

# Working with Wood & Tools

## Unit I Member Manual

National 4-H Wood Science Series

4-H 4421

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**Oregon State** | Extension  
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## Acknowledgement

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## Note to Parents and Home Helpers

**Y**ou, as parents or home helpers, are the most important and influential persons in your children's lives. You can nurture and cultivate their interest in this project by guiding their planning, helping them carry out their projects, and recognizing them for a job well done.

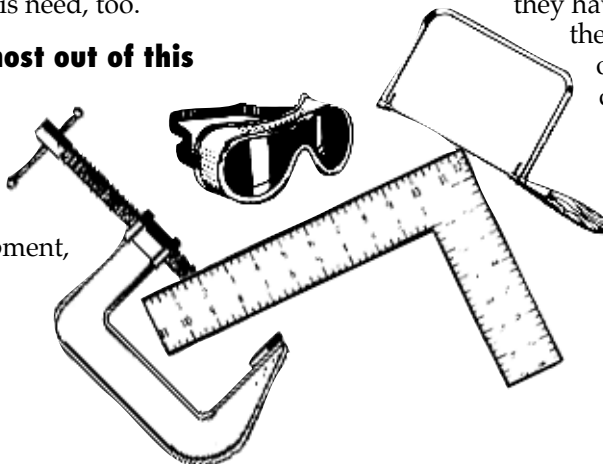
The information in this manual can provide significant learning experiences for your children. Helping them plan the things they will learn and do, followed by assessing their progress based on these plans, will make their experience more worthwhile. Your children's project leader usually helps them plan and evaluate their work. If this is not possible for some reason, you could fulfill this need, too.

### Help children get the most out of this project:

- Become familiar with the material in this manual.
- Work with them to decide what tools, equipment,

and supplies they will need and what they can realistically expect to obtain.

- Thoroughly review the tasks they are expected to complete, making sure they understand them. **DO NOT DO ANY OF THE WORK FOR THEM.**
- Assist them in scheduling their time.
- Discuss their progress with them from time to time.
- Help them distinguish between a good job and a poor one.
- Help them to get to know themselves, including their strengths and weaknesses, and to improve on their abilities.
- Review their accomplishments based on what goals they have for themselves. Avoid comparing the progress of any one child with that of other members who may have different goals and equipment.





## Introduction

Hi, Woodworker! This is the first unit of the 4-H Wood Science series. This manual tells you some important things about using wood tools and building objects with wood.

Remember that the wood you will be using was once a tree in the forest! We know that the forest keeps growing, year after year. It keeps giving us a rich harvest of wood. Many people work with the forest and with forest products.

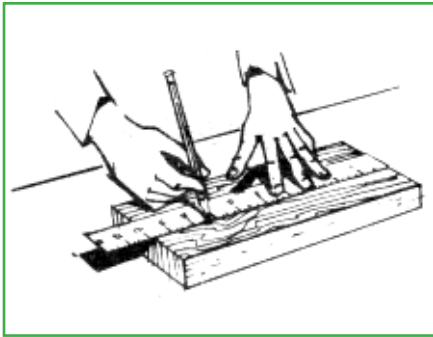
The forest also can be a fun area as well as a work area. Make a list of fun things people can do in the forest, like watching animals and camping.

Building things out of wood and wood products can be fun, too. In the back of this manual are plans

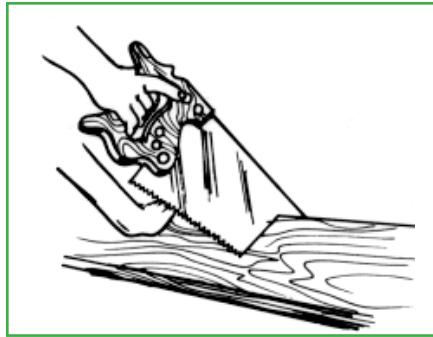
for some items you may want to make. There also are many other easy-to-build items that you could make. But before you start building anything, discuss your project with your parent or your leader. Make sure you have the materials and tools and work area that you need. Your parent or leader may be able to provide you with a good place to work.

There is a lot to say about wood and wood products! Remember this tip: the more you know about wood, the better you can use it. So get permission to tour places where people work with wood, such as lumberyards, carpenter or cabinet shops, forest areas, or lumber mills.

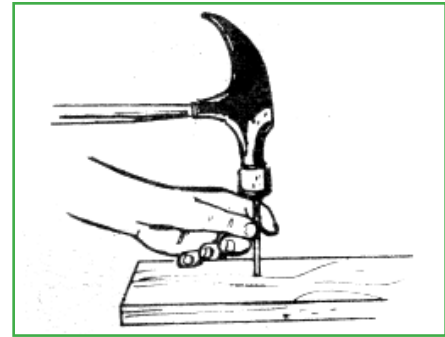
## The Wood Science Program gives you a chance to do some fun things!



**Measure and Mark**



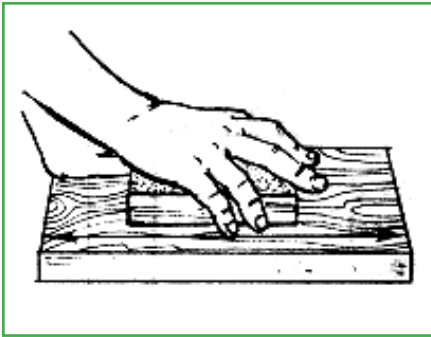
**Saw Boards**



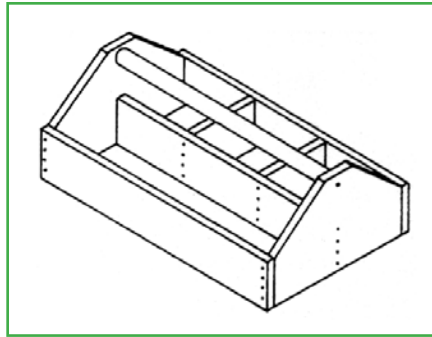
**Drive and Pull Nails**



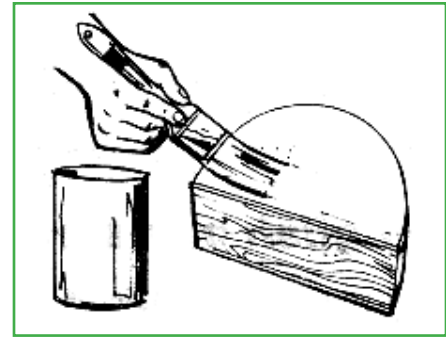
And learn how to use wood tools to help you do these things correctly and easily.



**Sand Wood**



**Build Things**



**Use glue and finishes**

Get a notebook and be prepared to jot down drawings, ideas, and important information about wood and wood tools. If you keep a good notebook, you will remember more things about wood as you go along!

The wood that you will be working with may be in the form of lumber, plywood, particleboard, or fiberboard. Even though all of this wood comes from trees, each product looks different and has different uses. In Unit I, you will be working more with lumber and plywood. You will work with other kinds of wood in later manuals.

Some types of wood cost more than others. Wood comes in different grades. The better the grade, the higher the price. You may save money by buying a lower grade and cutting the material you need from the good parts of the piece. Use low-cost lumber if you can find it.

Other things being equal, the heavier the wood, the harder and stronger it is. Some woods are more likely to split than others. Some woods are easier to cut, sand, and finish. Ask your parents, your leader, or the people at the lumberyard about suitable materials.

## Things you can do

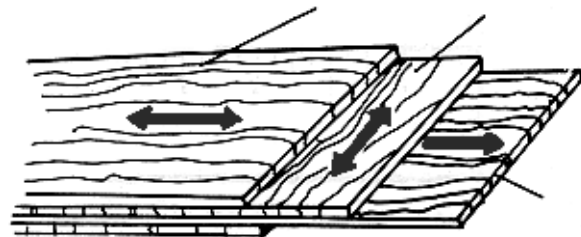
We can divide all kinds of trees into two basic wood groups, called **hardwoods** and **softwoods**. Hardwoods (such as oak, maple, and cottonwood) have broad, flat leaves. They usually turn colors and lose their leaves in the fall. Softwoods (such as pine and cedar) have needle-like or scale-like leaves and usually keep their leaves through the entire winter.

- Make an exhibit showing the two major groups of wood. Show what kinds of trees are in each group.
- Have your leader, or someone who works with wood, show you how plywood is made.

## Lumber and Plywood

Lumber contains a lot of water when it is cut. Much of this water evaporates into the air. When this happens, the wood begins to shrink! If the wood becomes wet again, it will get bigger, or **swell**. When wood loses water it also can **warp**, or change its shape.

Plywood is made by gluing together thin layers of wood. (See the picture below.) The grain in each layer goes in the opposite direction, shown by the arrows. Plywood does not shrink and swell as much as lumber. It does not crack or split as easily, either. But the edges



**Plywood has three or more layers of wood. The grain of each is placed in the opposite direction of the layer below it.**

on plywood are harder to smooth and finish.

Some plywood is made for outdoor use. If you use the indoor plywood outside, it may come apart when it gets wet.

Plywood is normally sold in sheets 4 feet by 8 feet. But many lumberyards do sell smaller pieces. It comes in many thicknesses. Plywood called  $\frac{1}{4}$ -inch plywood is  $\frac{1}{4}$  inch thick.  $\frac{3}{4}$ -inch plywood is  $\frac{3}{4}$  inch thick.