MATHEMATICS DEPARTMENT

INNOVATIVE PEDAGOGIC TECHNIQUES USED BY TEACHERS OF MATHS DEPARTMENT

SESSION:2020-21

- 1. EXTRAMARKS VIDEOS FROM THE MODULES OF REPRESENTATION OF IRRATIONAL NUMBERS ON THE NUMBER LINE FOR CLASS VIII WERE SHOWN.
- 2. A VIDEO ON TOPIC COMPARING NUMBERS FOR CLASS VI WAS MADE BY THE TEACHER AND SHARED WITH STUDENTS.
- 3. STUDENTS OF CLASS X WERE ASKED TO PLOT GRAPHS IN HW OF LINEAR EQUATIONS AND SHOW THROUGH THEIR CAMERAS TO ENSURE ACTIVE PARTICIPATION.
- 4. TEACHERS GUIDED AND MOTIVATED STUDENTS FOR MAKING REVOLVING MODEL OF EARTH DEPICTING STATISTICAL DATA OF POLLUTION LEVEL OF ALL CONTINENTS, MODEL OF FUEL FREE ELECTRICITY BASED UPON CONCEPT OF ROTATION AND DIFFERENTIATION.



5. FOLLOWING ACTIVITIES WERE PERMORMED IN DIFFERENT CLASSES:

| CLASS | ACTIVI | TIES |
|-------|--------|--|
| VI | 1. | ACTIVITY ON PRIME NUMBERS (PAPER CUT OUT AND COLOURING) |
| | 2. | ACTIVITY ON INTEGERS (USING BINDIS ETC) |
| | 3. | ACTIVITY ON TYPES OF TRIANGLES (PAPER CUT OUTS) |
| | 4. | MAKING SHAPES USING SET SQUARES |
| | 5. | ACTIVITY ON SYMMETRY BY PASTING CUT OUTS OF VARIOUS MONUMENTS, OBJECTS, |
| | | SHAPES, ALPHABETS AND NUMBERS AND DRAWING LINES OF SYMMETRY |
| | 6. | MAKING INKED STRING PATTERNS TO SHOW SYMMETRY |
| | 7. | PARTS OF A CIRCLE WITH HELP OF CUT OUT OF A CIRCLE |
| VII | 1. | TO MULTIPLY DECIMALS USING GRAPH PAPERS. |
| | 2. | TO VERIFY ANGLE SUM PROPERTY OF TRIANGLE. |
| | 3. | TO MAKE THE NETS OF SOLID SHAPES. |
| VIII | 1. | TO MAKE KITE AND RHOMBUS BY PAPER FOLDING. |
| | 2. | TO VERIFY THAT THE SUM OF EXTERIOR ANGLES OF POLYGON IS 360 ^{0 S} BY PAPER |
| | | CUTTING AND PASTING. |
| | 3. | TO VERIFY THAT THE SUM OF FIRST N ODD NATURAL NUMBERS IS N ² ON THE GRAPH |
| | | PAPER. |
| | 4. | TO VERIFY THE IDENTITY $(A+B)^2 = A^2 + B^2 + 2AB$ |
| | 5. | TO MAKE THE NETS OF SOLID SHAPES. |
| IX | 1. | MAKING A SQUARE ROOT SPIRAL. |
| | 2. | TO FACTORISE THE POLYNOMIALS. |
| | 3. | TO VERIFY TRIANGLE INEQUALITY PROPERTY. |
| | 4. | TO VERIFY DEGREE MEASURE THEOREM. |
| | 5. | TO VERIFY THE AREA OF PARALLELOGRAM. |
| Х | 1. | MAKING A CLINOMETER AND USING IT TO DETERMINE HEIGHTS OF TREES IN SCHOOL |
| | | GROUND. |
| | | CLINOMETER IS A TOOL THAT IS USED TO MEASURE THE ANGLE OF ELEVATION OR |
| | | DEPRESSION IN A RIGHT ANGLE TRIANGLE, IN ORDER TO MEASURE THE HEIGHT OF TALL |

| | | THINGS, THAT YOU CANT POSSIBLY REACH TO THE TOP OFF, FLAGPOLES, BUILDING, |
|----|---------|--|
| | | TREES ETC. |
| | | https://youtu.be/dpsPpkRsWws |
| | 2. | USING DATA ON CURRENT SHARE PRICES FROM INTERNAT/BUSINESS LINE TO DRAW |
| | | MORE/LESS THAN OGIVES AND FIND MEDIAN USING THEM. |
| | | IN ORDER TO DO THIS ACTIVITY, STUDENTS WERE ASKED TO COLLECT THE DATA ABOUT |
| | | SHARE PRICES FOR 40-50 SHARES PRICED BETWEEN RS 100-1000. THEN THE STUDENTS |
| | | MADE A FREQUENCY DISTRIBUTION TABLE FROM THIS DATA. AND THEN THEY DREW |
| | | MORE/LESS THAN OGIVES AND ALSO FOUND OUT THE MEDIAN GRAPHICALLY. AFTER |
| | | THIS THEY COMPARED THE VALUES OBTAINED FROM THE ALGEBRAIC CALCULATIONS |
| | | AND GRAPHICAL CALCULATIONS. |
| | 3. | STUDY OF DEVELOPMENT OF NUMBER SYSTEM/HISTORY OF MATHS. |
| XI | 1. | TO CONSTRUCT DIFFERENT TYPES OF CONIC SECTIONS |
| | | HTTPS://WWW BING COM/VIDEOS/SEARCH?O=VEDIO+OE+CONIC+SECTIONS&DOCID=6 |
| | | 07995746613004012&MID=F7999A6D6B6CF9445417F7999A6D6B6CF9445417&VIEW= |
| | | |
| | 2 | TO FIND THE NUMBER OF WAYS IN WHICH THREE CARDS CAN BE SELECTED FROM |
| | 2. | GIVEN FIVE CARDS |
| | З | TO REPRSENT SET THEORETIC OPERATIONS LISING VENN DIAGRAM |
| | J. ⊿ | STUDENTS OF CLASS 11 WERE ASKED TO MAKE POWERPOINT PRESENTATIONS ON THE |
| | ч. | TOPICS TALIGHT IN THE CLASS. THIS WAY STUDENTS GOT A FIRST HAND EXPERIENCE OF |
| | | EXPLORING RESEARCHING ABOUT THE APPLICATIONS OF THE TOPICS THEY HAD DON'T |
| | | IN THE CLASS AND THEY ACTUALLY "LEAPNT BY DOING" - WHICH IS A MALOP |
| | | |
| | | |
| | | THE TOPICS ON WHICH THE STODENTS MADE THE PETS ARE. |
| | | |
| | | |
| | | |
| | | LINKS TO 5 SUCH PPTS MADE BY STUDENTS ARE GIVEN BELOW: |
| | | nttps://drive.google.com/file/d/1sf600mFCIIIanJQ1Xn32meQmnIIDvv88v/view?usp=sna |
| | | ring |
| | | |
| | | https://drive.google.com/file/d/1qdla0ZqazrDy4trFwAian8uRikIV6P4F/view?usp=sharing |
| | | https://drive.google.com/file/d/15IGvitEMtYU0y21RxJwTFo7MmA6Blkfu/view?usp=shar |
| | | ing |
| | | |
| | | https://drive.google.com/file/d/1heKvL3wfikleCK3LiWhpOM-WArZn- |
| | | x5x/view?usn=sharing |
| | | |
| | | https://drive.google.com/file/d/17t0IM7GYx6e9AkcD_B3efI3TUW7IwVWV/view?usp=sh |
| | | aring |
| | | |

Class 6





Class 7th



Class 8th

Served with Construm

fan edwih Curdan e

Son edwithConton e

San edwiki Curdom e



Sam ed with Candourn e

fan elwih Cudan e

San edwih@ueSan e

Scanned with ConScience

Stan ed with Curdtain e

Scan ad with Curdown a



Second with ComSecond

fan edwih Curdan e

Stan ed with Cueldonne







Class 10th

Making a clinometer Objective To make a clinometer and use it to measure the height of an object.

Stiff card, small pipe or drinking straw, thread, a weight (a metal washer is ideal)

Materials required

Pre-requisite knowledge 1. Properties of right angled triangles.

- 1.
- 2.
- **Solution:** Propage a semi-circular protractor using any hard board and fix a viewing tube (straw or pipe) along the diameter. Punch a bole (*i*) at the centre of the semicircle. Suspend a weight (*w*) from a small nail fixed to the centre. Ensure that the weight at the add of the string hangs below the protractor. Mark degrees (in sexagecimal scale with 0° at the lowest and 1° to 90° proceeding both clockwise and anticlockwise). [Fig 21]. 4.

- Determining the height of an object

 6. First measure the distance of the object from you. Let the distance be d.

 7. Look through the straw or pipe at the top of the object. Make sure you can clearly see the top of the object.

 8. Hold the clinometer steady and let your partner record the angle the string makes on the scale of the clinometer. Let this angle be θ.

Using trigonometric ratio :

$\tan \theta = \operatorname{height} / \operatorname{distance} = \frac{h}{d}$

 $h = d \times \tan \theta$ If, for example, d = 100 m and $\theta = 45^{\circ}$ $h = 100 \times \tan 45^{\circ} = 100$ m



Fig 21

| | | Real number | ens | |
|-----------------------|--|----------------------------|--------------------|--------------------|
| Were | do we need nun | vours ? | | |
| > we? | reed numbers to | cound terings, | calculate time, | , keep |
| neco | ids of accuments | of many oter | er essential te | ungs y |
| our | life | , 0 | | |
| | | | une at Ma withen | tions |
| We | rave divided run | ibers no any | forthe news of the | |
| The | have alviaca i | | | |
| U) NAT | UKAL NUMBERS | | | |
| (2) WT | TECEPE | | | |
| (4) RAT | INAL NUMBERS | | | |
| (5) IRR | ATIONAL NUMBERS | | | |
| We | vill now discuss + | them in detail | <u>ا</u> | |
| (1) Nat The 100 | pral numbers , are denoted to , 794 etc. | include numb y N. Donne | ers stanting f | 101111 be 1, 2, |
| | | | | |
| | 1234567 | 8 9 10 11 12 | | |
| 121 WH | Ne mansberg in | clude all mate | ral numerous | €p 0. |
| The | y are denoted by | y W. gome en | auples can en | 0,3, |
| 431 | ,873. etc. 6 | / | | |
| | | | | |
| | 012345678 | 9 101112 | | |

| appriment Number | | | | |
|--|--|--|---|---------------------|
| 3) Integers munib are -8 | are including v urs. They are a ,-1001, -2347, | Male number unoted by Z. 1, 7801 etc. | & & negative Some exam | plis |
| | -8-7-6-5-4-3-3 | 2-10128456 | ; | |
| (4) Rational These and are 20 | Numbers ind ie in the form 5 , <u>-984</u> , 79 37 , 40 | ude Integens a & white q + eld They are d | s well as fro -0. some e: aroted by R | rctions, namples |
| | <-1-1-1 | 0112333 | | |
| (5) Duration not of t shue th some on | ial Numbers in the form p wh yare & no amples are va | unde mumber ene pæg are i et rational der e, VIO03, JI, | is which and degens of q = 1 y and visial to etc | e D Ioural, |
| | Î | | | |
| <:- | | | | |
| Perin | t D represents V | 2 | | |
| Rational | numbers of 9 | mational no. | s to getterer | 7/7 |
| willed R | ear mus. | | | |





Class 11th

