

### Lesson #13: How to use a Plane

#### Objectives

Students will be able to...

- Use a plane correctly and safely.

#### Common Core Standards

Cabinetmaking and Wood Products Pathway

A1.4, A1.7, A2.1, A2.2, A3.1, A2.3, A6.1, A6.2 A3.4, A6.7, A4.1, A5.1, A5.2, & A5.4

Residential and Commercial Pathway

D2.1, D2.2, D3.1, D3.3, & D4.1

Reading 11-12.4

Writing 11-12.1

RIST 11-12.2

Problem Solving/Critical Thinking 5.4

Health and Safety 6.2, 6.3, 6.6, & 6.12

Responsibility and Leadership 7.4 & 9.3

Demonstration and Application 11.1

Technical Knowledge and Skills 10.1, 10.2, & 10.3

#### Materials

Planes

Bench or Block Plane Handout

YouTube Video <https://www.youtube.com/watch?v=sMSWSriUUWg>

YouTube Video <https://www.youtube.com/watch?v=-YkNA24s4Ho>

Plane Review Worksheet

#### Lesson Sequence

- Introduce a *plane*. Ask students if they remember what they may use a plane for and how it may be used. Demonstrate how to use a plane. (5 minutes)
- Pass out the *Bench or Block Plane Handout*. Read together and have students highlight important information. (10 minutes).
- Watch the *YouTube Video* <https://www.youtube.com/watch?v=sMSWSriUUWg>  
Answer any questions students may have (10 minutes).

- Watch the *YouTube Video* <https://www.youtube.com/watch?v=-YkNA24s4Ho> Answer any questions students may have (10 minutes).
- Pass out the *Plane Review Worksheet*. Have students work on answering these questions independently. Collect before they leave the class. (10-15 minutes).

### Assessment

Use results from the Plane Review Worksheet to assess student understanding.

### Accommodations/Modifications

Students May Use Notes  
One on One Support  
Highlight Important Information

## Bench or Block Plane Handout

Hand planes fall into two major categories: bench planes and block planes. The difference is whether the bevel faces up or down. On bench planes, the bevel always faces down, while on block planes, the bevel always faces up. The bevel angles mean that bench planes excel at cutting with the grain while block planes are good for cutting end grain or against the wood grain.

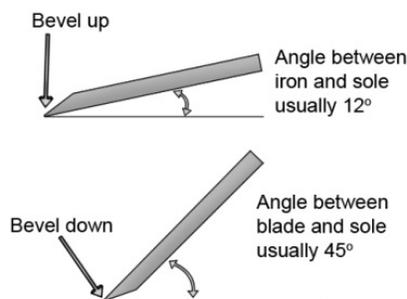
Sharp and properly adjusted, a hand plane will also leave a much better finish on the wood that you're working on than any machine or power tool could ever hope to accomplish. Some woodworkers don't even bother to use sandpaper on their work, instead leaving a glassy, smooth finish done purely by hand planing. That's why these venerable tools--planes go back to Roman times--still fit into today's shop.

### Jack Plane

Bench planes are generally categorized according to length. Common bench planes range in length from 9 to 22 inches or more. The longer the plane, the better it will straighten an edge, because the long body bridges dips and rises in the board's surface.



The most versatile of these is the jack plane. It is fairly heavy duty and removes wood quickly and efficiently. The iron is positioned bevel-down in a bench plane. So, on the push stroke, place greater pressure on the toe. They are held with two hands, with the front hand holding a knob and the back hand gripping a handle (called a tote). The blades on bench planes are angled at  $45^\circ$ , and they are positioned with the bevel side down. A chip breaker lies on top of the blade in a bench plane; it directs wood shavings up and away and helps to reduce the stuttering or skipping movement known as chatter.



## **Blocks planes**

The block plane ranks near the top for versatility and convenience. They're small little tools that work well for chamfering or trimming end grain like you would for dovetails, but too short to straighten boards.



At only 6 in. to 7 in. long, a block plane is designed to be used with one hand, and it can fit easily inside a tool pouch. For projects such as cabinets, these small planes have a variety of uses: chamfering, cutting end grain, leveling corner joints, trimming miters, cleaning up saw cuts, and smoothing straight and curved edges. Block planes are available in standard and low-angle versions. The blade on a standard-angle block plane is set at 20°; the blade on a low-angle block plane is set at 12°, which is better for cutting end grain and adjusting miters. Because the blade angle on both of these models is much lower than that on a bench plane, chatter is naturally reduced; at the same time, the risk of tear out is greater.

If a carpenter has only one plane on a job site, it's likely to be a standard-angle block plane. These handy little tools are useful for back-beveling miters, chamfering edges, scribe-fitting panels, and angling cedar shingles for woven corners.

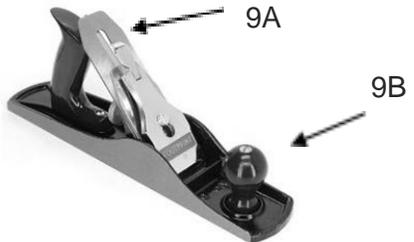
### Plane Review

**Directions:** Read and answer all questions below. Write answers on answer sheet.

1. In order to cut a smooth straight **edge** do you plane with the grain or against the grain?  
\_\_\_\_\_
2. What type of plane is best suited for planing a **face or an edge** of a board?  
\_\_\_\_\_
3. What type of plane is best suited for planing an **end or a chamfer**?  
\_\_\_\_\_
4. Which **part of a Jack Plane** is used to adjust the plane iron out or draw it in?  
\_\_\_\_\_
5. Which **part of a Jack Plane** is used to adjust the plane iron laterally (to the left or right)?  
\_\_\_\_\_
6. The main purpose behind planing a board is to make sure faces, edges and ends are at what angle from one another?  
\_\_\_\_\_
7. The steps in squaring a board properly go from squaring a face to squaring an edge to squaring an \_\_\_\_\_

**Directions (8-9):** Use word bank below and list the following parts of the planes:

Lever Cap	Plane Iron	Knob	Adjusting screw
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8A \_\_\_\_\_  
8B \_\_\_\_\_

9A \_\_\_\_\_  
9B \_\_\_\_\_

**Plane Review** -*Answer Key*

1. with the grain
2. jack plane
3. block plane
4. adjusting nut
5. lateral adjust lever
6. 90 degrees
7. End
8. A-Lever cap                      B-adjusting screw (nut)
9. A- Plane Iron                      B. knob
10. Rabbet Plane-used to plane the inside of rabbet joints