Hand Tools for Woodworking

2009
25 minutes

Program Synopsis

Hand tools are devices or objects that are used in everyday life. They can be used to change the characteristics or properties of an object. They are also used to join or manufacture an item from the same or a variety of different materials, such as wood and metal. This program offers an introduction to the functions of saws, planes and chisels and demonstrates the importance of securing your work. Correct preparation by measuring and marking out materials is also shown and discussed.

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Introduction

Tools have been around for centuries and over the years they have improved and developed. While there are machines and portable power tools available to undertake most woodworking tasks, there is still a place for hand tools in the modern workshop.
In this program Stuart Lees explores the use of basic hand tools for securing your work, measuring and marking out, cutting and shaping timber.

Program Rationale

This program accurately shows how to effectively and safely use basic hand tools for woodwork. The importance of hand tools is demonstrated, and although not power tools, they still have a place in the modern workshop.

Program Timeline

00:00:00 Copyright CLV Splash
00:00:00 Introduction
00:01:19 Securing your work
00:05:18 Measuring and marking out
00:10:52 Saws
00:15:32 Planes
00:19:52 Chisels
00:23:17 Conclusion
00:23:52 Credits
00:24:39 End Program

Internet Resources

- www.using-tools.com
- www.technologystudent.com
- www.stanleytools.com

Program Worksheet

Before the Program

1. List the hand tools available to you at home.

2. List the hand tools available to you in your school workshop.

3. List the hand tools you have used in the past.

During the Program

1. What are the two reasons we secure our work?

2. Why are the metal jaws of clamps covered with plastic?

3. Explain why the metal bracket on the end of a tape measure moves?

4. What is a parallax error?

5. What is a drawback of the combination square?

6. What is the rule used when measuring material?

7. Name the three saws used in the program?

8. How do you start a saw cut using the tenon saw?

9. Explain the term “kerf”.

10. Explain the difference between a “cross” and “rip” cuts.

11. What is the definition of a plane as given in the program?

12. Why is it important to plane with the grain of the timber?

13. What is the purpose of the trying plane?

14. What was the spokeshave originally used for?

15. How do you tune a plane?

16. What is the purpose of the bevel on the bevel chisel?

17. Explain why you might put a chisel cut around the outline of an opening.

18. What is considered the normal angle for the cutting edge of a chisel?

After the Program

1. Practical activity: Constructing a bench hook

   A bench hook assists you in making a square cross cut to a piece of timber.

   To make a bench block you need a piece of timber about 300mmx210mmx19mm for the base, and another piece 425mm x 50mm x19mm for the lips.

   Start by measuring the smaller piece into two equal parts. Use a square and pencil to mark the face and side.

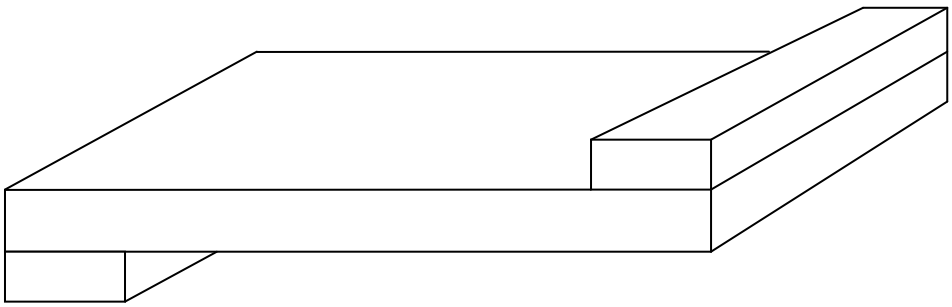
   Cut the marked piece of wood making sure you follow the lines.

   Measure, mark and drill three holes so they are evenly spaced on both ends of the base about 25mm from the edges.

   Countersink one end and then turn the base over and repeat the procedure on the other end.

   Screw the two lips to the base, along the ends, making sure that they are on different sides to each other.

   To use the bench hook, simply place one lip against the edge of the workbench and push the required work piece firmly against the top lip. Align the squared line to be cut along the edge of the hook and make the cut.



Suggested Student Responses

During the Program

1. What are the two reasons we secure our work?
   The two reasons we secure our work are for safety and to make it easier to work on it.

2. Why are the metal jaws of clamps covered with plastic?
   The metal jaws on clamps are covered with plastic so the timber being held does not get damaged.

3. Explain why the metal bracket on the end of a tape measure moves?
   The metal bracket on the end of a measuring tape moves to allow for the correct zero point when measuring.

4. What is a parallax error?
   Parallax error is a visual error caused by incorrectly sighting the measurement on the tape measure or rule.

5. What is a drawback of the combination square?
   A drawback of the combination square is that they tend to be inaccurate.

6. What is the rule used when measuring material?
   The rule when measuring material is "measure twice, cut once".

7. Name the three saws used in the program?
   The tenon saw
   The panel saw
   The Japanese pull saw

8. How do you start a saw cut using the tenon saw?
   To start a saw cut using a tenon saw you first need to do a few pull strokes with the saw resting against the side of your hand.

9. Explain the term "kerf".
   A kerf is the width of a cut made by a saw.

10. Explain the difference between a "cross" and "rip" cuts.
    Cross cuts cut across the grain of the timber while rip cuts cut down the grain of the timber.

11. What is the definition of a plane as given in the program?
    The definition of a plane as given in the program is a woodworking tool with a sharpened piece of metal connected to a firm body.

12. Why is it important to plane with the grain of the timber?
    It is important to plane with the grain as planning against will cause the surface of the timber to be torn and rough.

13. What is the purpose of the trying plane?
    The purpose of a trying plane is to remove the high spots in the timber to create a smooth and unrippled surface.

14. What was the spokeshave originally used for?
    Spokeshaves were originally used to shape the spokes of wagon wheels, as the name suggests.

15. How do you tune a plane?
    To tune a plane you must make sure the base is flat and sharpening the blade.

16. What is the purpose of the bevel on the bevel chisel?
    The purpose of a bevel on a chisel is to allow the chisel to get right into the corners.

17. Explain why you might put a chisel cut around the outline of an opening.
    Placing chisel cuts around the outline of a cut is done so that the timber does not splinter past the edges of the required cut out.

18. What is considered the normal angle for the cutting edge of a chisel?
    25^{o} – 30^{o} is considered the normal angle for the cutting edge of a chisel.