

# Science Exploration

## Framing Bid Process

Subject Area: Science Exploration      Grade Levels: 6<sup>th</sup> – 8<sup>th</sup>

Date: 8-2-12

### Lesson Overview

Students will be exposed to the overall bidding experience from a Framing industry perspective. Students will bid on a “job” which will require students to apply reading, writing, social studies, engineering/tech, earth science and math skills. This lesson will include models, pictures, and worksheets which will demonstrate the cost to build eight (8) standard walls in a residential unit.

#### Materials Included in this Lesson

- Worksheets
- Rulers
- Computers (Research)

#### Other Materials for this Lesson

- Spiral Notebook
- Wood sticks
- Glue

#### Skills the Student will Learn

- Review of Overall bidding process
- Problem Solving
- Fractions
- Cost Estimating
- How to write a Scope Letter
- Team work

#### Student Deliverables

- Fraction worksheet
- Research geographic location of jobsite
- Draw a Standard Wall frame with dimensions
- Create a small model of product
- Develop a Price Sheet
- Team name and logo

### Length of Lesson: 8 Days

#### Activity Day One

**1. Invitation to Bid** - Review Letter, Highlight any unknown terms, Fill out form.

- a. List all unknown words.
- b. Who is requesting the information?
- c. Who is invited to bid?
- d. Where is the ‘actual’ job project located (job-site)?
- e. How long will the selected team be at this job-site?
- f. How do you deliver the bid? (email, mailing, etc...)?

- g. What exactly does the framing company have to build?
  - h. When is the Bid due?
  - i. What is available for viewing in room 29?
- 2. Form Group -**
- a. Create business name, logo, and slogan/mission statement (**TEAM BUILDING**)
- 3. Review of General Bidding process**
- a. Sales person finds jobs or customers contacts Framing Company
  - b. Company reviews the invitation and/or contract/plans
  - c. Company puts a bid together for Customer
  - d. Bid is awarded
  - e. Accounting Department sets up files (accounting and receiving)
  - f. Operation Manager would assemble a team to build the job

### Activity Day Two

1. Student will **research** location of job-site and begin discussion on Wood.
2. Watch Brain Pop Video & Complete **Worksheet**
  - a. Longitude (Vertical) & Latitude (Horizontal) (**SOCIAL STUDIES**)
  - b. Global Positioning System (**ENGINEERING/TECH**)
  - c. Volcanoes (**EARTH SCIENCE**)
3. Properties of Wood
  - a. **Use a KWL chart on Wood**

### Activity Day Three

1. Math Fractions
  - a. **Activity/ Worksheets**

### Activity Day Four

1. Teacher will demonstrate to class how to draw a standard wall which includes studs, top, very top, and bottom plate. Students will create a wall free-hand. Drawing will include dimensions, identification of items.
  - a. **Worksheet Template**

### Activity Day Five

1. Student will work on "**Scope of Work**" and "**Price Sheet**" worksheet.

### Activity Day Six

1. Continuation: Student will work on “**Scope of Work**” and “**Price Sheet**” worksheet.

### Activity Day Seven

1. Each student will build at least one (1) Standard Wall Model for a grade.  
**(ENGINEERING)**
  - a. Teacher will provide kit for students to build model. (Popsicle sticks, form board, Elmer’s glue.)

### Activity Day Eight

1. Submit Bid

## Enrichment Suggestions

Teacher can add challenging problems to this project by adding a Window or a Door way to the Wall Unit and have students re-calculate the cost to build wall with these features.

## Student Resources

Students will be encouraged to use their Math book as a reference. Students will also use the computer lab for researching purposes.

## Foundation Academic Standards

- 1.2 Add, subtract, multiply, and divide rational numbers (integers, fractions, and termination decimals) and take positive rational numbers to whole-number powers
- 2.1 Use estimation to verify the reasonableness of calculated results.
- 2.2 Apply strategies and results from simpler problems to more complex problems.
- Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6, 7, and 8 topics, texts, and issues, building on others’ ideas and expressing their own clearly.
- Shaping Earth’s Surface,2.d, Students know earthquakes, volcanic eruptions, landslides, and floods change human and wildlife habitats

## CTE Pathway Standards

- D4.0 Students understand project management procedures and processes as they occur in a construction project: D4.4 Solve common residential construction problems, such as framing, plumbing, and electrical, by using the official codes adopted by the state and local building standards commission.

- 8NS.1 The Number System (Know that numbers that are not rational are called irrational)
- 8G.1 Understand congruence and similarity using physical models, transparencies, or geometry software
- MR 2.7 Make precise calculations and check the validity from the context of the problem

### Lesson Plan Relevance To Externship

What a great opportunity for teachers to bring “real” world job skills into the classroom. Students will be able to learn the overall bidding process which occurs in every construction industry with a few modifications. Student will write, read, work in teams, review math, and submit work in a timely manner.

## Rubric for the (Framing Bid) Project

Student Deliverables	4 Exceeds Expectations	3 Meets Expectations	2 Approaches Expectations	1 Fails to meet Expectations
Brain-pop Quiz	Views and Review Videos Passes quiz on file with 100-90% or better score	Views and Review Videos Passes quiz on file with 89-80% or better score	Reviews Videos Reviews Quizzes Passes quiz on file with 79-70%	Not view Videos Not review Quiz on File Failed quiz with 60% or below
Wood Quiz	KWL completed and neat  Passes quiz on file with 100-90% or better score	KWL complete but not neat Passes quiz on file with 89-80% or better score	KWL somewhat completed and somewhat neat Passes quiz on file with 79-70%	KWL not complete and not neat Failed quiz with 60% or below
Drawing of Wall	Neatly drawing with all labels included.  Drawing is colored and easy to read.	Somewhat neatly drawn with some labels included.  Drawing has some colored.	Little labeled and not neatly drawing.  Drawing is not colored difficult to read	Not complete drawing of Wall and not labeled.  Drawing is not colored and it is not neat.
Scope of Work/Price Sheet	All information is correct and neatly completed	Some information missing and somewhat neatly completed	Missing information and/or incorrect information. Not neat.	Many missing information and/or incorrect information.  Not neat.