

## Estimate Shop Area Lab

**Text: Cord**

**Unit number and title: Unit #2 Estimating Answers**

**Short Description:** Estimate square footage then Measure and draw to scale.

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Date: 1/20/08

### LAB PLAN

**TEACHER:** Teacher Prep/ Lesson Plan

Have tape measures, drafting rulers, graph paper, pencils, pencil sharpener, calculators and handouts ready for student use.

- **Lab Objective**

TSWBAT work collaboratively with group members.

TSWBAT delegate and cooperate jobs for the benefit of the group.

TSWBAT calculate basic math skills to find square footage of a triangle, circle, rectangle, trapezoid, etc.

- **Statement of pre-requisite skills needed**

Basic math facts and ability to measure accurately with various tools and equipment, basic geometry and algebra skills.

**Arithmetic**

A. Performs basic computations

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

C. Makes reasonable estimates of arithmetic results without a calculator

D. And uses tables, graphs, diagrams, and charts to obtain or convey quantities information

**Mathematics**

A. Approaches practical problems by choosing appropriately from a variety of mathematical techniques.

B. Uses quantitative data to construct logical explanations for real world situations

C. Expresses mathematical ideas and concepts orally and in writing

D. And understands the role of occurrence and prediction of events.

Square Footage, Measuring Tape, Drafting Ruler, Table Saw, Band Saw, Storage room, Finishing Room, Finishing Booth, etc. (all shop equipment)

Tape measure, Drafting Rulers, graph paper, pencils, pencil sharpener, calculators and handouts.

- **GLEs (State Standards) addressed**

Math: 1.1.6, 1.1.8, 1.2.1, 1.2.5, 1.2.6, 1.3.1, 1.3.3, 1.4.1, 1.5.1, 1.5.2, 1.5.4, 1.5.5, 1.5.6, 2.1.1

Reading: (Reading)

Writing: 1.1.1, 1.2.1, 1.6.2, 2.1.1, 2.2.1

- **Leadership Skills**

Communication is the largest part of any cooperative/collaborative activity. You as a member are responsible to show respect for others views and insights. All members have a voice and need to be heard.

- **SCAN Skills/Workplace Skills**

Math, Communication, Problem Solving, Speaking, Cooperation

**Creative Thinking-** Uses imagination freely, combines ideas or information in new ways, makes connections between seemingly unrelated ideas, and perhaps goals in ways that reveal new possibilities.

**Decision Making-** Specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternatives.

**Problem Solving-** Recognizes that a problem exists (i.e., there is a discrepancy between what is and what should or could be), identifies possible reasons for the discrepancy, and devises and implements a plan of action to resolve it. Evaluates and monitors progress, and revises plan as indicated by findings.

**Seeing Things in the Mind's Eye**

A. Organizes and processes symbols, pictures, graphs, objects etc.

B. For example, sees a building from a blueprint, a system's operation from schematics, the flow of work activities from narrative descriptions, or the taste of food from reading a recipe

**Knowing How to Learn**

A. Recognizes and can use learning techniques to apply and adapt new knowledge and skills both in familiar and changing situations

B. Involves being aware of learning tools such as personal learning styles (visual, aural, etc), formal learning strategies (note taking or clustering items that share some characteristics)

C. And informal learning strategies (awareness of unidentified false assumptions that may lead to faulty conclusions).

- **Set-up information**  
Remind students to follow the directions exactly, work together and communicate who is performing what task, measure twice and draw/cut once.
- **Lab organization**  
Grouping/leadership opportunities/cooperative learning expectations;
- **Timeline**  
This initial group breakdown and task sign-up should take 10 minutes at the most. The question and answer time that goes with it will vary from class to class. 30 minutes for each group to get the materials lists combined and ready for bids should be enough.
- **Teacher Assessment of student learning**  
Teacher verbally gives helpful hints and compliments when needed. Teacher will measure and evaluate final product. Students will evaluate each member of the team and their performance on private evaluation forms.
- **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
- **Optional activities**
- **Career Applications**  
Construction, Architecture, Engineer, Surveyor, Assessor, Realestate,

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**LAB TITLE: Storage Shed Materials List Unit #7**

**STUDENT INSTRUCTIONS:**

- **Statement of problem addressed by lab**

In this lab you will need 5 people in each group. You will need to read and interpret the drawings. This is typical of a real-world job. It is important to work with your instructor and the other members of your team in planning the job so you can avoid costly, time-consuming errors.

- **Grouping instructions and roles**

Students are broken into groups of 5 and each participant has a job:

- 1- Recorder/Supervisor
- 2- Floor bid coordinator
- 3- Wall #1 coordinator
- 4- Wall #2 coordinator
- 5- Front and Back wall Coordinator

The group works on their own area for materials lists and supplies needed. When finished the information is recorded and checked by the group for accuracy. The group works on the roof materials and supplies list to complete the materials needed.

- **Procedures**

Gather one information packet per group and one participant job sheet.  
Follow the directions and get your materials list

- **Outcome instructions**

Complete the given data collection sheet and the participant job sheet.

- **Assessment instructions**

Teacher observation – ongoing during lab  
Did students work cooperatively  
Were instructions followed  
Did student complete the data collection sheet  
Were calculators/conversions within normal range

Participant Job Sheet, fill in name of participants:

- 1- Recorder/Supervisor \_\_\_\_\_
- 2- Floor bid coordinator \_\_\_\_\_
- 3- Wall #1 coordinator \_\_\_\_\_
- 4- Wall #2 coordinator \_\_\_\_\_
- 5- Front and Back wall Coordinator \_\_\_\_\_

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## 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)

Washington  
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Math  
Council

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Name: \_\_\_\_\_

Date: \_\_\_\_\_

Buildings are expensive!! Are we utilizing our space efficiently? First you will need to estimate square footages of floor space covered with tables, storage rooms, finishing booths and other items. Second, you must sketch a scale drawing of the wood shop layout. Our objective here is to visualize area used and then get the exact dimensions and check our estimates. The school has asked that we determine how much of the floor space is covered with tables, storage rooms, finishing booths and other items. You will determine the different surface areas that are covering the floor. When finished you need to draw a scale drawing of the shop area with the tools in their appropriate locations. Use the graph paper provided. Draw your scale at 1/8". Show all work!!!

1. What is the total area of the wood shop/classroom?
2. What is the area of the finishing room/Sauna?
3. What is the area of the awning/construction slab/dance floor?
4. What is the area of the table saw?
5. What is the area of the bandsaw?
6. What is the area of the jointer?
7. Calculate the total square footage the above tools cover in the shop area?

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