

Warm Up- Discuss with Partner

- 1.) What is the difference between a simple and complex machine?
 - A simple machine is made of 1 component while a complex machine is several simple machines put together
- 2.) What are some basic household items that are considered complex machines, but are simply a few simple machines combined?
 - scissors, bikes, can openers, doors...
- 3.) Which simple machine is often said to be humankind's greatest invention?
 - the wheel



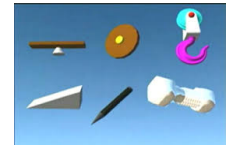
Simple Machines: make work easier for us by allowing us to push or pull over increased distances.

6 Main Types: inclined plane, lever, pulley, screw, wedge, wheel and axle

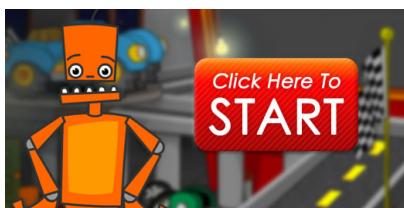


Discovery Ed: Simple Machines

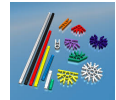
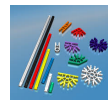
Watch the videos and fill out the worksheets. These will be your notes!



ED HEADS Web Quest



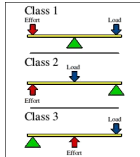
K'Nex Lab



1. In your group, Brainstorm a problem you want to solve with a machine.
2. Sketch a plan for your machine on a sheet of paper.- This will be turned in!
3. Look through your boxes of K'nex and assign group member to build different parts of your machine. You will then put these together to form your final product!

Warm Up

1.) How many main classes of levers are there? • 3



2.) What is the fulcrum?

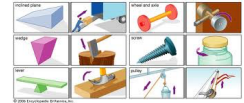
- the point or support about which a lever turns

3.) How does a lever help you do work?

- it allows you to use only a small amount of force to accomplish a bigger task

Let's Practice!

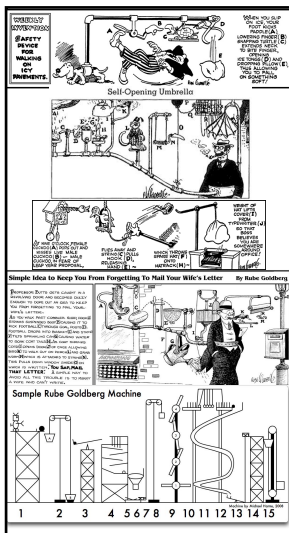
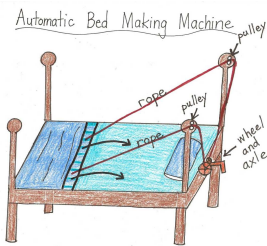
1. Let's read through the information and examples first. any volunteers?
2. Work with your table partner to complete questions #1-7 on the back.
3. Let's go over them together.
4. Finish with questions #8-14.
5. Let's go over them. Any questions?
6. **Homework:** Complete the 10 question worksheet on Mechanical Advantage -due tomorrow! Don't forget about your quiz tomorrow on simple machines!



Rube Goldberg Machines

-a comically involved, complicated invention, laboriously contrived to perform a simple operation

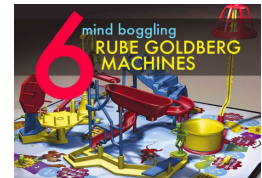
~Webster's New World Dictionary



Videos and Examples



HONDA



Let's Try One Online



Warm Up

- 1.) Why might it help us to know the mechanical advantage of a machine?
 - so we know how much force is needed to move an object

- 2.) A machine makes tasks easier by multiplying input....
 - forces OR distances; but not both at the same time

- 3.) Can the mechanical advantage of a machine be less than 1?
 - yes, but it doesn't mean it isn't useful

Mechanical Advantage of Machines

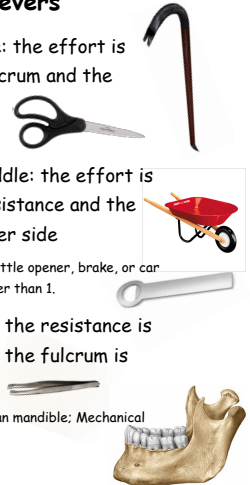
- Simple machines can multiply input forces or input distances, but never both at the same time.
- If a machine has a mechanical advantage less than 1, it means that instead of multiplying force, the machine multiplies distance
 - > a broom doesn't push the dust with as much force as you use to push the broom, but a small movement of your arm pushes the dust a large distance
- Ideal Mechanical Advantage: the mechanical advantage a machine should have if there was no friction or wear on the machine
- Actual Mechanical Advantage: the physical measurements of the input and output forces

Video -->



3 Classes of Levers

- Class 1: Fulcrum in the middle: the effort is applied on one side of the fulcrum and the resistance on the other side
 - > example: crowbar or pair of scissors
- Class 2: Resistance in the middle: the effort is applied on one side of the resistance and the fulcrum is located on the other side
 - > example: wheelbarrow, nutcracker, bottle opener, brake, or car pedal; Mechanical advantage is greater than 1.
- Class 3: Effort in the middle: the resistance is on one side of the effort and the fulcrum is located on the other side
 - > example: a pair of tweezers, the human mandible; Mechanical advantage is less than 1.



Quiz on Circuits & Simple Machines!

When you finish your quiz, start working on the Levers Worksheet.

Test Today!

Take a few minutes to study for your Physics



- Do not write on the test copy. Be sure to bubble your answer sheet correctly.
- When finished, place test on the corner of your desk.
- Read the biography of Reuben Lucius Goldberg.

November 14, 2016

