

CLASS- VIII

TERM 1

CHAPTER 1

TOPIC RATIONAL NUMBERS.

- P.K Testing :-** (i) what are natural numbers.
(ii) Define whole numbers.
(iii) what are integers.

Objectives:-

After this Ch. Students will come to know about

- (i) Rational numbers.
- (ii) Properties of rational numbers.
- (iii) Representation of rational numbers on number line etc.

Vocabulary used: - Whole no. , Natural, Integer, Closure additive identity, additive inverse etc.

Important spellings :- Commutative
Associative
Distributive
Closure
Additive inverse etc

Aids/ Innovative methods:-

First of all teacher will explain. The Properties of rational numbers with the help of smart class. After this she will put a crossword to make the concept more clear.

CROSSWORD PUZZIF

Across

- (i) Property that states $a \times (b+c) = a \times b + a \times c$ for rational no. a,b,c.
- (ii) Property of rational no. which states that for two r.n. a and b $a+b$, $a.b$ or $a-b$ is a rational number is
- (iii) Zero is the additive _____ of rational numbers.

Down:-

- (iv) Product of two rational numbers with same sign is always _____.
- (v) The r.n $-\frac{3}{5}$ and $\frac{1}{3}$ lie on _____ side of zero on number line.

(vi) $\frac{4}{9}$ is the multiplicative _____.

Procedure:- Teacher will explain the following definitions.

Natural numbers:- The counting numbers 1,2,3 are called Natural numbers.

Whole numbers:- Natural numbers along with zero are called whole numbers.
0,1,2,3...

Integers:- The Whole numbers together with negative of counting numbers are known as integers.

-4,-3,-2,-1,0,1,2,3,4,.....

Multiplicative Inverse :- If the product of two r.n is 1 then they are called multiplicative inverse of each other.

$$\frac{3}{5} \times \frac{5}{3} = 1$$

Rational numbers :- A number of the form $\frac{a}{b}$ where a and b are integers. To except b may not be zero.

After this teacher will explain all the properties of rational numbers. i.e closure, commutative Associative, distributive etc. and encourage, the students to write them colorfully in note book or by using colored sheets.

The concept of additive identity multiplicative inverse, reciprocal will be explained. With the help. Of sums given in the book method to represent given r.n on numbers line will also be explained.

Participation of students

To check the concept teacher will give them few r.n and tell them to apply all properties on them. Hints for solutions of text book sums will be given and teacher will encourage the students to solve them.

Recapitulation:-

- (i) Draw a number line and show $-\frac{3}{5}$ and $\frac{2}{5}$ on it.
- (ii) Find five rational numbers between 2 and 3.
- (iii) Verify the property
 $X \times (y+Z) = X \times Y + X \times Z$ by taking.

$$X = -\frac{3}{2}, Y = -\frac{1}{4} \text{ and } Z = -\frac{1}{2}$$

(iv) Simplify and name the prop used

$$-\frac{7}{12} \times \frac{6}{13} + -\frac{7}{12} \times \frac{9}{26}$$

Assignment: - Students will be asked to complete w-sheet form w-sheet book and one matching w-sheet will be given.

Match the followings

Column -I (property)

- (i) Distributive Property
- (ii) Commutative under multiplication
- (iii) Multiplicative Identity
- (iv) Additive
- (v) Commutative under addition.

Column – II (example)

- (a) $-\frac{5}{9} \times 12 = 12 \times (-\frac{5}{9})$
- (b) $-\frac{1}{9} \times 1 = 1 \times (-\frac{1}{9}) = -\frac{1}{9}$
- (c) $4 + \frac{5}{9} = \frac{5}{9} + 4$
- (d) $-\frac{3}{8} + 0 = 0 + (-\frac{3}{8}) = -\frac{3}{8}$
- (e) $\frac{6}{11} \times (\frac{5}{9} - \frac{3}{14}) = \frac{6}{11} \times \frac{5}{9} - \frac{6}{11} \times \frac{3}{14}$

CHAPTER 2

TOPIC LINEAR EQUATIONS IN ONE VARIABLE

P.K Testing :- (i) Define an equation.

An equation is a statement of equality containing an unknown quantity.

(ii) what do you know about solution of an equation.

Any Value of the unknown which makes the L.H.S. and RHS equal is called the solution of the equation.

(iii) What type of changes occur when we transpose +, -, x, ÷ Signs to other side of the equation.

+ will become -

-will become +

X will become ÷

÷ will become X

Objectives:-

After this ch. Students will come to know about the method to solve various types linear equations and their applications in daily life.

Activity

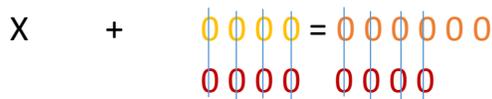
To explain the method to solve linear equation teacher will explain an activity.

Consider the equation $x + 4 = 6$

$$X + 4 = 6$$


$$X + 4 = 6$$

To find x, subtract 4 circles from both sides.



$$X + 0 = 2$$

$$X = 2$$

Procedure :-

The sign of equality in the equation indicates that the two sides are balanced. To solve the equation we perform same mathematical operation on the L.H.S and R.H.S of the equality.

Eg. $X + 3 = 7$
Sub 3 from both sides.
 $X + 3 - 3 = 7 - 3$
 $X = 4$

If we add subtract, multiply or divide by same number both sides of equation, The balance is not disturbed. And the value of both sides remains same hints for solutions of text book ex will be given.

Participation of students:-

Activity (Puzzle)

Form a linear equation

- (i) Select a month from the calendar say January.
- (ii) Think of 3x3 square and find the sum of all numbers.
- (iii) Generalize and form an equation using the variable x to get the sum of the number in the square where x is the smallest number of that square.

January

S	M	T	W	Th.	F	SA
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Sum of all no's in box =90

Ans. $X + 88 = 90$

Recapitulation:-

- (i) Is $Px^2 - Qy = 1$ a linear equation ?
- (ii) If x is an even number then which is the next odd number.
- (iii) Find x if $\frac{x}{3} + 1 = \frac{7}{15}$
- (iv) Divide 40 into two parts such that $(\frac{1}{4})^{\text{th}}$ of one part is equal to $(\frac{3}{8})^{\text{th}}$ of the other etc.

After revision c – test will be taken.

CHAPTER 3

Topic Understanding Quadrilateral

Previous knowledge:-Teacher will ask about Triangles Quadrilaterals, Pentagon, Hexagon, Heptagon, octagon, nonagon, Decagon, polygon, convex polygon and concave polygon.

OBJECTIVES

The students will be exposed to the concepts related to

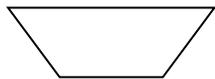
- ❖ Classification of polygons
- ❖ Interior/ exterior angle sum property of polygons
- ❖ Various parallelograms and their properties

Vocabulary used: - Polygons, Concave Polygons, Convex Polygons.

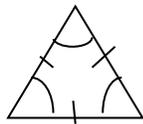
Aids/Methods Used :- Blackboard ,Smart boards ,Charts and three dimensional figures.

Procedures :- Teacher will explain closed figures, open curve ,closed curve, Polygon.

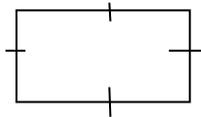
Polygon:- A simple closed curve made up of only line segments is called polygon.



Regular Polygons:- A regular polygon is both equilateral and equiangular e.g. a square has sides of equal length and angles of equal measure.

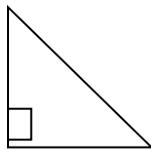


Equilateral Triangle

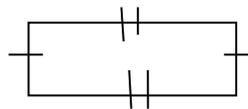


Square

Irregular Polygons:- Irregular polygon have not equal Sides and equal angles e.g.



Right angled Triangle



Rectangle

Angles sum property: - The sum of measures of the three angles of triangles is 180°

- Sum of the measures of exterior angles of any polygon is 360°

$$\text{Exterior angle} = \frac{360^\circ}{\text{no. of sides}}$$

Properties of Parallelogram:-

- The opposite angles of a parallelogram are equal measure.
- The adjacent angles in a parallelogram are supplementary.
- The diagonals of a parallelogram bisect each other(at the point of intersection of course).

Properties of Rhombus :-

- All the properties of a parallelogram.
- Diagonal are perpendicular to each other.

Properties of Rectangle :-

- All the properties of a parallelogram.
- Each of the angle is a right angle diagonals are equal.

Properties of Square :-

- All the properties of a parallelogram, rhombus and a rectangle.

Properties of kite :- A quadrilateral with exactly two pairs of equal consecutive sides.

- The diagonals are perpendicular to one another.
- One of the diagonals bisects the other.

Participation of Students :- students will be asked like

- 1) What is regular polygon?
- 2) Equiangular and Equilateral figures.
- 3) What are the properties of rhombus?
- 4) Tell the properties of Rectangle, square and kite
- 5) How to find Exterior angle if No. of sides are 9.

LEARNIG OUTCOMES

The students will understand

- ❖ Classification of polygons
- ❖ Interior/ exterior angle sum property of polygons
- ❖ Various parallelogram and their properties
- ❖ Problem solving

Recapitulation:- Teacher will summarize by Talking about properties of parallelogram, square, rhombus, kite, polygon, irregular polygon ,convex polygon and concave polygon .

Activity:- Sum of all angles of Quadrilateral

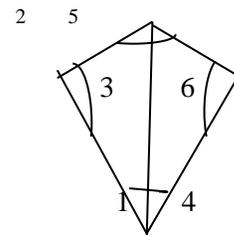
1) Take a quadrilateral say ABCD divide it into two triangles by drawing a diagonal, you get six angles 1,2,3,4,5,6

Use angle sum property of a triangle and square has the sum of me

asures of $\angle A, \angle B, \angle C$ and $\angle D$

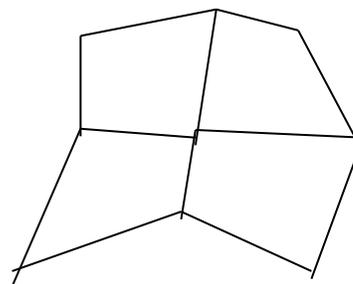
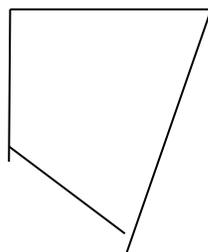
And amounts to $180^0 + 180^0 = 360^0$

In Fig. ABC is one triangle and ACD is the second triangle



Activity :-

Take any four congruent card board copies of any quadrilateral ABCD with angles as shown in fig(a) arrange the copies as shown in figure (b) where angles $\angle 1, \angle 2, \angle 3$ and $\angle 4$ is 360^0 so sum of the measures of the four angles of a quadrilateral is 360^0 .



Art Integration:- Videos on you tube .Edutopia

Assessment:

- ❖ Find the measure of an angle of a regular polygon of 20 sides.
 - ❖ Find the 4th angle of the quadrilateral if sum of three angles equal twice the fourth angle.
 - ❖ If the diagonals of a quadrilateral bisect at right angles then the quadrilateral is
- (1) Rhombus (2) Parallelogram (3) Rectangle

RESOURCES

Text Book NCERT Of Mathematics for Class VIII

Reference Book [Cordova]

CHAPTER 4

Topic :- Square and Square Roots

Previous knowledge

Students will be asked:

- 1) What is square of 10?
- 2) What is square of 12?
- 3) What is the meaning of triplet?

OBJECTIVES

Skill of knowing square number by observing unit digit

Finding square of a number by different methods

Finding square root of a number by estimation method

Applying Knowledge of square roots

Vocabulary Used :- Pythagoras, Triplet Factorisation

Procedure :- Teachers will introduce the concept of square root

- Any number which ends with 2,3,7,8 is never a perfect square .
- Any number ends with odd number of zero is never a perfect square.
- Rule to write numbers between two square numbers will be explained.

Exe. 6.1 will be discussed in the class

Pythagorus Triplet :- sides of any right angled triangle can be written in the form of $m^2-1, 2m, m^2+1$ where m is +ve integer

Square Root by Prime Factorisation Method:-

Prime factorisation method will be explained for example

Find the square root of 400

Square root by Division method :-

Find the square root of 1296

Assignment will be given

Worksheet will be done

Recapitulation:-

Students will be asked some questions

- What will be the unit digit of the square root of
a)81 b) 273 c) 799 d) 1234
- * Is 1057 perfect square. Give reason
- * Is 64000 perfect square. Give reason.

Learning Outcomes

The students will

Know about square numbers and finds square of numbers

Understand the relationship of square number and its square root

Understand various methods to find square root

Activity :- Develop a method to finding Pythagorean triplets without using general formula.

We divide the attempt in two parts

- a) for odd numbers as first numbers in the triplet
- b) for even numbers as first number in the triplet

A) consider the Pythagorean triplet

- a)3 b) 4 c)5

analyse the relationship between the number in columns (a),(b) and (c)

$$3^2=4+5$$

And 4 is 1 less than 5

Square the first number (a) and express it as sum of two numbers whose difference is 1 thus
(a) 5 (b) 12 (c) 13

$$5^2 = 25$$

$$25 = 13 + 12$$

And $13 - 12 = 1$

(B) consider the triplet

(a) 4 (b) 3 (c) 5

Let us analyse that $\frac{a^2}{2} = b + c, |b - c| = 2$

$$\frac{4^2}{2} = 8 = 5 + 3$$

$$5 - 3 = 2$$

e.g. (a) 6 (b) 8 (c) 10

$$\frac{6^2}{2} = 18 = 10 + 8$$

$$10 - 8 = 2$$

ASSESSMENT

By prime factorisation method find square root of 5184

Find square root of 5.183 upto 2 decimal place

The area of a square is 595.36 square cm .Find the length of its side.

Find the smallest number by which 3872 be divided to get a perfect square.

RESOURCES

Text Book NCERT Of Mathematics for Class VIII

Reference Book [Cordova]

CHAPTER 5

Comparing Quantities

Learning Objectives

Students will be able to

- Understanding the concept of ratio, percentage and money transactions.
- Remembering and forming the formulae.
- Comparing and analyzing the cases.
- Computing and accurately and timely.
- Applying the concepts to day to day bases life activities.

PK Testing

- What is the percentage of 5 oranges out of 25 fruits?
- A shirt is marked at Rs.850 and sold for Rs.765. Find the profit or loss percent.

Innovative Methods:

Group work, Dummy Market, Money Transaction game.

Procedure:

The following terms will be explained to students:

1. **Discount:** Discount is reduction given on marked price of an article.
2. **Marked Price:** The Price marked on an article is known as marked price.
3. **Selling Price:** The price at which article is sold.
4. **Profit and Loss:** When selling price is more than cost price then there is profit and if cost price is more than selling price then there is loss.
5. **Overhead Expenses:** Additional Expenses made after buying an article are included in CP and are known as Overhead Expenses.
6. **Sale Tax:** The GST charged by the government in the sale of an item. It is collected by shopkeepers from customers.
7. **Compound Interest:** Interest is extra money paid by institutions like banks or Post office on money deposited with them. Interest is also Paid by people when they borrow money.

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

Where A is Amount, P is Principal, R is Rate of Interest and N is Number of years.

Class Activity 1:

Teacher will explain the difference between ratio and percentage through the following activity:

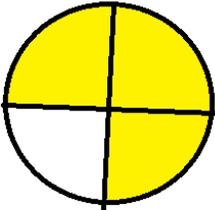
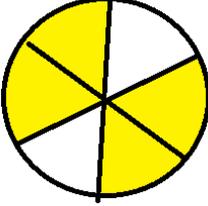
Ratio and Percentage. Are they related to each other?

Teacher will show various same sized shapes whose different parts are shaded.

Students will be asked to convert shaded parts of each circle in fraction.

Students will be asked to convert these fractions in percent and compare the shaded parts.

Convert to percent				Convert from percent			
Fraction	$\frac{1}{2}$	Multiply by 100	50 %	25 %	Divide by 100	$\frac{1}{4}$	Fraction
Ratio	1:2			1:4		Ratio	
Decimal	0.5			0.25		Decimal	

Shaded parts of circles		
Fraction	$\frac{3}{4}$	$\frac{4}{6}$
In percent	$\frac{3}{4} \times 100 = 75\%$	$\frac{4}{6} \times 100 = 66.66\%$
Comparison	Larger	

Class Activity 2:

Bank and Customer Activity

Teacher will organize an activity which involves purchasing, depositing and borrowing money, cases of simple and compound interest.

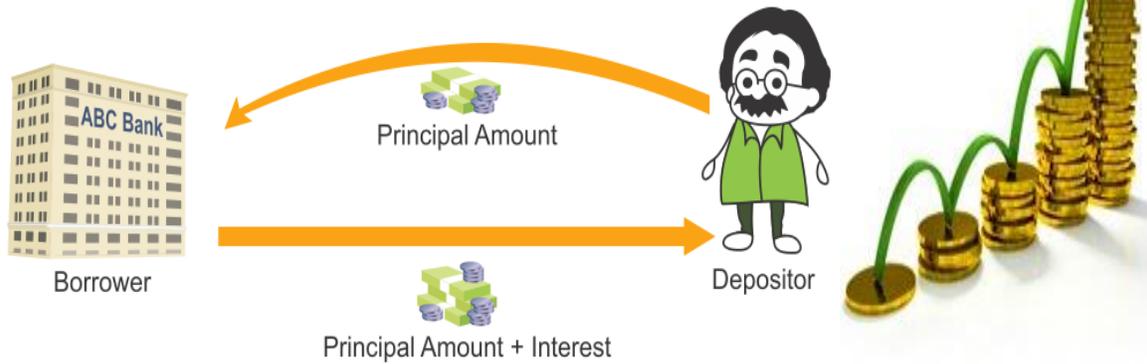
Teacher will involve all the students using dummy currencies to explain Profit, Loss, Simple Interest and Compound Interest starting with Rs 100 or Rs 1000

Interest calculated on the original principal throughout the holding period.

Simple Interest =

Interest calculated on the original principal throughout the holding period.

$$\text{Simple Interest} = \frac{\text{Principal} \times \text{Time} \times \text{Rate of Interest}}{100} = \frac{\text{PTR}}{100}$$



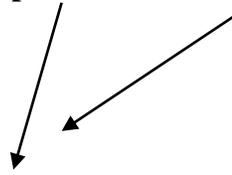
Comparison of Simple Interest and Compound Interest for the same Principal may be discussed thoroughly .

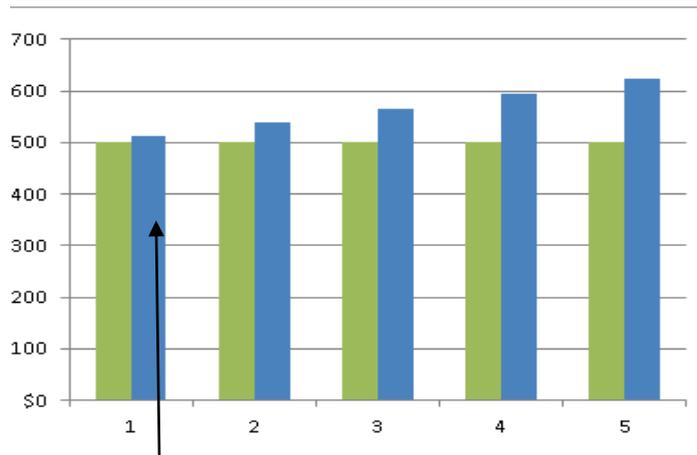
Comparison @ 10% per annum for principal of Rs 100

Simple Interest			Compound Interest		
Year	Principal	Interest	Year	Principal	Interest
1	100	10	1	100	10
2	100	10	2	110	11
3	100	10	3	121	12.1
4	100	10	4	133.1	13.3
5	100	10	5	146.4	14.6
6	100	10	6	161.1	16.1
7	100	10	7	177.2	17.7
8	100	10	8	194.9	19.5
Total	100	80	Total	100	114.5

It can be shown also by Graphical method.

Simple Interest **Compound Interest**





Suggested Activities:

1. Teacher will organize classroom activity to convert students' marks in different subjects into percentage and compare performance in ratio and percentage.
2. Teacher will organize dummy market.

Recapitulation:

1. Fill the final amount you will get in each case using simple interest.

Start Amount (Rs)	Interest	Years	Final Amount
360	10%	5	
420	12%	6	
500	15%	9	
680	11%	10	
1200	5%	12	
2400	4%	7	
3500	2.5%	6	
3600	3.5%	5	
4800	1.2	4	

2. Find the ratio of the following
 - (a) 25 km to 100 m
 - (b) 5.6 kg to 280 g
4. If 25% of x is 50, then find x
5. A shop keeper allows a discount of 15% on the written price. How much above the cost price must he mark his goods to make a profit of 15%.
6. Find the amount of Rs 2400 after 3 years, when the interest is compounded annually at the rate of 20% per annum. Also find the amount if this would be the case of simple interest.
7. By reducing the SP of an article by Rs. 50, a gain of 5% turns into a loss of 5%. Find the original SP of the article.

8. A dealer bought two tables for Rs. 3120. He sold one at a loss of 15% and other at a profit of 36%. If the selling price of each table set is same, find the cost price of each table.

Learning Outcomes

Student will be able to:

- Derive and understand the formulae.
- Link with real life money transaction, comparing, savings and percentage.
- Applies the concepts to solve the problems of different spheres using the concepts in own ways.
- Finds problem and solves for on which simple and compound interest applies.

Resources

Mathematic textbook for class VIII by NCERT.

Assessment

1. 70% of 32 students are good in science. How many are not good in science?
2. A table marked at Rs 16,000 is available for Rs 15,500. Find the discount given and the discount per cent.
3. Find C I paid when a sum of Rs 12,000 is invested for 1 year and 3 months at 8% per annum compounded annually.
4. Rakesh goes to a departmental store and purchases the following articles:
 - a. biscuits and bakery products costing Rs. 50, VAT @ 5%.
 - b. medicine costing Rs. 90, VAT @ 10%.
 - c. clothes costing Rs. 400, VAT @ 1% and
 - d. cosmetics costing Rs. 150, VAT @ 10%.

Calculate the total amount to be paid by Rakesh to the store.

CHAPTER 6

TOPIC – DATA HANDLING

P.K TESTING – 1. What do you mean by data ?

2. Do you know about raw data and original data ?

3. What do you mean by tally marks ?

4. What is frequency ?

Vocabulary used – Group , frequency , ascending , uncertain , list , sort , descending .

Important Spellings - Tally marks , Frequency , dice , probability etc .

ART INTEGRATION

<http://www.tranum.org>similar>

AIDS/Resources - Smart board , charts , Blackboard , By giving task of collecting data on particular topic etc.

Procedure – Teacher will introduce the topic with the help of definitions.

RAW DATA – Data mostly available to us in an unorganized form is called raw data .

FREQUENCY – The number of times that particular entry occurs .

PIE CHART OR CIRCLE GRAPH – A circle graph shows the relationship between a whole and its part .

PROBABILITY – Probability is the science of uncertainty .

$$\text{Probability} = \frac{\text{NO. of Favourable outcomes}}{\text{Total NO. of outcomes}}$$

EVENT - One or more outcomes of an experiment make an event .

RANDOM EXPERIMENT - A random experiment is one whose outcome cannot be predicted exactly in advance.

INNOVATIVE PEDAGOGY - LINK - <http://www.topmarks.co.uk>data>

Teacher will also give them an activity . For e.g

Do a survey to find out which type of Sandwich (Ham , cheese , egg , chicken) is the most popular in your class .

- (a) Which type do you think will be the most popular sandwich in your class ?
- (b) What is the best way to collect the data ?
- (c) Use this tally chart to record your data .

TYPE OF SANDWICH	NO. OF CHILDREN	TOTAL
HAM		
EGG		
CHICKEN		
CHEESE		

Now draw a circle graph or pie chart on the next sheet.

CO-SCHOLASTIC ACTIVITIES –

Participation of students – Teacher will give them a task to put chits of numbers 1 to 20 in a box .Take out two chits at a time and write there sum .

- (a) Prime number or a composite , if composite than multiple of which number ?
- (b) Probability of getting two number prime .
- (c) Probability of getting two numbers multiple of 5 .

RECAPTULATION- 1. What is the total angle of a circle ?

2. What do you mean by uncertainty ?
3. What is probability of a even number when a dice is thrown ?

ASSIGNMENT- For more practice teachers will tell the students to complete assignment given in the workbook .

ASSESMENT- 1. A pie chart is used to compare ?

2. In the class interval of 20-30 the lower limit is _____ ?

3. When the number of observations is large , the observations are usually organized in groups of equal width called _____ ?

4. The top speeds of thirty different land animals have been organized into a frequency table . Draw a histogram.

MAXIMUN SPEED (KM/H)	FREQUENCY
10-20	5
20-30	5
30-40	10
40-50	8
50-60	0
60-70	2

LEARNING OUTCOME – 1. Draw and interpet scale diagrams .

2. Extract information from tables .

3. Draw , interpret and compare pie charts , bar charts and frequency diagrams .

4. Use and interpret coordinates .

5. Plot points and draw graphs using suitable axes and scales .

Chapter 7

Topic :- Practical Geometry

Previous Knowledge :- Teacher will ask about quadrilateral triangles . For example: how many triangles make a quadrilateral

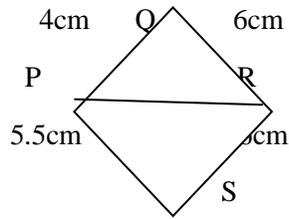
Objectives.

- ❖ Students will be introduced to the concepts related to
- ❖ Construction from line to quadrilateral
- ❖ Relationship between vertices and edges
- ❖ Analysing and applying appropriate construction criterion

Vocabulary used :- Diagonal, Adjacent sides, Angles sum property.

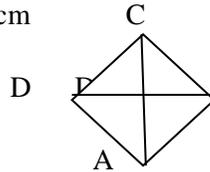
Aids/ methods used :- Blackboard, smart board, charts

Procedures :- When the length of four sides of quadrilateral are given e.g. construct a quadrilateral PQRS when $PQ=4\text{cm}$, $QR=6\text{cm}$, $RS=5.5\text{cm}$ and $PR=7\text{cm}$.



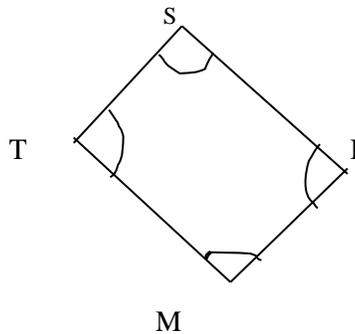
- **When two diagonals and their sides are given**

e.g. Construct a quadrilateral ABCD given that $BC=4.5\text{cm}$, $AD=5.5\text{cm}$, $CD=5\text{cm}$ and diagonal $AC=5.5\text{cm}$ and diagonal $BD=7\text{cm}$



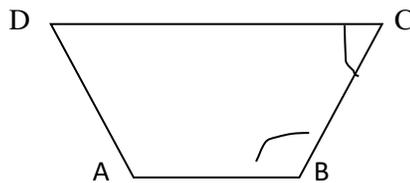
When two adjacent sides and three angles are known

e.g. Construct a quadrilateral MIST where $MI=3.5\text{cm}$, $IS=6.5\text{cm}$, $\angle M = 75^\circ$, $\angle I = 105^\circ$, $\angle S = 120^\circ$



When two sides and two angles are given

Construct quadrilateral ABCD where $AB=4\text{cm}$, $BC=5\text{cm}$, $CD=6.5\text{cm}$ and $\angle B = 105^\circ$ and $\angle C = 80^\circ$



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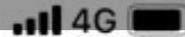
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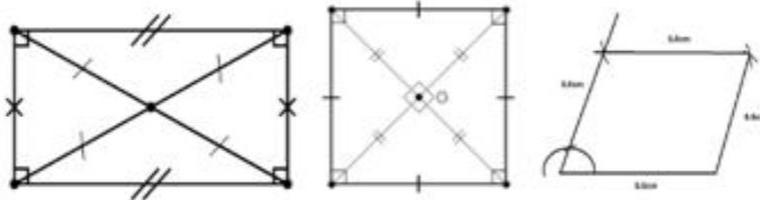


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Sample Activity 2

Special quadrilaterals like Rectangle, Square, Parallelogram, Rhombus can be constructed with less mentioned (actually fulfilling criterion) criterion through group activity.

Teacher may go with both giving complete and less mentioned criteria in parallel groups and observe the task.



Suggested Activities

- (i) Teacher may show math lab objects and tools to explain criteria.
- (ii) Students may be asked to submit project and models made with sticks to form quadrilaterals following the criteria.
- (iii) Students may be asked to perform by paper folding activity to justify the constructions.

Learning Assessment

What are the different criteria to construct quadrilaterals?

- (1) Is it possible to construct a quadrilateral with any three sides and two diagonals?
- (2) Is it possible to construct a quadrilateral with any three angles and any two sides?
- (3) If you want to construct a square, how many measures do you need? Take your own measurement and construct a square.
- (4) How many minimum measures do you need to construct-
 - a) Parallelogram
 - b) Rhombus
 - c) Rectangle
- (5) Construct rhombus for each of the following given measurements-

Learning Outcomes

The students will be able to

Extends construction from basic to quadrilaterals

Identify different parts and types of quadrilaterals

Apply suitable construction criteria

Analyse and find own way of constructing special quadrilateral

Participation of Students :-

Teacher will ask if three angles of quadrilateral

are given how to find fourth angle.

RESOURCES

Text Book NCERT of Mathematics for class VIII

Reference Book [Cordova]

CHAPTER 8

TOPIC Exponents and Powers

Objectives:

Students will be able to:

- Understanding power notation as exponential form
- Expressing the numbers in exponential form and using scientific notation (standard form)
- Understanding and applying laws of exponent.
- Expressing and Comparing.

PK Testing:

- What is exponent?
- How will you solve 2^{-10} ?

Innovative methods: Class group activity, Quiz.

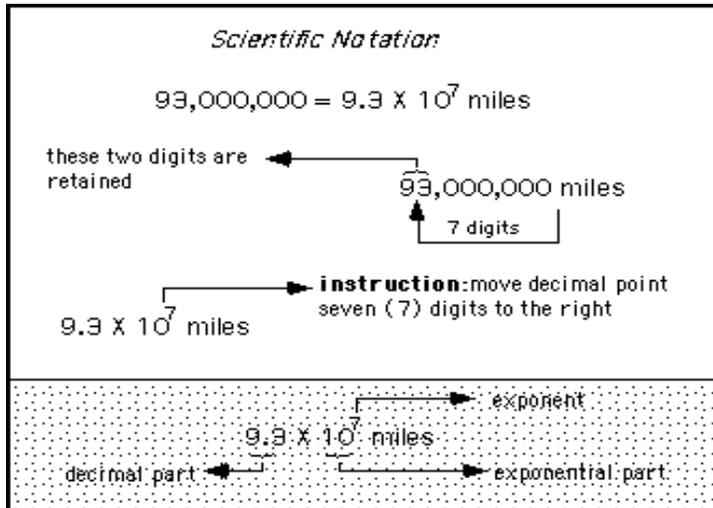
Procedure:

Go ahead or go back: Usual to Standard Notation

Conversion of useful large/ small number in usual and standard form.

Student may be asked some useful and known large/small number.

Convert these numbers in standard form to usual form or usual form to standard form.



$$100 = 1 \times 10^2$$

$$4321 = 4.231 \times 10^3$$

$$1.23 = 1.23 \times 10^0$$

$$0.25 = 2.5 \times 10^{-1}$$

$$0.0007925 = 7.925 \times 10^{-4}$$

Let us convert

$3500 = 3.5 \times 10^3$ 3.5 is between 1 and 10; we go from **larger number to smaller number**,
So we use a **Positive Exponent**

$0.0000001 = 1 \times 10^{-7}$ 1 is between 1 and 10; we go from **smaller number to larger number**,
So we use a **Negative Exponent**

$0.123456 = 1.23456 \times 10^{-1}$ 1.234565 is between 1 and 10; we go from **smaller number**
to **larger number**, So we use a **Negative Exponent**

$1000000 = 1 \times 10^6$ 1 is between 1 and 10, we go from a **larger number to Smaller number**,
so we use a **Positive Exponent**

Now Standard to Usual Notation:

1. Move decimal point to **RIGHT** for **POSITIVE** exponent of 10
2. Move decimal point to **LEFT** for **NEGATIVE** exponent of 10

$$2 \times 10^9$$

$$2.000000000$$

1 2 3 4 5 6 7 8 9

$$2,000,000,000$$

8.9×10^9
As the given number in scientific form

Step 1 : Exponent is negative 9 so put nine 0's before 8
 0000000008.9

Step 2 : As the exponent is 9 shift decimal 9 digits to left
 0.0000000089

0.0000000089 Usual form

Suggested Activities:

1. Teacher will ask students to collect known and interesting number/s from other subjects and write them in scientific notation.
2. Teacher will motivate students to compute exponential numbers in their own way and verify with answer using proper method.

Recapitulation

1. Fill in the blanks with proper notation

S. No.	Description of number	Usual form	Standard form
1.	The distance from Earth to the Sun	-----	1.49×10^{11} m
2.	The speed of light	300000000 m/sec	-----
3.	The average diameter of a Red Blood Cell	-----	7×10^{-6} mm
4.	The distance of moon from the Earth	-----	3.84×10^8 m
5.	The size of a plant cell	0.00001275 m	-----

2. Evaluate: (i) $\frac{1}{3^{-2}}$ (ii) $\left(\frac{2}{3}\right)^{-4}$

3. Find the value of $\left\{ \left(\frac{1}{3}\right)^{-3} - \left(\frac{1}{2}\right)^{-3} \right\} \div \left(\frac{1}{4}\right)^{-3}$

4. Find the value of $\left\{6^{-1} + \left(\frac{3}{2}\right)^{-1}\right\}^{-1}$

5. By what number should $(4)^{-1}$ be multiplied so that the product may be equal to $(10)^{-1}$

6. Express the following numbers in standard form:

(i) 652000000000

(ii) 0.00000000003125

(iii) 3759×10^{-4}

7. Find the value of x for which $3^{x+1} \div 3^2 = 3^5$

Learning Outcomes

Students will be able to

- Understands the concept of Exponents and Powers.
- Gets knowledge of large and small numbers.
- Skills to solve sums related to Exponents.
- Capable of expressing large and small numbers in standard form

Assessment

(1) Find the value of (i) $\left(\frac{1}{4}\right)^{-2}$ (ii) $5^{-3} \times 5^{-6}$

(2) Simplify: $\frac{25 \times a^{-4}}{5^{-3} \times 10 \times a^{-8}}$

(3) Write the following numbers in standard form.

(i) 0.0000003296 (ii) 0.000002751 (iii) 1450000000 (iv) 6970000

(4) If $\left(\frac{7}{12}\right)^{-4} \times \left(\frac{7}{12}\right)^{3x} = \left(\frac{7}{12}\right)^5$, then find the value of x.

TERM 2

CHAPTER 1

Cubes and Cube roots

OBJECTIVE:- The students will be able to

- 1) Identify the cubes.
- 2) Identify the prime numbers.
- 3) To apply the prime factorisation method.

PK TESTING :- The teacher will ask following questions

- 1) What is the meaning of square?
- 2) What is the meaning of 2^4 ?
- 3) Complete these $1^3 = _$, $2^3 = _$, $3^3 = _$.

VOCABULARY :- Cubes, Cube roots, Factorisation, Estimation.

IMPORTANT SPELLINGS :- Factorisation, Ramanunjan number.

EXPLANATION :- Lets take 2 examples and try to learn the concept of cubes and cube roots.

Example 1) Lets assume a cube of side 2 units then volume of this cube is 2^3

Example 2) lets assume a cube whose volume is given 8 units and the side of the cube is assumed to be X units

According to the question $8 = X^3$

$$2^3 = X^3$$

$$\text{So } X = 2$$

Therefore cube root of 8 is 2.

PROCEDURE :- The cube of a number is that number raise to the power 3

Thus if a number X then cube of a X is X^3

For example ;

NUMBER	CUBES
1	$1^3 = 1$
2	$2^3 = 8$
3	$3^3 = 27$
4	$4^3 = 64$
5	$5^3 = 125$
6	$6^3 = 216$
7	$7^3 = 343$

ADDING CONSECUTIVE ODD NUMBERS :-

$$1=1^3$$

$$3+5=8=2^3$$

$$7+9+11=27=3^3$$

$$13+15+17+19=64=4^3$$

PERFECT CUBE :- A natural number n is called a perfect cube if there is a natural number 'a' such that $n = a^3$

The number 1,8,27,64..... are perfect cubes or cube numbers.

METHOD TO DETERMINE PERFECT CUBE :-

- 1) Resolve the given number into prime factors
- 2) Group together the triplets of the like prime factors
- 3) If no factor is left ungrouped the given number is a perfect cube

CUBE ROOT THROUGH ESTIMATION METHOD :-

- 1) Determine the units digit of the cube root by given number observing the units digit of the given number.
- 2) Strike off three digits from the right of the given number. If nothing is left we stop and the number obtained in first step is the required cube root.
- 3) Consider the number remained after step 2. Find the largest single digit number whose cube is less than or equal to this number. This is the tens digit of the cube root of the given number.

RECAPTULATION :- Teacher will summarize

- A natural number A is a perfect cube of x if $a=x^3$, where x is a natural number.
- Cube of odd number is a odd number
- Cube of even number is even number

- Cube of negative number is a negative number
- $a^3 \times b^3 = (ab)^3$, where a and b are natural numbers
- Cube root of a is denoted by $\sqrt[3]{a}$
- If a and b are natural numbers, then
- $\sqrt[3]{ab} = \sqrt[3]{a} \times \sqrt[3]{b}$
- $\sqrt[3]{\frac{a}{b}} = \frac{\sqrt[3]{a}}{\sqrt[3]{b}}$

Learning outcomes

- Students will be able to find the cubes of different numbers
- Students will be able to find cube root by prime factorization and by estimation method

Activity based on art integration

- Start with a square piece of paper
- Fold from midline and open it
- Fold quarterlines
- Rotate and fold in half
- Open and fold bottom left corner
- Fold to make parallelogram
- Open big triangle and tuck small triangle
- Make square with 2 triangle flaps

- Make 6 exactly modules
- Use six modules to make self locked cube

Resources

Text book NCERT of mathematics for class VIII

Reference Book [Cordova] And Maths Plus Assessment

Find the cube root of 0.001331

Find the cube root of -17576

Find cube root of $-\frac{216}{42875}$

Find cube of $-13\sqrt[8]{}$

The volume of a cubical box is 32.768 cubic meter. Find the length of its side

CHAPTER 2

MENSURATION

OBJECTIVES-Students will be able to

Find the perimeter of different figures like rectangle, square, triangle and circle

Find the area of parallelogram ,trapezium, cuboid, cylinder and cube

Find the volume of cuboid, cube and cylinder

PK TESTING- Teacher will ask following questions

1 What is rectangle and tell the area of rectangle

2 What is the area of square if side is x

3 What is the area of triangle

4 How we can find area of parallelogram

VOCABULARY AND SELLINGS- Parallelogram, Trapezium.

EXPLANATION- 1 Perimeter of rectangle is $2[l+b]$

2 Area of rectangle is $[l \times b]$ sq units

3 Area of square $[s \times s]$ sq units

4 Area of triangle = $\frac{1}{2} [\text{base} \times \text{height}]$

5 Area of parallelogram = base x corresponding height

6 Area of a circle $A = \pi r^2$

PROCEDURE

[Teacher will explain all areas with the help of Paper Folding Activity](#)

Area of Trapezium = $\frac{1}{2} [\text{sum of parallel sides}] \times \text{height}$

Area of Rhombus = $\frac{1}{2} \times \text{Product of diagonals}$

Area of Cuboid = $2[lb + bh + hl]$

Lateral surface area of Cylinder = $2\pi r h$ sq units

Total surface area of Cylinder= $2\pi r[r+h]$

Volume of Cuboid=lengthxbreadthxheight

Volume of Cube=side³

Volume of Cylinder= $\pi r^2 h$

STUDENTS PARTICIPATION

Students will be asked

1 Find the area of quadrilateral ABCD with diagonal AC=25cm and offsets are 9m and 8m

2 Find the vol of a cube of edge 9m

3 students will be asked to tell

The shape of their lunch box

The shape of chalk box

The shape of pen holder

RECAPTULATION

Teacher will summarize by explaining the concepts related to

- area of trapezium and rhombus
- surface area of cuboid, cube and cylinder
- volume of of cuboid, cube and cylinder

Students will be asked to make shapes of above mentioned entities by paper folding.

ASSESSMENT

1. Find the volume of cube of edge 9m.
2. Find the surface area of cube whose each side is 4.5cm.
3. Find the volume of cubic tank whose side is 1.2m.
4. Lateral surface area of cube is 100cm^2 . Find its edge.
5. Total surface area of a cubical box is 294cm^2 . Find length of its edge.
6. Find the volume of cuboidal can with measures $15\text{cm} \times 10\text{cm} \times 20\text{cm}$.

Activity [Art Integration]

Students will make different coloured shapes like cube, cuboid, cylinder.

LEARNING OUTCOMES

Students will be expected to solve problems related to area and volume of cuboid, cube, trapezium, rhombus and cylinder.

Also they will be able to recognize the related shapes of buildings.

RESOURCES

NCERT text book of mathematics for class 8

Reference book (Cordova)

CHAPTER 3

PLAYING WITH NUMBERS

Objectives:-

The students will be able to give the general form of two digit number and its reverse.

The student will be able to solve the problems based on divisibility rules.

P K Testing:- Teacher will ask about two digits numbers, three digits numbers

Teacher will ask about divisibility rule of 2,3,4,5,10 and 6

VOCABULORY /SPELLINGS

Divisibilit Rules, General Form nd Puzzles

EXPLANATIONS

Numbers In General Form

A two digit number whose tens digit is a and unit digit is b can be written as $10a+b$ where a nd b are whole numbers

A three digits numbers whose hundred's digit is a and ten's digit is b and unit's digit is c, can be written as

$100a+10b+c$, where a,b,c are whole numbers from 0 to 9.

PROCEDURE

Test of divisibility

Divisibility by 2

A number is divisible by 2, if unit place is a zero or an even number.

Divisibility by 3

A number is divisible by 3, if the sum of its digits is divisible by 3.

Divisibility by 9

A number is divisible by 9, if the sum of its digits is divisible by 9

Divisibility by 5

A number is divisible by 5, if one digit is zero or 5.

Divisibility by 10

A number is divisible by 10, if unit digit is zero.

Activity (In Game Form)

Two friends Shikha and Sudha have the following conversation

SHIKHA	SUDHA
Choose any two digit numbers	Choose a number say 34
Reverse the digits to get a new number	Reverses the digits and gets 43
Add this number to the number you started with	Adds 34 and 43 to get 77
Divide the sum by 11	Divides the number by 11 and gets 7 as quotient
The remainder is zero	Sudha says you are right but she is surprised and wants to know how did she get?

Student Participation

Teacher will ask following

Find A, B and C

3	A
+2	5
B	2

4	A
+9	8
CB	3

1	A
X	A
9	A

RECAPTULATION:-Teacher will summarize

1 Numbers can be written in general form $ab=10a+b$

2 The general form of numbers are helpful in solving puzzles and number games

3 The reason for the divisibility of numbers by 10,5,2,3 and 9 can be given when numbers are written in general form

CO-Scholastic Activities:-

Teacher will explain Playing With Numbers with the help of MAGIC SQUARE

LEARNING OUTCOMES:-

Students will be able to give general form of two digit number and its reverse

Will be able to solve puzzles in general form of numbers

Will be able to check the divisibility of a number by 2,3,5,9 and 10

RESOURCES

NCERT text book of mathematics for class 8

Reference book (Cordova) and Maths Plus

ASSESSMENT:-

Replace * by smallest digit so that $35*82$ is divisible by 3.

If $5897x$ is divisible by 3, find all the possible values of digit x .

Find A and B in the addition sum:

1	2	A
+6	A	B
A	0	9

Find P and Q in the multiplication sum:

	Q	P
+	Q	3
4	6	P

If a number N , when divided by 5 leaves remainder 1, find the possible one's digit of N .

If $1234x/3$ leaves a remainder 1, find the least value of x .

$21P5$ is a multiple of 3. Find the least value of digit p .

Using four 4's write the numeral 9.

Select the correct alternative from the alternatives given against each of the following:

(1) If $AB+AB=CB$, then B can only be

(A)

CHAPTER 4

VISUALISING SOLID SHAPES

OBJECTIVES:-Students will able to

Identify 2-dimensional and 3-dimensional shapes

Recognize different views of 3-D objects

Define Faces,Edges and Vertices of different objects

Explain Polyhedrons,Pyramids

Apply Euler's formula

PK TESTING:-

Teacher will ask following

1 What are plane figures?

2 What are solid figures?

3 What is the difference between 2-D nd 3-D shapes?

VOCABULARY AND SPELLING USED:-

Visualising Solids, Dimensional,Euler's Formula,Prism

Pyramid and Polyhedron

EXPLANATION:-

Teacher will explain all 2-D and 3-D shapes with the help of smart class and paper folding activity

PROCEDURE:- Teacher will explain some definitions

- 1 2-D FIGURES:- Figures having length and breadth are called 2-D figures eg A polygon and Circle
- 2 3-D FIGURES :- Figures having length ,breadth and height eg Cubes, Cuboids and Cylinders
- 3 Polyhedron:- A solid which is made of polygonal regions (or bounded by polygons) is called a polyhedron
- 4 Convex polyhedron:- If the line segment joining any two points on the surface of a polyhedron entirely lies inside then it is said to be a convex polyhedron
- 5 Prism:- Prism is a polyhedron whose base and top are congruent polygons and whose other faces are parallelogram in shape
- 6 Pyramid:- It is polyhedron whose base is a polygon and whose lateral faces are triangles with a common vertex
- 7 Euler's Formula:- For any polyhedron $F+V-E=2$ where F stands for faces, V stands for vertices and E stands for edges

STUDENTS PARTICIPATION:-

Teacher will ask some questions

- 1 Tell the shape of chalk box.
- 2 Give examples of polygons.
- 3 Define prism .
- 4 Define pyramid

LEARNING OUTCOMES :- Students will be able to 1)
Recognize 2-D nd 3-D objects.

2) 3-D objects have different views from different positions

3)Find edges, vertices nd faces by EULER'S
FORMULA

RECAPTULATION:-Teacher will summarize

A solid shape bounded by polygon is called a polyhedron

Polygons forming a polyhedron are called its faces

Points of intersection of edges of a polyhedron are known as its edges

A prism is a regular prism if its ends are regular polygons

RESOURCES:-

- 1 NCERT Text Book Of Mathematics For Class VIII
- 2 Reference Book (Cordova)

ASSESSMENT:-

- 1 Find the number of edges of a match box
- 2 Identify the front, side nd top of the chalk box

- 3 A polyhedron has 7 faces and 10 vertices. Find its number of edges
- 4 How prism and cylinder alike

Chapter 5

Topic: - Factorization

Objective: - Students will learn to

- * Find the factors of a monomial and write it as a product of irreducible factors.
- * Find HCF of two or more monomials and polynomials
- * Factorise an algebraic expression using various method.

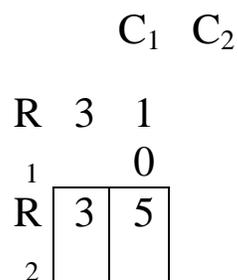
- PK Testing
1. Write 70 in the product of prime Nos
 2. Write the common factor of the terms $5xy + 3x$
 3. Factorise $14pq + 35 pqr$

Vocabulary: - Factor, expression, constant, coefficient, polynomial, errors.

Important spellings: - Factorisation, Coefficient, constant.

Explanation with innovative method: - Teacher will tell a factor game to students to teach factorisation for example.

1. Take any two number 3 and 10 and write their factor inside a square which is divided into four parts as shown below



$$R \begin{array}{|c|c|} \hline 1 & 2 \\ \hline \end{array}$$

2. Now, in Row R_2 and R_3 multiply the numbers

$$\begin{array}{c} C_1 \quad C_2 \quad C_3 \\ R_1 \quad 3 \quad 10 \\ R_2 \quad \begin{array}{|c|c|} \hline 3 & 5 \\ \hline \end{array} \quad 15 \\ R_3 \quad \begin{array}{|c|c|} \hline 1 & 2 \\ \hline \end{array} \quad 2 \end{array}$$

3. Now Add the numbers in column C_3

$$\begin{array}{c} 3 \quad 10 \quad 17 \\ \begin{array}{|c|c|} \hline 3 & 5 \\ \hline \end{array} \quad 15 \\ \begin{array}{|c|c|} \hline 1 & 2 \\ \hline \end{array} \quad 2 \end{array}$$

4. Now cross multiply the number inside the square and write its factor

$$3x^2 + 17x + 10 = (3x+2)(x+5)$$

Procedure : - Teacher will start the lesson with definition of algebraic expression. Then factors and coefficient will be explained.

After this the different method to factorise an expression will be discussed using following identities.

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

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

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

$$x^2+(a+b)x+ab = (x+a)(x+b)$$

Teacher will tell the students to do exercise questions and she will ask their problems, then she will explain and clear their doubts.

Students Participation: -

Teacher will divide the students into groups of 5 each and give 5 questions to each group, one question to each child of each group. There will be time limit and at last teacher will check their answers. Then teacher will announce the winner group who has the highest score.

Re capitulation: -

1. What are factors of x^2-64
2. Factorise and divide $(10x-25) \div (2x-5)$
3. What are the factors of
 - (a) $a^2+2ab+b^2 =$ _____
 - (b) $a^2-2ab-b^2 =$ _____
 - (c) $a^2-b^2 =$ _____
 - (d) $x^2+(a+b)x+ ab =$ _____

Art integration : - Students will learn the art to factorise an expression in very easy way using identities and make their observation fast.

Learning outcome: - After this lesson, students will be able to

- * Define and explain the process of factoring in algebra
- * Factor terms in an expression with guidance

Resource : - Smart class, NCERT book.

Co-Scholastic activities: - Teacher will tell the student to make a chart of identities.

- Assessment : -
1. Factorise $x^2+xy+8x+8y$
 2. Factorise $10a^2-15b^2+20c^2$
 3. Factorise $p^2+6p-16$
 4. Factorise and divide $39y^3 (5ay^2-98) \div 26y^2 (5y+7)$
 5. Find and correct the error $(a+4) (a+2) = a^2+8$

Chapter 6

Topic - Direct and Inverse

- P.K Testing: -
1. If two students take 20 Min to arrange chairs for an assembly, then how much time would five students take to do the same job?
 2. What are equivalent proportion?
 3. Are $1:2 :: 12:24$ equivalent proportion?

- Objectives: -
1. Identity direct and inverse variation
 2. Find the unknown in a variation problem.
 3. Solve application problems involving direct variation.
 4. Solve application problems involving inverse variation.

Vocabulary/ Spelling: - Direct proportion, Inverse proportion.

Explanation with innovative method, links used: - Link used # 1
Direct and Inverse proportion class 8 (AK Study 1024)

Procedure: - Teacher will show students a packet of juice and read the information for ingredients. The label on a juice pack shows this information. Apple juice of 440 ml, each 440 ml provides -

- * Energy 226 Calories
- * Carbohydrate 6.6 g

* Vitamin c 20 mg

Ask the students that if 440 ml of juice provides 226 calories , how many calories 100 ml of juice will provide? As students to decide is it direct or inverse proportion question, can they show working? If they are unable, show working on the board.

Student participation: - Write some statements of question for direct and inverse proportion on paper slips. These questions can be taken from textbook or students can make these themselves. Prepare enough slips that each student gets one slip. Distribute these slips in the students. Ask students to read the statement, write is it direct or inverse proportion? And then solve the question collect back the solved slips, shuffle and redistribute among students, to read and check the question of each other.

Recapitulation : - 1. What type of variation is indicated by $x_1/y_1 = x_2/y_2$?

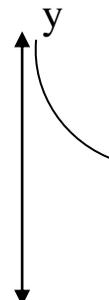
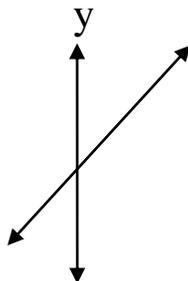
2. What type of proportion is indicated by $x_1y_1 = x_2y_2$?

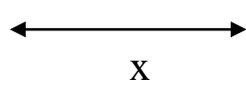
3. What type of relation between no. of workers and days if they are doing same job?

4. A train is moving at a uniform speed of 75 Km/hr, how far will it travel in 20 minutes?

Art integration with other domain: - Teacher will explain this topic by graphical representation i.e how direct and inverse proportions vary.

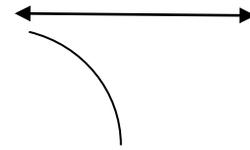
Direct variation





x

$$Y = Kx$$



$$Y = K/x$$

Learning outcomes: - The students will be able to : -

- * Discuss the concept of variation
- * Define direct proportion
- * Solve the problems under direct variation
- * Recognize inverse proportion

Resources: - NCERT Book, Smart Class, Graph paper

Co-scholastic activities: - Children will make a chart based on direct and inverse variation

- Assessment: -
1. A loaded truck travels 168 Km in 5 hours. How far can it travel in 25 minutes?
 2. A 10 m 50 Cm high vertical pole casts a shadow 6 m long. Find at the same time the length of the shadow cast by another pole 5 m 60 cm high.
 3. A truck covers a distance of 510 Km with 34 liters of diesel. How much distance would it cover in 20 liter of diesel.
 4. If 18 dolls cost Rs 630, how many dolls can be bought for Rs 455?

Chapter 7

Algebraic Expressions and Identities

1. Learning Objective :- Students will come to know about

- (i) Identify the algebraic expressions
- (ii) Solve degree of Polynomials, monomials, Binomials and Polynomials
- (iii) Solve Addition, Subtraction and Multiplication of Algebraic Expressions
- (iv) Standard Identities

2. P.K. Testing :-

- (i) What do you understand by terms, variables and Coefficients?

3. Vocabulary / Important spellings :-

Monomial, Binomial, Factorization, Identities, degree of Polynomial etc.

4. Explanation with innovative method :-

- (i) Smart Class
- (ii) Green Board
- (iii) P.P.T

Teacher will explain the concept with the help of smart class. She will explain them the method to solve, addition, subtraction and multiplication of algebraic expression with examples.

After this she will explain the various identities. i.e.

$$(a) \quad (a + b)^2 = a^2 + 2ab + b^2$$

$$(b) \quad (a - b)^2 = a^2 - 2ab + b^2$$

$$(c) \quad (a + b)(a - b) = a^2 - b^2$$

$$(d) \quad (x + a)(x + b) = x^2 + (a + b)x + ab$$

To make the concept interesting she will explain these identities in the form of activities.

5. Art Integration :

Activity 1 : $(a + b)^2$

(Link) <https://youtu.be/i1enQcj5pl4>.

Activity 2 : $(a - b)^2$

(Link) <https://youtu.be/WJPoS2C727M>.

Activity 3 : $(x + a)(x + b)$

(Link) <https://youtu.be/6UluJBn-bjw>.

Activity 4 : $a^2 - b^2$

(Link) <https://youtu.be/XUym-n9gxmw>.

Students will use cutting and pasting method of coloured sheets to do these activities. This will enhance their creative skills. Few examples related to these identities will be explained in the class.

6. Co-Scholastic activities :-

To make concept of constant and variable's more clear teacher will a task on

Pinki's birthday her mother has organized a birthday party. She told her that she will give 3 sweets to each of her friends. Pinky is very excited she decided to find out how may sweets will be needed for distribution. To do so she prepare the following table.

No. of friends	1	2	3	4
No. of sweets needed	3	3+3=6	3+3+3 = 9	3+3+3+3 = 12

She realized that number of sweets required 3 times the number of friends that come for the party.

Number of sweets = 3 × number of friends

Number of sweets = 3n (n = 1, 2, 3, 4, ...)

Here n = variable

3 = constant

7. Students Participation :-

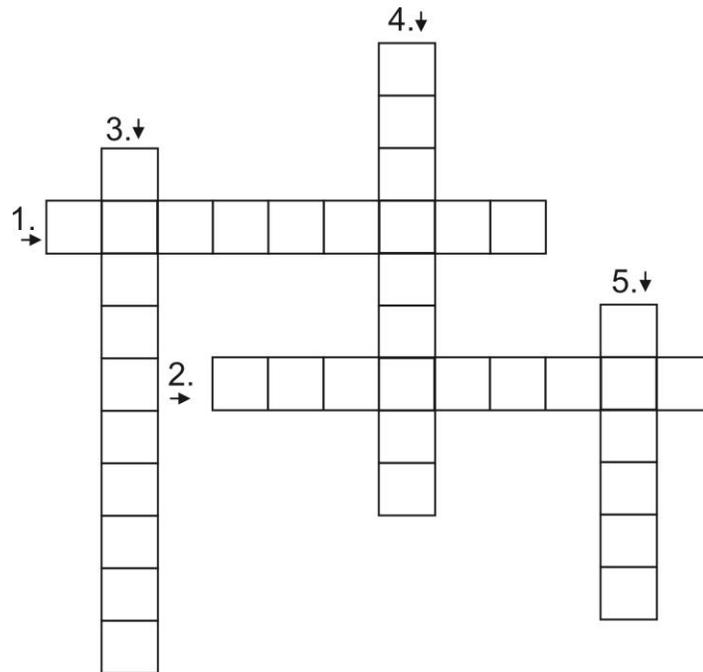
Crossword is given for solutions.

Across:

- (i) A symbol that has a fixed numerical value = constant
- (ii) Expressions are formed from variables and constants.

Down:

- (iii) An algebraic expression with variables having non-negative integral exponents. Polynomial
- (iv) Type of expression formed by squaring a binomial.
Trinomial
- (v) The highest exponent of the variable in a polynomial is called Degree of the polynomial.



Resources :-

- (i) Mathematics Text book class VII (NCERT)
- (ii) PPT
- (iii) Smart class content.
- (iv) Work sheet book (Edu Hub Pub)

8. Recapitulation / Assignment

- (i) $(a + b)^2 = \underline{\hspace{2cm}}$
- (ii) $(a - b)^2 = \underline{\hspace{2cm}}$
- (iii) $(a + b)(a - b) = \underline{\hspace{2cm}}$
- (iv) $(x + a)(x + b) = \underline{\hspace{2cm}}$
- (v) $(a + b)^2 + (a - b)^2 = \underline{\hspace{2cm}}$
- (vi) $(a - b)^2 - (a + b)^2 = \underline{\hspace{2cm}}$
- (vii) Subtract $x^2 - y^2$ from $y^2 - x^2$
- (viii) Find the value of $5x^{25} - 3x^{32} + 2x^{-12}$ at $x = 1$
- (ix) Using identities evaluate :
 - a. $(xy + 3p)^2$
 - b. $\left(\frac{3}{2}a - \frac{2}{3}b\right)^2$
 - c. 102^2
 - d. 99^2
 - e. 9.5×10.5
 - f. 104×96
- (x) Find the product of $(x^2 - 1) \times (2x + 2) \times (x - 1)$

9. Assessment :-

- (i) C-test will be conducted in the form of M.C.Q, T/F, matchings, Long / Short sums

10. Learning Outcomes :-

Students will be able to

- (i) Recognize technical terms and appropriate some of the uses of algebra.
- (ii) Able to add, subtract and multiply the given equations.
- (iii) Able to simplify identities.

Chapter 8

TOPIC – INTRODUCTION TO GRAPHS

P.K TESTING – (a) What do you mean by x-axis ?

(b) What is Cartesian plane ?

(c) What is origin ?

(d) What is bar graph ?

Vocabulary words - linear , co-ordinate, variable , dependent, independent etc .

Important Spellings – Co-ordinate , pie-graphs , variable , histogram , linear, dependent , independent.

Aids/Innovative methods – Smart boards , board , charts etc .

PROCEDURE- We use the data graphically i.e on graph paper, pie chart, histogram etc to understand them properly and quickly .If we draw a number line and rotate it through 90 degree in anticlockwise direction such that point “0” coincide we call these lines as horizontal and vertical lines . The plane along with x-axis and y-axis is called as Cartesian

plane or coordinate plane , the x coordinate is known as abscissa and y coordinate is called ordinate.

LINEAR GRAPH – If on joining the points on the graph , we get a straight line such a graph is called a linear graph otherwise it is a non-linear graph .Various examples of linear and non-linear graphs will be discussed in the class. Reading of graph and then getting information from graph will be discussed.

CO-SCHOLASTIC ACTIVITY/PARTICIPATION OF STUDENTS-

LINK –

www.slideshare.net/mobile/monikarana75457/introduction-to-graph-class-8

RECAPTULATION – Q.1 STATE TRUE / FALSE :-

1. The central angle of a sector in a pie chart cannot be more than 180 degree.
2. Sum of all the central angles in a pie chart is 360 degree.

Q.2 Draw the graph of the following table .Is it a linear graph ?

X	3	4	5	6	7
y	12	16	20	24	28

LEARNING OUTCOMES- 1. Draw bar graphs.

2.Represent the given data in the form of pie graph .

3. Draw histogram,Line graph .

4.Locate a point on the graph.

5. Solve some application problems using graphs.