

# TECHNOLOGY: A School-Museum Connector

A Guide for Teachers to use to:

> Explore Museum Exhibits

> Discover Technology in Your School

> Organize Your Own Exhibit

## Part 1: Explore Museum Exhibits

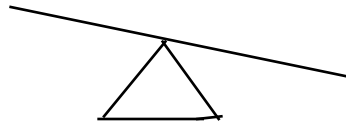
Look in any exhibit at Field Museum that presents a culture or any exhibit at the Chicago Historical Society that includes tools.

Find an example of any of the following kinds of simple machines.

*They may not look like machines, but they are. A machine is "any device that provides a mechanical advantage--that is, allows a limited amount of effort to do useful work in lifting or moving a load."*

*Random House Encyclopedia*

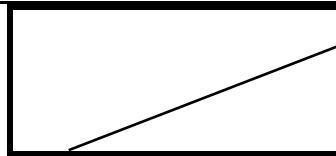
### the lever



This kind of machine magnifies effort so it is easier to move a load. You will not necessarily see the fulcrum (the pivot). This is a kind of lever.

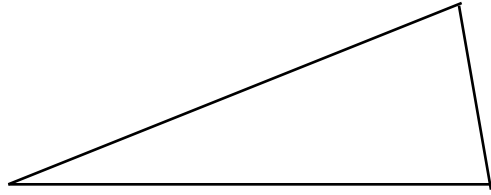
What work does the lever help people do?

### the inclined plane



This kind of machine is a ramp. The Ancient Egyptians probably used ramps to move the stones to build the pyramids.

What do people move with this inclined plane?



**the wedge**

A wedge is two inclined planes together.  
These are used to concentrate force.

What work did these people use the wedge to do?

What kinds of mathematics have people applied to make these tools?  
For example, each of these tools involves angles.

## **Part 2: Discover Technology in Your Own School**

### **INCLINED PLANES**

Have your students identify examples of the inclined plane in your own school. (Start with the staircase.)

Make a list of the applications of the inclined plane. Depending upon the math level of your students, have them estimate the angle of the inclined planes they identify and the amount of weight these inclined planes enable people to move.

### **WEDGES**

Have your students look in the classroom itself for examples of wedges. Then interview the school engineer, the lunchroom manager, and other members of the school staff. Ask them what wedges they use in their work.

### **WHEELS**

Examine the school to identify various wheels. Some will be in clear view, such as wheels on carts. Others will be hidden, such as the wheels in gears. Is the wheel the most important invention? Discuss that question with your students after they find many examples.

## **Part 3: Organize Your Own Exhibit**

Have students organize an exhibit about simple machines.

On the next page are questions and statements they can include in the exhibit. The most important questions and statements, however, are the ones your students write. Encourage them to make an exhibit that explains how simple machines work--and how they enable people to do more work with less time and effort.

As they organize the exhibit, they will develop knowledge and research, writing, and critical and creative thinking skills.

## Exhibit Organizer

Here are some topics and kinds of questions and statements you could include in an exhibit about simple machines.

<b>kind of tool</b>	<b>questions/statements</b>
<b>lever</b>	<p>How is your arm like a lever?</p> <p>Is a screwdriver a lever or an inclined plane?</p>
<b>screw</b>	<p>How is a screw like a wedge?</p> <p>How is a screw like an inclined plane?</p> <p>When you use a screwdriver, which tools are you using:</p> <p style="text-align: center;">wedge   inclined plane   lever</p>
<b>clothes pin</b>	<p>A clothes pin is a combination of two inclined planes. They apply pressure because they are joined together by a clamp.</p> <p>What are some other ways people fasten things together?</p> <p>Which of them also involve inclined planes?</p>
<b>pulley</b>	<p>Pulleys are wheels that help move things. When you pull on a cord on a pulley, the energy you use is multiplied because you are pulling on twice as long a cord as if you were pulling directly on the cord.</p> <p>Set up experiments in which you see how much easier it is to lift a weight with one pulley, two pulleys, and even more pulleys.</p>