

Lesson #8: Screws, Drives, and Screwdrivers

Objectives

Students will be able to...

- Understand that a screwdriver is a simple machine.
- Demonstrate their knowledge with the fasteners content.

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

A screw is a simple machine handout

YouTube video <https://www.youtube.com/watch?v=SR97M7f9TPQ>

Fasteners Test

Lesson Sequence

- Read *A Screw is a simple machine handout* as a class. Answer any questions. (10-15 minutes)
- Watch *YouTube video* <https://www.youtube.com/watch?v=SR97M7f9TPQ> (8 minutes)
- Review content about fasteners. Answer any questions. (5-10 minutes)
- Hand out *Fasteners Test*. (20-30 minutes)

Assessment

Use assessment data from Fasteners test to see if students still need any clarification on this material or if they understand the content.

Accommodations/Modifications

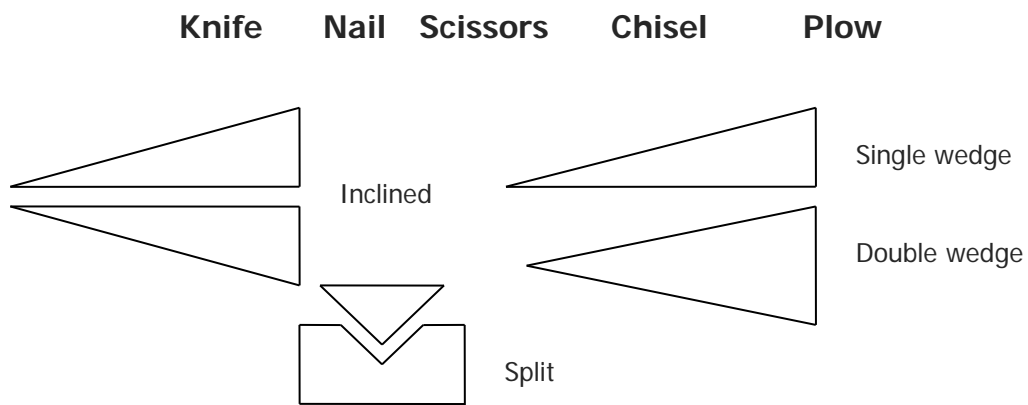
One-on-One Support
Test Read Aloud
High Light Important Information
Extra Time

A Screw is a Simple Machine

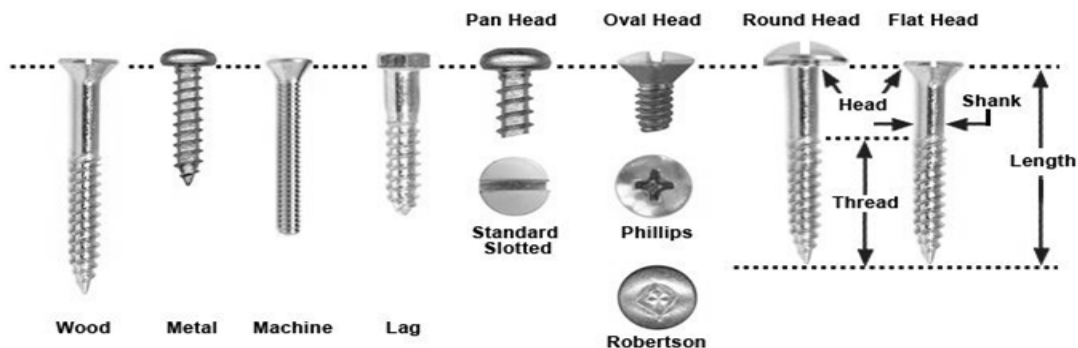
The **wedge** is a type of **inclined plane** that performs its function by separating or holding devices apart. While other inclined planes remain stationary, wedges may be in motion while doing their job. A wedge can be a single inclined plane (like a doorstop) or a double inclined plane (like an axe).



Below are some more wedges. See if you can determine which single inclined planes are or which double inclined planes are.



The screw is an inclined plane wrapped around a central cylinder. This inclined plane allows the screw to move itself or to move an object or material surrounding it when rotated.



Fasteners Test

Part 1: Adhesives (Glues)

Circle the correct answer.

1. What is an adhesive?
 - A. A compound that bonds two pieces of material together
 - B. A simple machine known as a wedge.
 - C. A Helix
 - D. Deciduous
 2. What is the most commonly used wood glue today?
 - A. Polyvinylacetate (PVA)
 - B. Yellow glue
 - C. Carpenters glue
 - D. All of them
 3. What are the two basic categories of glue?
 - A. Natural and synthetic
 - B. White glue and yellow glue
 - C. Epoxy and synthetic
 - D. Polyurethane
 4. Which of the following are examples of natural adhesives?
 - A. Tree sap
 - B. Plant resins
 - C. Egg whites
 - D. All of them
 5. Which of the following are examples of synthetic adhesives?
 - A. Carpenters glue
 - B. Hide glue
 - C. Hoof glue
 - D. All of them
- Extra Credit:* What is the name of the bull on the bottle of Elmer's glue?
 - A. Ernie
 - B. Elmer
 - C. Eugene
 - D. All of them

Part 2: Nails

Circle the correct answer.

6. What is a nail?
 - A. A simple machine known as a wedge.
 - B. An inclined plane with a helix wrapped around it.
 - C. A natural adhesive
 - D. None of them
7. Nails were among the first items to be produced from which of the following metals?
 - A. Steel
 - B. Iron
 - C. Copper
 - D. Titanium
8. What material are nails made from today?
 - A. Steel
 - B. Iron
 - C. Copper
 - D. Titanium

9. What famous early American manufactured nails at his home known as Monticello?
- A. George Washington B. Benjamin Franklin C. Thomas Jefferson D. None of them

10. What do we call nails that are cut from iron or steel sheets?
- A. Slit nails B. Hand wrought C. Sheet nails D. Cut nails

Extra Credit: What would early American settlers do to retrieve their nails from their homes as they move west?

- A. Burn their houses down
B. Pull the nails out; one by one
C. They didn't bother to retrieve them
D. Dismantle their house, and have professional retrievers pull the nails out.

Part 3: Screws

Circle the correct answer.

11. What ancient Greek calculated the value of pi, and applied the mathematical principle of the screw?
- A. Aristotle B. Aerosmith C. Archimedes D. Aristarchus

12. What is a screw?
- A. An inclined plane with a helix wrapped around it C. A natural adhesive
B. A simple machine known as a wedge D. None of them

13. What material were the oldest screws made from?
- A. Wood B. Fish bones C. Carbon fiber D. Titanium

14. What do we call it when a screwdriver pops out of the screw head due to the application of too much torque?
- A. Cam-out B. Tear-out C. Peel-out D. Frustrating

15. What is the most popular/common screw-drive type today?
- A. Robertson B. Phillips C. TORX D. Tri-Wing

Extra Credit: What creature produces a screw-shaped egg case that protects the young within by keeping it safely anchored in the place it was laid?

- A. Mountain goat B. Tree snake C. Sparrow D. Horn shark

Fasteners Test - Answer Key

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