

Lab Framework

Text:CORD

Unit number and title: Unit 7 – Working With Two Dimensional Figures

Short Description: Connecting Nets with 3-D Figures

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Lab Title

Surface Area Laid Flat

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**

To show students how nets represent the surface area of 3-D figures and give them tools to calculate surface area.

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

Vocabulary – surface area, area, rectangle, square, triangle

Measurement Techniques – measuring side lengths and heights

Formulas – Basic area formulas for triangles, rectangles and squares

- **Vocabulary**

Net, rectangular prism, triangular prism, pyramid

- **Materials List**

Sponges cut into prism or pyramid forms, paint, butcher paper, rulers, T-squares, protractors or right angle forms

- **State Standards addressed**

Math: 7.3.D - Solve single- and multi- step word problems involving surface area or volume and verify the solutions.

Reading: 1.1 - Use word recognition skills and strategies to read and comprehend text.

2.1. Demonstrate evidence of reading comprehension.

3.1. Read to learn new information.

Writing: 2.2. Writes for different purposes.

- **Leadership Skills**

Students helping each other during project.

- **SCAN Skills/Workplace Skills**

A. Performs basic computations

C. Makes reasonable estimates of arithmetic results without a calculator

- **Set-up information**

1. Set-up paint stations for each team of students, dish, paint, sponge, paper

2. Have students pick a sponge and stamp each side of their sponge on the butcher paper using the paint.

3. Have students measure and label the dimensions of their stamps and find the area of each stamp.

4. Have students check each others work and calculations.

5. Conclude with connecting how these concepts could apply to creating boxes and other shapes. Show students examples of nets where the sides are connected with fold lines.
- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required**)
 - 10 minutes – class instructions and demonstration
 - 30 minutes – student work time
 - 10 minutes – conclusions and connections
 - **Teacher Assessment of student learning** (scoring guide, rubric)
 - Grade students stamps and calculations using normal participation and completion guidelines of your classroom.
 - **Summary of learning** (to be finished after student completes lab)
 - discuss real world application of learning from lab
 - **Optional activities**
 - Bring in boxes that can be cut down and unfolded to form nets. Have students take measurements and find the surface area before unfolding and checking their work.
 - **Career Applications**
 - Design of packaging or cases to contain objects and application of material planning.

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LAB TITLE: Surface Area Laid Flat

STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**
To find the total surface area of a 3-D object.
- **Grouping instructions and roles**
You may work with your teammates on calculations and to check each others work.
- **Procedures**
 1. Dip one side of your sponge in the paint and stamp that side neatly on the butcher paper.
 2. Repeat stamping for each side of your sponge.
 3. Measure and label the dimensions of your stamps.
 4. Calculate the area of each stamp.
 5. Calculate a final surface area for your sponge.

Lab Data Collection

Student: _____ **Date:** _____

Unit: Unit 7 – Working With Two Dimensional Figures

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Criteria: Write the problem/objective in statement form

Calculations: Calculate the area of each stamp and the total surface area of the sponge.

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