

Lab Framework

Text:CORD Classic

Unit number and title:unit 8 working with 3 dimensional shapes

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Lab Title Full Throttle

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Short Description: volumes

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**

The student will be able to calculate the length of time an engine could run on the air that is available in the classroom at different RPM's

- **Statement of pre-requisite skills needed** (i.e., vocabulary, measurement techniques, formulas, etc.)

Be able to figure up volume of rectangles/ and cylinders/ be able to calculate percentages and percentages

- **New Vocabulary**

area
length
width
height
pi
diameter
three dimensional
cone
sphere
Displacement

- **Materials List**

tape measure
calculator
graph paper
caliper

- **GLEs addressed**

Math: (1.1.6/1.1.8/1.2.5/1.2.6/2.2.3/5.1.1)
Reading: (3.2)
Writing: (3.3)

- **Leadership Skills**

2.1

- **SCAN Skills**

A. Performs basic computation
B.. Uses basic numerical concepts such as whole numbers and percentages in practical situations

- **Set-up information**

Students will work in partners (a partner they haven't been with yet) to help each other stay on track when needing help with applying formula's

The Students will use graph paper to plot out the engine cylinder and classroom dimensions to scale

- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required**)

Two 55 minute class periods

day one will be setting up the procedure and location of measuring tools making measurements and recording data.

day two will be to finish calculation recording results and discussing results with class as a large group

- **Teacher Assessment of student learning** (scoring guide, rubric)

teacher observation

grading of lab sheets

Participation points

- **Summary of learning** (to be finished after student completes lab)

-discuss real world application of learning from lab

-opportunity for students to share/present learning

designing an air intake system large enough to handle the oxygen needs of

an engine

- **Optional activities**

compare length of time at idle 10% / 50% / 100% throttle opening

- **Career Applications**

Automotive engineering designing automotive parts

LAB TITLE: Full Throttle

STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**

The student will be able to calculate the length of time an engine could run on the air that is available in the classroom at different RPM's
- **Grouping instructions and roles**
 - Students will work in partners (a partner they haven't been with yet) to help each other stay on track when needing help with applying formula's The Students will use graph paper to plot out the engine cylinder and classroom dimensions to scale
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- **Procedures – steps to follow/instructions**

each pair of students will measure an engine cylinder (provided) calculate the Cubic Inch Displacement of the engine. Next the students will calculate the volume of the classroom recording their measurements on their graph paper and drawing the diagrams to scale. then calculate the time that it would take for the engine to have consumed the volume of air in the room. Step 2 calculate the time with engine at 50% throttle and step3 10% throttle (idle)
- **Outcome instructions**

Once you have completed your measuring/ drawings/ and calculations you will need to write up you results before the second day discussion.
After the class discussion assignment sheet should be turned in.
- **Assessment instructions (peer-teacher)**

Teacher observation- follow directions on assignment sheet
Assignments are collected
Classroom in organized and supplies are turned in.

Lab Data Collection

Student: _____ **Date:** _____

Unit: _____

Lab Title:

Criteria: Write the problem/objective in statement form

Data Collection: Record the collected/given data

Calculations: Complete the given calculations to solve for an answer(s)

Summary Statement:

Other Assessment(s)