

Unit: Building Materials

Title: Materials and Fasteners

Skill(s) and Knowledge: Students will be able to: identify Lumber, engineered wood products, fasteners and adhesives.

Tasks: Identify different species of wood, describe hard and soft wood, plywood, lumber types, lumber defects, define actual and nominal lumber sizes. Identify fasteners and adhesives used in your shop, read pages: 145-161.

Performance objective: Identify engineered building materials, define the use of engineered materials. Identify and describe the use of fasteners and adhesives. Identify the parts of a board including: end, edge, face, thickness, width and length, calculate board feet, identify lumber defects. Answer the questions on pages: 160-161.

Tools, supplies and reference materials:

Lumber samples of the following: 2x douglas fir framing material, 1x pine, oak, cedar, examples of defective lumber. Plywood: CDX, OSB, Hardboard. Fasteners: framing and finish nails, screws: slotted, square and phillips drive. Adhesives used in your shop and the matching MSDS sheets. Career Connection Book 1 Chapter 6 pages: 145-161.

Methods of instruction: Lecture and demonstration on how to identify building materials and their use and proper storage, reference to the Career Connections Book 1 Chapter 6, and hands-on practice with a sample of each material.

Estimated time: 4 hrs. **Number of students:** 10-15

Task analysis or activities: Students will work in small groups, working together to complete all activities and helping each other as they progress at their own pace. Try to have enough material for each student or small group of students. Depending on the quantities in your shop, you could dedicate a station to each material and then students could be divided into small groups and rotate through each station. Suggested Stations: Identify species and 2x vs. 1x and lumber defects, identify plywood, identify parts of the board and calculate board feet, identify fasteners/ adhesives and describe their uses. Create a worksheet for each station.

Evaluation: Students will be graded on their use of time, safety methods, quality of work, cleaning and organization of their work area, interaction with other students, and vocational employability skills grading rubric. Answer the questions on pages: 160-161.

Performance Notes:

Vocational Frameworks References

- 2.D.01 Recognize and describe the use of building materials.
- 2.D.02 Recognize and describe the use of engineered building materials.
- 2.D.04 Apply carpentry math principles.
- 2.D.06 Demonstrate lumber storage techniques.

English/Strand 3 Frameworks References:

RST Grades 9-10 #4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases in a technical context.

Frameworks References: Math

N-Q3 Identify significant figures in recorded measures and computed values based on the context given and the precision of the tools used.

Common Core References:

- Read and listen critically for information understanding and enjoyment
- Set goals and achieve them by organizing time, workspace, and resources effectively
- Work both independently and in groups

SCANS references:

Foundation Skills:

1. Basic skills— reading, writing, mathematics, speaking, and listening.
2. Thinking Skills-- thinking creatively, making decisions, solving problems, visualizing, knowing how to learn, and reasoning
3. Personal qualities--individual responsibility, self-esteem, sociability, self management, and integrity

Work Place Competencies

1. Resources--allocating time, money, material, space, and staff.
2. Interpersonal skills--working in teams, teaching others, serving customers, leading negotiating, and working well with culturally diverse populations.
3. Information--acquiring and evaluating data, organizing and maintaining files, interpreting & communicating, and using computer to process information
4. Systems--understanding social, organizational, and technological systems, monitoring and correcting performance, and designing or improving systems.
5. Technology--selecting equipment and tools, applying technology to specific tasks, and maintaining and troubleshooting technologies

CAREER CONNECTIONS: PROJECT BOOK 1

Lesson Plan: Chapter 6, Materials and Fasteners Used in the Projects

Time Required: One 50-minute class period (or present the information when students need to use the materials and fasteners for a project)

Goal:

To describe the materials and fasteners commonly used by carpenters

Objectives:

At the end of this chapter, students should be able to:

- Classify lumber and describe its characteristics.
- Classify engineered wood products and describe their uses.
- Identify the types and uses of fasteners and carpentry adhesive.

Procedures:

The following provides a summary of instructional and assessment procedures.

Teach

Minutes	Activity
5	<i>Chapter 6 Introduction</i> Review the lesson goal and objectives with students.
10	<i>Section 1</i> Explain the two classifications of lumber (softwood and hardwood). Describe examples and their uses. Discuss lumber size and defects. Demonstrate the materials described in this lesson in the classroom or in the shop area.
10	<i>Section 2</i> Describe the types of engineered wood products. Explain their characteristics and uses.
15	<i>Section 3</i> Describe the types of mechanical fasteners (nails, brads, and screws) and their uses. Describe the applications for adhesives such as wood glue.
10	<i>Chapter Review</i> Answer any questions students have about the chapter. Ask students to review Chapter 7 for the next class.

Assess

Assessment Activity	Assessment Method and Criteria

Carpentry Frameworks Based Lesson Plan

Framework: 2.D

Chapter Check questions	1 point for each correct answer
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