

Week 2: Ready, Aim, Splash!

They're not called lazy summer days for nothing. But if you have to do some work, look for a simple machine to help. Simple machines make work easier. There are six kinds of simple machines: lever, pulley, screw, wedge, inclined plane, and wheel and axle. You can combine simple machines into something more complex called a compound machine; for example, a bike is made up of screws, levers, a pulley and a wheel and axle. This week's "work" is actually a lot of fun—building a simple machine to launch water balloons!

experiment

WATER BALLOON CATAPULT

Materials

Two identical gallon or half-gallon milk jugs with handles

Yardstick

20-inch dowel rod

Two large rubber bands

Paper bowl or cup

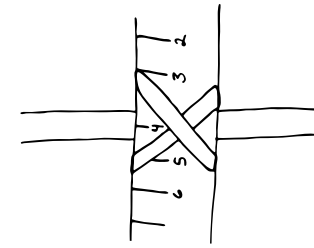
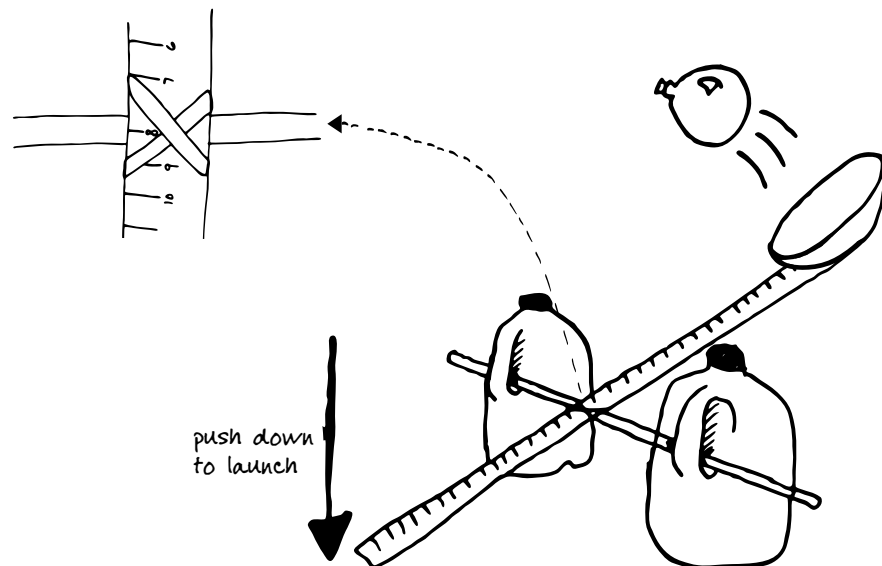
Duct tape

Water balloons

Water



Fill the jugs with water, cap them and put them on the ground or a table. Attach the yardstick perpendicular to the dowel using two rubber bands that make an X shape. Set the dowel at the 8-inch mark. Rest each end of the dowel inside the jug handles. Tape a paper bowl to the other end of the yardstick. Hold the bowl end down and load it with a small water balloon. To launch, just push down on the other end of the yardstick and get out of the way!



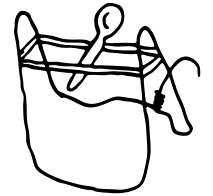
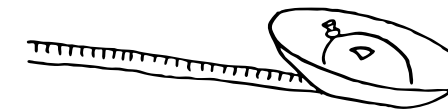
Make changes to your catapult to see if you get different results. What happens if you move the dowel to different spots on the yardstick? What happens if you change the position of the bowl? Try flinging other items, like cannonballs made of paper.

Safety note

This is best done outside. Do not aim the catapult at anyone!

What's happening?

A catapult is a type of simple machine called a lever. A lever is a bar centered on a turning point called a fulcrum that's used to raise or move weights. Levers make it easier to lift heavy things, like a person on a seesaw. In the catapult, the bar (yardstick) pivots on the fulcrum (dowel) in order to raise the bowl and toss the water balloon.



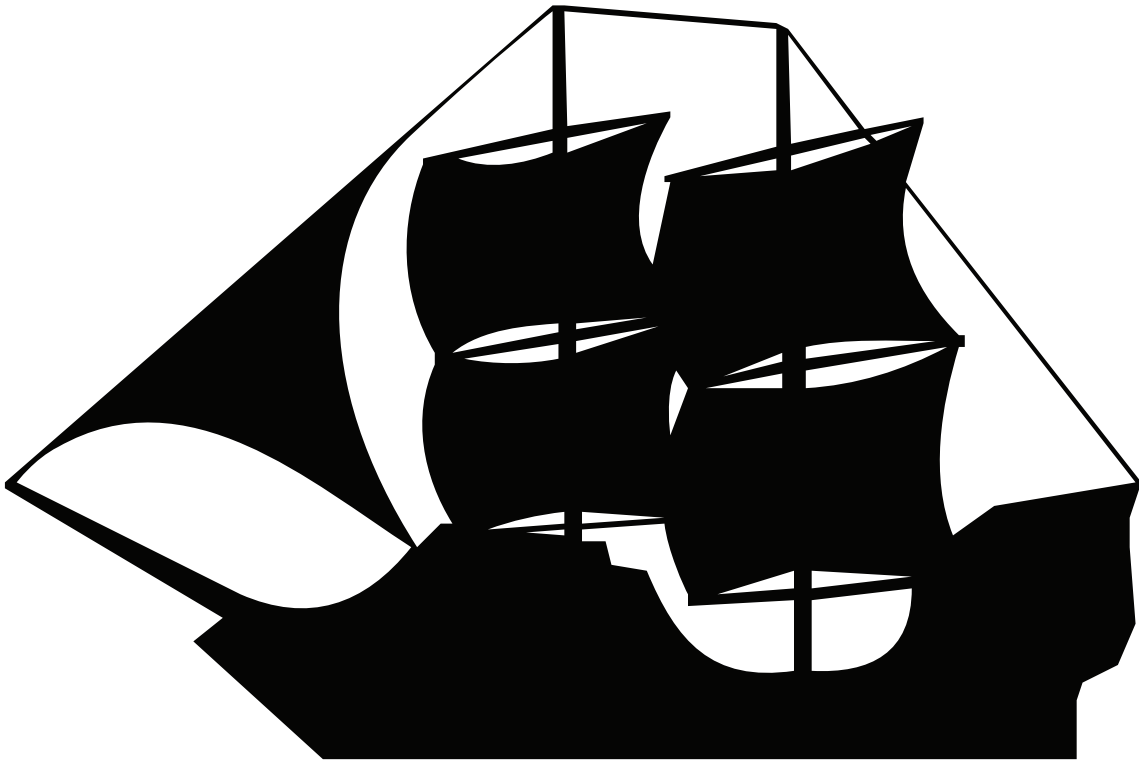
More ways to play with machines

Help MSI's friend, Twitch, finish his tasks by using found objects to create simple machines in our online Simple Machines game at msichicago.org/simplemachines

Go on a simple machines scavenger hunt! Can you find all six simple machines at the playground or at home?

- Lever
- Wheel and axle
- Inclined plane
- Pulley
- Screw
- Wedge





Battleships