Measuring Up

Woodworking
Youth Activity Guide

Name __________________________

County ________________________
Notes to the Helper

Helpers and teachers looking for ways to help youth develop in positive ways will find the art of woodworking to be fun and educational. Experiential learning, the basis of the Woodworking Wonders curriculum, will help you teach the subject and show youth how to apply the skills to life. Simple lessons on safety, tools and other activities will help you teach the learning process and basic woodworking skills. You'll find the first-hand experiences in this book will bring about enthusiastic responses from youth and for you, too. Congratulations for being involved with youth in woodworking! You're doing an important job in helping youth learn how to learn.

Your Responsibilities

• Become familiar with the material in this book.
• Assist youth in selecting and completing woodworking projects appropriate for their skill level.
• Guide youth in thinking through why something happens or why it doesn't happen.
• Encourage youth to complete difficult tasks.
• Help youth get to know their strengths and weaknesses.
• Help youth evaluate their completed project(s) for quality. Questions at the end of each activity will help youth think through the steps of the project as well as how to apply new skills to their own lives.
• Be an example with safety rules. Have youth go through a safety check before starting projects to help instill a "safety first" habit.

The Woodworking Wonders Series

There are four books for youth in the Woodworking Wonders series: Measuring Up for grades 2-4; Making the Cut, for grades 4-6; Nailing It Together, for grades 6-8; and Finishing Up for grades 9-12. The books may be used by youth in any grade based on their prior knowledge of woodworking. Each of the guides includes an achievement program and further study activities.

At the beginning of each chapter, you'll find a woodworking skill and a life skill that can be applied to personal growth. There's a short lesson about the chapter topic followed by activities and questions for further learning. Measuring Up, written on a fourth-grade reading level, helps you to read along with your woodworkers.

The Woodworking Group Helper's Guide lists additional activities and briefly outlines the concept behind experiential learning.

Years of research and experience with youth reveal that for most youth, learning is best done experientially. The Experiential Learning Model shows the five sequential steps in this process. Each of the steps supports the three basic concepts of experiential learning: do, reflect and apply.

In this book, a short lesson with each activity initiates the "do" part of the cycle. The activity is followed by questions that help the youth "reflect" on his or her new knowledge. In thinking through what has been learned, the youth processes the experiences. Finally, questions about how new skills can be applied to real-world experiences helps complete the "apply" portion of the Experiential Learning Model. Doing, reflecting and applying will help youth have a full and rewarding learning experience.

Keep in mind that some children will be more developmentally able than others to handle certain activities. Each child has his or her own way of learning. Pay attention to how youth learn: what is exciting to them and what is a task to them. Through patient assistance and encouragement, helpers will develop an understanding of how to motivate youth under their guidance.

Acknowledgements

These publications were reviewed and researched by: Jim Adams, Kansas State University; Curt Peters, University of Arizona; Kevin Jones, University of Arkansas; Bobbie Bower, 4-H volunteer, and Michael Bower, 4-H volunteer and master carpenter, both of North Carolina; Elton Fisher, Colorado State University; Matt Pangre, 4-H member, Illinois; and Bobby Rogers, 4-H leader and woodworking business owner, North Carolina.

Writer and editor: Dennis McConnell, Pennsylvania

Design and Production: Northern Design Group, Minnesota

Technical Plans: Bobby Rogers and Michael Bower

Original Design Team: Roger Tomsochek, Extension 4-H Youth Specialist, Purdue University, and Cherri Hofmann. An earlier version of the plans was done by Ronald Hawthorne, volunteer; Art Rodgner, Extension Educator, 4-H; Del Reijo, Extension Educator; 4-H; Katherine Rust, volunteer; and Thomas Thurston, volunteer, all from Indiana, Purdue University.

Warning: Some web sites which are included in these materials as a convenience for users are not managed by National 4-H Council or other land-grant universities, therefore responsibility for contents cannot be taken by National 4-H Council or the universities. Given the dynamic nature of the Web, some sites may no longer exist or may have had content changes.

Copyright 2003 National 4-H Council. All rights reserved. Reproduction without permission of National 4-H Council is strictly prohibited.
Measuring Up

Table of Contents

Introduction
Note to the Helper ........................................ Inside Front Cover ................................. 2
How This Book Works .................................... 3
My Plans ....................................................... 4
Achievement Program .................................... 5
Certificate of Completion ............................... 6

Chapter 1 - Getting Started
Finding Your Place ....................................... 6
Tools and Equipment ..................................... 8
Safety Is No Accident ................................... 10

Chapter 2 - Working With Wood
What’s Wood? ............................................. 12

Chapter 3 - Practicing Your Skills
Taking Measure .......................................... 15
Pounding Away .......................................... 17
I Saw, You Saw, Handsaw ......................... 20

Chapter 4 - Making Connections
Holding It Together .................................... 23
Sticking Together ........................................ 25
Butting Up .................................................. 27

Chapter 5 - Finishing Up
Sanding Tips .............................................. 29
Painting — The Finishing Touch .................. 31

Project Plans
Flower Box ............................................... 33
Letter or Napkin Holder ............................... 34
Picture Frame ............................................. 35

Shop Talk Glossary ..................................... 36
Resources ...................................................... 36

Have fun with your woodworking project. Look for this symbol for good safety rules!
How This Book Works

Woodworking is a valuable skill. You can make a career of it or you can apply woodworking knowledge to hobbies and household repairs. To get the most out of this book, it would be a good idea for you to know how it is organized.

Each chapter features a short lesson on woodworking skills. Then the fun starts! After reading about a skill, you get to practice it through the activities. With each lesson or activity you’ll see:

About Woodworking: this will be a skill you learn from the activity

About Yourself: this will be how you might apply the skill to your life

Toolbox
This picture will tell you what you need for each activity.

Activities
You’ll find fun activities where you see this picture. Questions at the end of activities will make you think about what you learned and how you can use your new skills in other areas of your life.

Talk it Over
Questions at the end of activities will help you think through what you’ve learned and how it applies to your life.

Clovers Mean Safety
You’ll find tips about safety when you see clovers. Being safe will keep you and others from being hurt. Safety skills are just as important as learning how to use tools.

More Challenges
Want to learn more? Look for the More Challenges picture. You’ll find more activities, field trips or community activities about woodworking.

Keeping Track

My Plans on the next page will help you set goals and use the Achievement Program to record what you learn. After you finish the Achievement Program, your helper will fill out the certificate in this book. Framing your certificate will be an accomplishment! You have lots of fun ahead of you. Let’s get started on Woodworking Wonders.
My Plans

This page will help you plan how to finish this book. Get your pencil and put on your thinking cap! You have up to three years to complete the book.

- Write your name.
- Select your helper and write down the telephone numbers where you can reach him or her.
- Complete My Project Goals.
  - Select the woodworking project(s) you’d like to make.
  - Complete at least seven activities each year.
  - Do at least two leadership experiences for each year.

Name: _____________________________

My project helper is: _____________________________

Phone: _____________________________ E-Mail: _____________________________

1. My Project Goals

I plan to make these woodworking projects while I use this book:

__________________________________________________________________________

I plan to complete my Achievement Program by _____________________________ Date

2. Leadership Experiences

Each year plan, participate or lead at least two of the experiences listed below. You can add your own leadership activities in the last line.

<table>
<thead>
<tr>
<th>Experiences</th>
<th>Plan to do</th>
<th>Date</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Give a presentation or demonstration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrate a woodworking skill.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make an exhibit of a woodworking project.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invite a friend to be part of the woodworking group.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participate in a county or school judging activity.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other leadership activities</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Project Highlights

Record and date the most fun things you do in Measuring Up. Include all that you do in the woodworking projects you have made, any wood objects you’ve repaired and any you’ve painted.

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

4. Project Review

Ask your helper, leader or parent to review each of the projects or activities listed in My Plans.
Measuring Up
Achievement Program

☐ Do at least seven activities listed in this book each year. You have three years to complete this book. You can complete the book before that time, too.

☐ If you take three years to complete this book, you’ll complete 21 activities for the Achievement Program. Date the activities you complete below and have your leader, helper or parent initial them.

More Challenges are optional activities. Select and complete any of them. Record the activity and date below and have your helper, leader or parent initial each one. If you’ve thought of some not listed in the book, write those in, too.

### Required Activities

<table>
<thead>
<tr>
<th>Activities</th>
<th>Date Completed</th>
<th>Helper’s Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chapter 1 – Getting Started</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selecting a Work Area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name the Tools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic Tool Word Find</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety Settings</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Chapter 2 – Working With Wood</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify Woods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soft vs Hard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lumber Parts</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Chapter 3 – Practicing Your Skills</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring Up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On Your Mark</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hammer Parts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hit the Nail on the Head</td>
<td></td>
<td></td>
</tr>
<tr>
<td>See and Saw</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naming the Hand Saw Parts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rasp Around</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Chapter 4 – Holding It Together</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pounding Nails</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glue Together</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Butting Wood</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Chapter 5 – Finishing Up</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compare the Feel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loading the Brush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clean Painting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Optional Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Page #</th>
<th>Date Completed</th>
<th>Helper’s Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write your own activity here.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: ________</td>
<td>Helper’s Initials: __________</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity</th>
<th>Page #</th>
<th>Date Completed</th>
<th>Helper’s Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write your own activity here.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: ________</td>
<td>Helper’s Initials: __________</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity</th>
<th>Page #</th>
<th>Date Completed</th>
<th>Helper’s Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write your own activity here.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: ________</td>
<td>Helper’s Initials: __________</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Achievement Program Certificate

I certify that

has successfully completed the requirements of the Measuring Up Achievement Program.

Helper
Date

Picture of my woodworking project and me
Getting Started

A place to work is a top priority for woodworkers. It needs to be a safe place. It needs to be a place you can store and organize your tools. In addition to learning about safe work areas, you'll also learn how to be safe while working. On top of that, you'll learn how to recognize basic tools. All of that is coming up in Chapter 1.

Finding Your Place

Where can you safely work on woodworking projects? Is there space in a family garage or basement? Could you work at a nearby community center or church? The next activity will help you compare workspace features.

What makes a workspace feature important, you ask? Well, safety is a big consideration. Permission to work there is also important.

Selecting a Work Area

Decide on three workspaces to compare. Write each one in the chart under Space 1, Space 2 and Space 3. Then, compare each workspace feature listed on the left with a scale of good, OK or poor. Jot down your reasons.

You can add features that are important to you, but aren't listed in the chart. Based on your chart, which is the best place to work? Write down your answer after you fill in the chart.

<table>
<thead>
<tr>
<th>Judging Work Spaces</th>
<th>Space 1</th>
<th>Space 2</th>
<th>Space 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enough space</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bright light</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good ventilation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workbench or sturdy table</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage area for tools and materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Making dust is OK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GFCI protected outlets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easy to clean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Features</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What kind of space is best for you to do woodworking projects?

Explain your answer.
Share it
What places did you consider for work places? Why?
What makes a safe woodworking area?

Process it
How would you describe an ideal workshop?
What is one of the most important safety rules you have learned?
Why is it important to decide ahead of time what safety rules will be used in your shop?

Generalize it
Why are safety rules in work places important? What would happen if there were no safety rules?

Apply it
What do you do to make good decisions? Who or what can help you make a decision? Why?
Tools and Equipment

Now that you’ve found a safe workspace, you need to think about tools. Perhaps you can use tools from a family member. Can you borrow tools? You may want to buy some tools of your own. Good tools can be expensive, so you’ll want to learn how to choose the best ones for your job. This activity will help you get to know some basic tools.

What You’ll Learn

About Woodworking: How to identify woodworking tools
About Yourself: Decision making

Name the Tools

Here are pictures of 13 tools. Place the number of the tool listed below by its picture on the peg board.

Tools
1. Claw hammer
2. Pliers
3. Sandpaper block
4. Carpenter’s pencil
5. Try Square
6. Handsaw
7. Flat-bladed screwdriver
8. Wood rasp
9. Tape measure
10. C-clamp
11. Phillips screwdriver
12. Brace and Bit
13. Nail Set
Talk it Over

Share it
Which tools did you know about in the activity?
Which tools have you used before?
Which tools were new to you in the activity?

Process it
What is your favorite tool and why?

Generalize it
What are some decisions you'll have to make about the tools you will need to use in woodworking projects?

Apply it
Which tools do you think you will use the most?
How can you purchase your own tools?

More Challenges
1. Visit the shop of a woodworker in your community. List the tools you find and how they are used. Discuss your list with your parent, helper or leader.
2. Visit a museum and find tools used long ago. How are those tools like the ones used today? How are the tools of long ago different? Why are they different? Share your ideas with your helper.
Safety Is No Accident

Woodworking is fun, but it can be dangerous if you’re not careful. Tools must be used and stored with care to prevent accidents.

What You'll Learn
- About Woodworking: What makes a safe work area.
- About Yourself: How to make decisions by comparing.

Safety Settings

Draw a line between the safety gear or rule on the right to the situation that calls for it on the left. Some situations call for several safety measures.

<table>
<thead>
<tr>
<th>Situation</th>
<th>Safety Gear / Safety Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. You're sanding a project to get it ready for paint.</td>
<td>1. Safety glasses</td>
</tr>
<tr>
<td>B. The phone rings and you run to answer it with a nail set in your hand.</td>
<td>2. Earplugs</td>
</tr>
<tr>
<td>C. You are on the deck hammering in nails that have popped up.</td>
<td>3. Dust mask</td>
</tr>
<tr>
<td>D. Your little brother wants to watch you build a birdhouse and you’re using sharp tools.</td>
<td>4. Have good storage for tools</td>
</tr>
<tr>
<td>E. The rasp looks dull, but is it sharp? You run your finger over it to find out.</td>
<td>5. Test for sharp edges</td>
</tr>
<tr>
<td>F. You're visiting a community woodworker and the owner is demonstrating power equipment.</td>
<td>6. Do not run with sharp edged tools.</td>
</tr>
<tr>
<td>G. Your helper sends you to get a saw and tells you to hurry. You grab the saw with the teeth facing toward your stomach and run back happy to be of help.</td>
<td>7. Keep tools away from small children</td>
</tr>
</tbody>
</table>

Tools
- Toolbox
- Pencil
Safety Rules

- Each woodworker needs certain basic safety equipment. You also need to take care with what you wear when you work. Here are some important safety rules:
- Keep all work surfaces free of clutter.
- Store all tools properly.
- Keep work areas free of obstructions. Arrange cords and hoses so no one will trip or walk over them.
- Sweep sawdust and wood shavings often. Don't allow large piles of debris to accumulate.
- Have an all-purpose fire extinguisher in a handy place.
- Clean up all liquid spills immediately.
- Shops should have GFCI protected outlets. Ask an adult for help.
- Keep all cords in good repair. Ask an adult to repair or replace defective electrical cords.
- Have a well-ventilated area for dusty procedures and for finishing (lacquers, stains, paints, etc.).
- Dispose of oily and stained rags properly and safely depending on what is on the rags.
- Always have an adequate first-aid kit in the shop area.
- Keep shop exits clear and free of anything that could cause someone to trip.

More Challenges

1. Find examples of personal protective equipment in a hardware store. Take note of the variety available, the price and use of each item.
2. Explain to a group or to your parent, teacher or helper the ways to be safe in a woodworking shop. Give examples of how and when to wear safety equipment or to use safety equipment.
3. Make a first aid kit for your woodworking area.
4. Make a poster using safety rules you've learned. Illustrate the poster and hang it in your work area.

Talk it Over

Share It
What safety rules did you know?
What safety rules were new to you?

Process It
Why are safety glasses important to wear while doing most woodworking projects?
Why can clothing or jewelry make woodworking dangerous?
Why are dust masks important in some woodworking projects?

Generalize It
What other safety decisions have you made?
What other workers might need to wear safety equipment? Why?

Apply It
Now that you know about basic safety rules, can you think of other areas in your life where safety equipment is important? Why?