**Lesson Information**

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| Lesson: (3 of 4) Roofs Length: 90 minutes  Unit: (2 of 4) Concrete and Framing  Course: Carpentry |

**Content Assumptions**

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| Prior to this class, students have taken safety, math, and materials handling courses. |

**Essential Questions**

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| 1. How are previously-learned skills and concepts (e.g., those of math, safety, materials handling) applied in roof framing? 2. What are the basic principles shared by roof-framing tools? |

**Objectives Assessments**

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| After completing this lesson, students will be able to:   1. Demonstrate their knowledge of the terms and concepts associated with roof framing and the tools used in roof framing. 2. Demonstrate the proper use of tools for roof framing. 3. Translate information found on construction drawings into quantities of building materials. | 1. Labeling diagram(s) — key; group discussion — Instructor observation 2. Presentation/video — rubric, Instructor observation 3. Materials estimate — checklist |

**Activities/Instruction**

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| **Show and Tell** (20 minutes)  Using diagrams such as those listed in the Materials section, Instructor introduces students to the terms and concepts associated with roof framing, as well as processes for calculating, laying out, cutting, and installing the components of roof frames. Students label blank versions of the diagrams.  **Teach Each Other — Roofing Tools and Methods** (55 minutes)  Instructor divides the class into three groups and assigns each of them one of the following topics:   * Rafter-framing squares and construction calculators: what they are, and how they are used in roof-framing * Speed squares and calculators: what they are, and how they are used in roof-framing * Gable roofs, trusses, and vent openings: what they are, and how they are framed   Students are to spend 35 minutes researching their topics AND planning a presentation or making a video demonstrating what they learned. Each group then gets about 3 minutes to show its presentation/video (total time spent should be 15 minutes with transitions). Instructor can require that students take notes on others’ presentations/videos as another formative assessment. After all presentations/videos have been shown, Instructor leads a short (5-minute) discussion about the similarities among tools used in roof framing (i.e., that they all utilize the principles of geometry).  **Construction Planning: Materials Estimate** (15 minutes)  Instructor distributes copies of the chosen construction plans and explains the task. Students are to estimate the amount of materials to be used in framing the roof represented on the plans. |

**Materials**

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| For students:   * Plans for a simple residence (as used in the lesson “Wall and Ceiling Framing”) * Classroom/library resources (e.g., textbooks, tool manuals, etc.)   For Instructor:   * http://www.mcvicker.com/resguide/page010.htm#RACF * [PRESENTATION-VIDEO RUBRIC] * [FRAMING MATERIALS ESTIMATE CHECKLIST] |