



**CAPSTONE ENGLISH MEDIUM
HR. SEC. SCHOOL, SEMRA**

Summer
Time

HOLIDAY
HOMEWORK

CLASS 11

holiday



MODEL OF A THEODOLITE

OBJECTIVE

CONSTRUCT A THEODOLITE MODEL TO MEASURE HEIGHTS USING TRIGONOMETRY.

MATERIALS

PROTRACTOR, STRAW, CARDBOARD, TAPE, MEASURING TAPE, CALCULATOR, A4 SHEETS

STEPS

ATTACH A STRAW TO A PROTRACTOR TO CREATE A THEODOLITE FOR SIGHTING.

CHOOSE AN OBJECT (E.G., A WALL) AND MEASURE THE DISTANCE TO ITS BASE.

MEASURE THE ANGLE OF ELEVATION TO THE TOP USING THE THEODOLITE.

CALCULATE HEIGHT: $\text{HEIGHT} = \text{DISTANCE} \times \tan(\text{ANGLE})$.

VERIFY WITH A MEASURING TAPE.

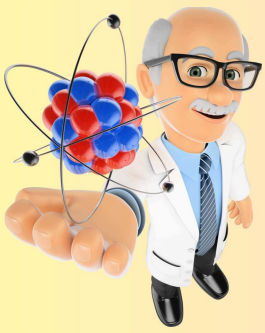
WRITE A 150-WORD REPORT WITH DIAGRAM AND RESULTS.

PRESENT THE MODEL AND CALCULATIONS.

LEARNING OUTCOMES

PRACTICAL APPLICATION OF TRIGONOMETRY IN SURVEYING

IMPROVED SKILLS IN MODEL-BUILDING AND MEASUREMENT



Physics

SIMPLE PENDULUM EXPERIMENT



OBJECTIVE

VERIFY THE RELATIONSHIP BETWEEN PENDULUM LENGTH AND TIME PERIOD.

MATERIALS

STRING, WEIGHT, STOPWATCH, RULER, STAND

STEPS

SET UP A PENDULUM WITH A WEIGHT TIED TO A STRING.

MEASURE TIME FOR 10 OSCILLATIONS FOR LENGTHS (E.G., 20 CM, 40 CM, 60 CM).

CALCULATE TIME PERIOD ($T = \text{TIME}/10$) AND T^2 .

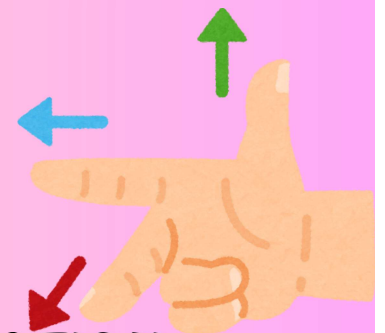
PLOT T^2 VS. L AND CHECK LINEARITY.

PRESENT GRAPH AND EXPLAIN THE FORMULA

$$T = 2\pi\sqrt{L/G}.$$

LEARNING OUTCOMES

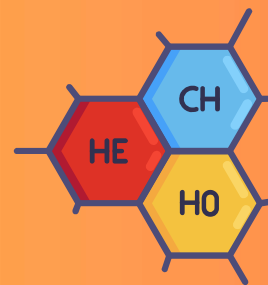
UNDERSTANDING OSCILLATORY MOTION





CHEMISTRY

WATER HARDNESS TEST



OBJECTIVE

DETERMINE AND COMPARE HARDNESS OF WATER SAMPLES.

MATERIALS

SOAP SOLUTION, EDTA, WATER SAMPLES, BURETTE

STEPS

COLLECT WATER SAMPLES (E.G., TAP, RAINWATER, WELL).

PERFORM SOAP TEST: ADD SOAP DROPS TO 50 ML WATER UNTIL LATHER FORMS; COUNT DROPS.

(OPTIONAL) USE EDTA TITRATION FOR PRECISE HARDNESS MEASUREMENT.

CLASSIFY WATER AS SOFT OR HARD AND EXPLAIN CHEMICAL CAUSES.

PRESENT RESULTS IN A TABLE WITH EXPLANATIONS.

LEARNING OUTCOMES

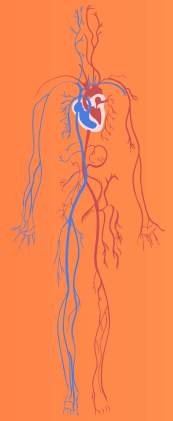
UNDERSTANDING WATER CHEMISTRY

PRACTICAL SKILLS IN TITRATION AND ANALYSIS





STUDY OF MITOSIS



OBJECTIVE

OBSERVE AND DOCUMENT STAGES OF MITOSIS IN PLANT CELLS.



MATERIALS

ONION ROOT, MICROSCOPE, ACETOCARMINE, SLIDES, COVERSGLIPS



STEPS

GROW ONION ROOTS IN WATER FOR 2-3 DAYS.

CUT ROOT TIPS, STAIN WITH ACETOCARMINE, AND PREPARE SLIDES.

OBSERVE UNDER A MICROSCOPE AT 400X MAGNIFICATION.

SKETCH AND LABEL STAGES: PROPHASE, METAPHASE, ANAPHASE, TELOPHASE.

PRESENT SKETCHES WITH A 100-WORD EXPLANATION.



LEARNING OUTCOMES

UNDERSTANDING CELL DIVISION

ENHANCED MICROSCOPY AND OBSERVATION SKILLS



LITERARY ANALYSIS PRESENTATION

OBJECTIVE

ANALYZE A LITERARY PIECE AND PRESENT FINDINGS.

MATERIALS

A4 SHEETS, NCERT TEXTBOOK, PRESENTATION SOFTWARE

STEPS

CHOOSE A PIECE FROM "HORNBILL" (E.G., "A PHOTOGRAPH").

IDENTIFY THEMES, LITERARY DEVICES, AND PERSONAL REFLECTIONS.

CREATE A 5-SLIDE PRESENTATION WITH TEXT AND VISUALS.

WRITE A 150-WORD SUMMARY OF THE ANALYSIS.

PRESENT TO THE CLASS.



IMPROVED LITERARY ANALYSIS

ENHANCED PRESENTATION SKILLS

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NIBANDH ON SAMAJIK MUDDA

OBJECTIVE

EXPLORE A SOCIAL ISSUE THROUGH ESSAY WRITING IN HINDI.

MATERIALS



A4 SHEETS, CHART PAPER, NCERT TEXTBOOK

STEPS

CHOOSE A SOCIAL ISSUE (E.G., ENVIRONMENTAL POLLUTION).

WRITE A 300-WORD ESSAY WITH INTRODUCTION, BODY, AND CONCLUSION.

CREATE A POSTER WITH KEY POINTS AND VISUALS.

PRESENT THE ESSAY AND POSTER TO THE CLASS.

EXPLAIN THE ISSUE'S RELEVANCE.

LEARNING OUTCOMES

MASTERY OF ESSAY WRITING

ENHANCED AWARENESS AND PRESENTATION SKILLS