting from Direct to Indirect speech.

2. Write a book review on any one of the following book after reading-

a) Charlie and the Chocolate factory- Roald Dahl

b) Matilda- Roald Dahl

3. Define the following and give example

a) Personification

b) Simile

c) Metaphor

d) Alliteration

e) Irony

4. Read the lessons and the question and answer completed in class.

5.

SOCIAL SCIENCE

Summer vacation assignment 2024-25

Subject : Social Science (Geography)

1. Write five points about usefulness of natural resources.
2. Imagine – there is no land on the Earth. What would be condition of the Earth? Describe at least three probable occurrences on it.
3. What is a landslide? What are the main causes of it?

N.B. Submit the assignment on A4 size paper only.

Class: VIII

Answer the following questions. Word Limits: 100 to 150 words.

1. Write a note on Tipu Sultan – The 'Tiger of Mysore'.
2. How did the East India Company begin to trade in Bengal?
3. In what ways did the British change their policies as a result of the rebellion of 1857?
4. On an outline political map of India, mark the important centres of Revolt of 1857 in North India.
5. Give a brief account of "Rani Laxmibai".

MANIPURI

Sainik School Imphal

Vacation Home Work

Class: viii

Subject : Manipuri

Q.1 ꯃꯥꯇꯕꯤꯔꯣ ꯏꯕꯨꯡꯉꯣ ꯍꯥꯏꯕ ꯁꯩꯔꯦꯡ ꯑꯂꯤꯒꯤ ꯋꯥꯃꯁꯩ ꯏꯌꯨ ॥ 5

Q.2 ꯃꯩꯇꯩꯒꯤ ꯋꯩꯎ-ꯇꯣꯕꯁꯄ ꯑꯃꯁꯨꯡ ꯃꯤꯡꯒꯩꯒꯤ ꯃꯔꯝꯗ ꯋꯥꯔꯦꯡ ꯑꯃ ꯏꯌꯨ ॥ 10

Q.3 ꯏꯕꯣꯋꯒꯤ ꯏꯃꯨꯡ ꯍꯥꯏꯕ ꯋꯥꯔꯤ ꯃꯁꯥ ꯑꯂꯤ ꯎꯂꯥꯒꯤ ꯑꯣꯏꯕ ꯇꯣꯕꯁꯗ ꯏꯌꯨ ॥ 10

Q.4 ꯁꯨꯃꯥꯡ ꯂꯤꯂꯥꯒꯤ ꯃꯔꯝꯗ ꯋꯥꯔꯦꯡ ꯑꯃ ꯁꯝꯂ ꯏꯌꯨ ॥ 5

SCIENCE

Summer Vacation Assignment

Class VIII Subject: - Science

1. Choose any five families of your neighbourhood. Enquire whether their energy consumption (coal, gas, electricity, petrol, kerosene) has increased or decreased in the last five years. Enquire also about the measures they adopt to conserve energy.

2. Find out the location of major thermal power plants in India. What could be the reasons for their being located at those places?

3. Collect pictures of some other agricultural machines and paste them in a file. Write their names and uses.

MATHEMATICS

Vacation Homework

Class VIII Maths

Prepare neat and clean concept maps for the following chapter:

1. Rational numbers
2. Linear equation in one variable
3. Understanding Quadrilateral
4. Algebraic expressions
5. Algebraic identities
6. Percentage and its applications

Sample concept maps are given below for your reference.

Rational Numbers

The numbers of the form $\frac{a}{b}$ where a and b are integers and $b \neq 0$, are called rational numbers.

Ex. $\frac{5}{8}, 1, \frac{-3}{7}$

Stondard form

A rational number is said to be in standard form $\left(\frac{a}{b}\right)$ if a and b are integers having no common factor other then 1, and b is positive.

Ex. Standard form of $\frac{24}{-15}$ is $\frac{-8}{5}$

Rational No. Between two Rational No.

Q. Insert 5 rational number between $\frac{3}{8}$ and $\frac{5}{6}$

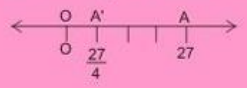
Sol. LCM of 8, 6 is 24

$\frac{3}{8}=\frac{3}{8}\times\frac{3}{3}=\frac{9}{24}, \frac{5}{6}=\frac{5}{6}\times\frac{4}{4}=\frac{20}{24}$

5 rational no. between $\frac{3}{8}$ and $\frac{5}{6}$ are $\frac{10}{24}, \frac{11}{24}, \frac{12}{24}, \frac{13}{24}, \frac{14}{24}$

Graphical Representation

Q. Represent $\frac{27}{4}$ an number line



Mark point A and divide OA into four equal part then OA' will represents $\frac{27}{4}$

Operation on rational Number

1. Addition

Ex. Add $\frac{3}{7}$ and $-\frac{2}{5}$

Sol. $\frac{3}{7}+\left(-\frac{2}{5}\right)$

$=\frac{3}{7}-\frac{2}{5}=\frac{15-14}{35}=\frac{1}{35}$

2. Subtraction

Ex. Subtract $-\frac{3}{2}$ from $\frac{1}{5}$

Sol. $\frac{1}{5}-\left(-\frac{3}{2}\right)=\frac{1}{5}+\frac{3}{2}=\frac{2+15}{10}=\frac{17}{10}$

3. Multiplication

Ex. Multiply $-\frac{3}{2}$ from $\frac{1}{5}$

Sol. $-\frac{3}{5}\times\frac{2}{7}=-\frac{6}{35}$

4. Division

Ex. Divide $-\frac{3}{2}$ from $\frac{5}{4}$

Sol. $\frac{3}{2}\div-\frac{5}{4}=\frac{3}{2}\times\frac{4}{-5}=-\frac{6}{5}$

Chart

Property / Operation	Closure	Commutative	Associative	Distributive
Addition	✓	✓	✓	✓
Subtraction	✓	×	×	×
Mutiplication	If a , b are rational then a × b is also rational	a × b = b × a	a ×(b×c) = (a×b)×c	a ×(b+c) = a×b + a×c a ×(b−c) = a×b − a×c
Division	✓	×	×	×

in above table a, b, c are rational number

Important Points

1. Multiplicative inverse of a is $\frac{1}{a}$.
2. Multiplicative identity is 1.
3. Additive identity is 0.
4. Additive inverse of a is −a.
5. Absolute value of a number is it's numerical value (value without sign).

Square and Square Roots

When a number is multiplied with it self

e.g. Square of 7 is 7× 7 = 49.

Chart

Perfect Square

A natural no. is perfect sq. if it is sq. of some natural no.

e.g. 36 is perfect sq because it is the sq. of 6

Properties of perfect square

1. No. ending with 2,3,7,8 never be a perfect square
2. No. ending with odd no of zero never be a perfect sq.
3. Diff of square of two consecutive natural no. is equal to their sum. $(n+1)^2 - n^2 = (n+1) + (n)$
4. Pythogorean triplet (x,y,z) if $z^2 = x^2 + y^2$

Square Root

Square root of no x, in that no whose square is x.

Ex. Sq. root of 64 is 8 because $8^2 = 64 \Rightarrow \sqrt{64} = 8$.

Prime factorization

Q. Find sq. root of 36.

Sol. $\sqrt{36} = \sqrt{2 \times 2 \times 3 \times 3}$

$= 2 \times 3 = 6$

2	36
2	18
3	9
3	3
	1

Long Division method.

Q. Find sq. root 58081.

		241
2	58081	
2	4	
44	180	
+4	176	
481	481	
	481	
	×	

$\sqrt{58081} = 241$

Ex. Square by diagonal method.

25^2

	2	5
2	0 4	1 0
5	1 0	2 5

0 6 2 5 $\therefore 25^2 = 625$

Square by column method

Ex. To find 25^2, take a = 2, b = 5

a^2	2ab	b^2
2^2	$2 \times 2 \times 5$	5^2
4	20	25
+2	+2	
6	22	

$25^2 = 625$

Square root of fraction

$\sqrt{a \times b} = \sqrt{a} \times \sqrt{b}$

$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$

Ex. $\sqrt{\frac{529}{841}} = \frac{\sqrt{529}}{\sqrt{841}} = \frac{23}{29}$

Ex. $\sqrt{36 \times 49} = \sqrt{36} \times \sqrt{49} = 6 \times 7 = 42$

Successive subtraction

We successive subtract odd no from the given no. till we get zero. The number of time we subtract is the square root of the no.

Ex. $\sqrt{16}$

16 - 1 = 15

15 - 3 = 2

12 - 5 = 7

7 - 7 = 0 so $\sqrt{16} = 4$

Cube & Cube roots

The cube of no. is obtained when no. is multiplied by itself 3 times. Cube of x is x ´ x ´ x

Chart

Perfect cube

A natural no. is said to be a perfect cube if it is the cube of same natural no.

Properties of perfect cube

(i) Cube of even no is even.
(ii) Cube of odd no. is odd
(iii) Cube of negative no is negative.
(iv) The sum of the cube of first n natural no. is equal to the squre of their sum.
$1^3 + 2^3 + 3^3 + ... + n^3 = (1 + 2 + 3 + ... n)^2$
(v) Cubes of the numbers ending in digits 1, 4, 5, 6 and 9 are the number ending in the same digit. Cubes of numbers ending in digit 2 ends in 8, and cube of numbers ending in digit 8 ends in 2. The cubes of the numbers ending in digits 3 and 7 ends in 7 and 3 respectively.

Cube by column method

To find 25^3, take a = 2, b = 5

a^3	$3a^2b$	$3ab^2$	b^3
2^3	$3\times 2^2\times 5$	$3\times 2\times 5^2$	5^3
8	60	150	125
+7	+16	+12	
15	76	162	

$25^3 = 15625$

Cube roots

The cube root of a no. is x that no whose cube gives x.
Ex. Cube root of 8 is 2 because
$2^3 = 8$
$\sqrt[3]{8} = 2$

Cube root by prime factorization

Ex. $\sqrt[3]{216}$

2	216
2	108
2	54
3	27
3	3
3	3

$\sqrt[3]{216} = \sqrt[3]{2\times 2\times 2\times 3\times 3\times 3}$
$= 2\times 3 = 6$

Ex. $\sqrt[3]{\frac{-512}{125}} = \frac{\sqrt[3]{-512}}{\sqrt[3]{125}}$

$\frac{\sqrt[3]{-8\times -8\times -8}}{\sqrt[3]{5\times 5\times 5}} = -\frac{8}{5}$

Cube root by pattern

We have to successively subtract 1,7,19,37,61,91 ..... from number till we get zero. The no of time we subtract give the cube root.

Ex. $\sqrt[3]{64}$

64 – 1 = 63
63 – 7 = 56
56 – 19 = 37
37 – 37 = 0
So $\sqrt[3]{64} = 4$

Exponents

$a \times a \times a = a^3$, read as a raised to power 3 where a is base, 3 is exponent

Chart

Scientific notation or standard form

Ex. speed of light = 300000000 m/s is written in standard form as = 3×10^8 m/s

No. in expanded form with the help of exponents

$123.45 = 1\times10^2 + 2\times10^1 + 3\times10^0 + 4\times10^{-1} + 5\times10^{-2}$

Laws of exponent

(i) $\left(\frac{a}{b}\right)^m \times \left(\frac{a}{b}\right)^n = \left(\frac{a}{b}\right)^{m+n}$

(ii) $\left(\frac{a}{b}\right)^m \div \left(\frac{a}{b}\right)^n = \left(\frac{a}{b}\right)^{m-n}$

(iii) $\left\{\left(\frac{a}{b}\right)^m\right\}^n = \left(\frac{a}{b}\right)^{mxn}$

(iv) $\left(\frac{a}{b}\times\frac{c}{d}\right)^n = \left(\frac{a}{b}\right)^n \times \left(\frac{c}{d}\right)^n$

(v) $\left\{\frac{(a/b)}{(c/d)}\right\}^n = \frac{(a/b)^n}{(c/d)^n}$

(vi) $\left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n$

(vii) $\left(\frac{a}{b}\right)^0 = 1$

$(-1)^{even} = 1$

$(-1)^{odd} = -1$

Q. Find x

If $25^{2x-1} = 625$

Sol. $(5^2)^{2x-1} = 5^4$

$5^{4x-2} = 5^4$

$\therefore 4x - 2 = 4$

$4x = 6$

$x = \frac{6}{4} = \frac{3}{2}$

Q. Find x

If $\left(\frac{2}{7}\right)^{-6} \times \left(\frac{14}{9}\right)^{-6} = \left(\frac{x}{y}\right)^{-6}$

Sol. $\left(\frac{2}{7}\right)^{-6} \times \left(\frac{14}{9}\right)^{-6} = \left(\frac{x}{y}\right)^{-6}$

$\left(\frac{2}{7}\times\frac{14}{9}\right)^{-6} = \left(\frac{x}{y}\right)^{-6}$

$\left(\frac{4}{9}\right)^{-6} = \left(\frac{x}{y}\right)^{-6}$

$\therefore \frac{x}{y} = \frac{4}{9}$

Q. Simplify $\frac{3^{-5}\times10^{-5}\times125}{5^{-7}\times6^{-5}}$

Sol. $\frac{3^{-5}\times10^{-5}\times125}{5^{-7}\times6^{-5}}$

$\frac{3^{-5}\times(2\times5)^{-5}\times5^3}{5^{-7}\times(2\times3)^{-5}}$

$= \frac{3^{-5}\times2^{-5}\times5^{-5}\times5^3}{5^{-7}\times3^{-5}\times2^{-5}}$

$= 2^{-5+5} \times 3^{-5+5} \times 5^{-5+3+7}$

$= 2^0 \times 3^0 \times 5^5 = 3125$

NC

Algebraic Expression

Algebraic Exp. : $9x^2 - 3xy + 5$

Term: $9x^2$, $-3yx$, 5

$9x^2$ = $9 \times x \times x$ (Factors)

$-3yx$ = $-3 \times x \times y$ (Factors)

Like & Unlike terms

Like term having same algebraic factor..

Ex. 3xy, 5xy

$3xy = 3 \times x \times y$

$5xy = 5 \times x \times y$

Unlike term having diff. algebraic factor.

Ex. $4x^2y = 4 \times x \times x \times y$

$2xy = 2 \times x \times y$.

Degree

Highest power of the variable in a term.

Ex. $3x^2 + x + 1$ deg 2

Ex. $x^1y^1z^1 + x^2 + 1$ deg 3

* if term contain more than one variable we have to add the power of all variable.

Ex. $-3x^2y$

- Numerical coefficient is -3
- Coefficient of y is $-3x^2$
- Coefficient of x^2 is -3y

Division

Ex. Divide.
$15x^3 + 12x^2 + 21x$ by $3x$

Sol. $\frac{15x^3 + 12x^2 + 21x}{3x}$

$= \frac{15x^3}{3x} + \frac{12x^2}{3x} + \frac{21x}{3x}$

$= 5x^2 + 4x + 7$

* When the remainder is zero the divisor is called a factor of the dividend..

Ex. Find the value of a if $2x - 3$ is a factor of $2x^4 - x^3 - 3x^2 - 2x + a$.

Sol. First we divide $2x^4 - x^3 - 3x^2 - 2x + a$ by $2x - 3$.

$2x - 3 \overline{)\ 2x^4 - x^3 - 3x^2 - 2x + a\ (\ x^3 + x^2 - 1}$

$2x^4 - 3x^3$ (− +)

$2x^3 - 3x^2$

$2x^3 - 3x^2$ (− +)

$-2x + a$

$-2x + 3$ (+ −)

$a - 3$

$2x - 3$ is a factor of $2x^4 - x^3 - 3x^2 - 2x + a$ if, $a - 3 = 0$ Hence, $a = 3$.

Multiplication

Ex. Multiply $(x + y)(x^2 + y^2 - xy)$

Sol. $x(x^2 + y^2 - xy) + y(x^2 + y^2 - xy)$

$x^3 + xy^2 - x^2y + y^3 - xy^2 + yx^2$

$= x^3 - y^3$

Types of Algebraic Exp

According to the No. of terms

Monomial ⟶ Single term **Ex.** 2xy

Binomial ⟶ Two terms **Ex.** x + y

Trinomial ⟶ Three terms **Ex.** x + y + z

Multinomial ⟶ More than 3 term
Ex. $x^3 + x^2 + 7x + 1$

Addition & Subtraction

We can add & subtract only the like terms.

Ex. Add 5ab , 4ab

Sol. 5ab + 4ab
= (5+4) ab = 9ab

Ex. Subtract of 7xy from 2xy

Sol. 2xy − 7xy = (2− 7) xy = − 5xy.

Algebraic Identities

An identity is an equality, which is true for all values of the variables.

Chart

Identities

1. $(a + b)^2 = a^2 + 2ab + b^2$
2. $(a - b)^2 = a^2 - 2ab + b^2$
3. $(a + b)(a - b) = a^2 - b^2$

Problem Based on Identity

Q. Expand $(2x - 5y)^2$

Sol. $(2x - 5y)^2$

$= (2x)^2 - 2(2x)(5y) + (5y)^2$

$= 4x^2 - 20xy + 25y^2$

Q. Find the value of $\frac{107^2 - 103^2}{210}$

Sol. $\frac{107^2 - 103^2}{210} = \frac{(107 + 103)(107 - 103)}{210}$

$= \frac{210 \times 4}{210} = 4$

Q. If $x + \frac{1}{x} = 3$ find $x^2 + \frac{1}{x^2}$

Sol. $x + \frac{1}{x} = 3$

$\left(x + \frac{1}{x}\right)^2 = 3^2$

$x^2 + 2x \times \frac{1}{x} + \frac{1}{x^2} = 9$

$x^2 + 2 + \frac{1}{x^2} = 9$

$x^2 + \frac{1}{x^2} = 9 - 2 = 7$

Factorization

The process of finding two or more expression whose product is the given expression is called factorization.

I. Factorization by taking out the common factor.

Ex. $8x^3y^2 - 4yx = 4xy(2x^2y - 1)$

Ex. $x(x + 3) + 2(x + 3) = (x + 3)(x + 2)$

II. Factorization by grouping.

Ex. $ax + by + ay + bx = ax + ay + bx + by$

$= a(x + y) + b(x + y) = (x + y)(a + b)$

III. Factorization the difference of two squares.

$a^2 - b^2 = (a + b)(a - b)$

Ex. $9x^2 - 16y^2 = (3x)^2 - (4y)^2$

$= (3x - 4y)(3x + 4y)$

IV. Factorization of quadratic trinomial

Ex. Factorize $x^2 + 9x + 18$

Sol. $x^2 + 9x + 18 = x^2 + 6x + 3x + 18$

$= x(x + 6) + 3(x + 6)$

$= (x + 6)(x + 3)$

Ex. Factorize $9x^2 - 22x + 8$

Sol. $9x^2 - 22x + 8 = 9x^2 - 18x - 4x + 8$

$= 9x(x - 2) - 4(x - 2)$

$= (x - 2)(9x - 4)$

LINEAR EQUATION IN ONE VARIABLE

A linear equation which has only one variable is called linear equation in one variable. For example : x + 3 = 5.

RULES FOR SOLVING

We can add or subtract same number on both side	We can multiply or divide both side by non zero number	Keep the variable on one side and constant on other side
x + 7 = 8 x + 7- 7 = 8 - 7 x = 1	3x = 6 $\frac{3x}{3} = \frac{6}{3}$ x = 2	3x + 7 = 2x + 10 3x - 2x =10 - 7 x = 3

Chart

SOLUTION

Value of variable which satisfy equation
x = 3 is solution of 3x + 1 = 10 because
3 (3) + 1=10
9 + 1 = 10
10 = 10

SOME PROBLEM

Solve: $\frac{2x+1}{3x-5} = \frac{7}{3}$

Sol. $\frac{2x+1}{3x-5} = \frac{7}{3}$

By cross Multiplication
3(2x+1) = 7 (3x-5)
3 × (2x) + 3 × (1) = 7 × (3x) - 7 × (5)
6x + 3 = 21x -35
21x – 6x = 3 +35
15x = 38
x = 38/15

Solve: $\frac{x}{2} - \frac{3x+1}{5}$

Sol. $\frac{x}{2} - \frac{3x+1}{5}$

$\frac{5(x) - 2(3x+1)}{10} = 6$

$\frac{5x - 2(3x) - 2(1)}{10} = 6$

$\frac{5x - 6x - 2}{10} = 6$

– x – 2 = 60
x = – 62

English word / Mathematical meaning

English word	Mathematical meaning
More than, exceeds older than,	+
Less than, decreased, younger than	–
Times, of, product	×
Divided by, quotient,per, for	÷
What, how many,etc.	x (or some other variable)

APPLICATION

Fraction	Money	Geometry	Age
Dr. of fraction is 5 more than Nr Nr.=x , Dr.=x +5 Fraction = $\frac{x}{x+5}$	No. of 2 Rs. Coin is 3 times the No.of 5 Rs. Coin No. of 5 Rs.Coin = x, No. of 2 Rs. Coin = 3x Total money = 5 × (x) + 2 × (3x)	Length of Rectangle is 5 less than twice the breadth. b = x l = 2x-5	My present age = x yr. After 2 yr. my age will be (x+2) yr. Before 3 yr. my age was (x-3) yr.

Percentage and its Application

Percentage means per hundred or for every hundred

$x\% = \frac{x}{100}$ Ex $25\% = \frac{25}{100} = \frac{1}{4}$

Chart

Problem on percentage

Ex. In 800 student 25% are girls, find the number of boys.

Sol. Boys percentage
= (100-25)%
= 75%
No. of boys = 75 of total student
$= \frac{75}{100} \times 800 = 600$

Ex. Ram salary is decreased by 20% and then increased by 20% find % change in his salary.

Sol. Let has salary is Rs. 100
His salary after 20% decrease
= 100 - 20% of 100
= 100 - 20 = 80
Now when his salary increased by 20% it become
= 80 + 20% of 80
= 80 +16 = 96
So Ram income is decreased by
(100 - 96) = 4%

Profit & Loss

Profit = SP - CP

$\text{Profit\%} = \frac{SP - CP}{CP} \times 100$

Loss = CP - SP

$\text{Loss\%} = \frac{CP - SP}{CP} \times 100$

Profit & Loss are Calculated on CP.

$SP = \left(\frac{100 + \text{gain\%}}{100}\right) CP$

$SP = \left(\frac{100 - \text{Loss\%}}{100}\right) CP$

Ex. A man sold an article at Rs.450 and having a loss of 10% in order to gain 20% at what price should be sold.

Sol. Initially SP = 450
loss = 10%

$SP = \left(\frac{100 - \text{loss\%}}{100}\right) CP$

$450 = \left(\frac{100 - 10}{100}\right) CP$

$CP = \frac{450 \times 100}{90} = 500$

Now CP = 500
gain = 20%

So the New $SP = \left(\frac{100 + \text{gain\%}}{100}\right) CP$

$= \left(\frac{100 + 20}{100}\right) 500$

= Rs. 600

% Increase and Decrease

$\%\ \text{Increase} = \frac{\text{increase}}{\text{original value}} \times 100$

$\%\ \text{Decrease} = \frac{\text{decrease}}{\text{original value}} \times 100$

Value added Tax

Tax is always calculated on the price at which article is sold.

$\text{SP With tax} = \left(\frac{100 + \text{tax\%}}{100}\right) SP$

Q. The cost of article in shop is Rs. 60 The sales tax was 5% find bill amount

Sol. SP = 60 , tax% = 5

$\text{SP With tax} = \left(\frac{100 + 5}{100}\right) \times 60 = 63$

Discount

Discount = MP - SP

$\text{Discount} = \frac{MP - SP}{MP} \times 100$

Discount always given on MP

$SP = \frac{100 - \text{Discount\%}}{100} \times MP$

Ex. An article marks Rs 600 and a discount of 20% is given find selling price of it.

Sol. MP = 600
Discount % = 20

$SP = \left(\frac{100 - \text{discount\%}}{100}\right) MP$

$= \left(\frac{100 - 20}{100}\right) \times 600 = \text{Rs. } 480$

Direct and Inverse Variation

Chart

Direct Variation

Two quantities are said to vary directly if the increase (or decrease) in one quantity cause the increase (or decrease) in other quantity.

Ex. Work and time
Work and No. of man
Distance and speed when time is constant.

Q. Cost 5 article is Rs. 60. Then find the cost of 7 article.

Sol. As cost is in direct variation with no. of article.

$$\frac{N_1}{N_2}=\frac{(\text{cost})_1}{(\text{cost})_2}\Rightarrow\frac{5}{7}=\frac{60}{(\text{cost})_2}\Rightarrow(\text{cost})_2=\frac{7\times60}{5}=\text{Rs. }84$$

Inverse Variation

Two quantity are said to vary inversely if the increase or decrease, in one quantity cause the decrease (or increase) in the other quantity.

Ex. No. man,No. of day to complete the work.
Speed & time when distance is constant.

Q. 10 men complete the work in 6 days. No. of days. required by 3 men to complete the same work.

Sol. As men and days are in inverse variation.

$$\therefore\frac{m_1}{m_2}=\frac{d_2}{d_1}\Rightarrow\frac{10}{3}=\frac{d_2}{6}\Rightarrow d_2=\frac{10\times6}{3}=20\text{ days.}$$

Time & Work

One man can do a piece of work in m days.
Then in one day he can do $\frac{1}{m}$ part of work.

Ex. If A complete a piece of work in 8 days, and B in 6 days. Then no. of day required to complete the work, if they work together.

Sol. A's one day work $=\frac{1}{8}$

B's one day work $=\frac{1}{6}$ Req. day $=\frac{24}{7}$ Days.

(A + B)'s one day work $=\frac{1}{8}+\frac{1}{6}=\frac{3+4}{24}=\frac{7}{24}$

Pipe & Cistern

Q. Pipe A can fill the tank in 8 hr. & Pipe B empty the full tank in 10 hr. If pipe A pipe B open together then find the time required to fill the empty tank.

Sol. In 1hr. A fill $\frac{1}{8}$ Part of tank.

In 1 hr. B empty $\frac{1}{10}$ part of tank.

If they work togther in 1 hr. the part of tank filled $=\frac{1}{8}-\frac{1}{10}$

$=\frac{5-4}{40}=\frac{1}{40}$

Req. time = 40 hr.

Time speed distance

- Speed $=\frac{\text{distance}}{\text{time}}$
- Avg. speed $=\frac{\text{total distance}}{\text{total time}}$
- km/h. $=\frac{5}{18}$ m/sec.

Q. Two trains running in the same direction at 40 km/hr and 22 km/hr completely pass one another in 1 minute. If the length of the Ist train is 125 m., then what will be the length of IInd train.

Sol. Here the speed will be taken as the difference of their speeds and the distance covered will be the sum of the lengths of the train.
Now in this case
Speed per hour = 40 - 22 = 18 km/hr.
$\therefore$ 18 km/hr. = 5 m/sec.
Let the length of second train = L m.
Distance covered = (125 + L) m
Time taken to cross each other = $\frac{\text{distance}}{\text{speed}}$

$\Rightarrow 60=\frac{L+125}{5}\Rightarrow L=175$ m.

Compound Interest

$A = P\left(1+\frac{R}{100}\right)^T$ $\quad CI = A - P$

Chart

In SI. the interest is calculated on principal, for all years, so interest is same for all years.

In CI, the interest is calculated an amount of the previous year so interest is different for all years.

When interest is calculated QLY

$A = P\left(1+\frac{R/4}{100}\right)^{T\times 4}$

When interest in calculated HLY

$A = P\left(1+\frac{R/2}{100}\right)^{T\times 2}$

Depreciation

As the time passes the value of object depreciate is called depreciation.

$A = P\left(1-\frac{R}{100}\right)^T$

When Time Period is in fraction

Ex. $T = 2\frac{3}{4}$ yr.

$A = P\left(1+\frac{R}{100}\right)^2\left(1+\frac{\frac{3}{4}\times R}{100}\right)$

If the present population of a town is P. and it is growing at R% P.A.

Then population of town after T year is $P\left(1+\frac{R}{100}\right)^T$

Then population of town before T year in $\frac{P}{\left(1+\frac{R}{100}\right)^T}$

When Rate of interest is different for diff. year

$A = P\left(1+\frac{R_1}{100}\right)^{T_1}\left(1+\frac{R_2}{100}\right)^{T_2}\ldots\ldots$

Q. In what time a sum of Rs. 1000 become Rs. 1331 at 10% P.A at CI.

Sol. A = 1331, P =1000, R = 10% P. A.

$A = P\left(1+\frac{R}{100}\right)^T$

$1331 = 1000\left(1+\frac{10}{100}\right)^T$

$\frac{1331}{1000} = \left(\frac{11}{10}\right)^T$

$\left(\frac{11}{10}\right)^3 = \left(\frac{11}{10}\right)^T \Rightarrow T = 3\text{yr.}$

Q. If CI -SI = 50 for 2 yr at R= 10% P.A. find P

Sol. $SI = \frac{PRT}{100} = \frac{P\times 10\times 2}{100} = \frac{P}{5}$

$A = P\left(1+\frac{R}{100}\right)^T = P\left(1+\frac{10}{100}\right)^2 = P\left(\frac{11}{10}\right)^2 = \frac{121}{100}P$

$CI = A - P = \frac{121P}{100} - P = \frac{21P}{100}$

CI - SI = 50

$\frac{21P}{100} - \frac{P}{5} = 50$

$\frac{P}{100} = 50 \Rightarrow P = 5000$

Q. If a money become double in 5 yr. In what time it will become 8 times.

Sol. A = 2P, T = 5yr.

$\therefore A = P\left(1+\frac{R}{100}\right)^T$

$2P = P\left(1+\frac{R}{100}\right)^5$

$\left(1+\frac{R}{100}\right) = 2^{1/5}$

A = 8P, T = ?

$A = P\left(1+\frac{R}{100}\right)^T$

$8P = P\left(1+\frac{R}{100}\right)^T$

$8 = (2^{1/5})^T$

$2^3 = 2^{T/5} \Rightarrow 3 = \frac{T}{5} \Rightarrow T = 15\text{yr.}$

* SI Means : Simple Interest
CI Means : Compound Interest

Quadrilaterals

A quadrilateral is four sided closed figure.

Chart

Property of parallelogram

1. Opposite angle are equal
2. Opposite sides are equal
3. Diagonal bisect each other
4. Diagonal divide parallelogram into two congruent triangle.

Q. If ABCD is ||^{gm} find x,y

Sol. In ||^{gm} diagonal bisect each other

$\therefore OA = OC$

$x - 5 = 7$

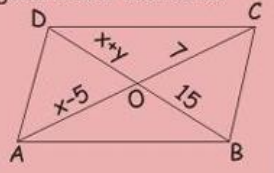
$x = 12$

and $OB = OD$

$15 = x + y$

$15 = 12 + y$

$y = 3$



Q. ABCD is ||^{gm} find all angles of ||^{gm}

Sol. $\angle C = \angle A = 50°$

$\therefore \angle C = 50°$

as AB||CD

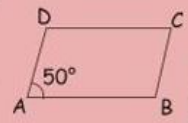
$\therefore \angle A + \angle D = 180°$

$50° + \angle D = 180°$

$\angle D = 130°$

$\angle B = \angle D = 130°$

$\therefore \angle B = 130°$



Angle sum property

sum of all interior angle of quadrilateral is 360°

Q. Angles of Quadrilateral are in the ratio 1 : 2 : 3 : 4 find angles.

Sol. Let angle are x, 2x, 3x, 4x

$x + 2x + 3x + 4x = 360$

$10x = 360$

$x = 36$

So, angle are $36, 2\times 36, 3\times 36, 4\times 36$

i.e. 36°, 72°, 108°, 144°

Polygon

Sum of interior angle = (n −2)180

Sum of exterior angle = 360°

For Regular polygon

Each Interior angle = $\frac{(n-2)180}{n}$

Each Interior angle = $\frac{360}{n}$

Types of Quadrilateral

Trapezium

Quadrilateral with one pair of opposite side is parallel.

If AD = BC, it is known as isosceles trapezium

Parallelogram

Quadrilateral in which both pair of opposite side is parallel.

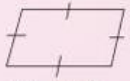
Kite

Quadrilateral in which adjacent sides equal but unequal opp. side

Rectangle

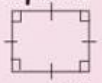
||^{gm} with
all angle 90°
*Length of diagonal are equal

Rhombus



||^{gm} with
all side equal
*diagonal bisect each other at 90°

Square



||^{gm} with
all side equal and all angle 90°
*Length of diagonal are equal
*Diagonal bisect at 90°

NCERT / VIII / Quadrilaterals

Solid Shapes

Objects that occupy space and have three dimensions [length, breadth and height or depth]

Chart

Types of Solids

(a) Prism : A solid whose base and top are identical polygons and side faces are rectangles, is called prism.

(b) Pyramid : A solid whose base is any polygon and side faces are triangles, all of which meets at the top to form a vertex is called a pyramid. Figures shows a pentagonal pyramid.

(c) Sphere : Sphere is a solid whose every point is equidistant from a fixed point. Figure shows the sphere.

Euler's formula

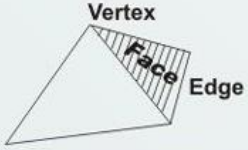
$V + F - E = 2$

Vertex ← Face → Edges

eg : For Triangular pyramid

$V = 4 ; E = 6 ; F = 4$

$\therefore\ 4 + 4 - 6 = 2$



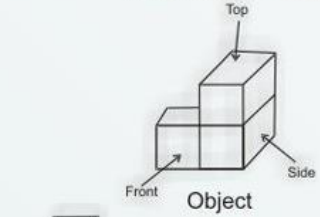
Polyhedron

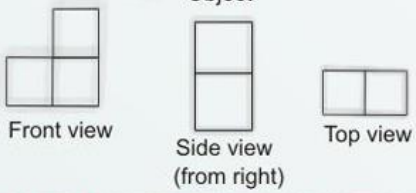
A solid which is made up of polygonal regions called faces is called a polyhedron.

(a) Convex polyhedrons : The idea of convex polyhedrons comes from convex polygon. A convex polyhedron is one whose all faces are convex polygons.

(b) Regular polyhedron : A polyhedron is regular if all its faces are regular polygons and same number of faces meet at each vertex.

View of 3-D Shapes

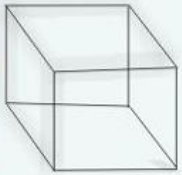


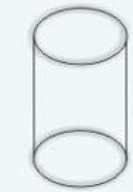


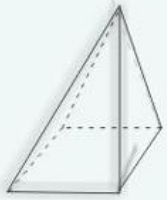
NETS

2 - D Representation of a 3- D figure

Solids







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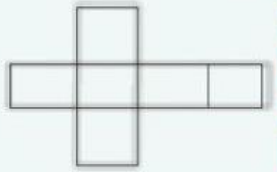
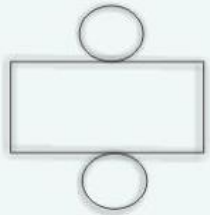
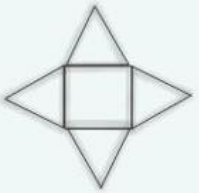






Mensuration

Basic Geometrical figures

Rectangle

$A = \ell \times b$, $P = 2(\ell + b)$

Square

Area $= a^2$, $P = 4a$

Parallelogram

Area = Base ´ height

Triangle

Area $= \frac{1}{2} \times$ base $\times$ Height

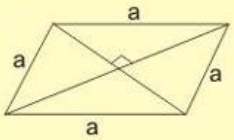
Eq. $\Delta = \frac{\sqrt{3}}{4}\text{side}^2$

Circle

Area $= \pi r^2$

Circumference $= 2\pi r$

Rhombus

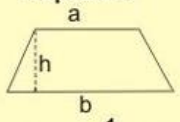


Area $= \frac{1}{2} d_1 d_2$

Perimeter $= 4a$

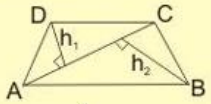
$a^2 = \frac{d_1^2}{4} + \frac{d_2^2}{4}$

Trapezium



Area $= \frac{1}{2}(a+b)h$

Quadrilateral



Area $= \frac{1}{2}(AC)(h_1+h_2)$

Chart

Plane Figures

Figure having two dimensions are called plane figures.

Ex. Square, Rectangle, Circle, Triangle etc.

Solid Figures

Figure having three dimensions are called solid figures.

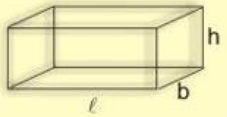
Ex. Cube, Cuboid, Cylinder, etc.

Cuboid

T.S.A. $= 2(\ell b + bh + h\ell)$

L.S.A. $= 2h(\ell + b)$

$V = \ell bh$

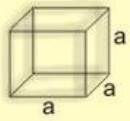


Cube

L.S.A. $= 4a^2$

T.S.A. $= 6a^2$

$V = a^3$

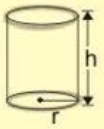


Cylinder

C.S.A. $= 2\pi rh$

T.S.A. $= 2\pi r\,(h+r)$

$V = \pi r^2 h$



Problem of Plane Figures

Q. Find the area of trapezium

Sol. Draw CE ||AD

$\therefore$ AECD is ||gm

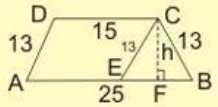
EC = AD = 13

AE = DC = 15

$\therefore$ BE = AB – AE

= 25 – 15

= 10



$EF = FB = \frac{1}{2}EB = 5$

In ΔCFB

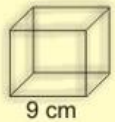
$h = \sqrt{13^2 - 5^2} = 12$

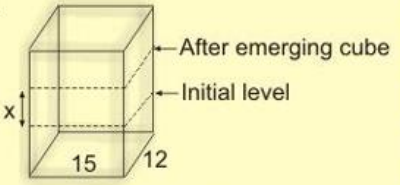
ar trap. $ABCD = \frac{1}{2}(25 + 15)12 = 240$ sq. unit

Problem of solid Figures

Q. A cube of 9 cm edge is immersed completely in a rectangular vessel contaning water. If the dimension of the base are 15 cm and 12 cm find rise in water level in the vessel.

Sol.





Volume of cube = Volume of cuboid of height x

$9 \times 9 \times 9 = 15 \times 20 \times x$

$x = \frac{9 \times 9 \times 9}{15 \times 20} = 2.43$ cm

Frequency distribution table

Ex. In a survey of 20 families, each family is found to have the following number of children :
1, 2, 2, 3, 2, 3, 3, 4, 1, 1, 4, 4, 2, 2, 3, 1, 5, 1, 1, 2
Make a frequency distribution table.

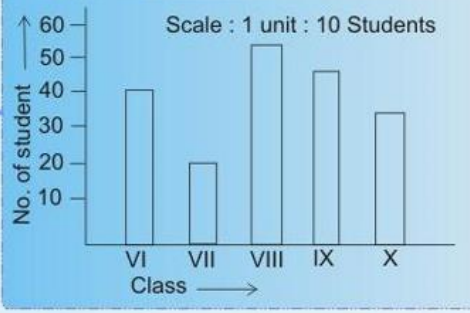
Sol. Arrange in ascending order.
1, 1, 1, 1, 1, 1, 2, 2, 2, 2, 2, 2, 3, 3, 3, 3, 4, 4, 4, 5.

Number of children	Tally Marks	No. of families
1	𝍸 I	6
2	𝍸 I	6
3	IIII	4
4	III	3
5	I	1
	Total	20

Bar-Chart

Draw the bar graph for the given table.

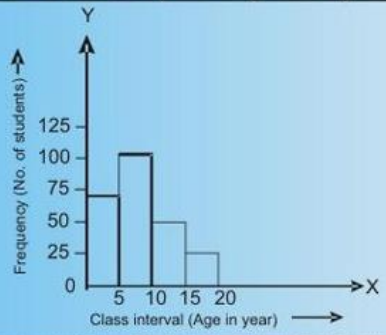
Class	VI	VII	VIII	IX	X
No. of Students	40	20	55	50	35



Histogram

Draw a histogram of the following frequency distribution.

Class (Age in years)	0 – 5	5 – 10	10 –1 5	15 – 20
No. of students	72	103	50	25



Group frequency distribution table

Ex. The marks obtained by 40 students of class VIII in an examination are given below :
18, 8, 12, 6, 8, 16, 12, 5, 23, 2, 16, 23, 2, 10, 12, 9, 7, 6, 5, 3, 5, 13, 21, 13, 15, 20, 24, 1, 7, 21, 16, 13, 18, 23, 7, 3, 18, 17, 16, 4.
Present the data in the form of a frequency distribution using the same class size, one such class being
15 –20 (where 20 is not included).

Sol. The frequency distribution is as given below :

Marks	Tally marks	Frequency
0-5	𝍸 I	6
5-10	𝍸 𝍸 I	11
10-15	𝍸 II	7
15-20	𝍸 IIII	9
20-25	𝍸 II	7
	Total	40

For class 10-15, 10 is lower limit,15 is upper limit

$$\text{Class mark} = \frac{UL + LL}{2} = \frac{10 + 15}{2} = 12.5$$

Class size = UL – LL = 15 10 = 5

Statistics

It is defined as the science of collection, presentation, analysis and interpretation of numerical data.

Chart

Some definitions

Data is defined as information in numerical facts.

Range Is defined as the difference between maximum and minimum value of observation.

Frequency is defined as the number of times an observation occur.

Pie-chart

$$\text{Central angle for a variable} = \frac{\text{Frequency of the variable}}{\text{Total of frequencies}} \times 360°$$

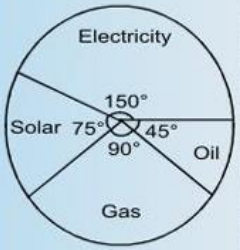
The main source of energy is used by each house in a street is listed below :

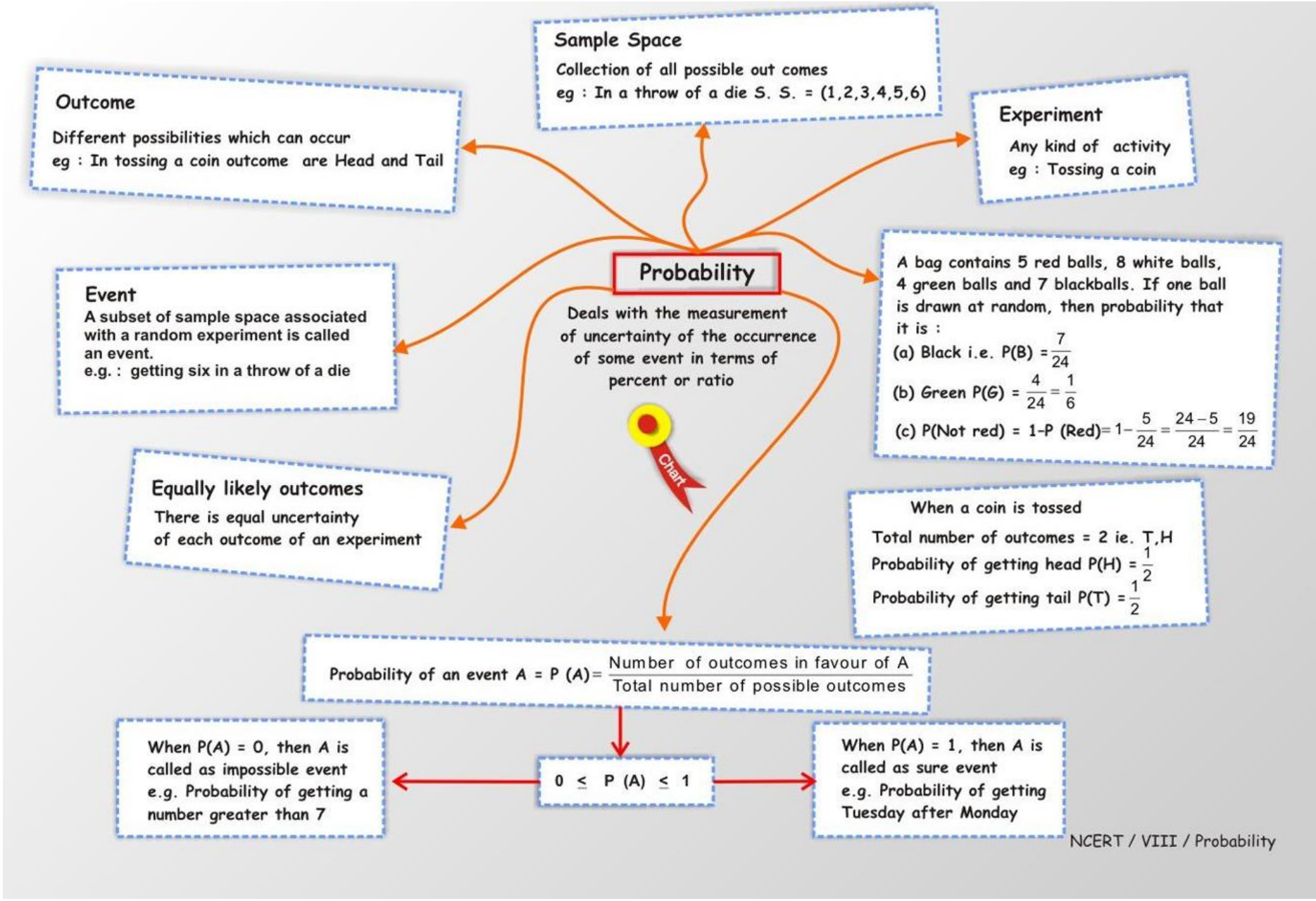
Source of Energy	Electricity	Solar	Gas	Oil
No. of houses	20	10	12	6

Represent the above data by a pie chart

Sol.

Source of energy	Number of houses	Central angle
Electricity	20	$\frac{20}{48} \times 360 = 150$
Solar	10	$\frac{10}{48} \times 360 = 75$
Gas	12	$\frac{12}{48} \times 360 = 90$
Oil	6	$\frac{6}{48} \times 360 = 45$




Sample Space
Collection of all possible out comes
eg : In a throw of a die S. S. = (1,2,3,4,5,6)
Outcome
Different possibilities which can occur
eg : In tossing a coin outcome are Head and Tail
Experiment
Any kind of activity
eg : Tossing a coin
Probability
Deals with the measurement of uncertainty of the occurrence of some event in terms of percent or ratio
Event
A subset of sample space associated with a random experiment is called an event.
e.g. : getting six in a throw of a die
A bag contains 5 red balls, 8 white balls, 4 green balls and 7 blackballs. If one ball is drawn at random, then probability that it is :
(a) Black i.e. P(B) = 7/24
(b) Green P(G) = 4/24 = 1/6
(c) P(Not red) = 1-P (Red) = 1 - 5/24 = (24-5)/24 = 19/24
Chart
Equally likely outcomes
There is equal uncertainty of each outcome of an experiment
When a coin is tossed
Total number of outcomes = 2 ie. T,H
Probability of getting head P(H) = 1/2
Probability of getting tail P(T) = 1/2
Probability of an event A = P (A) = Number of outcomes in favour of A / Total number of possible outcomes
When P(A) = 0, then A is called as impossible event
e.g. Probability of getting a number greater than 7
0 ≤ P (A) ≤ 1
When P(A) = 1, then A is called as sure event
e.g. Probability of getting Tuesday after Monday

SANSKRIT

<u>ग्रीष्म कालीन अवकाश गृह कार्य</u>

<u>कक्षा 8(आठवीं) संस्कृत</u>

1) संस्कृत की संख्यावाचक शब्द 1 से 50 तक लिखकर याद करे।

2) अपने पाठ्य पुस्तक से कोई भी पाँच श्लोक लिखकर उनका अर्थ भी साथ लिखे ।

3) कोई भी तीन क्रिया धातु के वर्तमान काल, भुतकाल और भविष्य काल के शब्दरूप लिखे और याद करे

HINDI

<u>ग्रीष्म कालीन अवकाश गृह कार्य</u>

<u>कक्षा 8(आठवीं) हिंदी</u>

1) स्वरचित एक कविता और कहानी / निबंध लिखिए।

2) 'बस की यात्रा' पाठ्य पुस्तक के प्रश्न-उत्तरो को याद करे।

3) लाख की चूड़ियाँ' और 'बस की यात्रा पाठ मे आए मुहावरों की सूची बनाए और उनका अर्थ भी साथ मे लिखिए ।

4) पांच पृष्ठ श्रुतलेख लिखें । (five page handwriting)