

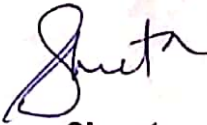
Name of the School S.V.N High School

Class : IXth

From _____ To _____

TIME-TABLE

DAY	I	II	III	IV	V	VI	VII	VIII
MON	Hindi	English	Maths	Rest	Social Science	Dance	Science	English
TUE	"	"	"	"	"	"	"	"
WED	"	"	"	"	"	"	"	"
THU	Hindi (40)	English (40)	"	"	History	Economics	"	"
FRI	"	"	"	"	"	"	"	"
SAT	"	"	"	"	"	"	"	"


Signature

Name of the School S.V.N High School

Class : IXth

From _____ To _____

TIME-TABLE

DAY	I	II	III	IV	V	VI	VII	VIII
MON	Hindi	English	Maths	Art	Social Science	Dance	Science	
TUE	"	"	"	"	"	"	"	
WED	"	"	"	"	"	"	"	
THU	Hindi (or)	English (or)	Science	"	Maths	Economics	Dance	
FRI	"	"	"	"	"	"	"	
SAT	"	"	"	"	"	"	"	"

Signature

ATTENDANCE CHART

School S.V.N High School

Class : IXth

Subject : MATHS.

Name & Roll No.																				
1. Anutt	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
2. Anmol	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
3. Asha	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
4. Ashika	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
5. Buntty	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
6. Diya	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
7. Gaurav	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
8. Ganga	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
9. Hitesh	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
10. Himanshu	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
11. Pasul	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
12. Prateek	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
13. Rahul	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
14. Seema	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
15. Smita	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
16. Monica	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
17. Sonu	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
18. Madhu	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
19. Nyside	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
20. Shilani	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
21. Varuna	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
22. Veena	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
23. Vivek	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
24. Rishabh	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
25. Mayank	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

ATTENDANCE CHART

School _____

Class : _____ Subject : _____

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4.	EQUATION	14/09/17		
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MICRO TEACHING
LESSONS

LESSON No. 01

Date 11/09/17

Duration of the period 5-10 minutes

Pupil Teacher's Name SHWETA

Pupil Teacher's Roll No. 2007

Class IXth

Average Age of the pupils 14⁺

Subject MATHS

Topic SQUARE

SKILL OF PROBING QUESTION

PUPIL TEACHERS ACTIVITY	PUPIL'S ACTIVITY	COMMENT
The teacher drawing a square shaped figure on the blackboard asks the students what the figure was?	Square - shaped	Prompting
How the cost of barbing a square can be found out?	Silence	Seeking further information
Ok, Dear students what will be xg. to find out cost of barbing?	fixed length to be barbed	Prompting
Any other thing	Rate of barbing	seeking further information
In a square shaped area, where will barbing be done?	on all the four sides.	Re-focussing

In a square
what is the
sum of all
four side
called?

Perimeter

Increasing
critical
information

How will we
find out the cost
of barbing
after finding
out the perimeter
(the length to
be barbed)

By multiplying
the total length
with rate of
barbing

seeking further
information.

What is the
formula to
find the cost
of barbing in a
square shaped area?

Perimeter of a
square $\times$ cost
of barbing per
unit

Increasing
critical
awareness

LESSON No.02...
 Date... 12/09/17...
 Pupil Teacher's Name... SHWETA...
 Class... IX...
 Subject... Maths...
 Duration of the period... 5-10 min...
 Pupil Teacher's Roll No. ... 2007...
 Average Age of the pupils... 14+...
 Topic... Parallel lines...

SKILL OF EXPLAINING

PUPIL TEACHER'S ACTIVITY	PUPIL'S ACTIVITY	IMP. OF SKILL
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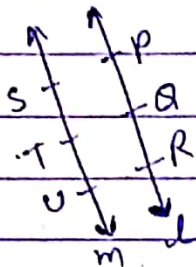
Good Morning Students, today we shall learn about parallel and Non-parallel lines	A line segment is a line having two end points	Opening statement
--	--	-------------------

In previous class, you have already read about a line and the line segment. So, first of all tell me what is a line segment? Yes like AB A $\longleftrightarrow$ B.	No response	Explaining links
--	-------------	------------------

Now what type of these lines are? $\longleftrightarrow$ l $\longleftrightarrow$ m. (Drawn on black-board)		Conveying main idea
--	--	---------------------

These are parallel lines on the main

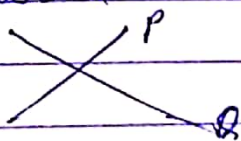
thing between two parallel lines is that the distance between two parallel lines at each point is same i.e.



$$PS = QT = RU$$

Here l is parallel to m and in symbolic form $l \parallel m$.

What type of these lines are?



These are non-parallel lines. Non-parallel lines are those lines which cut at a point. So today we learn about parallel and non-parallel lines.

-explaining lines

Conveying main idea, closing statement.

Date 13/09/17
 Pupil Teacher's Name SHWETA
 Class IX
 Subject MATHS

Duration of the period 5-10 min
 Pupil Teacher's Roll No. 2007
 Average Age of the pupils 14+
 Topic SIMPLE LINE

SKILL OF INTRODUCING THE LESSON

PUPIL TEACHER'S ACTIVITY

PUPIL'S ACTIVITY

COMPONENT

Putting a simple line on the chalk board, teacher asks

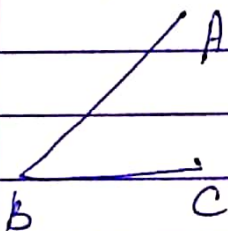
A $\longleftrightarrow$ B

Simple line

use of previous experiences

What the figure AB is called in the language of Maths?

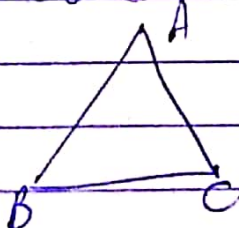
When two simple lines meet on a point what the figure thus made is called in Mathematics?



Angle

Use of proper device and technique.

What figure ABC is called?



Triangle

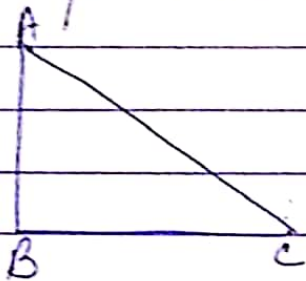
Maintaining continuity.

How many types
of triangles are
there on the basis
of angle?

Three types

What type of
triangle ABC is?

Right angled
triangle



In triangle ABC, Base
what the side
BC is called?

creation of
interest and
motivation.

In triangle ABC, Perpendicular
what the side
AB is called?

What is the area
of ABC?

No comments.

Date 14/09/17

Duration of the period 5-10 min

Pupil Teacher's Name SHWETA

Pupil Teacher's Roll No. 9007

Class IX

Average Age of the pupils 14+

Subject MATHS

Topic EQUATION

SKILL OF STIMULUS VARIATION

Pupil Teacher's Activity

Pupil's Activity

Hello students, today we will study a very imp. and useful identity.

First of all, let me ask you a question.

What is an equation?

An equation is an equality which is true for some value of variable in it.

Yes, correct

Let us consider 2 numbers

$a = 1$ and $b = 2$

What is a^2 ?

1

What is b^2 ?

4

What is ab ?

2

So, now tell me -

What is $(a+b)^2$?

$(2+1)^2 = 9$.

Observe that?

$a^2 + b^2 + 2ab$ is also 9.

So, what do you infer?

We observe that
 $(a+b)^2 = a^2 + b^2 + 2ab$.

Students listen carefully.

This is in fact true for all values of a & b .

You can check for yourself.

Students check by taking examples.

So, such equations which are true for all values of variables in it are called identities.

Thus $(a+b)^2 = a^2 + b^2 + 2ab$ is an identity.

Date.....15/09/17.....
Pupil Teacher's NameSHWETA.....
Class.....IX.....
Subject.....MATHS.....

LESSON No.05.....

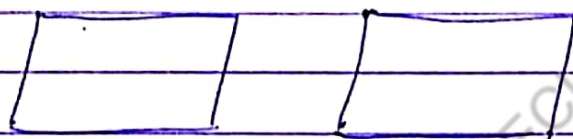
Duration of the period.....5-10 min.....
Pupil Teacher's Roll No.2007.....
Average Age of the pupils.....14+.....
Topic.....Triangle.....

SKILL OF ILLUSTRATION with EXAMPLE

Pupil Teacher's Activity

Well students, today we will study about congruency of triangles.

look at these figures :-



What is common in these?
Exactly

These are called congruent figures in maths.

The figure having same shape & size are called congruent figures.

lets understand better with example -

If a 2 rupee coin is placed over another coin, then

Pupil's Activity

They are rectangles.

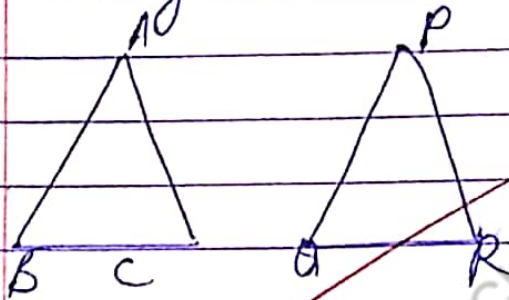
Students listen carefully

What do you observe?

One coin will come over other exactly.

Also, triangles with equal corresponding sides and angles are called congruent triangles.

Students note down carefully.



**MEGA TEACHING
LESSONS**

LESSON No. 01

Date 16/09/17

Duration of the period 40 min

Pupil Teacher's Name SHWETA

Pupil Teacher's Roll No. 2007

Class IX

Average Age of the pupils 14+

Subject MATHS

Topic STIMULUS VARIATION

INSTRUCTIONS

SKILL OF QUESTIONING :

1. Prompting
2. Seeking further information
3. Refocussing
4. Re-directing
5. Increasing critical awareness.

1. Co-ordination of explaining statements.
2. Use of proper words.
3. clear beginning statement
4. connecting links
5. fluency of language.

SKILL OF STIMULUS VARIATION

1. Movements
2. Gestures
3. Change in voice
4. Focussing
5. change in interaction pattern
6. Pausing.

Teaching Points	Pupil Teacher's Activity	Pupil's Activity	Black-Board Work
Quadratic Equation	A equation of degree 2 is called quadratic equation Pupil teacher writes some example of quadratic equation on black board.	Students will listen carefully	A equation of degree 2 is called quadratic equation

EXAMPLES

$$x^2 - 3x - 10 = 0$$

$$2y^2 + y - 6 = 0$$

Pupil teacher asks
some examples
from students also

$$z^2 - 10z + 20 = 0$$

$$x^2 + 4x + 10 = 0$$

Examples —

$$x^2 - 3x - 10 = 0$$

$$2y^2 + y - 6 = 0$$

$$z^2 - 10z + 20 = 0$$

$$x^2 + 4x + 10 = 0$$

General form

General form —

$ax^2 + bx + c = 0$ is
the general form
of a quadratic
equation.

General form —

$$ax^2 + bx + c = 0$$

is the general
form of a
quadratic equation.

(ii) Resolve in
linear factors of
the type $(ax + b)$
 $(cx + d)$ of the
terms on L.H.S

Students listen
carefully &
try to understand

Examples:—

$$x^2 - 3x - 10 = 0$$

$$2y^2 + y - 6 = 0$$

$$z^2 - 10z + 20 = 0$$

$$x^2 + 4x + 10 = 0$$

(iii) Put each
factor equal to
zero.

(iv) we will get
the required
solution.

General form;
 $ax^2 + bx + c = 0$
is the general
form of a
quadratic
equation.

PROBLEM

Find the roots of the following quadratic equation by factoring.

$$x^2 - 3x = 10$$

Students write down in their copies.

SOLUTION

Solution -

$$x^2 - 3x = 10$$

$$x^2 - 3x - 10 = 0$$

$$x^2 - 5x + 2x - 10 = 0$$

$$x(x-5) + 2(x-5) = 0$$

$$(x+2)(x-5) = 0$$

$$x-5=0 \text{ or } x+2=0$$

$$x=5 \quad x=-2$$

Thus $x=5$ & $x=-2$ are two roots of the equation.

$$x^2 - 3x = 10$$

Problem

$$x^2 - 3x = 10$$

Solution

$$x^2 - 3x = 10$$

$$x^2 - 3x - 10 = 0$$

$$x^2 - 5x + 2x - 10 = 0$$

$$x(x-5) + 2(x-5) = 0$$

$$(x-5)(x+2) = 0$$

Thus, $x=5$ or $x=-2$ are the roots.

$$x-5=0$$

$$\text{or } x+2=0$$

$$x=5, x=-2$$

Thus, $x=5$

$$x=-2$$

are two roots of equation

$$x^2 - 3x = 10$$

RECAPITULATION :

- Q1. What is quadratic equation?
- Q2. How can we write a quadratic equation in its standard form?
- Q3. Give five examples of quadratic equations.

HOME - WORK.

Q1. Check the following are quadratic equations -

(i) $(x+1)^2 = 2(x-3)$ (ii) $(x+2)^3 = 2x(x^2-1)$

Q2. Find the roots of the following quadratic equation by factorisation -

(i) $2x^2 + x - 6 = 0$.

(ii) $2x^2 - x + \frac{1}{8} = 0$

(iii) $x^2 - x - 6 = 0$.

Date 17/09/17
Pupil Teacher's Name SHWETA
Class Vth
Subject Maths

LESSON No. 02

Duration of the period 40 min.
Pupil Teacher's Roll No. 2007
Average Age of the pupils 14+
Topic GROUP

Coordinations in statements.
use of proper words.
clear beginning statements.
fluency of language.

SKILL OF STIMULUS VARIATION :-

Movements
Gestures
change in voice
focussing
change in interaction pattern
Pausing

SKILL OF ILLUSTRATION

Formulation of relevant examples.

Formulation of simple examples

formulation of interesting examples.

Inductive - deductive approach.

TEACHING POINTS	PuRL-Teacher's Activity	Pupils' Activity	Black-Board work
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Group.

Today, we will study about group. Group has an important place in mathematics. It is related to many groups, as a football team, a class, student in library all these form a group of particulars.

Students are meant to listen and are fully to gain understanding.

GROUPING DEF-
The collection of things are called grouping.

Defination

Collection of the thing is called group. We show it with the help of A, B, C, D & inner part with a, b, c.

Students note down in their notebooks.

Type of group

Types of groups

There are two types of groups -

(a) Limited

(b) Unlimited.

(i) Limited

(ii) Unlimited

limited grouping

It is type in which the numbers are fixed & countable
Example -

$$A = \{1, 2, 3, 4, 5\}$$

$$B = \{a, b, c, d, e\}$$

$$C = \{\text{Natural Numbers}\}$$

Students are listening carefully

$$A = \{1, 2, 3, 4, 5\}$$

$$B = \{a, b, c, d, e\}$$

$$C = \{\text{natural number}\}$$

Students note down the examples in their notebooks

$$A = \{1, 2, 3, 4, 5\}$$

$$B = \{a, b, c, d, e\}$$

$$C = \{\text{Natural Numbers}\}$$

Example

In this examples, 'A' is the collection of five terms, 'B' is the collection of a, b, c, d, e & 'C' is the collection of natural numbers.

(i) Union

(ii) Intersection.

Union

If the groups A & B are joined together we make it C. Then all terms without combination is called union of A & B.

Students note down in their copies.

$$A = \{1, 2, 3, 4\}$$

$$B = \{2, 3, 5\}$$

$$A \cup B = \{1, 2, 3, 4, 5\}$$

Pupil teacher given examples to students.

$$A = \{K, L, M, N\}$$

$$B = \{M, N, O\}$$

$$A \cup B = \{K, L, M, N, O\}$$

Students note down in their note books.

$$A = \{K, L, M, N\}$$

$$B = \{M, N, O\}$$

$$A \cup B$$

$$= \{K, L, M, N, O\}$$

Intersection

If A is a collection of terms & B is also a collection of terms we join A & B then we will take the term which are common.

If both A & B & rename it as C.

Eg =

$$A = \{1, 2, 3, 4\}$$

$$B = \{2, 4, 6\}$$

What is $A \cap B$

$$A \cap B = \{2, 4\}$$

Intersection

$$A = \{1, 2, 3, 4\}$$

$$B = \{2, 4, 6\}$$

$$A \cap B = \{2, 4\}$$

Eg

$$A = \{a, b, c, d\}$$

$$B = \{c, d, e\}$$

$$A \cap B = \{c, d\}$$

Teacher give another example to the students-

Students write down in their copies

$$A = \{a, b, c, d\}$$

$$B = \{c, d, e\}$$

$$A = \{a, b, c, d\}$$

$$B = \{c, d, e\}$$

$$A \cap B = \{c, d\}$$

$$A \cap B = \{c, d\}$$

RECAPITULATION :-

Q1 Define Group?

Q2 If two sets. A & B are given as follows-

$$A = \{1, 2, 3, 4, 5, 6\}$$

$$B = \{6, 7\}$$

What is $A \cup B$?

Q3 Give some common Examples of groups?

HOME-WORK :

(i) Union.

(ii) Intersection.

Q2 Find $A \cup B$:

i) $A = \{1, 2\}$
 $B = \{3, 4\}$

ii) $A = \{a, e, i, o, u\}$
 $B = \{ \}$

Q3 Find $A \cap B$

i) $A = \{a, e, i, o, u\}$
 $B = \{e, i\}$

ii) $A = \{K, L, M, N\}$
 $B = \{1, 2, 3\}$

UNITED SECULAR SOCIETY

LESSON No.03.....

Date 18/09/17

Duration of the period 40 min

Pupil Teacher's Name SHWETA

Pupil Teacher's Roll No. 2007

Class IX

Average Age of the pupils 14+

Subject MATHS

Topic FACTORS

INSTRUCTIONS

Movements

Gestures

change in voice

focussing

change in interaction pattern

Pausing

SKILL OF EXPLAINING :

Co-ordination of Explaining statements

use of proper words

clear beginning statement

connecting links

fluency of language.

Teaching points

Pupil Teacher's Activity

Pupil's Activity

Black-Board Work

Factor.

The perfect divisor of a number or term is called factor.

Students will listen carefully

Factor algebraic Expression

$5xy + 3x$ is an algebraic expression & the term $5xy$ has been formed by factors $5, x, & y$.

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

is also a factors i.e.
 $5xy = 5 \times x \times y$

Factorisation

When we factorise an algebraic expression, we write it as a product of factors eg.

$$3xy, 5x^2y,$$

$$5(y+1)(x+2)$$

Students write down in their copies.

E.g.:-
 $5(y+1),$
 $(x+2),$
 $5x^2y$

Teaching points	Pupil's Teacher's Activity	Pupil Activity	Black-Board work
-----------------	----------------------------	----------------	------------------

Method of common factors

factorise $2x + y$
 $2x = 2 \times x$
 $y = 2 \times 2$
 $2x + y = (2 \times x) + (2 \times 2)$

factor 2 is common to both the terms

Students listen carefully

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

$$10x = 2 \times 5 \times x$$

common factor is $5x$

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

$$10x = 2 \times 5 \times x$$

common factor is $5x$

Examples

factorise -

$$12a^2b + 15ab^2$$

$$12a^2b = 2 \times 2 \times 3 \times a \times a \times b$$

$$15ab^2 = 3 \times 5 \times a \times b \times b$$

$$12a^2b + 15ab^2 =$$

$$2 \times 2 \times 3 \times a \times a \times b + 3 \times 5 \times a \times b \times b$$

$$= 3 \times a \times b \times (2 \times 2 \times a + 5 \times b)$$

$$= 3ab(4a + 5b)$$

required factor from 3, a, b as common factor.

Students are trying to understand the concept

$$12a^2b + 15ab^2$$

$$12a^2b = 2 \times 2 \times 3 \times a \times a \times b$$

$$15ab^2 = 3 \times 5 \times a \times b \times b$$

$$12a^2b + 15ab^2$$

$$= 2 \times 2 \times 3 \times a \times a \times b + 3 \times 5 \times a \times b \times b$$

$$= 3 \times a \times b (2 \times 2 \times a + 5 \times b)$$

$$= 3ab(4a + 5b)$$

for example expression $2xy + 2y + 3x + 3$ Students listen carefully

Factorisation
by
regrouping
terms

We will notice that the first two terms have common factors 2 and y and last two terms have a common factor 3. But not a single factor is common. Now $(2xy + 2y)$ is factor form?

Example

$$\begin{aligned} &= (2xx + y) + (2xy) \\ &= (2xy + x) + (2xy) \\ &= 2xy(x+1) \\ &= 2y(x+1) \end{aligned}$$

$$\begin{aligned} 3x+3 &= 3xx + 3x1 \\ &= 3(x+1) \end{aligned}$$

The common factor is $(x+1)$

Students note down in their copies

$$\begin{aligned} 2x + 2y \\ &= 2xx + y \\ &+ 2xy \end{aligned}$$

$$\begin{aligned} &(2xy + x) + \\ &2xy \end{aligned}$$

$$\begin{aligned} &= (2xy)(x+1) \\ &= 2y(x+1) \end{aligned}$$

$$\begin{aligned} 3x+3, 3xx+ \\ 3x1 \\ &= 3(x+1) \end{aligned}$$

factor form is
 $(2y+3)(x+1)$

Students will
listen

Rearranging the
expression as

Regrouping

Rearranging the expression
as $2xy + 2y + 3x + 3$
allows us to form groups
all the 'o's us to form
groups $(2xy+2y)$
& $(3x+3)$ leading to
factorization. This is
s regrouping.

carefully &
note down
in copies.

$2xy + 2y + 3x + 3$,
allows us to form groups
 $(2xy+2y)$ and
 $(3x+3)$ leading to
factorization.

RECAPITULATION :

- Q1 what is factorization ?
- Q2 what is common factor ?
- Q3 what is regrouping ?

HOME-WORK

Q1 Find the common factor of given terms.

(i) $12x, 36$

(ii) $6abc, 24ab^2, 12a^2b$

(iii) $10pq, 20qr$

(iv) $18pq, 27p^2q^2$

Q2 Factorize the following expression.

(i) $7x - 42$

(ii) $20lm^2 + 3alm$

(iii) $15xy - 6x + 5y - 2$

(iv) $x^2 + xy + 8x + 8y$

LESSON No. 04

Date 19/09/17

Pupil Teacher's Name SHWETA

Class IX

Subject MATHS

Duration of the period 40 min.

Pupil Teacher's Roll No. 2007

Average Age of the pupils 14+

Topic POWER

SKILL OF EXPLAINING :

co-ordination of explaining statements

use of proper words

clear beginning statement

connecting links

Fluency of language

SKILL OF QUESTIONING :

Prompting

seeking further information

Refocussing

Re-directing

Increasing critical awareness.

SKILL OF PRESENTATION :

① Use of Experience

② Continuity

③ Time duration

④ use of methods

Teaching points	Pupil-Teacher's Activity	Pupil's Activity	Blackboard Remarks
-----------------	--------------------------	------------------	--------------------

Negative power.

If we take $(3/4)^2$ then two (2) is the power of (3) if we take $(3/4)^4$ then 4 is the power of $(3/4)$ Secondly we can take neg. power

If we take $(5)^{-4}$ then -4 is the power of 5.

The pupil teacher will tell the different methods to find out the -ve power.

Students listening carefully

Explaining Skill.

Power

$$(3)^4$$

$$(-3)^3$$

$$(5)^{-4}$$

of 5

$$15^4$$

$$5^4 = 5 \times 5 \times 5 \times 5$$

$$= 625$$

$$\frac{3}{4} \times \frac{3}{4} \times \frac{3}{4} \times \frac{3}{4}$$

$$\left(\frac{3}{4}\right)^4$$

Clear

beginning

starting

0, 1, 2, 3, 4

Rule - 1st

When we multiply the number having same power then if base is same, power will add up.

Students writing in their books

Connecting links
0, 1, 2, 3, 4.

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

Rule II If $m > n$, then
 $x^m \div x^n = x^{m-n}$

When n is the term
 with zero power or
 less than n then
 result comes to be in
 negative power

Students
 listening
 carefully
 & writing in
 notebooks.

Rules.

$$x^m \times x^n = x^{m+n}$$

$$\left(\frac{4}{5}\right)^2 \times \left(\frac{4}{5}\right)^3$$

Fluency of
 language.

$$= \left(\frac{4}{5}\right)^{2+3}$$

0 1 2 3 4 5

$$= \left(\frac{4}{5}\right)^5$$

Skill of questioning

$$\left(x^m\right)^n = x^{mn}$$

$$\left[\left(\frac{1}{2}\right)^2\right]^3$$

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

$$= \left(\frac{1}{2}\right)^6$$

Prompting 0 1 2 3 4 5

Rule III $(x^m)^n = x^{mn}$

For eg $\left[\left(\frac{1}{2}\right)^2\right]^3$

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

$$= \left(\frac{1}{2}\right)^6$$

Recapitulating

0 1 2 3 4 5

$$4) x^m \div x^n$$

$$= x^{m-n}$$

$= \left(\frac{1}{2}\right)^4$ Now
 we will
 read it?

$$6) \left(\frac{1}{2}\right)^0 =$$

what is
 value

RECAPITULATION

Q1 $x^m \cdot x^n = ?$

Q2 $\left[\left(\frac{2}{3}\right)^2\right]^3$ Solve it.

Q3 How will we study $(2)^4$?

Q4 What is the answer of 5^0 ?

HOMEWORK

Q1 Evaluate $2^3 \times 4^2$

Q2 $[1 + 3 + 5]^2$, Evaluate

Q3 Find the value of x , if

(i) $2^{2x} = 32$

(ii) $(4)^{2-2x} = 1$

Date... 20/09/17

LESSON No. 05

Pupil Teacher's Name ... SHWETA

Duration of the period... 40 min

Class... IX

Pupil Teacher's Roll No. ... 2007

Subject... MATHS

Average Age of the pupils... 14+

Topic... Scalene Triangle

INSTRUCTIONS

SKILL OF STIMULUS VARIATION:

Movements

Gestures

change in voice

focusing

change in interaction pattern

Pausing

SKILL OF EXPLAINING

Co-ordinations in statements

use of proper words

clear beginning statements

Fluency of language.

SKILL OF PRESENTATION

Use of experience

continuity

Time duration

use of methods

Teaching Points	Pupil Teacher's Activity	Pupil's Activity	Black-Board work
-----------------	--------------------------	------------------	------------------

Scalene Triangle

A triangle in which all the three sides are not of equal length is called a scalene triangle.

Students will listen carefully

A triangle in which all the three sides are not of equal length is called a scalene triangle.

Perimeter

Perimeter of a triangle is the sum of length of its three sides.

Semi-perimeter is the half of its perimeter.

Students write down in their copies

Perimeter of a triangle is the sum of the length of its three sides.

Semi-perimeter

Pupil teacher explains the semi-perimeter with example.

Semi-perimeter is half of its perimeter.

If a, b, c are the sides of triangle

$$\text{Semi-perimeter} = \frac{a+b+c}{2}$$

To find area of a scalene triangle first we will find the semi-perimeter of a triangle & then apply Heron's formula

Area of a scalene triangle is

$$= \sqrt{s(s-a)(s-b)(s-c)}$$

where s is semi-perimeter

if ABC is a scalene triangle whose sides are $AB = 32m$, $BC = 40m$ & $AC = 24m$
The find it's area

Students write down the formula's in their note-books

If a, b, c are the sides of a triangle then semi-perimeter $= \frac{a+b+c}{2}$

Heron's formula

Area of a scalene triangle

$$= \sqrt{s(s-a)(s-b)(s-c)}$$

where s is semi-perimeter & a, b, c are sides of triangle.

Students listen carefully

Solution -

$$AB = 30m$$

$$BC = 40m$$

$$AC = 24m$$

Semi-perimeter of
Triangle ABC

$$= \frac{AB + BC + AC}{2}$$

Pupil teacher ask
a student to
find out
semi-perimeter.

Good

well & students
what will come
when we sub. a, b
to from S

$$S - a$$

$$8m$$

$$S - b$$

$$24m$$

$$S - c$$

$$16m$$

Students

listen

Carefully

Solution.

$$AB = 32m$$

$$BC = 40m$$

$$AC = 24m$$

Semi-perimeter

$$= \frac{AB + BC + AC}{2}$$

$$= \frac{32 + 40 + 24}{2}$$

$$= 48m$$

then

Area of $\triangle ABC$

$$= \sqrt{s(s-a)(s-b)(s-c)}$$

$$= \sqrt{48(48-40)(48-24)(48-32)}$$

$$= \sqrt{48 \times 8 \times 24 \times 16}$$

$$= 384 \text{ m}^2$$

Students
write

down in
their
copies

Area of $\triangle ABC$

$$= \sqrt{s(s-a)(s-b)(s-c)}$$

$$= \sqrt{48(48-40)(48-24)(48-32)}$$

$$= \sqrt{48 \times 8 \times 24 \times 16}$$

$$= 384 \text{ m}^2$$

RECAPITULATION:-

Q1 What is the formula of perimeter?

Q2 What is the formula to find the semi-perimeter of a triangle?

Q3 What is Heron's formula?

**DISCUSSION
LESSON**

Date 21/09/17
Pupil Teacher's Name SHWETA
Class IX
Subject MATHS

LESSON No. 01

Duration of the period 40-50 min.
Pupil Teacher's Roll No. 2007
Average Age of the pupils 14+
Topic Circle & its parts

INSTRUCTIONAL AIDS

Chalk, Roller-Board, Duster, pointer, Black-Board, chart.

INSTRUCTIONAL OBJECTIVES

Students are expected to acquire

Recognise : Students will be able to recognise the figure of a circle.

Recall : Students will be able to recall the radius & diameter of a circle.

UNDERSTANDING:

Students will be able to differentiate among the diameter and chord of a circle.

Students will be able to differentiate among the terms radius and diameter.

APPLICATION

Students will be able to analyse the radius, diameter, interior and exterior point of the circle.

SKILL

- ① Students will be able to draw a circle of a given radius
- ② Students will be able to solve various exercise related to circle

PREVIOUS KNOWLEDGE ASSUMED

Pupil teacher assumed that students have some knowledge about circles & its parts

INTRODUCTION:

Pupil teacher will ask following questions to students

- Q1 What is in my hand? (Showing a coin)
- Q2 What is shape of coin?
- Q3 What is shape of Bangle?
- Q4 What do you mean by circle?

ANNOUNCEMENT OF THE TOPIC

Well students, today we will study about circles & its parts.

PRESENTATION

Pupil Teacher's Activity

Pupil's Activity

Black-Board work

Definition of a circle: A circle is a closed curve whose each point is equidistant from a fixed point in it.

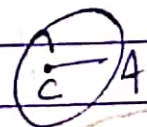
Students will listen carefully

 Circle



C = center of the circle is a fixed point.

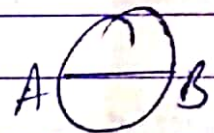
Pupil teacher draws a circle on the Black-Board



" c " denotes the centre of the circle center is a fixed point

CA = Radius of the circle.

A radius of a circle is a line-segment joining the centre of a circle to any point on circle. Students listening attentively



AB = diameter

$D = 2r$

$$r = \frac{D}{2}$$

The segment AC is radius of circle
Diameter is a line segment whose end point lie on a circle or diameter is equal to twice the radius.

Radius

$$D = 2r$$

Students
listening
carefully



Arc in a circle

In the figure given, RS is an arc. An arc is a part of circle RS is an arc.

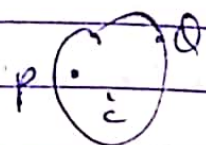
RS = Arc of circle

Here the point P and Q lies in which part of the circle?

P lies in inside & Q lies outside circle.

Interior Exterior part of a circle

Here P lies in the interior part & Q lies in exterior part of a circle. So, P is interior point & Q is exterior point of circle.



Circumference of a circle

The distance around a circular region is known as its circumference.

Students listen carefully

P = interior part
Q = Exterior part
Circumference of circle = $2\pi r$
for $\pi = 2\frac{1}{2}$
or 3.14
R = Radius.

Formula Circumference of a circle. $2\pi r$
for $\pi = \frac{22}{7}$ or 3.14

r = radius

Problem Find the circumference of a circle whose radius is 7cm.

Teacher solves this problem on the black board & students will note down it

Students note down in their copies

Solution

Radius, 7cm.

Circumference of circle

$$= 2\pi r$$
$$= 2 \times \frac{22}{7} \times 7$$
$$= 44\text{cm.}$$

Students write down in their copies

Solution

Radius, 7cm.

Circumference of circle

$$= 2\pi r$$
$$= 2 \times \frac{22}{7} \times 7$$
$$= 44\text{cm.}$$

Activity

$$R.D.C = D/2 = \pi$$

$$3.5 \quad 70 \quad 22 \quad 22/7 = 3.14$$

$$7.0 \quad 14 \quad 44 \quad 44/7 = 3.14$$

$$10.5 \quad 21 \quad 66 \quad 66/21 = 3.14$$

$$21.0 \quad 42 \quad 132 \quad 132/42 = 3.14$$

The ratio is constant
& we denote it by its
approximate value is
 $22/7$ or 3.14 we can

say that $c/d = \pi$
where 'c' represent
circumference of
circle & d is
diameter

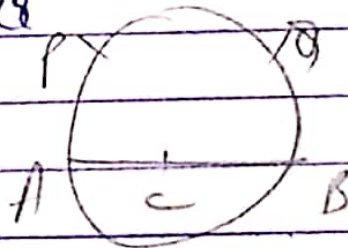
$$c = \pi/d = \pi \times 2r$$

$$c = 2\pi r$$

RECAPITULATION

Q1 Define a circle?

Q2 In this figure, what is radius, & area of a circle



HOME WORK

- Q1 What is a circle? Define the radius & diameter of a circle?
- Q2 Find the circumference of a circle whose radius is 5cm?
- Q3 Find the circumference of a circle whose radius is 9cm?

Date. 22/09/17
Pupil Teacher's Name SHWETA
Class IX
Subject MATHS

LESSON No. 02

Duration of the period 40-50 min
Pupil Teacher's Roll No. 2007
Average Age of the pupils 14⁺
Topic Rectangle & Square

INSTRUCTIONAL AIDS

Black-board, Roller-board, chalks, Duster points.

INSTRUCTIONAL OBJECTIVES

Students are expected to acquire —

Recognise : Students will be able to recognise the figure of a rectangle & a square.

Recall : Students will be able to recall the appropriate method of finding the area of rectangle & square.

UNDERSTANDING :

Students will be able to differentiate among the formula of finding out the area of a rectangle & square.

APPLICATION :

Students will be able to apply the formula in their day to day life.

SKILL

Students will be able to do various exercise related to area.

Pupil teacher assumed that students have so knowledge about rectangle/square.

INTRODUCTION

Pupil teacher will ask the following question to the students:

Q1

What is the shape of figure?

Q2

What is shape of figure?

Q3

What is the shape of figure?

Q4

How many sides are there in the above figure?

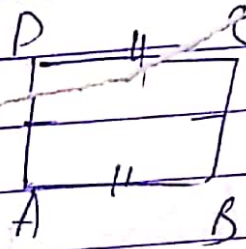
Q5

Do you know how to calculate the area of rectangle & a square?

ANNOUNCEMENT: OF THE TOPIC

Well students, today we will study about area of rectangle & area of square.

PRESENTATION

Teacher points	PUPIL TEACHER'S ACTIVITY	PUPIL'S ACTIVITY	Black Board
	Rectangle is a four sided closed figure opposite sides of rectangle are equal.	Students will listen carefully	
	One angle of a rectangle is a right angle		$AB \perp CD$ $AD \perp BC$ $\angle A = 90^\circ$
	Pupil teacher explain with the help of a figure	Pupil to pay attention	
	AB is the length of rectangle we call it length = l.		

Area of Rectangle

BC is breadth of rectangle we call it breadth = b

Pupil will note down in four copies



Area of rectangle =
length $\times$ breadth
 $= l \times b$

find the area of a rectangle whose
length = 5cm &
breadth = 3cm.

AS, l
BC, b
Area of
Rectangle
 $l \times b$

Solution

In a rectangle
length = 5cm
breadth = 3cm
area = $l \times b$
 $= 5 \times 3$
 $= 15 \text{ cm}^2$

Students
look

carefully at solution
blackboard. $l = 5 \text{ cm}$
 $b = 3 \text{ cm}$

Square

Square is a four
sided closed figure
all the four side

Area of Rectangle
 $= l \times b$
 $= 5 \times 3$
 $= 15 \text{ cm}^2$

of square are equal
each angle of a
square = 90°

Diagonals of square
bisect each other at
right angles

AB, BC, CD, AD
 AC, BD

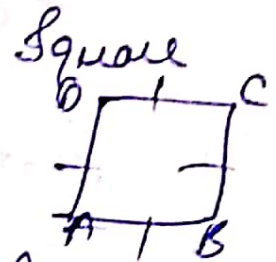
Formula Sides of a square
we denote it as '1'
Area of sq = $(\text{side})^2$

Find the area of square
whose side is 5cm
each

Sol. Pupil teacher solve on
black-board

Side of square = 5cm
Area of square = $(5)^2$
= 25cm^2

Students not-
down in their
copies



AB, BC, CD, DA

$\angle A, \angle B, \angle C,$
 $\angle D, 90^\circ (\text{each})$

Students listen
carefully &
not down in
their copies

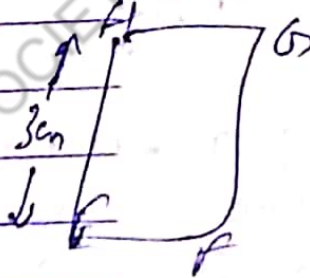
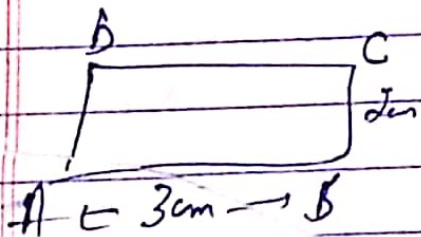
Solution
Side of sq
= 5cm
Area of sq
= $(5)^2$
= 25cm^2

RECAPITULATION

Q1 = What is formula for calculating the area of rectangle?

Q2 = What is formula for calculating the area of square?

Q3 = What is area of following figures:



HOME-WORK

Q1 = Find the area of a rectangle whose length is 10cm & breadth is 7cm?

Q2 = Find the area of square whose each side is 6cm?

Q3 = Find the area of rectangle whose length is 25cm & breadth is 15cm.

**SCHOOL TEACHING
PRACTICE LESSONS**

Date 22/09/17
Pupil Teacher's Name SHWETA
Class IX
Subject Maths

LESSON No. 01

Duration of the period 40-50 min
Pupil Teacher's Roll No. 2007
Average Age of the pupils 14+
Topic QUADRILATERAL

INSTRUCTIONAL AIDS:

Black-board, Roller-board, chalk, Duster, pointer.

INSTRUCTIONAL OBJECTIVES:

Students will be able to acquire

KNOWLEDGE:

Students will be able to recognise the four sided figure.

Students will be able to recall the different property of different types of quadrilateral.

Students will be able to differentiate among the special type of quadrilaterals for e.g. -

APPLICATIONS:

Students will be able to analyse the special type of quadrilateral.

SKILL

Students should be able to solve the various exercise related to quadrilaterals.

Pupil teacher assume that the students have some knowledge about four ideal closed figure. Pupil teacher will ask the following questions from the students.

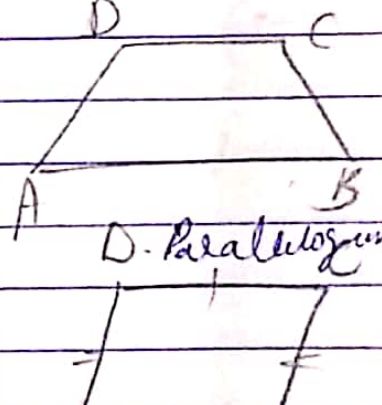
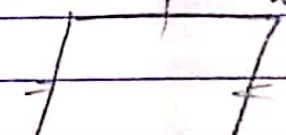
- Q1 What is open figure?
- Q2 What is closed figure?
- Q3 What is shape of figures:-



- Q4 How many sides are there?
- Q5 How many sides does a square contain?

ANNOUNCEMENT OF TOPIC

Well, Students today we will study about special type of quadrilaterals.

Teaching points	Pupil-Teacher's Activity	Pupil's Activity	Black-Board work
	four sided closed figure is called quadrilateral. It has four vertices & four angles & The sum of all four angle is 360°	Students listening carefully	four sided closed figure is called quadrilateral. Sum of all four angles is 360°
Special type of Quad.	Quadrilateral are of following types - Trapezium, parallelogram, rectangle, rhombus, & square		
Trapezium	A quadrilateral in which opp. of atleast one pair of sides are parallel is called trapezium	Pupil draw the figure of trapezium in their notebook	Trapezium  D. Parallelogram 
Parallelogram	A parallelogram is a quadrilateral in which opp. side in both pair are parallel (It is also a trapezium because	Pupil listen carefully.	AB $\parallel$ CD AD $\parallel$ BC.

$$AB \parallel DC$$

$$AD \parallel BC$$

- (1) Opp. sides are equal.
- (2) Opp. angles are equal
- (3) Diagonal bisect each other (O is mid-point of AC & BD)

Rhombus

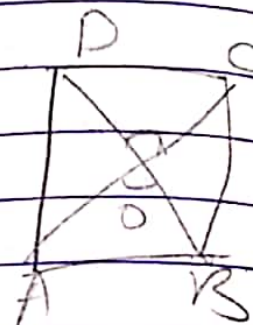
A parallelogram with a pair of adjacent sides are equal is called a rhombus.

Properties

- 1) $AB = BC = CD = DA$
- 2) $\angle A = \angle C$ and $\angle B = \angle D$
- 3) Diagonals of rhombus bisect each other at right angle (90°)

$$\therefore \angle BOC = \angle COD = \angle AOD = \angle AOB = 90^\circ$$

Rhombus



Pupil draw the figure & note down the properties of rhombus in their notebook

$$AB = BC = CD = DA$$

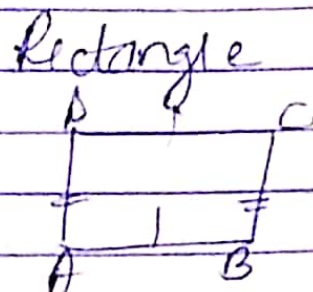
$$\angle A = \angle C$$

$$\angle B = \angle D$$

$$\angle BOC = \angle COD = \angle AOD = \angle AOB = 90^\circ$$

Rectangle - A parallelogram with one angle right angle is called a rectangle (parallelogram is not a rectangle but rectangle is a parallelogram)

Pupil draw the figure of rectangle and writing the properties of rectangle in their note-book.



Properties $\angle A = \angle C$, $\angle B = \angle D$
 $AB \parallel CD$ & $AB = CD$
 AD is a transversal of two lines
 $\angle A + \angle D = 180^\circ$

$\angle A = \angle C$
 $\angle B = \angle D$
 $\angle A + \angle D = 180^\circ$
 $\angle A = \angle B = \angle C = \angle D = 90^\circ$
 (each)

Interior angles on the same side of a transversal Students listening carefully.

$\angle A = 90^\circ$
 $\angle B = 90^\circ$
 $\angle C = 90^\circ$
 $\angle D = 90^\circ$

Hence each angle of a rectangle is right angle and $AC = BD$

square - A parallelogram with a pair of adjacent sides equal & one angle is right angle is called square.

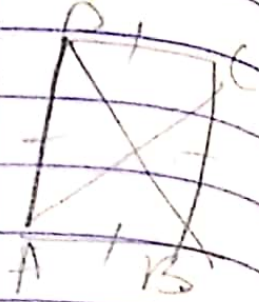
PROPERTIES

- ① All sides of a square are of equal length.
- ② Each angle is right angle.
- ③ The diagonals are of equal length.
- ④ The diagonals bisect each other at right angle.

Then all about special type of quadrilateral for today.

Pupil will write the properties in their note books.

Square.



$AB = BC = CD = DA$
 $\angle A = \angle B = \angle C = \angle D$
Diagonals bisect each other at right angle.

RECAPITULATION:

- Q1 Draw a trapezium, parallelogram, rhombus, rectangle & square?
- Q2 What are the properties of a parallelogram?
- Q3 What are properties of a rectangle?

HOME-WORK

- Q1 Define Quadrilateral?
- Q2 Write about special type of quadrilaterals.
- Q3 Write down properties of square & rhombus?

Date 33/09/17

LESSON No. 09

Pupil Teacher's Name SHWETA

Duration of the period 40-50 min

Class IX

Pupil Teacher's Roll No. 2107

Subject Maths

Average Age of the pupils 14+

Topic LINEAR Equation

INSTRUCTIONAL AIDS :

Chalk, Black-Board, Pointer, Roller-Board, Duster.

INSTRUCTIONAL OBJECTIVE :

After this lesson students are expected to acquire.

KNOWLEDGE :

Recall : Students are able to recall the terms variables & constants.

Recognise : Students are able to recognise an equation & an expression.

UNDERSTANDING :

- (1) Students are able to differentiate b/w expression & equation.
- (2) Students are able to form an equation.

APPLICATION :

Students are able to form an equation in their day life calculation.

(2) Students are able to solve an equation.

SKILL :

Students will be able to solve various exercise related to linear equation.

PREVIOUS KNOWLEDGE ASSUMED :

Pupil teacher assumed that the student have some knowledge about linear equations. Pupil teacher will ask questions to check their previous knowledge.

INTRODUCTION

Q1 What is variable?

Q2 What is constant?

Q3 After applying operations (+, -, $\times$, $\div$) on variables & constants, what will say that?

Q4 What is equation?

ANNOUNCEMENT OF TOPIC

Well students, today we will discuss about topic linear equation.

PRESENTATION.

Teaching Points.	Pupil-Teacher's Activity	Pupil's Activity	Black-Board work
	A number or a combination of variable or constant connected by the symbols of operation $+$, $-$, $\times$, $\div$ etc is called an algebraic expression	Students will listen carefully	
Ex. of Expression	$2x + 3y$, $a - b$ $3n$		Example of expressions $2x + 3y$, $a - b$, $3n$.
	Pupil teacher ask some examples from students & write them on black-board	lay $20x + 40$	Students examples lay, $20x + 40$
	Good		
Linear equation	When an expression is equated to some number or expression then it is called an equation	Students try to understand the concept	Example $x + 5 = 0$ $5x + 40 = 10$ $4y + 10 = 20$.
Example	Pupil teacher will write some examples of linear equations		

on black-board.

$$x + 5 = 0$$

$$50x + 40 = 110.$$

Solution of Equation

To solve an equation means to find the values of variables used in problem

Students write down in their note books.

Solution of an equation

Pupil teacher solve an equation on black-board.

$$\begin{aligned} 5x + 10 &= 20 \\ 5x &= 20 - 10 \\ x &= \frac{10}{5} \end{aligned}$$

$$x = 2$$

Problem

$$5x + 10 = 20$$

$$5x = 10, x = 10/5 = 2$$

2 is the solution of this equation.

Verification of Equation

After finding the value of variable whenever put the value of that variable in the equation, if equation is satisfied means R.H.S & L.H.S are equal, then

Students listen carefully & write down in their note book.

The value of variable is true otherwise wrong
(P.T explain this with previous example)

$$5x + 10 = 20, x = 2$$

Put the value $x = 2$

$$5 \times 2 + 10 = 20$$

$$10 + 10 = 20$$

$$L.H.S. = R.H.S$$

Value of variable is right

Example of verification

$$5x + 10 = 20$$

$$x = 2$$

$$5 \times 2 + 10 = 20$$

$$10 + 10 = 20$$

$$L.H.S. = R.H.S$$

Value of variable is right

RECAPITULATION

Q1) What is an equation?

Q2) Which sign should be must there in the equation.

HOME-WORK.

Solve the equations

(i) $x - 5 = 2$

(ii) $y + 9 = 7$

(iii) $19x - 13 = 2$

(iv) $2x - \frac{3x}{5} = 7$

(v) $4x = x - 6$

Date 24/09/17

LESSON No. 03

Pupil Teacher's Name SHWEPA

Duration of the period 40-min

Class IX

Pupil Teacher's Roll No. 2007

Subject MATHS

Average Age of the pupils 14+

Topic INTEGERS

INSTRUCTIONAL AIDS:

Black-board, Roller-board, chalk, Duster, pointer chart.

INSTRUCTIONAL OBJECTIVES

Students are expected to acquire -

KNOWLEDGE:

Recognise: Students will be able to recognise the addition of one positive integers & negative integers.

Recall: Students will be able to recall the addition & subtraction of an integer.

UNDERSTANDING

- ① Students will be able to understand the addition & subtraction of two negative integers.
- ② Students will be able to explain the addition of two integers on a number line.

APPLICATION

Students will be able to analyse the addition of two integers on a number line.

SKILL

Students will be able to solve various exercise related to addition of two integers in 4-5 minutes at allocated time.

PREVIOUS KNOWLEDGE TESTING

Pupil teacher assumed that students have some knowledge about integers & ask some questions from them

- Q1. What do you mean by integers?
- Q2. What are positive integers?
- Q3. What are negative integers?
- Q4. Which one is greater among -4 and -7 ?
- Q5. How can we add these two integers?
 (-4) & (5) ?

ANNOUNCEMENT

Well students, today we will study about the integers & how to represent integers on the number line.

Learning Ints	Pupil TEACHER'S ACTIVITY	Pupil's Activity	Black-board work
Integers	If the whole numbers are represented by $\square$ and negative number integers by $\square$ then how can we represent the integers?	Students will listen carefully	Integers
	Combination of these two are integers	No response Students writing in notebooks	Whole number all represented by $\square$ integers are represented by $\square$ integers are represented by $\square$
Pup. of intgs on no line	The integers are -3, -2, -1, 0, 1, 2, 3 -3 -2 -1 0 1 2 3	Students listening carefully hook down in their copies	$\square = \square$
	Mark a point 0 on it		Integers are -3, -2, -1, 0, 1, 2, 3
Extra Intgs	Positive integers are marked on right side of 0	Students will mark 0 on no. line.	$\begin{array}{ccccccc} \hline -3 & -2 & -1 & 0 & 1 & 2 & 3 \\ \hline \end{array}$ -ve int +ve int
Mark -6 on no. line	Mark -6 on number line.		

Make 2 on the number line

$-4, -3, -2, -1, 0, 1, 2, 3, 4$

Can you write these marked integers in ascending order?

The ascending order of these no. is $-4, -1, 3$

$$-4 < -1$$

Ascending order
 $-4, -1, 3$

Why did we choose -4 as smallest number.

Descending order

$10, 6, 2, -4, -10$

Descending order

$10, 6, 2, -4, -10$

Can you write these marked integers in descending order.

$10, 6, 2, -4, -10$

Among two no. greater no. lies on right of other.

number line case of
positive & negative
integers. The value of
no. represent on right
side increases & value
decreases on left
side of 0.

Students note
down in their
notebooks

Greatest no.
lie on right hand
side.

Smaller number
on left hand
side of 0.

RECAPITULATION

Q1 How can we represent the integers on no. line?

Q2 Mark 17 on no. line?

Q3 Use sign of $>$, $<$, $=$ in box to make statement
true.

0 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 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

HOMEWORK

Q1) What are integers? How can we represent them on number line

Q2) Complete Pattern:

(a) 7, 3, -1, -5, _____, _____, _____

(b) -2, -4, -6, -8, _____, _____, _____

(c) 15, 10, 5, 0, _____, _____, _____

Date 25/09/17

LESSON No. 04

Pupil Teacher's Name SHWETA

Duration of the period 40-min

Class IX

Pupil Teacher's Roll No. 2007

Subject Maths

Average Age of the pupils 14

Topic NATURAL NUMBERS

INSTRUCTIONAL AIDS :

Chalk, duster, pointer, roller-board, chart, black-board

INSTRUCTIONAL OBJECTIVES :

Students are expected to acquire

KNOWLEDGE :

Recognise : Students will be able to recognise the ordering of integers

Recall : Student will be able to recall the integers on a number line.

UNDERSTANDING :

1. Students will be able to understand & compare two integers.

2. Students will be able to illustrate the integers on a number line.

APPLICATION

Students will be able to establish the relationship b/w two integers

SKILL

- (1) Students will be able to represent the integers in ascending & descending order
- (2) Students will be able to represent two integers on a no. line.

PREVIOUS KNOWLEDGE ASSUMED :

Repil teacher assumed that students have some knowledge about integers.

INTRODUCTION

- Q1 What do you mean by natural number,
- Q2 What do you mean by whole number,
- Q3 What are integers?
- Q4 How can we represent the integers on no. line?

call these two integers?

Ok, the result is -3
A sign of greater
integer

**Addition of
One positive
integer &
negative
integer**

Find the value of
 $3 + (-5)$

In above eq, we add
two integers, tell me
what we call these two
integers?

One positive and
One negative $3 + (-5)$
 $= -2$
Integers

The result will be ---

$$+3-5$$
$$=-2$$

$$7-9=-2$$

Subtraction of integers
Given integers we say
Integers are closed
under integers.

$$17 - (-21)$$
$$= 17 + 21$$
$$= 38$$

If a & b are two
integers then $a-b$
is also an integer

Students will
copy in their
copies

**Subtraction
of two
integer**

In above example, the sign is of greater integer, the sign of above example is -ve because -9 is negative & is greater than 7

So answer is -2

Subtraction of two negative integers

Find $(-21) - (-10)$

In above example first students will write down $(-)$ will give +ve in their integer. Then we solve the question by the method discuss above.

$$\begin{aligned} & -21 - (-10) \\ & = -21 + 10 \\ & = -11 \end{aligned}$$

Find

$$\begin{aligned} & 32 - (-12) \text{ , ?} \\ & 32 - (-12) \\ & = 32 + 12 = 44 \end{aligned}$$

Subtraction of one positive & negative integers

Find $32 - (-17)$

Pupil teacher solve the question on the black board?

RECAPITULATION :-

Q1 Observe the following & fill in the blank

(1) (-8) to _____

(2) (-23) to _____

(3) $0 + (-59)$ _____

(4) $-61 +$ _____ $= -61$

(5) $0 +$ _____ $= -43$

(6) _____ $+ 0 =$ _____

Q2 Write down a pair of integers whose
(1) sum is -3
(2) difference is -5

HOME WORK

fill in the blanks to make the following statement true:

(1) $(-5) + (-8) = (-8) + ()$

(2) $-53 + () = -53$

(3) $(13 + (-12)) + () = 13 + ((-12) + (-7))$

Date 26/09/17
Pupil Teacher's Name SHWETA
Class IX
Subject Maths

LESSON No. 25

Duration of the period 40-50 min
Pupil Teacher's Roll No. 2007
Average Age of the pupils 14+
Topic Polynomials

INSTRUCTIONAL AIDS:

Chalk, black-board, Duster, pointer, pointer board.

INSTRUCTIONAL OBJECTIVES:

Students are expected to acquire.

KNOWLEDGE

Recall - Students will be able to recall expression.

Recognise - Students will be able to recognise polynomials.

UNDERSTANDING:

Students will be able to differentiate polynomial & expression.

APPLICATION

Students will be able to analyse - polynomial on the basis of degree.

SKILL

Students will be able to solve various exercise related to polynomial.

PREVIOUS KNOWLEDGE ASSUMED

Pupil teacher assumed that the students have some knowledge about polynomial.

INTRODUCTION :

Q1 What is variable?

Q2 What is constant?

Q3 What is expression?

Q4 What is polynomial?

ANNOUNCEMENT

Well students, today we will still about polynomials -

PRESENTATION

Pupil's Teacher's Activity

Pupil's Activity

Black-Board work.

A polynomial is an algebraic expression in which variables have non-negative integral exponents only.

Students will listen carefully

Polynomial is an algebraic expression in which variables have non-negative exponents only.

Pupil-Teacher gives some examples on Black-board eg.

listen carefully

$$12 + 2x + x^2$$

$$x^2 + 3x - 9$$

$$7x^3 + 52x^2y - 5xy^2$$

$$x^2 + 6x + 12$$

$$9x^2 + x^2y + y^2$$

$$x^2 + 6x + 12$$

$$9x + x^2y + 4xy^2$$

Pupil-teacher asks some example from students also

The parts of an expression which are divided by + and - are known as terms.

Pupil teacher asks a question from students

The parts of expression which are divided by + and - are known as terms.

What is term?

Good

Polynomials having only one term are known as monomials

eg. $2x, 4y, x^0, x^3$

Students listen carefully

Polynomials having only two terms are binomials eg-

~~$2x + 3y, 2x + 3, 10y + 5$~~

Students write down their

notation

Polynomials having only three terms are known as trinomials eg.

$x^2 + 4x + 2$
 $x^3 + x + 4$

Trinomial
 $x^2 + 4x + 2$
 $x^3 + x + 4$

To write down the terms of a polynomial in decreasing order of the exponents of variables is called standard form of a polynomial.

To write the terms of a polynomial in decreasing order of exponents of variables.

called the standard form of a polynomial

Students listen carefully

Pupil teacher gives eg. on black-board

The highest component of variable in a polynomial is called degree of polynomial. eg.

$$5x^2 + 13x - 9$$

degree of polynomial is?

Students write down in their copies

The highest exponent of variable in a polynomial is called degree of polynomial

Pupil teacher writes some example & ask the degree of polynomial from students

Examp 17

$$5x^2 + 13x - 9$$

degree of polynomial is 2.

$$x^3 + 4x + 2$$

3

$$9x^6 + 5x^5 + 3x^2 + x + 4$$

6

RECAPUTLATION

Q1 What is polynomial?

Q2 What is degree of polynomial?

Q3 Write the following polynomial in standard form

(i) $y^2 + 6y + 9 + 4y$ (ii) $4y^2 - 13y^5 + 12y$

(iii) $y^2 + 4y^8 - y^6$

Date 27/09/17 LESSON No. 06

Pupil Teacher's Name SHWETA

Duration of the period 40-min

Class IX

Pupil Teacher's Roll No. 2007

Subject Maths

Average Age of the pupils 14+

Topic Polynomial

INSTRUCTIONAL AIDS:

chalk, black-board, Duster, Roller-Board, Pointer

INSTRUCTIONAL OBJECTIVES:

Students are expected to acquire

KNOWLEDGE:

Recall - Students will be able to recall polynomial.

Recognise - Students will be able to recognise, monomial, binomial & trinomial.

UNDERSTANDING

Students will be able to differentiate between expression & polynomial.

Students will be able to analyse polynomial on the basis of degree.

SKILL

Students will be able to solve various exercise related to polynomial.

Pupil teacher assumed that students have some knowledge about polynomials.

INTRODUCTION :

- Q1 What is an expression?
- Q2 What is polynomial?
- Q3 What is standard form of polynomial
- Q4 How can we divide a polynomial by a polynomial?

ANNOUNCEMENT

Well students, today we will discuss how to divide a polynomial by a polynomial.

PRESENTATION

TEACHING POINTS	PUPIL TEACHER ACTIVITY	Pupil's Activity	Black-Box Work
	Divide $20x^4$ by $10x$	Students will listen carefully	
	Pupil teacher tells students that first we will write the coefficient of x by coefficient of x^4 ✓ Δ then simplify it.		

$$\frac{20x^4}{10x}$$

$$= \left(\frac{20}{10}\right) \left(\frac{x^4}{x}\right) = 2x^3$$

Students
will write
down in their
copies

Solution

$$= \frac{20x^4}{10x}$$

$$= \left(\frac{20}{10}\right) \left(\frac{x^4}{x}\right)$$

$$= 2x^3$$

Divide each term of
polynomial by the
given & solve it.

Students
listen
carefully

Divide $3y^3 + 15y^2 + 12y$ by
 $3y$

Pupil teacher asks
students.

How many terms are
there in this polynomial

3

$$\frac{3y^3 + 15y^2 + 12y}{3y}$$

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

$$= y^2 + 5y + 4$$

Students
write
down in
their
copies

$$\frac{3y^3 + 15y^2 + 12y}{3y}$$

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

$$= y^2 + 5y + 4$$

First we write the dividend & divisor in the standard form

**Division
of a
polynomial
by a
binomial**

Second, we divide the first term of dividend by first term of divisor

This gives us the first term of quotient

we multiply the divisor by first-term of quotient & subtract product from the dividend

we treat the remainder as the new dividend. The divisor remains the same we repeat.

Students

listen

carefully &
try to understand
the concept

The same procedure

Students
listen
carefully

Problem

Divide $-14x^2 - 13x + 12$
by $2x + 3$

dividend & divisor are
already in standard
form

Solution

$$\begin{array}{r} -7x + 4 \\ 2x + 3 \overline{) -14x^2 - 13x + 12} \\ \underline{-14x^2 - 21x} \\ 8x + 12 \\ \underline{8x + 12} \\ 0 \end{array}$$

Students
write down
in their
notebooks

Quotient = $-7x + 4$

~~Remainder = 0~~

Quotient
 $-7x + 4$

Remainder = 0

RECAPITULATION

Q1 When we divide a polynomial by a binomial what is our first step?

Q2 Divide

(i) $2x^2$ by $2x$

(ii) $-3x^3$ by x^2

HOME-WORK

Divide the following

(1) $-4b^3 + 4b^2 + b^2$ by $2b$

(2) $x^4 - x^2$ by $\sqrt{2}x^2$

(3) $x^2 + 6x + 8$ by $x + 4$

(4) $x^2 + 7x + 10$ by $x + 5$

Date... 28/09/17

LESSON No. 07

Duration of the period... 40 min.

Pupil Teacher's Name... SHWETA

Pupil Teacher's Roll No. 2007

Class... IX

Average Age of the pupils... 14+

Subject... Maths

Topic... Surface Area

INSTRUCTIONAL AIDS :

Blackboard, Roller-board, chalk, Duster, pointer, charts.

INSTRUCTIONAL OBJECTIVES

Students will be able to acquire ;

KNOWLEDGE

Recognise : Students will be able to recognise the figure of cylinder.

Recall : Students will be able to recall the appropriate method of finding area of cylinder.

UNDERSTANDING :

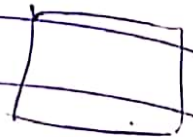
Students are expected to be able to differentiate among the formula of finding the curved surface area & total surface area.

SKILL

Students will be able to solve various exercise related to surface area in 4-5 min of time allotted. Pupil teacher assumed that students have some knowledge about cylinder.

INTRODUCTION

Q1 What is shape of figure?



Q2 What is shape of figure?



Q3 What is formula of area of rectangle?

Q4 What is formula of area of circle?

Q5 What is shape of figure?



ANNOUNCEMENT

Well students today we will study about surface area of cylinder.

PRESENTATION.

Rpil Teacher's Activity

A right circular cylinder has two plane ends. Each plane end is circular in shape.

These are two circular regions are congruent & parallel to each other we call it base of cylinder.

The line segment OO' joining the centre of two plane ends is called the axis of the cylinder. OO' is $\perp$ to every line segment base.

radius = r
length = l
 $PP' \parallel OO'$

Each circular edge has length $2\pi r$ & area of each plane end is πr^2 .

Rpil's Activity

Students listening carefully

Students listening carefully

Black-Board

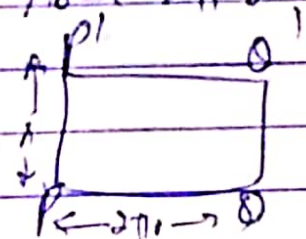


A right circular cylinder.



Circumference = $2\pi r$

Area = πr^2



Area of rectangle = $l \times b$

= $2\pi r \times h$

= $2\pi r h$

CSA

curved surface area
could be some how
made plate curved
surface area of cylinder
 $= 2\pi rh$

$$\begin{aligned}\text{Total surface area} &= \\ 2\pi rh + 2\pi r^2 \\ &= 2\pi r(h+r)\end{aligned}$$

Students
note in
their note-book

Problem-1

Find the radius of
cylinder whose area is
 88 cm^2 & height 14 cm
What is given in this
statement

Pupil note
in their
copy

Solution
 88 cm^2
 $h = 14\text{ cm}$

Given

$$CSA = 88\text{ cm}^2$$

$$h = 14\text{ cm}$$

$$CSA = 2\pi rh$$

$$88 = 2 \times \frac{22}{7} \times r \times 14$$

$$r = 1\text{ cm}$$

$$\begin{aligned}CSA &= 2\pi rh \\ 88 &= 2 \times \frac{22}{7} \times r \times 14\end{aligned}$$

$$r = 1\text{ cm}$$

Problem-2

Find the TSA of cylinder
whose diameter is 14 cm
& height 1 m ?

Pupil will
note down
in their
copy

Pupil teacher solve the problem on the black-board

$$D = 140 \text{ cm}$$

$$r = \frac{140}{2} = 70 \text{ cm}, \quad \frac{70}{100} \text{ m}$$

$$h = 1 \text{ m}$$

$$\text{TSA} = 2\pi r (h + r)$$

$$= 2 \times \frac{22}{7} \times 70 (1 + 7)$$

$$= \frac{44 \times 10}{10} = 7.48 \text{ m}^2$$

Students listening carefully

$$D = 140 \text{ cm}$$

$$r = \frac{140}{2} = 70 \text{ cm}$$

$$= \frac{70}{100} \text{ m}$$

$$h = 1 \text{ m}$$

$$\text{TSA} = 2 \times \frac{22}{7} \times 70 (1 + 7)$$

$$= \frac{44}{10} \times 17$$

$$= 7.48 \text{ m}^2$$

RECAPITULATION

Q1 A right circular cylinder has a base radius of 7 cm & height is 3.5 cm. Find the CSA of cylinder?

Q2 A closed circular cylinder has a diameter of 10 cm & height 15 cm. Find the TSA?

HOME-work

Q1 The circumference of the base of a right circular cylinder is 17cm , if the height of cylinder is 1m . Find the lateral surface area of cylinder?

Q2 CSA of a right circular cylinder at height 35cm is 121cm^2 . Find the radius of its base?

Date 28/09/17 LESSON No. 08
Pupil Teacher's Name SHWETA Duration of the period 40-50 min
Class IX Pupil Teacher's Roll No. 2607
Subject Maths Average Age of the pupils 14+
Topic Rational Numbers

INSTRUCTIONAL AIDS

Blackboard, Roller board, chalk, Duster, pointer, chart showing rational numbers

INSTRUCTIONAL OBJECTIVES

Students are expected to acquire

Recognise : Students will be able to recognise the rational numbers.

Recall : Students will be able to recall the number line.

UNDERSTANDING

Students will be able to differentiate the rational numbers & fractions

Students will be able to explain the rational number.

APPLICATION

Students will be able to analyse in the given rational number. On number line.

Students will be able to solve various exercise related to rational number in 45 min of duration.

INTRODUCTION

- Q1 What do you mean by natural number?
- Q2 What do you mean by whole number?
- Q3 What do you mean by integers?
- Q4 What are rational numbers?

SKILL

Well students today we will discuss about rational numbers.

PRESENTATION

A rational number is defined as a number that can be expressed in form of p/q where p & q are integers

$$\Delta q \neq 0$$

$9/5$ is a rational number.

$$p = 9, \quad q = 5$$

Students listening carefully

Rational number
 $\frac{p}{q}$
 $\frac{9}{5}$ is a rational number
 $p = 9, q = 5$

$$\frac{3}{8}, \frac{4}{8}, 1\frac{2}{3}$$

All fractions are rational number

Fractions are

rational

$$\frac{3}{8}, \frac{4}{8}, \frac{2}{3}$$

Decimal number that like 0.5, 2.3, 1.4 etc. Each of such number can be written as ordinary fractions. Hence all decimal numbers

Pupil will not-does in their copies

Decimal

no are

rational no.

$$0.5 = \frac{5}{10}$$

$$\text{Ex eg. } 0.5 = \frac{5}{10}$$

$$0.3\overline{3} = \frac{33}{100}$$

$$0.3\overline{3} = \frac{33}{100}$$

$$\frac{-2}{3} = \frac{-2 \times 2}{3 \times 2} = \frac{-4}{6}$$

$$\frac{-2}{3} = \frac{-2 \times 2}{3 \times 2} = \frac{-4}{6}$$

$$\frac{-2}{3} = \frac{(-2) \times (-5)}{3 \times (-5)} = \frac{10}{-15}$$

$$\frac{-2}{3} = \frac{-4}{6} = \frac{-10}{15}$$

Pupil will not-does in their copies.

Equivalent Rational number

Such rational numbers that are equal to each other are said to be equivalent to each other.

$$\frac{-2}{3} = \frac{-4}{6} = \frac{-10}{15}$$

Positive rational number

$$\frac{3}{8}, \frac{5}{7}, \frac{2}{3}$$

Positive Rational No. Both the numerator & denominator are positive integers, such a rational number is called a positive rational number.

Pupil will listen carefully

So,

$$\frac{3}{8}, \frac{5}{7}, \frac{2}{9}, \dots$$

are positive rational numbers.

Negative Rational No. The numerator is a negative integer, whereas the denominator is a positive integer. Such a rational number is called a negative rational no. So, $-\frac{5}{7}, -\frac{3}{8}, -\frac{9}{5}$ etc.

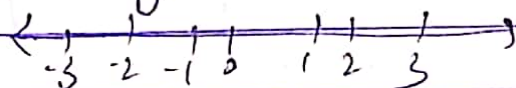
Pupil listens attentively & also working in their notebooks

Negative Rational No.

$$-\frac{5}{7}, -\frac{3}{8}, -\frac{9}{5}, \dots$$

are negative rational no.

Rational No. & No. line.



The points to right of zero are denoted by sign & an integer.

The points to the left of zero are denoted by -ve sign & are negative integers.

Let us represent the number -1 on the no. line.

To which side of 0 -1 is being -3 lies on the left of 0 at same distance as 1 from 0.

Mark 3 on the number line. If it is marked would be.

on the right of 0 & mark on left lies half way b/w zero.

1 & two -3 lies on left of 0. 3 is at same distance as 1 from 0.

RECAPITULATION

Q1 Reduce $-15/30$ to the standard form?
Q2 Reduce to standard form—

(i) $\frac{36}{-24}$ (ii) $-\frac{3}{5}$

HOME-WORK

Q1 What are rational numbers?

Q2 Give two examples of positive & negative rational numbers each

Q3 Represent $-\frac{4}{2}$ & $\frac{4}{2}$ on number line

LESSON No. 09

Date: 29/07/18
Pupil Teacher's Name: SHWETA
Class: IX
Subject: Maths

Duration of the period: 40-50 min
Pupil Teacher's Roll No.: 2007
Average Age of the pupils: 14+
Topic: Exercise

INSTRUCTIONAL AIDS:

Black-Board, Roller-board, chalk, Duster, pointer, chart.

INSTRUCTIONAL OBJECTIVES

KNOWLEDGE

Recognise: Students will be able to recognise the rational numbers.

Recall: Students will be able to recall the number line.

UNDERSTANDING

- ① Students will be able to differentiate the rational number and fraction.
- ② Students will be able to explain the rational numbers.

APPLICATION

Students will be able to analyse the given number on the number line.

SKILL

Students will be able to solve exercise related to rational numbers in 4-5 mins.

PREVIOUS KNOWLEDGE ASSUMED

Pupil teacher assumed that students have some knowledge of rational number

INTRODUCTION

- Q1 What do you mean by rational number?
- Q2 Give some examples of positive integers?
- Q3 Mark $-3/2$ on a number line?
- Q4 How can we add two rational numbers $\frac{7}{3}$ and $\frac{5}{3}$?

SKILL

Well students, today we will study about addition, subtraction, multiplication & division of two rational numbers.

PRESENTATION :-

Teaching Points

Addition of Rational No.s

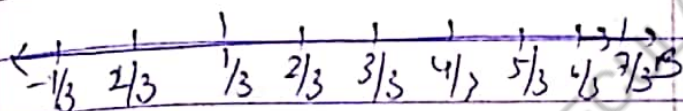
Pupil Teacher's Activity

let us add two rational numbers with same denominator say

$$\frac{7}{3} \text{ and } \frac{-5}{3}$$

we find

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



The distance between two consecutive points is $\frac{1}{3}$.
Adding $-\frac{5}{3}$ to $\frac{7}{3}$

will mean moving to the left of $\frac{7}{3}$ making jumps

where do we reach?

Good.

Pupil's Activity

Pupil will listen carefully

we reachable $\frac{2}{3}$

Black-Board Work

$$\text{find } \frac{7}{3} + \left(\frac{-5}{3}\right)$$

$$= \frac{7}{3} - \frac{5}{3}$$

$$= \frac{7-5}{3} = \frac{2}{3}$$

$$\frac{6}{5} + \left(\frac{-2}{5}\right)$$

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

$$= \frac{6-2}{5} = \frac{4}{5}$$

$$\text{find } \frac{3}{7} + \left(\frac{-5}{7}\right)$$

$$= \frac{3}{7} - \frac{5}{7}$$

$$= \frac{-2}{7}$$

Difference of two rational numbers is called subtraction.

Pupil will note down in their copies.

Find $\frac{5}{7} - \frac{3}{8}$

App. of rational number

let us now try to solve this problem

$$\frac{5}{7} - \frac{3}{8} = \frac{5}{7} + \left(-\frac{3}{8}\right)$$

$$= \frac{40-21}{56} = \frac{19}{56}$$

let us now multiply the rational numbers $-\frac{3}{5}$ by 2

On number line. let we will mean two jumps of $\frac{3}{5}$ to the left

$$\frac{6}{5} \quad \frac{5}{5} \quad \frac{4}{5} \quad \frac{3}{5} \quad \frac{2}{5} \rightarrow$$

Multiplication
 $-\frac{3}{5} \times 2$

$$= -\frac{6}{5}$$

What is the reciprocal
of $\frac{2}{7}$

$$\frac{7}{2}$$

The reciprocal of $-\frac{2}{7}$

$$\frac{7}{-2} \text{ i.e. } -\frac{7}{2}$$

The product of a
rational number
with its reciprocal
always 1.

Students
will listen
carefully

For eg

$$-\frac{2}{7} \text{ reciprocal of } \frac{7}{2}$$

Divide $\frac{4}{9}$ by $-\frac{5}{7}$

$$\frac{4}{9} \div -\frac{5}{7}$$

$$= \frac{4}{9} \times \frac{7}{-5} = -\frac{28}{45}$$

Find

$$\frac{6}{-5} \div -\frac{2}{3}$$

Division

Reciprocal
of

$$-\frac{2}{7} \text{ is } -\frac{7}{2}$$

Find

$$\frac{4}{9} \div -\frac{5}{7}$$

$$\frac{4}{9} \times \frac{7}{-5} = -\frac{28}{45}$$

RECAPITULATION:

Q1 find the sum.

(i) $\frac{5}{4} + (-\frac{11}{4})$

(ii) $-\frac{3}{11} + \frac{5}{9}$

Q2 find

(i) $\frac{7}{24} - \frac{17}{36}$

(ii) $-\frac{21}{9} - 6$

(iii) $\frac{19}{2} \times -\frac{7}{4}$

(iv) $(-4) \div \frac{2}{3}$

Date..... 30/09/17 LESSON No. 10
Duration of the period..... 40-50 min
Pupil Teacher's Name SHWETA Pupil Teacher's Roll No. 2007
Class..... IX Average Age of the pupils..... 14+
Subject..... Maths Topic..... Percentage

INSTRUCTIONAL AIDS :

chalk, Black-Board, Roller-board, Pointer, Duster chart.

INSTRUCTIONAL OBJECTIVES

The students will be able to acquire :

KNOWLEDGE

Recall : Students will be able to recall about comparing quantities

Recognise : Students will be able to recognise about real use of quantities.

UNDERSTANDING :

i) Students will be able to understand about the comparing quantities.

ii) Students will be able to classify the different types of comparing quantities.

SKILL : Students will be able to solve various exercise related to comparing quantities.

PREVIOUS KNOWLEDGE ASSUMED

Pupil teacher assumed that students have some knowledge about comparing quantities.

INTRODUCTION :

- Q1 A basket has 30 apples and 6 oranges what is the ratio between apples & oranges?
- Q2 Find percentage of oranges out of 36 fruits?

ANNOUNCEMENT

Today we will study about percentage.

PRESENTATION

Teaching Points	Pupil Teacher's Activity	Pupil's Activity	Black Board-work
-----------------	--------------------------	------------------	------------------

Percentage	Pupil teacher tells some thing about percentage	Students will listen carefully	old price = ₹ 34000
------------	---	--------------------------------	---------------------

	Old price of scooter = ₹ 34000 Reduction = 5% of ₹ 34000 = 1700 Rs		Reduction = 5% of ₹ 34000
--	--	--	---------------------------

	New price of scooter = old price - Reduction = ₹ 34000 - 1700 = ₹ 32,300		= 1700
--	---	--	--------

Discount is reduction given on marked price

Discount = M.P. - sale price

Example

An item marked at ₹ 840 is sold at ₹ 714. Find discount & discount %

Students write down in their notebook

$$D = M.P. - S.P.$$

$$= 840 - 714 = 126 \text{ ₹}$$

$$D\% = \frac{126 \times 100}{840} = 15\%$$

Percentage word becomes the Latin word per centum means of per centum is per one hundred.

Students listen carefully

Percentage word comes from Latin word 'per centum' meaning per one hundred.

Total no. of students be x . 60% of x are girls. Find total no. of students. If total girls are 18.

Students try to understand the concept

$$\begin{aligned} \text{Total students} &= x \\ \text{Girls} &= 60\% \text{ of } x \\ &= x \times \frac{60}{100} = \frac{3x}{5} \end{aligned}$$

Solution
T. R. D. x
Girls: $60\% \text{ of } x$
 $= \frac{60x}{100}$
 $= \frac{3x}{5}$

According to question

Students write down in their notebooks

$$\frac{3x}{5} = 18$$

$$\begin{aligned} 3x &= 18 \times 5 \\ x &= \frac{18 \times 5}{3} = 30 \end{aligned}$$

Total students: 30

The price of scooter was ₹ 34000 last year. It has increased by 20% this year. What is the price of scooter now.

Students
listen
carefully

Sol.

Previous price = ₹ 34000

old price
= 34000

Rate inc. = $34000 \times \frac{20}{100}$
= 6800

Rate inc.
= $34000 \times \frac{20}{100}$

New Price = old price + Inc.
= 34000 + 6800
= 40,800 ₹

Students
note

down
in their
copies.

New
= 34000 + 6800
= 40,800

Price of scooter was decreased by 5%. Find the price of scooter. If old price was ₹ 34000

RECAPULATION

Q1 Define the Percentage?

Q2 72% of 25 students are good in mathematics. How many students are not good in mathematics?

Q3 Define the discount?

HOME WORK

Q1 A man got 10% increase in his salary. If his new salary is ₹ 1,54,000. Find the original salary?

Q2 If a table marked at ₹ 15,000 is available at ₹ 14,400, find the discount and discount percentage on table.

Date... 1/6/2017

LESSON No. 11

Pupil Teacher's Name... SHWETA

Duration of the period... 40-50 min

Class... IX

Pupil Teacher's Roll No. 5007

Subject... Maths

Average Age of the pupils... 14+

Topic... Area of cone

INSTRUCTIONAL AIDS:

Blackboard, roller board, chalk, duster, pointer, chart.

INSTRUCTIONAL OBJECTIVES:

Students are expected to acquire:

Recognise : Students will be able to recognise the figure of a cone.

Recall : Students will be able to recall the appropriate method of finding area of a cone.

UNDERSTANDING

Students will be able to differentiate among the formulae of finding the curved surface area & total surface area.

APPLICATION:

Students will be able to apply the formula in their day to day life.

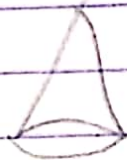
PREVIOUS KNOWLEDGE ASSUMED :

Pupil teacher assumed that students have some knowledge about cone.

SKILL

Pupil teacher will ask the following questions

- Q1 What is the formula for finding area of a circle?
- Q2 What is the formula for finding the circumference of a circle?
- Q3 What is shape of figure :-



ANNOUNCEMENT

Well students, today we will study about the surface area of a cone.

PRESENTATION :

TEACHING POINTS

Pupil Teacher's Activity

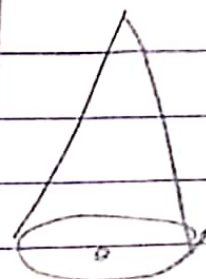
Pupil's Activity

Blackboard work

Right circular cone

A right circular cone has a plane and which is circular in the shape

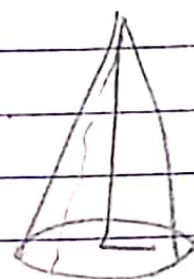
Pupil will listen carefully



Radius

This end is called the base of the cone. Its radius is called the radius of the base of cone or simply the base radius. There is also a corner which is a point of cone (farthest from the cone). It is called vertex of cone.

Students listening carefully



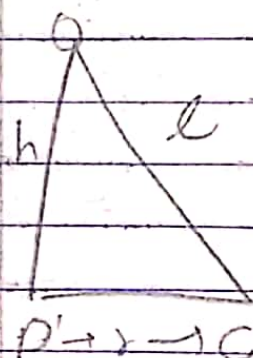
$O'P = r$
 $r = \text{radius}$

$O'O = h (\text{height})$

Height of cone

If O is the vertex of the cone and O' is the center of the base then $O'O$ is called the axis of cone & length of the line segment $O'O$ is called the height of cone. Observe $O'O$ is perpendicular of base.

Students writing in their notebooks



$\angle DO'C = 90^\circ$

for this reason we name
this solid as a right
circular cone.

Point P on the circular edge of the base, the line segment OP lies on the curved surface of cone. The length of each of such line segments is called slant height of cone.

Note that $\triangle OOP$ is right triangle, right angled at O'

$$l^2 = r^2 + h^2$$
$$l = \sqrt{r^2 + h^2}$$

Area of curved surface of cone = $\pi r l$
where l = slant height

T.S.A

Pupil write
down
the
formula.

= area of curved surface +
area of base

$$= \pi r l + \pi r^2$$

$$= \pi r (l + r)$$

$$D = 10.5 \text{ cm}$$

$$r = \frac{10.5 \text{ cm}}{2}$$

$$l = 10 \text{ cm}$$

Diameter of the base of cone is 10.5 cm & its slant height is 10 cm. Find the CSA of cone?

Students writing in their copies.

$$\text{CSA} = \pi r l$$

$$= \frac{22}{7} \times 10.5 \times 10$$

$$= 11 \times 15$$

$$= 165 \text{ cm}^2$$

Pupil teacher will solve the problem in black-board.

$$S.O.$$

$$h = 16 \text{ cm}$$

$$r = 12 \text{ cm}$$

Solution:

Radius is half of diameter

$$r = \frac{D}{2} \quad \text{or} \quad D = 2r$$

$$l = \sqrt{r^2 + h^2}$$

$$= \sqrt{12^2 + 16^2}$$

$$= 20 \text{ cm}$$

$$\text{CSA} = \pi r l$$

$$= 3.14 \times 12 \times 20$$

$$= 753.6 \text{ cm}^2$$

$$\text{TSA} = \pi r l + \pi r^2$$

$$= 3.14 \times 144$$

$$= 452.16$$

The height of cone is 16 cm & radius of its base is 12 cm. Find the CSA and TSA of cone?

RECAPITULATION:

Q1 CSA of a cone is 308 cm^2 & its slant height is 14 cm find.

- (a) radius of the base.
- (b) TSA of cone.

Q2 The radius of the base of a conical tent is 12 m . The tent is 9 m high find the cost of canvas require to make tent if one square meter of canvas costs $\text{₹ } 120$.

HOME-WORK.

Q1 Find the CSA of a right circular cone whose slant height is 10 m & base radius 7 m .

LESSON No. 12

Date: 03/10/17

Pupil Teacher's Name: SHWETA

Class: IX

Subject: Maths

Duration of the period: 40 mins

Pupil Teacher's Roll No.: 2007

Average Age of the pupils: 14+

Topic: Area of sphere

INSTRUCTIONAL AIDS :

Black-board, roller board, chalk, Duster, pointer.

INSTRUCTIONS OBJECTIVES :

Students are expected to acquire.

KNOWLEDGE

Recognise : Students will be able to recognise the figure of sphere.

Recall : Students will be able to recall the appropriate method of finding area of sphere.

UNDERSTANDING

Students will be to differentiate among the formula of finding the CSA & TSA.

Students will be able to apply the formula in two day to day life.

PREVIOUS KNOWLEDGE ASSUMED:

Pupil teacher assumed that students have some knowledge about sphere.

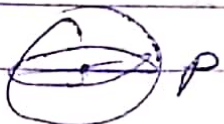
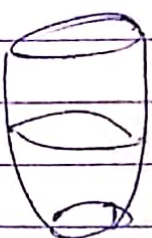
SKILL

Pupil teacher will ask the following questions to the students:-

- Q1 What is the formula for finding the area of a circle?
- Q2 What is formula for finding the circumference of a circle?
- Q3 What is the shape of figure?
- Q4 What is formula for finding area of a ball?

ANNOUNCEMENT OF TOPIC

Well students, today we will discuss about surface area of sphere.

Teaching points	Pupil - Teacher's Activity	Pupil's Activity	Black Board
<u>Sphere</u>	A sphere is a fixed formed by all those points in space which are at same distance from a fixed point The fixed point is called center of sphere. distance is called radius of sphere. A line segment passing through center of sphere & having its end point on sphere is called diameter of sphere. The radius r of sphere and diameter d of sphere are related by relation $d = 2r$. A plane through center divides the sphere into two equal part each part is called hemisphere	Pupil will listen carefully Pupil will listen carefully Pupil will note down in their notebooks	 Sphere. O - fixed point OP - Radius  

Surface
area of
hemisphere

Surface area of
hemisphere = $2\pi r^2$

Surface area of sphere

$$\begin{aligned} &= 2 \text{ (area of one hemisphere)} \\ &= 2 \times 2\pi r^2 \\ &= 4\pi r^2 \end{aligned}$$

CSA, TSA of sphere

$$= 4\pi r^2$$

Students
listening
attentively
writing
in their
notebook.

CSA, TSA of sphere, r^2

TSA

of
hemisphere

TSA of hemisphere

= CSA of hemisphere
+ area of base

$$= 2\pi r^2 + \pi r^2$$

$$= 3\pi r^2$$

Diameter of a sphere is 10cm. find its CSA.
Pupil teacher solve the problem on the board.

Pupil will copy in their notebooks

$$R = \frac{1}{2} \times D$$

$$= \frac{1}{2} \times 10$$

$$= 5 \text{ cm}$$

The surface area of a solid hemisphere with its circular base is to be painted if the radius of hemisphere is 28cm. Find the cost of painting the surface area at rate of ₹ 3 per 100 cm²

$$S.A$$

$$= 4\pi r^2$$

$$= \frac{4 \times 22 \times (28)^2}{7}$$

$$= \frac{4 \times 22 \times 20}{7}$$

$$\frac{2100 \times 22}{7}$$

$$= 3140 \text{ cm}^2$$

Sol:-

$$S.A \text{ of hemisphere}$$

$$= 3\pi r^2$$

$$\frac{3 \times 22 \times 28 \times 28}{7}$$

$$= 7392 \text{ cm}^2$$

$$\text{Cost} = 3 \text{ per } 100 \text{ cm}^2$$

$$= \frac{3 \times 7392}{100}$$

$$= 231.76$$

RECAPITULATION :

Q1 Assuming the earth to be a sphere of radius 6370 km. find

(1) Surface area of earth.

(2) Area of land if three fourth of earth's surface is covered by water.

Q2 Find the surface area of sphere whose diameter is :-

(1) 14 cm

(2) 21 cm.

HOME-WORK.

Q1 Find the surface area of sphere radius is :-

(1) 10.5 cm

(2) 5.6 cm.

Q2 Find the radius of sphere whose surface area is 154 cm^2 .

LESSON No. 13

Date 02/10/17
Pupil Teacher's Name SHWETA
Class IX
Subject Maths

Duration of the period 40 mins
Pupil Teacher's Roll No. 2007
Average Age of the pupils 14+
Topic transversal

INTRODUCTION AIDS :

Chalk, Duster, Pointer, Black-Board, Roller-Board.

INTRODUCTION OBJECTIVES :

Students will be able to acquire.

KNOWLEDGE :

Recall - Students will be able to recall parallel line

Recognise - Students will be able to recognise transversal.

UNDERSTANDING :

Students will be able to classify the angles made by transversal?

APPLICATION :

Students will be able to analyse on angles made by a transversal.

PREVIOUS KNOWLEDGE ASSUMED

Pupil Teacher assumed that students have some previous knowledge about concepts?

- Q1 What is line?
- Q2 What do you mean by parallel lines?
- Q3 What is transversal?

ANNOUNCEMENT

Pupil Teacher will announce the topic. Well students today we will discuss about angles made by a transversal with two parallel lines.

PRESENTATION

- ★ Two lines are said to be parallel if they do not meet anywhere & this distance remains same.

Type of Angles

① Corresponding Angles

Pair of corresponding Angles

i) $\angle 1$ and $\angle 5$

ii) $\angle 2$ and $\angle 6$

iii) $\angle 3$ and $\angle 7$

Alternate interior angles

$\angle 3$ and $\angle 5$, $\angle 2$ and

$\angle 8$

Exterior angles

$\angle 2$ and $\angle 5$

$\angle 3$ and $\angle 8$

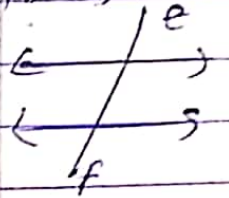
When a transversal intersects two parallel lines then

i) Each pair of corresponding angles are equal.

ii) Each pair of alternate angles are equal.

Transversal

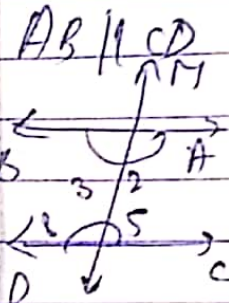
A line which intersects two lines at diff. point is called transversal



Students

listen

carefully.



MN Transversal

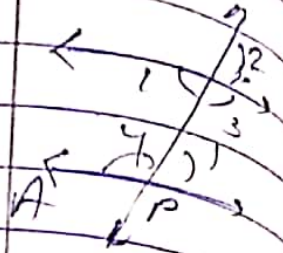
$\angle 2$ & $\angle 5$

$\angle 3$ & $\angle 8$

are interior angles.

Given

Given $AB \parallel CD$, A
 $\Rightarrow$ transversal MN intersect
 AB at P and CD at Q
 making two pairs of
 alternate angles
 $\angle 1, \angle 2, \angle 3, \angle 4$.



To Prove

$\angle 1 = \angle 2$ & $\angle 3 = \angle 4$

Proof $\angle 2 = \angle 5$ (V.O.A)
 $\angle 4 = \angle 8$ (C.A)

Therefore $\angle 1 = \angle 2 \rightarrow$ ①
 Since ray PQ stands
 on a line AB, Therefore
 a line AB,

$$\angle 1 + \angle 4 = \angle 2 + \angle 3$$

$$\angle 3 = \angle 4 (\because \angle 1 = \angle 2)$$

Hence

$$\angle 1 = \angle 2$$

$$\angle 3 = \angle 4$$

Students

distenry

carefully

Proof

$$\angle 2 = \angle 5$$

$$\angle 1 = \angle 2$$

$$\angle 1 = \angle 2$$

PQ stand

On line AB

$$\angle 1 + \angle 4 = 180^\circ$$

$$\angle 2 + \angle 3 = 180^\circ$$

from ① & ②

$$\angle 1 + \angle 4 = \angle 2 + \angle 3$$

$$\angle 3 = \angle 4$$

$$\angle 1 = \angle 2$$

$$\angle 3 = \angle 4$$

RECAPULATION

- Q1 Define the transversal?
- Q2 Define corresponding angles?
- Q3 Define alternate angles?

HOME-WORK

Prove that if a transversal intersects two parallel lines then each pair of alternate angles are equal.

Date..... 05/10/17
Pupil Teacher's Name..... SHWETA
Class..... IX
Subject..... Maths
LESSON No. 14.....

Duration of the period..... 40 min
Pupil Teacher's Roll No. 2007
Average Age of the pupils..... 14⁺
Topic..... Types of Angle.....

INSTRUCTIONAL AIDS :

Black-Board, Roller board, chalk, Duster, pointer, Chart.

INTRODUCTIONAL OBJECTIVES :

Students are expected to acquire.

KNOWLEDGE :

Recognise - The students are able to recognise the complementary & supplementary angles etc.

Recall - The students are able to recall the term line & line segment.

UNDERSTANDING :

① Students are able to give reason for adjacency of two angles.

② Students are able to differentiate between line & line segment.

Skill : Students are able to draw figures of type of angles

PREVIOUS KNOWLEDGE ASSUMED

Pupil-teacher assumed that students have some knowledge about angles.

Q1 What is a line?

Q2 What is a line segment?

Q3 Give difference b/w acute and obtuse angles.

ANNOUNCEMENT

Well students, today we will discuss about relation between different type of angles.

PRESENTATION



Teacher's Point	Pupil's Activity	Teacher's Activity	Black-Board work
Complementary angles	If the sum of two angles is 90° , the angles are said to be complementary angles and each angle is said to be complement of each other.	Students will listen carefully	If the sum of two angles is 90° , then angles are complementary angles.
	Pupil teacher explain on Black-Board & give examples of complementary angles.	Students listen carefully	
	If sum of two angles is 180° , then angles are said to be supplementary angles & each angle is called supplement of other.		
	Pupil teacher makes angles of 120° & 60° & tell that sum of angles is 180° . So these angles are supplementary angles.	Students try to understand the concept	

Two angles are called adjacent angles

Student note down in their copies.

- (1) They have a common vertex
- (2) They have common arm
- (3) The other arms are on opp. sides of common arm

When we open a book it look like the above fig. 1. A and B form

Students will note down in their copies.

Adjacent angles

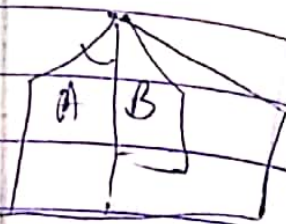


Fig. 1.

a pair of adjacent angle

In fig 2 angle 1 and 2 are adjacent

Vertically opp. angles or Vertical angles

Two angle formed by two intersected lines having no common arm are called vertically opposite angles

Adjacent angles

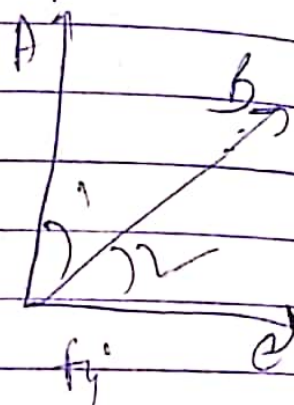


Fig.

RECAPITULATION

- Q1 What do you mean by complementary angles?
Q2 Can two right angle be supplementary angles?
Q3 If two lines intersect at a point then vertical angles are equal.

HOME - WORK

Q1 Find complement of following angles

- G1) $\angle A = 64^\circ$ find $\angle B$
G2) $\angle P = 40^\circ$ find $\angle Q$

where $\angle B$, $\angle P$ & $\angle Q$ are complement to each other

Q2 The Pair of complementary angles is

- a) 139° , 41°

- b) 53° , 127°

- c) 81° , 9°

- (d) 145° , 25°

Date — 06/08/17
Pupil Teacher's Name — SHWETA
Class — IX
Subject — Maths

LESSON No. 15

Duration of the period — 40-50 min
Pupil Teacher's Roll No. — 2007
Average Age of the pupils — 14+
Topic — Triangle

INSTRUCTIONAL AIDS:

Black-board, Roller-board, chalk, Duster, pointer, Chart.

INSTRUCTIONAL OBJECTIVES:

Students are expected to acquire —

KNOWLEDGE:

Recall — Students will be able to recall the different types of triangles.

Recognise — Students will be able to recognise the figure of triangle.

UNDERSTANDING:

Students should be able to differentiate among the formulae of solving area of triangle. Students will be able to understand the triangle which are based on angle.

SKILL

Students will be able to draw various triangle on basis of angle & sides.

Pupil teacher will ask some question to check their knowledge about triangle.

INTRODUCTION

Q1 What is this? 

Q2 What is AB in the line

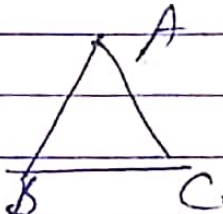
Q3 What is this? 

Q4 What is this?

Q5 What is the definition of a triangle?

Well students, today we will study about the triangle.

PRESENTATION

Teaching Points	Pupil-Teacher's Activity	Pupil's Activity	Black-Board work
Def. of Triangle	A triangle is a simple closed curve made of three line segments. It has three vertices. Three sides & three angles.	Students listening carefully	 side = AB, BC, AC Vertices = A, B, C Angles = $\angle ABC$, $\angle BAC$, $\angle ACB$
	Pupil Teacher will draw the figure of triangle on Black-Board.		
	Side = AB, BC, CA Vertex = A, B, C Angle = $\angle ABC$, $\angle BAC$ & $\angle BCA$	Students will listen carefully	
	There are two type of triangle	Pupil will listen carefully & note down in their notebooks	
G) Based on side I) Based on angle			

- (i) Scalene
- (ii) Isosceles
- (3) Equilateral

Acute angle Triangle
 obtuse angle Triangle
 Right angle Triangle

Pupil will listen carefully & note down in their note books



$$AB + BC + AC = 2.5 + 3.5 + 1.5$$

Pupil teacher explain with the help of figure.

Equilateral Triangle

A triangle in which all the three sides are not of equal length is called a scalene triangle.

Equilateral Triangle



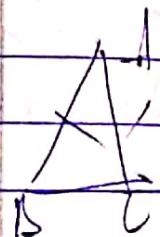
Pupil Teacher draw the figure of scalene triangle on the black-board

Pupil listen attentively

Isosceles

Equil.

A triangle in which all three sides are of equal length is called equilateral triangle.



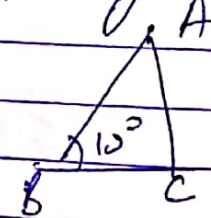
AB AC

Pupil Teacher explain with the help of different examples & different figures will be drawn on the black-board

Pupil will listen carefully

A triangle in which two sides are of equal length is called an isosceles

acute angle triangle.



Students will listen carefully & draw the figure in their copies.

Acute-angle triangle

Triangle-based on angle. In acute angle triangle all three angles are less than 90° , but their sum must be 180°

Right angle triangle

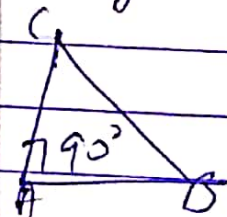
In right angle triangle only one angle is 90° but their sum must be 180°

All three angles are less than 90° . Their sum must be 180°

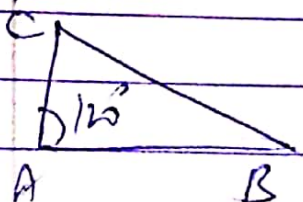
Obtuse angle triangle

In obtuse angle triangle only one angle is more than 90° & other two angles be less than 90° but their sum must be 180°

Right-angle triangle



Obtuse angle triangle



RECAPTULATION

- Q1 What is the definition of triangle?
- Q2 How many vertex does a triangle have?
- Q3 What are type of triangle?
- Q4 What is an equilateral triangle?

Home-work :

- Q1 Draw a triangle (write their definition)
- Q2 Draw a scalene, isosceles & an equilateral triangle?

Date... 07/10/17

LESSON No. ...16...

Pupil Teacher's Name... SHWETA

Duration of the period... 40-50 min.

Class... IX

Pupil Teacher's Roll No. ... 9007

Subject... Maths

Average Age of the pupils... 14+

Topic... CONGRUENCY

INTRODUCTIONAL AIDS :

Black-board, Roller-board, chalk, Duster, pointer, chart.

INSTRUCTIONAL OBJECTIVES :

The students are expected to acquire :

KNOWLEDGE :

Recognise : Students will be able to recognise the figures of congruence triangle.

Recall : Students will be able to recall the meaning of congruency of two triangles

UNDERSTANDING :

- ① Students are able to differentiate between congruency & similarity.
- ② Students are able to cite day to day life having congruent figures.
- ③ The students are able to apply the concept to test congruency of two triangles.

SKILL : Students are able to draw congruent figures accurately & neatly on chart paper etc.

PREVIOUS KNOWLEDGE ASSUMED

Pupil teacher assume that students have some knowledge about triangles.

INTRODUCTION :

- Q1 What is a triangle?
- Q2 What are types of triangle according to length of side?
- Q3 If two figures are seen to be same, what can be concluded?

ANNOUNCEMENT

Well students, today we will discuss about congruency of triangles.

PRESENTATION

Teaching Points	Pupil-Teacher's Activity	Pupil's Activity	Blackboard work
Meaning of congruency	The figure having the same shape and size are called congruent figure & Relation of two figures is being congruent is called congruency Let's understand it with the help of two coins (showing same two coins) If one coin place over the other what do you observe? Good This, we may say that figures are congruent if they have same shape & same size.	Students will listen carefully one coin covers the other coin exactly	Meaning of congruency If the figure having the same shape & size are called congruent figures & Relation of two figures is being congruent is called congruency.
Congruency of Triangle	Two triangle are congruent if pairs of corresponding sides & corresponding angles are equal.	Students note down in their notebooks.	

Eg:-

P.T explain on black board with the help of example.

Students listening carefully



Case III

ACA
Congruency

Two triangles are congruent if two angles and the included side of two triangles are congruent.



Two right triangles are congruent if the hypotenuse & one side of two triangles are congruent corresponding.

In
 $\triangle ABC$ & $\triangle PQR$
 $BC = QR$

Eg:-

Pupil. Teacher explain RHS congruency with help of example on black-board.

hyp. AC hyp. PR

$BC = QR$
hyp AC = hyp PR

Accordingly
RHS

$\triangle ABC \cong \triangle PQR$

we will use ($\cong$)
this symbol for their
congruency i.e.

$$\triangle ABC \cong \triangle PQR$$

These are four cases
of congruency of
two triangles

- I - SSS congruency
- II - SAS congruency
- III - ASA congruency
- IV - RHS congruency

Two triangles are congruent
if three sides of
both triangles
respectively

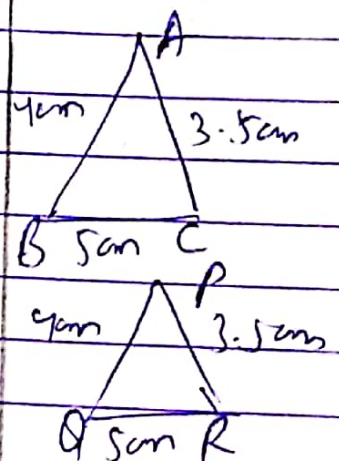
Two triangles are cong.
if two sides and
included angle of
one triangle
respectively.

Students
writing in
their
note-book

Symbol
of
congruency
 $\cong$

four cases
for
congruency
of AS

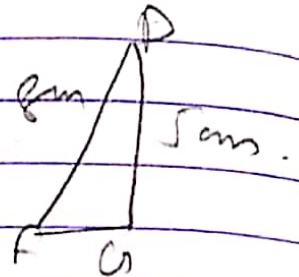
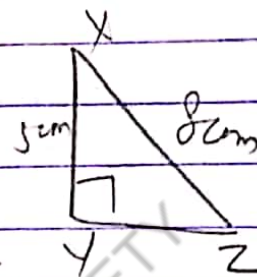
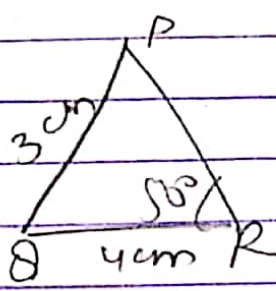
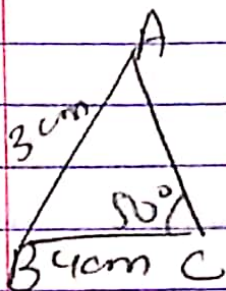
- I - SSS
- II - SAS
- III - ASA
- IV - RHS



$AB = PQ = 4\text{cm}$
 $AC = PR = 3.5\text{cm}$
 $BC = QR = 5\text{cm}$
 According to SSS
 $\triangle ABC \cong \triangle PQR$

RECAPITULATION.

State by application of which congruency conditions, following pairs of triangles are congruence —



HOME-WORK

Q1

Write all the four cases of congruency of two triangles.

Date... 08/10/17
Pupil Teacher's Name... S. W. R. A.
Class... IX
Subject... Maths

LESSON No. 17

Duration of the period... 40 mins.
Pupil Teacher's Roll No. 2007
Average Age of the pupils... 14+
Topic... Parts of Triangle

INSTRUCTIONAL AIDS :

chalk, black-board, Roller-board, Duster, pointer, chart.

INSTRUCTIONAL OBJECTIVE

Students are expected to acquire -

KNOWLEDGE

Recall- Students are able to recall term triangle
Recognise- Students are able to recognise the different type of triangle.

UNDERSTANDING

Students are able to explain what they have understood about the angles & sides of different type of triangle.

APPLICATION

Students are able to differentiate between type of triangle
Students are able to find the angles of an equilateral triangle.

PREVIOUS KNOWLEDGE ASSUMED :

Pupil Teacher assume that students have some knowledge about triangles.

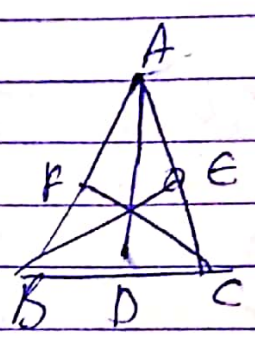
INTRODUCTION :

- Q1 What is a triangle?
- Q2 What are the elements of a triangle?
- Q3 Could you differentiate between type of triangle on basis of side?
- Q4 Tell any parts of a triangle.

ANNOUNCEMENT

Well students, today we will discuss about some basic parts of triangles.

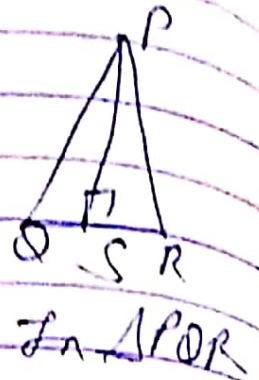
PRESENTATION

Teaching Points	Pupil-Teacher's Activity	Pupil's Activity	Black-board work.
Median of a Triangle	The line segment joining a vertex of a triangle to the mid-point of the opposite-side is called a median Pupil Teacher explain with the help of an example on Black-board How many medians are there in a triangle? The perpendicular line segment drawn from a vertex of a triangle to its opp. side is called an altitude of a Triangle	Students will listen carefully Three medians Students listening carefully	The line segment joining a vertex of a triangle to mid-point of opp. side is called a median  For the fig. AD, BE, CF are the medians of $\triangle ABC$. These medians intersect at point O.

Pupil teacher gives example on the black-board.

After giving example pupil teacher asks how many altitudes are there in a triangle

Three Altitude



$PS \perp QR$
 PS is an altitude of ΔPQR

Exterior angle of a Triangle

The angle formed between the extended sides and other side of a triangle is called exterior angle

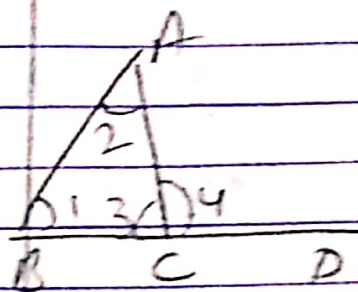
Students write down in their notebooks

Pupil-teacher explain on black-board with the help of an example

Relation
b/w
ext.
&
int.
opp.
angles

Exterior angles of a triangle is equal to sum of interior opp. angles

Students will note down in their notebook



In $\triangle ABC$, we have to prove

Let ABC be the given triangle, whose side BC is produced to make an exterior angle

we have to prove that

$$\angle 4 = \angle 1 + \angle 2$$

$$\angle 1 + \angle 2 + \angle 3 = 180^\circ \quad \text{--- (i)}$$

$$\angle 3 + \angle 4 = 180^\circ \quad \text{--- (ii)}$$

from (i) & (ii)

$$\angle 1 + \angle 2 + \angle 3 = \angle 3 + \angle 4$$

$$\angle 1 + \angle 2 = \angle 4$$

$$\angle 4 = \angle 1 + \angle 2$$

$$\begin{aligned} \angle 4 &= \angle 1 + \angle 2 \\ \angle 1 + \angle 2 + \angle 3 &= 180^\circ \\ \text{But} \\ \angle 3 + \angle 4 &= 180^\circ \end{aligned}$$

$$\begin{aligned} \angle 3 + \angle 4 &= 180^\circ \\ \text{(linear pair)} \\ \text{from (i) \& (ii)} \\ \angle 1 + \angle 2 + \angle 3 &= \angle 3 + \angle 4 \end{aligned}$$

$\angle 1 + \angle 2 = \angle 4$
Hence proved.

RECAPITULATION :

- Q1 Define the median of a triangle ?
- Q2 What is the altitude of a triangle ?
- Q3 What is the exterior angle of a triangle ?

HOME - WORK

Exterior angle of a triangle is equal to sum of interior opp. sides. prove this fact.

Date 09/10/17 LESSON No. 18
Pupil Teacher's Name SHWETA Duration of the period 40 min
Class IX Pupil Teacher's Roll No. 2007
Subject Maths Average Age of the pupils 14+
Topic RIGHT TRIANGLE

INSTRUCTIONAL AIDS:

Black-board, Roller board, chalk, Duster, pointer chair.

INSTRUCTIONAL OBJECTIVES:

Students are expected to acquire

KNOWLEDGE

Recognise - Students will be able to recognise the figures of right angle triangle.

Recall: Students will be able to recall the different type of triangle.

UNDERSTANDING

- ① Students will be able to differentiate different type of triangle.
- ② Students will be able to understand the pythagoras property.

Students will be able to apply this formula in their day to day life.

SKILL

Students will be able to solve various exercise related to pythagoras property in 4-5 min of duration.

PREVIOUS KNOWLEDGE ASSUMED:

Pupil teacher assumed that students have some knowledge about right angle triangle.

INTRODUCTION

Q1 What is this?

Q2 What do we call the triangle whose all three sides are equal?

Q3 What do we call the triangle whose one of the angle is 90° ?

Q4 What do we call the opp. sides of a right triangle?

ANNOUNCEMENT

Well students, today we will study about right angle triangle & pythagoras properties.

Teaching points

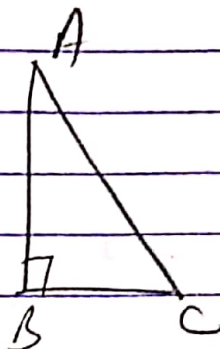
Pupil-Teacher's Activity

Pupil's Activity

Black-board work

In the right angle triangle only one angle is 90° but their sum must be 180°

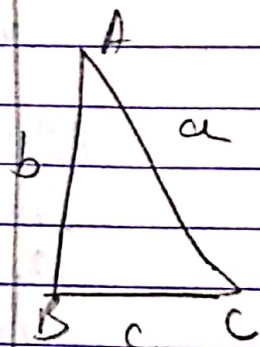
$$\angle B = 90^\circ$$



In a right angle triangle the sides have some special name. The side opp to right angle is called hypotenuse. The other two sides are known as legs of right angle triangle.

Students listening carefully

Right angle triangle $\angle B = 90^\circ$



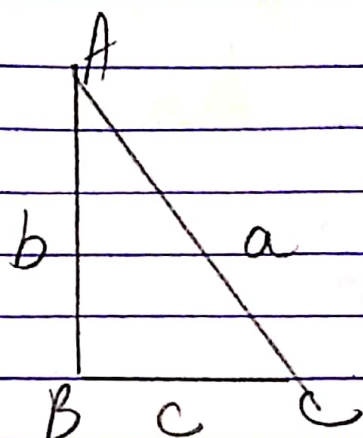
In $\triangle ABC$, the right angle is at point B. AC is hypotenuse. AB and BC are two legs of $\triangle ABC$.

Students writing in their notebooks

$$\begin{aligned} AB &= b \\ AC &= a \\ BC &= c \end{aligned}$$

$$\begin{aligned} AC &= a \\ AB &= b \\ BC &= c \end{aligned}$$

$$a^2 = b^2 + c^2$$



$$a^2 = b^2 + c^2$$

The square of hypotenuse is equal to sum of square of other two sides

$\triangle ABC$ is a right-angle triangle Right angle at C.
 giv $AC = 5\text{cm}$
 $BC = 12\text{cm}$ find length of AB ?

Pupil teacher will solve the problem on BB

PQR is a triangle right angle at P.
 giv $PQ = 10\text{cm}$ &
 $PR = 24\text{cm}$
 find QR ?

Sol
=

$AC = 5\text{cm}$

$BC = 12\text{cm}$

$AB = ?$

Pupil will note-down in their copies

$$\begin{aligned} AB^2 &= AC^2 + BC^2 \\ &= 5^2 + 12^2 \\ &= 25 + 144 \\ &= \sqrt{169} \\ &= 13\text{cm} \end{aligned}$$

Sy
1.

$$\begin{aligned} QR^2 &= PQ^2 + PR^2 \\ &= 10^2 + 24^2 \\ &= 100 + 576 \\ &= 676 \\ &= 26 \end{aligned}$$

RECAPITULATION

Q1 ABC is a triangle, right angle at C. If $AB = 25\text{ cm}$ and $AC = 7\text{ cm}$ find BC ?

Q2 Which of the following can be the sides of a right angle triangle?

(1) 2.5 cm , 6.5 cm and 6 cm

(2) 2 cm , 2 cm and 5 cm

(3) 1.5 cm , 2 cm and 2.5 cm

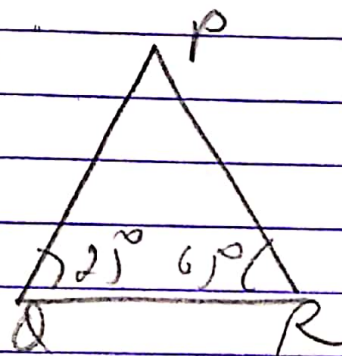
HOME WORK

Q1 Angle Q and R of a $\triangle PQR$ are 25° and 65° write which of following is true.

(i) $PQ^2 + QR^2 = PR^2$

(ii) $PQ^2 + PR^2 = QR^2$

(iii) $PR^2 + QR^2 = PQ^2$



Date..... 10/10/17

LESSON No. 19

Duration of the period..... 40-50 min

Pupil Teacher's Name..... SHWETA

Pupil Teacher's Roll No. 2007

Class..... IX

Average Age of the pupils..... 14+

Subject..... Maths

Topic..... FRACTION

INSTRUCTIONAL OBJECTIVES

Blackboard, Rollinboard, chalks, Duster, pointer, chart.

INSTRUCTIONAL OBJECTIVES

Students are expected to acquire -

KNOWLEDGE

Recognise - Students will be able to recognise the fraction in a figure and on the number line.

Recall - Students will be able to recall the fraction in a figure.

UNDERSTANDING

1. Students are to be understand the meaning of a fraction.
2. Students are to be explain the meaning of a fraction.

SKILL :

Students will be able to solve various exercise related to fraction in 4-5 min of duration.

PREVIOUS KNOWLEDGE ASSUMED:

Pupil Teacher assumed that students have some knowledge about fraction.

INTRODUCTION

- Q1 What do you mean by this figure?
- Q2 How many parts can you see in above triangle?
- Q3 How many parts are shaded?
- Q4 How can we write down this in term of a triangle fraction?

ANNOUNCEMENT

Well students, today we will discuss about fraction.

PRESENTATION

Teaching
Panda

Pupil-Teacher
Activity

Pupil's
Activity

Black-board.

Meaning

Pupil-Teacher will ask
the following question
from the students



Rectangle is
divided into
6 parts. 3
parts are
divided/shaded.
We can write in
terms of fraction

What do we call the
above figure

Tell me the part in which
the above rectangle is
divided?

6
3

How many parts we shade
How can we write in terms
of fractions?

No response

A fraction
means a part of
a group or a
region.
In above eg:
3 stands for
numerator &
6 stands for
denominator

We will write it as $\frac{3}{6}$

~~A fraction is a part of
group or of a region.~~

No response

In the above example
what does 6 stand for

It is the number of equal parts which have been taken out.



what do we will call the above figure?
 Tell me no. of parts into which the whole figure is divided?

4

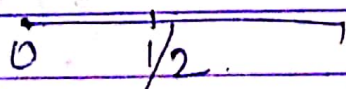
Good,
 How many parts are shaded?

2

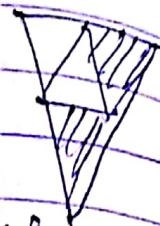
write down in terms of fraction

To show $\frac{1}{2}$ on a number line

$\frac{2}{4}$



The above line is a number line. To show $\frac{1}{2}$ on it we know that $\frac{1}{2}$ is greater than 0 & it is less



In above fig. is a triangle which is divided into 4 parts in which 2 parts are shaded. we write it as $\frac{2}{4}$ To show $\frac{1}{2}$ on no. line

$\frac{1}{2}$

than 1, so it should be between 0 & 1

Since we have to show $\frac{1}{2}$, we divide the gap into 2 equal parts

To show $\frac{1}{3}$ on a no. line

To show on no. line we have to divide gap into eq. parts

In a proper fraction the numerator is less than the denominator eg $\frac{3}{4}$

~~In an improper fraction the numerator is greater than the denominator for eg $\frac{5}{4}$~~

~~Pupil will not down in next copies.~~

To show $\frac{1}{3}$ on no. line

0 $\frac{1}{3}$ 1

Proper fraction $\frac{3}{4}$

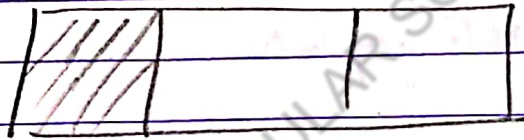
Improper fraction $= \frac{5}{4}$

RECAPITULATION

- Q1 To show $\frac{1}{4}$ on number line?
Q2 How can we show $\frac{2}{4}$ in a square?
Q3 How can we show $\frac{4}{7}$ in a square.

HOME-WORK

- Q1 Write down the fraction representing the shaded position.



- Q2 Show $\frac{1}{4}$ on number line?

Date 19/10/17 LESSON No. 20

Pupil Teacher's Name SHWETA

Duration of the period 40 mins

Class IX

Pupil Teacher's Roll No. 2007

Subject Maths

Average Age of the pupils 14+

Topic Addition & Subtraction

INSTRUCTIONAL AIDS:

Blackboard, Roller board, chalk, Duster, pointer, chart.

INSTRUCTIONAL OBJECTIVES:

Students are expected to acquire -
Recognise - Students will be able to recognise the proper and improper fraction.

Recall - Students will be able to recall the fraction.

UNDERSTANDING

- ① Students will be able to recall the addition and subtraction when denominator are same
- ② Students will be able to explain the addition and subtraction when denominator are same or not same.

APPLICATION

Students will be able to analyse the addition & subtraction of fraction.

PREVIOUS KNOWLEDGE ASSUMED

Pupil teachers assume that students have some knowledge about fraction.

- Q1 What do you mean by fraction?
- Q2 Whether $\frac{3}{4}$ is proper fraction or improper fraction?
- Q3 The fraction $\frac{2}{3}$, $\frac{4}{5}$ are like fractions or unlike fractions?

ANNOUNCEMENT

Well students, today we will study the addition and subtraction of fractions.

PRESENTATION

Teaching Points.	Pupil Teacher's Activity	Pupil's Activity	Black-Board work.
Adding a action when denom. are same type	Add $\frac{3}{5}$ and $\frac{1}{5}$ Pupil teacher will write the statement in black-board. I ask following question to students Well, students the above fractions the denominator is same or not? Good So what will be LCM? ∴ $\frac{3+1}{5} = \frac{4}{5}$ Find the subtraction of $\frac{4}{5}$ and $\frac{2}{5}$ ∴ $\frac{4-2}{5} = \frac{2}{5}$	Pupil will listen carefully Denominator is same 5 5.	Add - $\frac{3}{5}$ and $\frac{1}{5}$

ADDITION

Unlike fractions, therefore in order to add them we find equivalent fraction. Therefore, we convert into like fraction

Sol

$$\frac{1}{2} \times \frac{5}{5} = \frac{5}{10}$$

$$\frac{1}{5} \times \frac{2}{2} = \frac{2}{10}$$

Sub $\frac{5}{6}$ and $\frac{3}{4}$?

No.

Is the den. same in the fraction?

MULTIPLY

Firstly multiply num & den then if it will cut by a common factor then after cutting we get the result.

Can you multiply

No response

$\frac{1}{2}$ and $\frac{9}{4}$?

$$\frac{1}{2} \times \frac{9}{4} = \frac{9}{8}$$

RECAPITULATION

- Q1 Find the addition of $\frac{7}{6}$ and $\frac{2}{6}$?
- Q2 Find the subtraction of $\frac{4}{5}$ and $\frac{5}{6}$?
- Q3 Find the addition of $\frac{3}{4}$ and $\frac{4}{5}$?
- Q4 Find the multiplication of $\frac{7}{2}$ and $\frac{6}{4}$?

HOME-WORK

Q1 One purchased $3\frac{1}{2}$ kg of apples and $4\frac{3}{4}$ kg of oranges. What is the total weight of fruits purchased by her?

Q2 Ramesh solved $\frac{2}{7}$ part of an exercise while Seema solved $\frac{4}{5}$ of it, who solved lesser part?

Ravi

**FINAL DISCUSSION
LESSON**

Date.....15/10/17.....

LESSON No.0/.....

Pupil Teacher's NameSHWETA.....

Duration of the period.....50-min.....

Class.....IX.....

Pupil Teacher's Roll No.2007.....

Subject.....Maths.....

Average Age of the pupils.....14+.....

Topic.....S.A of cylinder.....

INSTRUCTIONAL AIDS

Blackboard, chalk, Duster, Pointer, charts, Rollerboard.

INSTRUCTIONAL OBJECTIVES

Students will be able to acquire.

KNOWLEDGE

Recognise:- Students will be able to recognise the figure of cylinder.

Recall :- Students will be able to recall appropriate method of finding the area of cylinder.

UNDERSTANDING

Students are expected to be able to differentiate among the formula of finding the curved surface area & total surface area.

APPLICATION

Students will be able to apply the formula in their day to day life.

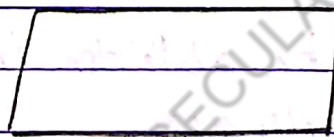
Skill

Students will be able to solve various exercise related to surface area in 4-5 min. of allotted time.

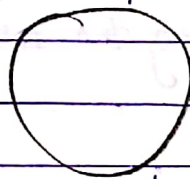
Pupil teacher assumed that the students have some knowledge about cylinder.

INTRODUCTION

Q1 What is the shape of figure?



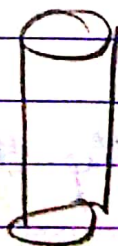
Q2 What is shape of figure?



Q3 What is the formula of area of rectangle?

Q4 What is the formula of area of a circle?

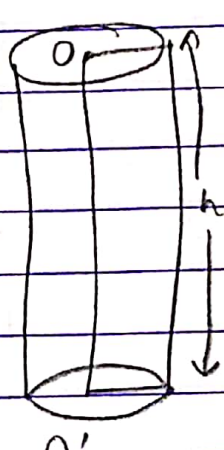
Q5 What is the shape of figure?



ANNOUNCEMENT

Well students, today we will study about surface area of cylinder.

PRESENTATION

Teaching Points	Pupil Activity Teacher	Pupil's Activity	Black-Board work
	A right circular cylinder has two plane ends each plane end is circular in shape There are two circular regions are congruent and parallel to each other we call it base of cylinder The line segment OO' joining the centre of two plane ends is called axis of the cylinder OO' is perpendicular to every line segment base $PP' \perp OO'$	Students listening carefully	

radius = r

length = l

PP1 = OO'

Students

note down

in their

notebooks

Each circular edge has
length $2\pi r$ & area of
each plane held in πr^2

Circumference

$$= 2\pi r$$

$$\text{Area} = \pi r^2$$

Curved surface area
could be some how
made plate

$$\text{CSA of cylinder} = 2\pi rh$$

Area of Rect.

$$= l \times b$$

$$= 2\pi r \times h$$

$$= 2\pi rh$$

$$\begin{aligned}\text{Total Surface area} \\ &= 2\pi rh + 2\pi r^2 \\ &= 2\pi r(h+r)\end{aligned}$$

Pupil note

in their

copies

Problem

Find the radius of a
cylinder whose area is
 88 cm^2 & height 14 cm

Sol

$$\begin{aligned}\text{CSA} &= 88\text{ cm}^2 \\ h &= 14\text{ cm}\end{aligned}$$

What is given in this
statement

$$\begin{aligned}\text{CSA} &= 88\text{ cm}^2 \\ h &= 14\text{ cm}\end{aligned}$$

$$\text{CSA} = 2\pi rh$$

Good.

$$\text{CSA} = 2\pi rh$$

$$88 = 2 \times 22 \times r \times 14$$

$$r = 1\text{ cm}$$

$$88 = \frac{2 \times 22 \times r \times 14}{7}$$

$$r = 1\text{ cm}$$

Find the total surface area of cylinder whose diameter is 140cm & length = 1m?

Pupil will not down in their copy

Pupil Teacher solve the problem on the blackboard

Sol
=

$$D = 140 \text{ cm}$$

$$r = \frac{140}{2} = 70$$

cm

$$h = 1 \text{ m}$$

$$D = 140 \text{ cm}$$

$$r = \frac{140}{2} = 70 \text{ cm}$$

$$= \frac{70}{100} \text{ m} = 0.7 \text{ m}$$

$$TSA = 2 \times \frac{22}{7} \times 0.7 \times 1$$

$$= 7.48 \text{ m}^2$$

$$TSA = 2\pi r (h + r)$$

$$= 2 \times \frac{22}{7} \times \frac{7}{10} \left(1 + \frac{7}{10}\right)$$

$$= \frac{44}{10} \times \frac{17}{10}$$

$$= 7.48 \text{ m}^2$$

RECAPITULATION

Q1 A right circular cylinder has a base radius of 8cm and height is 35cm. find the curved surface area of cylinder?

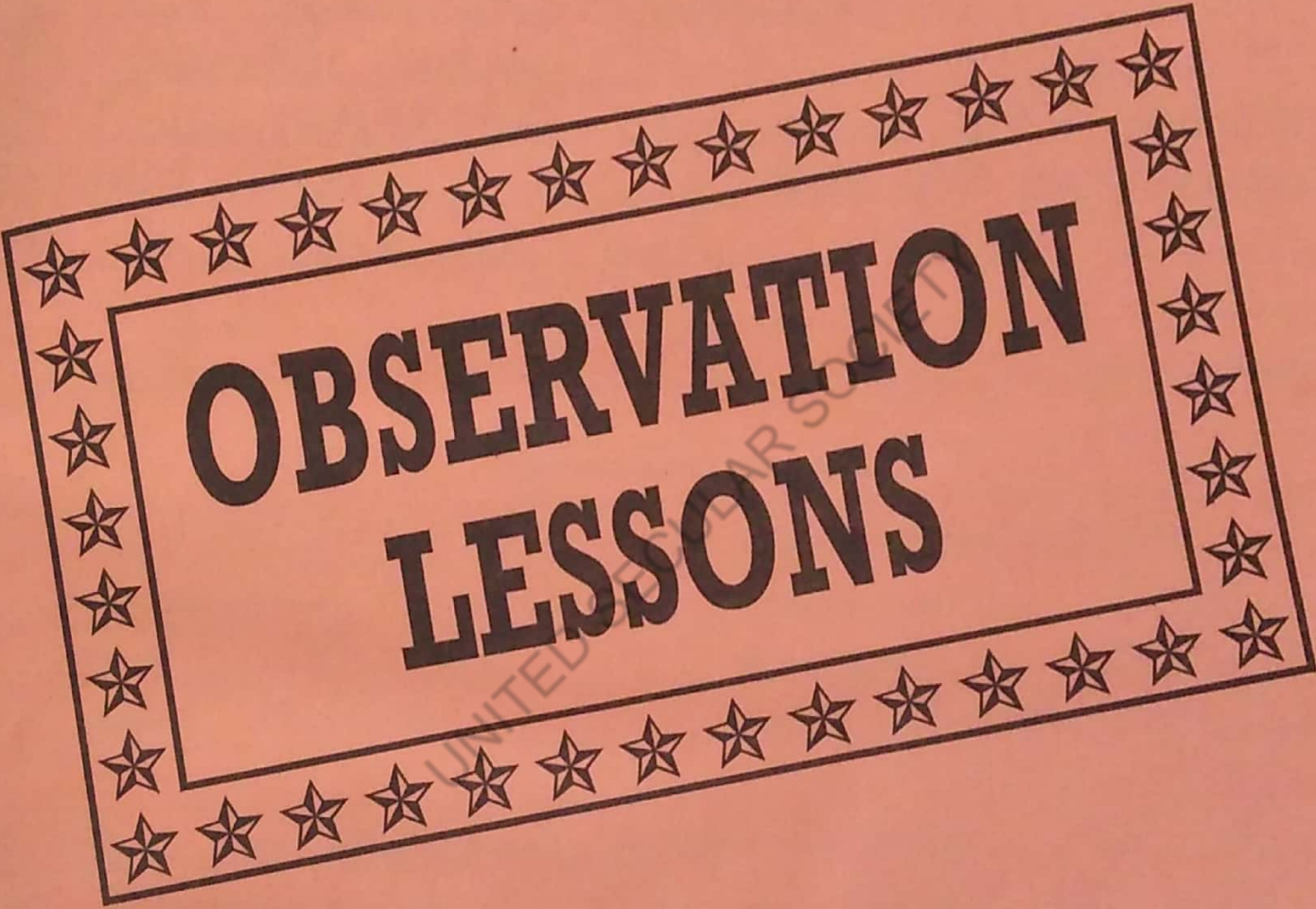
Q2 A closed circular cylinder has a diameter of 10 cm and height 15 cm. find the total surface area?

HOME-WORK

Q1 The circumference of base of a right circular cylinder is 176 cm. If height of cylinder is 1m. find the lateral surface area of cylinder?

Q2 CSA of a right circular cylinder of height 35cm is 121cm^2 . find the radius of its base?

Qam



OBSERVATION LESSONS

Observation Lesson No.

Date.....16/10/17.....
Pupil Teacher's NameAnju.....
Class.....IX.....
Subject.....Maths.....

Duration of the period.....40 min.....
Pupil Teacher's Roll No.2007.....
Average Age of the pupils.....16+.....
Topic.....Triangle.....

- ① Blackboard, entries were fulfilled-
- ② Creating situations for introducing the lesson.
- ③ Black-board writing needs some improvement.
- ④ Pupil Teacher was confident.
- ⑤ Less class control
- ⑥ Recapitulation topic was given to the students
- ⑦ Used appropriate Teaching aids for illustrations.
- ⑧ Home-work was given.

Sign. of Pupil Teacher

Sign. of Supervisor

Observation Lesson No.

Date.....17/10/17.....
Pupil Teacher's NameManju.....
Class.....IX.....
Subject.....Maths.....

Duration of the period.....46 min.....
Pupil Teacher's Roll No.2008.....
Average Age of the pupils.....16+.....
Topic.....Equation.....

- ① Black-Board entries were fulfilled.
- ② Introduction to the topic was good.
- ③ Black-Board writing was good.
- ④ Pupil-teacher was confident.
- ⑤ Chart as a teaching aid was used.
- ⑥ Recapitulation was done.
- ⑦ Home assignment was given
- ⑧ Discipline was maintained in the class-room.

Sign. of Pupil Teacher

Sign. of Supervisor

Observation Lesson No.

Date.....18/10/17..... Duration of the period.....40 min
Pupil Teacher's Name.....SHWETA..... Pupil Teacher's Roll No.....204
Class.....IX..... Average Age of the pupils.....147
Subject.....Maths..... Topic.....Cone

- ① Black-Board work was done.
- ② Creating situations for introducing lesson.
- ③ Effective introduction of lesson.
- ④ class-room interaction was good.
- ⑤ Pupil Teacher was confident.
- ⑥ Used appropriate & non-verbal information.
- ⑦ Home-work was given to students.

Sign. of Pupil Teacher

Sign. of Supervisor

Observation Lesson No.

Date.....19/10/17..... Duration of the period.....40 min
Pupil Teacher's Name.....SHARINI..... Pupil Teacher's Roll No.....2001
Class.....IX..... Average Age of the pupils.....147
Subject.....Maths..... Topic.....Cylinder

- ① Black-board entries were fulfilled.
- ② Introduction of topic was good.
- ③ Previous knowledge was tested.
- ④ Pupil teacher was confident.
- ⑤ The voice of teacher was audible.
- ⑥ Recapitulation was done in class.
- ⑦ Interaction with students were made.

Sign. of Pupil Teacher

Sign. of Supervisor

Observation Lesson No.

Date.....20/10/17.....

Duration of the period.....40 min.....

Pupil Teacher's Name.....Surya.....

Pupil Teacher's Roll No.....2012.....

Class.....IX.....

Average Age of the pupils.....14f.....

Subject.....Maths.....

Topic.....Surface area.....

- ① Black-Board entries were fulfilled.
- ② Introductory questions were asked.
- ③ The topic was announced on time.
- ④ Teaching aids were also used.
- ⑤ Black-Board writing ~~was~~ not clear.
- ⑥ Voice of Teacher ~~was~~ audible.
- ⑦ Recapitulation ~~was~~ done.

Sign. of Pupil Teacher

Sign. of Supervisor

Observation Lesson No.

Date.....21/10/17.....

Duration of the period.....40 min.....

Pupil Teacher's Name.....Kish.....

Pupil Teacher's Roll No.....2018.....

Class.....IX.....

Average Age of the pupils.....14f.....

Subject.....Maths.....

Topic.....Linear Equation.....

- ① Black-Board entries were filled.
- ② Previous knowledge was tested.
- ③ Announcement of topic was made in time.
- ④ Topic is well prepared.
- ⑤ Black-Board writing was good.
- ⑥ Voice was audible.
- ⑦ Recapitulation was maintained in class.
- ⑧ Homework is given to the students.

Sign. of Pupil Teacher

Sign. of Supervisor