Lab Framework

Text:Cord

Unit number and title: Unit 2, Estimating Answers

  Short Description: Making a quilt block and calculating how much fabric is necessary to complete a 4 foot by 4 foot quilt.

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Lab Title
The Quilt Block Puzzle

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**

     Students will estimate the amount of fabric needed to complete a quilt 4 feet by 4 feet.

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

     Students will need to know basic geometric shapes such as triangles, circles and squares. They will need to measure accurately and cut straight. They will need to know how to work with square inches and be able to convert that to yards.

- **Vocabulary**

     quilt, block, square inches

- **Materials List**

     Several colors of construction paper will be needed. They could be cut into 4-inch squares. You will need at least 9 of these squares for each student.

- **GLEs (State Standards) addressed**

   Math: **1.1.6   Complete multi-step computations with combinations of rational numbers using order of operations and addition, subtraction, multiplication, division, powers, and square roots**
   1.1.8   Apply estimation strategies in situations involving multi-step computations of rational numbers using addition, subtraction, multiplication, division, powers, and square roots to predict or determine reasonableness of answers.

   Reading: **2.1.4 Apply <u>comprehension monitoring strategies</u> for informational and technical materials, complex narratives, and expositions: use <u>prior knowledge</u>.**

   Writing: **2.2.1 Demonstrates understanding of different purposes for writing**

- **Leadership Skills 2.1 The student will communicate, participate, and advocate effectively in pairs, small groups, teams and large groups in order to reach common goals.**

- **SCAN Skills/Workplace Skills**
   Writing: records information completely and accurately
   Arithmetic: Performs basic computations
   Mathematics: Approaches practical problems by choosing appropriately from a variety of mathematical techniques.

Listening: Receives, attends to, interprets and responds to verbal messages and other cues.
Decision making: specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative.

- **Set-up information**
Students will be given 9 squares of construction paper of various colors. They are to create an appealing design similar to a quilt pattern. They are to use geometric shapes and can include various types of triangles, rectangles, squares, as well as circles if they wish. They will also have a base paper with a 12 inch square drawn on it in which to arrange the 9 smaller squares. The 9 smaller squares may be measured and cut to create the desired design. We will assume that these shapes will not be sewn together so the students do not need to add extra fabric for a seam allowance.
- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required**
It is estimated that the students will be able to create their design within one class period or less. After the design has been created, they are to calculate how much material of each shape they will need to purchase. Since they are estimating, they may use several ways to do this. They could lay out the shapes on a square foot piece of paper and count the number of each shape that fits. Then they can figure how many square feet fit into a yard of fabric. There could be discussion about other ways to estimate yardage requirements. The pieces may also be required to be place in the same direction (grain). If used in sewing, a seam allowance must be added to all sides.

- **Teacher Assessment of student learning** (scoring guide, rubric)
    The teacher will be able to see if the students' answers are reasonable. The students should be able to explain how they arrived at their answers.
- **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
        This project could apply to tile setting or flooring projects as well as fabric. One could also use this concept to create puzzles out of wood.

- **Optional activities**
    Quilt patterns could be glued onto paper and mounted in the classroom.
- **Career Applications**
    Tile setters, wood workers, clothing designers and fiber artists could use these concepts.

LAB TITLE:_____

STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**

    How much of each color of fabric do you need to buy to complete a 4 foot square quilt using a 9 patch design of your choice.

- **Grouping instructions and roles**

    Student will work either individually or in pairs for this project.

- **Procedures** – steps to follow/instructions

    You will be allowed to choose 9   4-inch squares to use to create your pattern. You may cut the squares into smaller shapes such as triangles, rectangles, or even circles if you wish. You should have no more than 4 plain squares in your design. The others must be made into smaller parts.
    You should use at least 2 different colors.

- **Outcome instructions**

    After you make your quilt block design, determine how much fabric of each color you will need to purchase. Since this will be an estimation, you will decide the best way to figure this out. There may be more than one way to do this. Students will glue down their designs and put up in the room.

- **Assessment instructions** (peer-teacher)

    The students will explain how the measurements were done and how the amount of fabric was determined. Their answers will need to be given in yards.

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)