



Level 1

National 4-H Curriculum  
BU-06875

# Measuring Up



## Woodworking Youth Activity Guide

Name \_\_\_\_\_

County \_\_\_\_\_



REVIEWED & RECOMMENDED  
National 4-H Curriculum



# 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.

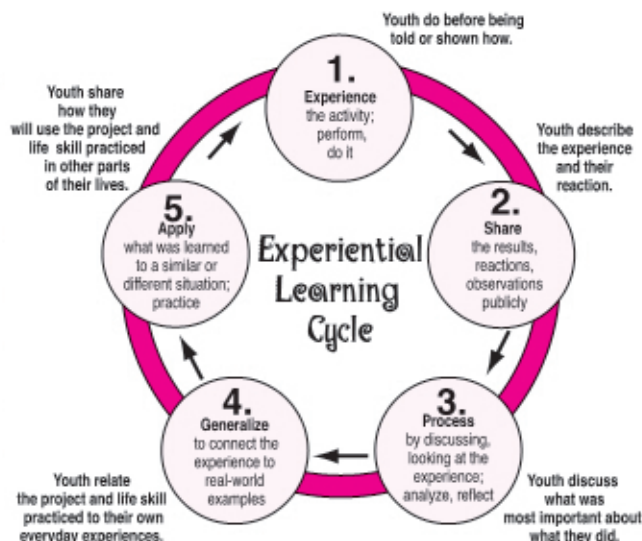
## The Woodworking Wonders Series

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* is written on a fourth grade reading level. Helpers may need to read along with young woodworkers.

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



Pfeiffer, J.W., & Jones, J.E., "Reference Guide to Handbooks and Annuals" © 1983 John Wiley & Sons, Inc. Reprinted with permission of John Wiley & Sons, Inc.

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; Eldon Fisher, Colorado State University; Matt Pangrac, 4-H member, Illinois; and Bobby Rogers, 4-H leader and woodworking business owner, North Carolina.

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For more on  
woodworking, look  
for these other  
guides in this set



#### Making the Cut

Chapter 1 - Getting Ready  
The Right Tools  
Safety First  
Exploring Woodworking Careers  
Non-Money Bills

Chapter 2 - Starting With Wood  
Selecting a Project  
Species Makes a Difference

Chapter 3 - Fitting Together  
Every Screw Needs a Screwdriver  
Combination Squares  
Cutting on the Angle

Chapter 4 - Finishing Factors  
Rough Paper  
Pad Power  
That Liquid Finisher  
Brush Away

Project Plans  
Napkin/Letter Holder  
Birdhouse  
Footstool



#### Nailing It Together

Chapter 1 - Careers in Woodworking  
What's the Latest?  
Careers You Can Choose

Chapter 2 - Making Connections  
Hanging Around  
Clamping Techniques  
Connecting Rods  
Living on the Edge  
Dado Joints

Chapter 3 - Finishing Flourish  
Staining

Chapter 4 - Making a Mark  
Getting an Angle on  
Things

Plan Magic  
Planes Away  
Chapter 5 - Is It Wood?  
Laminating Wood  
Plywood

Project Plans  
Bookcase  
Jigsaw Puzzle  
A Box of Many Uses



#### Finishing Up

Chapter 1 - Planning and Doing  
Tools for the Expert  
Wood 'n Money

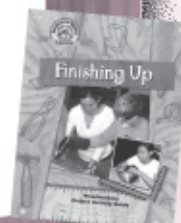
Chapter 2 - Power Tools  
Tools of the Trade  
Taking the Edge Off  
Cutting With Power

Chapter 3 - Joinery  
Dovetail Joints  
Mortise and Tenon Joints

Chapter 4 - Exotic Woods  
Woods of the World  
The Art of Veneer  
Overlays and Inlays

Chapter 5 - Advanced Finishing  
Techniques  
Sanding With Power  
Sticking Together  
Refinishing

Project Plans  
Step Stool/Chair  
Table Hockey Game



#### Helper's Guide

Introduction  
Welcome to the Helper's Guide!  
Ages and Stages

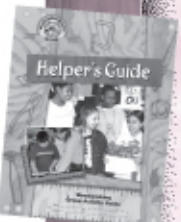
Developing Life Skills  
Defining Experiential Learning  
Chapter 1 - Woodworking Fun  
Making Meeting Plans  
Picnic Tables or Bird Houses?  
Center of Activity

Woodworking Bingo  
Touring a Lumberyard  
Chapter 2 - More About Wood  
What Wood Would It Be?

Public Performance  
Woodworking Skillathon  
Woodworking Promotion

Chapter 3 - Woodworking Games  
Going Public  
Woodworking Pyramid  
Woodworking Quiz Bowl  
Glossary Games

Answer Key  
Meeting Ideas  
Shop Talk Glossary  
Resources



Level 1

# Measuring Up

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Have fun with your  
woodworking project.  
Look for this symbol  
for good safety rules!





### Welcome to

## + Measuring Up +

If you like tools and making wood projects, you'll enjoy this book! You'll learn how to use hand tools. You'll also learn safety rules. You can learn how to make a flower box, a letter holder, and a picture frame.

### One Step at a Time

Everyone learns one step at a time. You'll make mistakes, but so do experienced woodworkers. Don't be discouraged. Keep trying! Before long you'll have a woodworking project you'll be proud of. If one step seems harder to you than another, ask for help.

## 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:  
About Yourself:

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.



*Make a picture frame.*

*flower box.*



*napkin or letter holder.*

### 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.

Photo of my  
project helper

Name: \_\_\_\_\_

My project helper is: \_\_\_\_\_

Phone: \_\_\_\_\_ E-Mail: \_\_\_\_\_

## 1. My Project Goals

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

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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.

Experiences	Plan to do	Date Completed
Give a presentation or demonstration		
Demonstrate a woodworking skill.		
Make an exhibit of a woodworking project.		
Invite a friend to be part of the woodworking group.		
Participate in a county or school judging activity.		
Other leadership activities		

## 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.

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## 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

Activities      Date Completed      Helper's Initials

### Chapter 1 – Getting Started

Selecting a Work Area  
Name the Tools  
Basic Tool Word Find  
Safety Settings

### Chapter 2 – Working With Wood

Identify Woods  
Soft vs Hard  
Lumber Parts

### Chapter 3 – Practicing Your Skills

Measuring Up  
On Your Mark  
Hammer Parts  
Hit the Nail on the Head  
See and Saw  
Naming the Hand Saw Parts  
Rasping Around

### Chapter 4 – Holding It Together

Pounding Nails  
Glue Together  
Butting Wood

### Chapter 5 – Finishing Up

Compare the Feel  
Loading the Brush  
Clean Painting



## More Challenges

## Optional Activities

Activity      Page #      Date Completed      Helper's Initials

Write your own activity here.

Date \_\_\_\_\_ Helper's Initials \_\_\_\_\_

Write your own activity here.

Date \_\_\_\_\_ Helper's Initials \_\_\_\_\_

Write your own activity here.

Date \_\_\_\_\_ Helper's Initials \_\_\_\_\_







Level 1



# Measuring Up



## Achievement Program Certificate

*I certify that*

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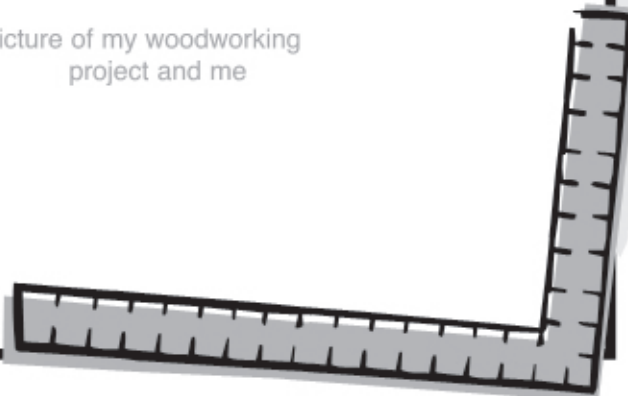
*has successfully completed the requirements of the  
Measuring Up Achievement Program.*

*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.

**What You'll Learn**

About Woodworking: *What makes a safe work area*  
About Yourself: *How to make decisions by comparing*



## Selecting a Work Area



Pencil

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.

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

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?

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### Generalize it

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

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### Apply it

What do you do to make good decisions? Who or what can help you make a decision? Why?

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## 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

Adapted from Shop Safety Tips, Larry Fulkerson, Boulder County, Colorado Woodworking Superintendent, Feb. 2000, handout.



## More Challenges

1. Visit a woodworking shop of a friend or a woodworking business. Compare their shop using the rating chart from the above activity. How does the shop compare to your work area?
2. Interview two woodworkers in your community. Ask them what makes a good woodworking shop. Compare their list to your list. What do you think? Using what you learned from the woodworkers, what can you apply to your own workspace? Share your answers with your helper.



# 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.



*Toolbox*

*Pencil*



## 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

### TIPS for Tools

- ✓ Get tools you'll need to do simple woodworking jobs.
- ✓ Keep a "wish list" of tools you would like to have.
- ✓ Borrow tools you won't use very often. Take very good care of them. Return tools you borrow as soon as you're finished using them.
- ✓ Sometimes you can buy used tools.



### Basic Tools Word Find

Find the word listed in the Word Bank in the Basic Tool Word Find.

T O O L B S A N D E R  
 A C H A L K L I N E E  
 P S Q U A R E A V B M  
 E A C E D L L I R D M  
 D W L E E H R F G G A  
 B I T V C D A H U P H  
 F U E N W I S J M L J  
 C B E E K L P A W A M  
 T R R U L E L A N N O  
 W C P Q R C H I S E L  
 S S A P M O C W O O D

#### Word Bank

Awl	File	Screwdriver
Bit	Hammer	Square
Blade	Jug	T Bevel
Chalk line	Plane	Tape
Chisel	Rasp	Tool
Clamp	Rule	Wrench
Compass	Sander	Wood
Drill	Saw	

#### 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 is the rule!*



*Safety Settings*



Pencil



## 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

### Situation

### Safety Gear / Safety Rule

- A. You're sanding a project to get it ready for paint.
- B. The phone rings and you run to answer it with a nail set in your hand.
- C. You are on the deck hammering in nails that have popped up.
- D. Your little brother wants to watch you build a birdhouse and you're using sharp tools.
- E. The rasp looks dull, but is it sharp? You run your finger over it to find out.
- F. You're visiting a community woodworker and the owner is demonstrating power equipment.
- 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.

1. Safety glasses



2. Earplugs



3. Dust mask



4. Have good storage for tools

5. Test for sharp edges

6. Do not run with sharp edged tools.

7. Keep tools away from small children



## Safety Rules



## 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?



## 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.

