

# Installation: Framing

**Media Type:** Video

**Duration:** 85 minutes

**Goal:** To demonstrate the process of installing wall, ceiling and roof framing, decking and framing members.

**Description:** This presentation discusses tools and materials needed to install framing, as well as safety precautions to be aware of when installing framing. The step-by-step process of installing framing members, wall, ceiling and roof framing and decking is explored in detail.

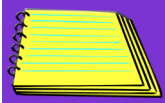
## Objectives:

1. To discuss tools and materials needed for framing installation.
2. To describe safety precautions relevant to framing installation.
3. To demonstrate the installation of wall, ceiling and roof framing.
4. To demonstrate the of decking and framing member buildup.


## Horizontal Alignment

| Core-Subject Area | Foundation Concept  | Basic Understanding  |
|-------------------|---|--|
| Language Arts     | <i>Application of Writing Skills</i>                      | <ul style="list-style-type: none"><li>• Descriptive and informative writing</li><li>• Organizing logical arguments</li><li>• Utilizing reference materials</li><li>• Enhancing grammatical mechanics</li><li>• Vocabulary enhancement</li></ul>                  |
|                   | <i>Analysis of Text &amp; Information</i>                 | <ul style="list-style-type: none"><li>• Critical thinking</li><li>• Communication skills</li><li>• Correlating text events with personal experiences</li><li>• Developing listening and comprehension skills</li><li>• Creating visual representations</li></ul> |
|                   | <i>Technology Applications in Literature</i>              | <ul style="list-style-type: none"><li>• Utilizing presentation processing software</li><li>• Internet-based research</li></ul>   |
| Math              | <i>Mathematical Figures &amp; Concepts</i>                | <ul style="list-style-type: none"><li>• Measurements</li><li>• Fractions</li><li>• Addition</li><li>• Subtraction</li><li>• Computation</li></ul>  |
|                   | <i>Geometrical Figures, Principles &amp; Applications</i> | <ul style="list-style-type: none"><li>• Spatial relationships</li><li>• Space dimensions</li></ul>   |


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## Lesson Plan

 **Class 1:** Begin class by passing out the *Installation: Framing Vocabulary Handout* and *Worksheet*. Instruct students to fill out the worksheet as they watch the presentation. Disseminate the *Grades of Lumber Student Handout*. Show the *Installation: Framing Introduction* and the *Lumber Basics* segments.


Video  
12 min.

 **Class 2:** Distribute the *Metal Studs Student Handout*. Remind students to continue filling out their *Worksheet*. Show the *Tools & Materials* and *Estimating Materials* segments. Allow the remainder of the class period for students to complete the *Estimating Framing Materials* and *Tool & Materials ID Activities*.


Video  
8 min.

 **Class 3:** Remind students to continue using the *Vocabulary Handout*. Disseminate the *Vapor Barriers Student Handout*. Show the *Framing Member Buildup* and *Installation Wall Framing* segments. Instruct students to begin the *Installing Framing Project*.

Video  
18 min.


 **Class 4:** Show the *Ceiling Framing* and *Roof Framing Part 1* segments. Have students complete the *Estimating Roof Framing Materials Activity*. If student licenses have been purchased, an interactive version of this Activity is available in the “Interactive Activities” section. Instruct students to continue working on the *Installing Framing Project*. Have students complete the *Framing & Roofing Identification* and *Roof Framing Terminology Activities* for homework. If student licenses have been purchased, interactive versions of these Activities are available in the “Interactive Activities” section.

Video  
18 min.

 **Class 5:** Show the *Roof Framing Part 2* segment. Have students complete the *List of Procedures and Roof Layout Activities*. Instruct students to continue working on the *Installing Framing Project*. Assign the *Sheathing Activity*

Video  
26 min.

for homework.

 **Class 6:** Instruct students to complete their *Worksheet*. Show the *Decking* segment. Instruct students to continue working on the *Installing Framing Project*.

Video  
3 min.

**Class 7:** Allow students to work on their *Activities* and *Projects* for the entire class period. Students should complete their *Installing Framing Projects*.

**Class 8:** Distribute the *Gable Roof Using Trusses Student Handout* and *Gable Roof with Vent Openings Students Handout*. Pass out the *Estimating Materials for Gable Roof Construction with Trusses Activity* and allow time for students to complete it. Hand out the *Trusses Project* for students to begin as homework.

**Class 9:** Students should complete the *Gable Roof Layout Using Rafters Activity*. Allow remaining class time for students to work on their *Trusses Project*.

**Class 10:** Distribute the *Framing a Gable Roof Using Rafters Project* and allow the entire class for students to work.

**Class 11:** Allow students to continue working on the *Framing a Gable Roof Using Rafters Project*.

**Class 12:** Allow students to continue working on the *Framing a Gable Roof Using Rafters Project*.

**Class 13:** Students should share their *Trusses Projects* with the class. Students should continue working on the *Framing a Gable Roof Using Rafters Project*.

**Class 14:** Have students complete the *Installation: Framing Assessment*. All *Projects/Activities* should be completed before the end of class.

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## Lesson Links

### Do it Yourself: House Framing

- <http://www.doityourself.com/stry/about-house-framing>

### Do it Yourself Advice: Framing Basics

- <http://www.diyadvice.com/diy/drywall/framing/>

## Career & Technical Student Organizations

### SkillsUSA

- Job Skill Demonstration A
- Job Skill Demonstration Open

## Lab Activities

### Tool & Material ID

#### Directions:

Students will list the tools and materials needed when installing framing. Students must provide the name of each, as well as the task or function for which it will be used. Also, they must include any safety concerns regarding use of the tool or material. After students complete the *Activity*, provide the correct answers with the *Answer Key*.

### Estimating Framing Materials

#### Directions:

Divide students into groups of three or four. Each group must utilize the methods describe in the presentation to estimate the following for the home on the plan provided: estimate the linear footage of plate material you will need; estimate the number of studs needed (be sure to add enough material to build up all framing members); determine the amount of each framing member to be constructed (i.e. tees, corners, trimmers, headers) and estimate the amount of sheathing needed to cover the outside of the house on the plan provided. After students complete the *Activity*, provide the correct answers with the *Answer Key*.

### Estimating Roof Framing Materials

#### Directions:

Students will follow the directions provided on the *Activity* to estimate roof framing materials. After students complete the *Activity*, provide the correct answers with the *Answer Key*. If student licenses have been purchased, an interactive version of this *Activity* is available in the “Interactive Activities” section.

### Framing & Roofing Identification

#### Directions:

Students will use the word bank provided for the framing member model and the flat roof layout to match the correct words and letters. After students complete the *Activity*, provide the correct answers with the *Answer Key*. If student licenses have been purchased, an interactive version of this *Activity* is available in the “Interactive Activities” section.

### List of Procedures

#### Directions:

Divide students into groups of three or four. Each group must research and describe the procedure for layout out a wood frame wall and exterior wall and they must include the following: installation of plates, corners, door openings, window openings, partition T's, bracings, firestops and assembling and erecting an exterior wall. After completing their research, students must create a list which describes the procedures and cite all sources used.

## Career Connections

Using the *Career Connections Activity*, allow students to explore the various careers associated with this lesson. See the *Activity* for more details. *If student licenses have been purchased:* Students will select the interviews to watch based on your directions. *If only a teacher license is purchased:* Show students all the career interviews and instruct them to only complete the interview form for the required number of interviews.

- iCEV50393, Lee Lewis, CEO, Lee Lewis Construction
- iCEV50366, John Brown, Construction Laborer, McDougal Companies

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## Lab Activities

### Sheathing

#### Directions:

Students will research and identify common materials and methods used for installing sheathing on walls and in roof construction. Also, they must research local building codes and standards for sheathing in their state. Students must cite all sources used.

### Roof Layout

#### Directions:

Students will follow the directions provided on the *Activity* to sketch different types of roof layouts. After students complete the *Activity*, provide the correct answers with the *Answer Key*.

### Roof Framing Terminology

#### Directions:

Students will fill in the blanks with the correct definition or term. After students complete the *Activity*, provide the correct answers with the *Answer Key*. If student licenses have been purchased, an interactive version of this *Activity* is available in the “Interactive Activities” section.

### Estimating Materials for Gable Roof Construction with Trusses

#### Directions:

After reviewing the *Gable Roof Using Trusses Student Handout*, students will answer the following questions. An *Answer Key* has been provided.

### Gable Roof Layout Using Rafters

#### Directions:

After reviewing the *Gable Roof Using Trusses Student Handout*, students will answer the following questions. An *Answer Key* has been provided.



## Project

### Installing Framing

#### Directions:

Students will follow the process for installing framing as outlined in the presentation. Depending on the school's resources, this may be done in an actual building, a full size mock-up, or a miniature mock-up. Make sure students follow all steps and safety procedures while performing all work adequately. See the *Installing Framing Teacher Instruction Sheet* for more information.

### Trusses

#### Directions:

Using the *Gable Roof Using Trusses Student Handout*, the Internet or any other available resources, students will research and gather information about trusses and how they are used when framing a gable roof. Using their research, they will develop a one page summary sheet detailing their findings. After completing the summary sheet, they will create a representation which shows how trusses are used to construct a gable roof. Representations can be a hand-drawn sketch, computer-generated graphic or a miniature model. Students should share their representation with the class and be prepared to answer questions.

### Framing a Gable Roof Using Rafters

#### Directions:

Students will follow the process for framing a gable roof utilizing rafters on a building which is 12' wide by 36' long with a slope of 5/12. Depending on the school's resources, this may be completed on an actual building, a full size mock-up, a miniature mock-up or a computer generated model. Make sure students follow all steps and safety procedures while performing all work adequately. See the *Framing a Gable Roof Using Rafters Teacher Instruction Sheet* for more information.

