

## Math

### Lumber: How much? How long?

Subject Area: Math, Career Paths

Grade Levels: 6,7

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Lesson Overview: Through pictures, models and worksheets students will be introduced to residential framing. Students will calculate board feet and measure wood for a 6 foot mini-wall. Students will also make posters showcasing desirable employee Qualities.

#### Materials included in this

##### Lesson:

- Pictures, diagrams
- Worksheets

##### Other Materials for this Lesson:

- 2" by 4" wood pieces: 6'long (2) and 10" high studs(6)
- Assorted 2" by 4" lengths: 1', 1 and 1/2', 3'
- Measuring tapes, yardsticks
- Butcher paper
- LCD projector or Overhead
- Poster materials: markers and tag board
- BIA Sheet: What employers want...

#### Skills the Student will learn

- To find volume of lumber
- To use lumber volume to calculate board feet
- To measure wood using fractions (16" on center studs)
- To work in groups for measurement tasks and posters

#### Student Deliverables

- Board Feet Worksheets

- Wall Frame Measurements(butcher paper)
- Wall frame Measurement worksheets
- “What Employers Want” posters

## Length of Lesson: 6 Days

### Activity Day One/Two

Using company brochure, site photos and computer panel designs, students will gain overview of possible careers in construction framing. Using the BIA “What Employers Want” sheet, student groups will plan and make posters to showcase desirable skills and qualities.

### Activity Day Three

Using cut wood examples and worksheets, students will learn that “board feet” is a measurement of lumber volume. Then they will use a formula to calculate board feet. A prerequisite Measuring Lines worksheet is included.

### Activity Day Three/Four

Students will learn that purchased 2” by 4” lumber is actually 1 and ½” by 3 and ½” thickness and width. Given a mini wall frame model (10” high studs by 6’ length) and worksheet Students will measure and label layout with studs 16” on center.

### Activity Day Four/ Five

Using lengths of butcher paper, Students, working in groups, will draw and measure their own 4,5,or 6 foot wall. Students will then calculate how many board feet of lumber are needed to make their wall.

### Activity Day Six

Group/class discussion: What did we learn? How did our group work together? During the lessons/activities which habits and skills did we show from our posters and theBIA What Employers Want sheet?

### Optional Extension Measurement /project

With some money from our school PTO I went to Michael’s Craft Store and purchased 5x6” wood frames and Artistic Woodworking decorative moulding (3’x 3/8”wide). I also purchased wood glue, paint and 2 Artistic Woodworking Miter Box and Saw (\$4.95 each). Students will measure and cut moulding for their own picture frames. Artistic Woodworking, Inc. Imperial Nebraska 69003

## Enrichment Suggestions

See Optional Extension Project above.

## Student Resources

Google images for posters

## Foundation Academic Standards

- 6.NS.3 Add, subtract, multiply and divide rational numbers
- 6.NS.6 Understand rational numbers
- 6.EE.4 Identify equal expressions

## CTE Pathway Standards

- NS 2.1 Solve problems involving addition, subtraction, multiplication and division of positive fractions
- AF 2.0 Convert one unit of measurement to another
- MR 2.1 Use estimation to verify the reasonableness of calculated results
- MR 2.7 Make precise calculations and check the validity from the context of the problem

## Lesson Plan Relevance To Externship

Shows how math is used in construction design and framing industry. Shows job opportunities and career choices after high school.

Rubric for the (type in the title) Project

<b>Student Deliverables</b>	1 Exceeds Expectations	2 Meets Expectations	3 Approaches Expectations	4 Fails to meet Expectations
Board Feet sheet				
Wall Frame sheet				
Job Posters				
Frame Measurement (butcher paper)				