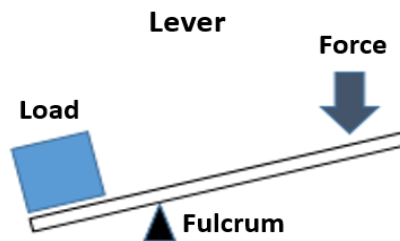


A Simply Amazing Simple Machine: Extending Pliers

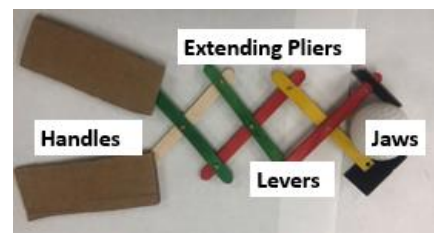
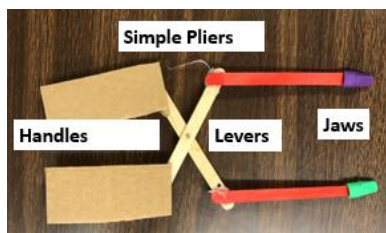
Simple machines are tools that help us do work (do certain jobs). The invention of these tools have helped humans to become very successful as a species. Simple machines allow us to accomplish tasks that would be impossible using our bodies alone. For example, the invention of the bow and arrow allowed humans to start hunting prey that were much too strong to kill using our own strength.

Simple machines make **work** easier for us changing the amount of **force** (pushing or pulling) needed to do certain kinds of work. Since human bodies are designed more to move than they are to push or pull, most machines take advantage of our ability to move easily. They are usually designed to combine long human movements using a little bit of force and convert them into a short movements with a stronger force.

One type of simple machine is a **lever**. A lever can make work easier by decreasing the amount of force needed to move or grab an object. If we move the fulcrum (pivot point) close to a heavy object, we can lift it using less force than before. The lever gives us what we call a mechanical advantage. We just have to push down a longer distance to make it move just a little ways up.



One super useful kind of lever are pliers. Pliers consist of two levers that work in opposite directions. By exerting forces in opposite directions, you can use pliers to grab and hold objects firmly. You can use them to turn things, tighten things, bend things, or just hang on tightly.



In this STEM Challenge, your job is to construct a pair of pliers that are designed to grab and hold a light object of your choice. Specifically, you will design the jaws and the handles of the pliers to work as effectively as possible.