

Simple Machine:

A machine with few or no moving parts. Simple machines make work easier.

<http://www.youtube.com/watch?v=grWIC9VsFY4>



Pulley

1. There are six simple machines. They make it easier for us to do work. A wheel pulley is one of the six simple machines. A pulley is a wheel with a rope wrapped around it. The wheel has a groove around the edge to hold the rope in place. You can attach one end of the rope to a heavy object that you want to lift. You will pull on the other end of the rope to lift the heavy object. Pulleys make work easier by changing the direction of the force needed to do work. It is hard to lift a heavy object up into the air. It is easier to pull the same object down to the ground. This is because of the force of gravity. Gravity is the

force that pulls objects down to the Earth. Gravity helps to make work easier when you use a pulley. You can also use more than one pulley at a time to make the work even easier. The weight will feel lighter with each pulley that you use. If you use two pulleys, it will feel like you are pulling one-half as much weight. If you use four pulleys, it will feel like you are pulling one-fourth as much weight! The weight will be easy to move, but you will have more rope to pull with each pulley that you add. You will pull twice as much rope with two pulleys. You will pull four times as much rope with four pulleys.



Screw

2. The screw is one kind of simple machine. Screws help us hold things together. A screw is a long post that is wrapped with metal threads. A screw is actually a kind of inclined plane.

It is an inclined plane that is wrapped around a cylinder. If you follow the threads on a screw, they will form a long ramp from the bottom of the screw to the top of the screw. The threads on a screw may be close together. The threads may be farther apart. A screw with threads that are close together makes work easy to do. It forms along inclined plane. The work is easy to do, but you will have to turn the screw many times. A screw with threads that are farther apart forms a shorter inclined plane. The work is harder to do, but you will not have to turn the screw as many times.

3. Wheel and Axle



A wheel and axle is one of the six simple machines. The wheel and axle work together to make one simple machine. A round water faucet knob is one example of a wheel and axle. The round knob is the wheel. Under the knob is a thin shaft. The knob is connected to the shaft. The shaft turns the water on and off. The shaft is the axle. The thin shaft would be hard to turn with your hands. The knob is larger. It is easy to turn with your hand. When you turn the knob, it also turns the shaft. The water is easy to turn off and on, thanks to a wheel and axle! There are many objects that use wheels and axles. A car uses many wheels and axles. The steering wheel is a wheel that turns an axle. That axle is connected to more wheels and axles that turn the wheels that move the car. A dolly is a tool that uses a wheel and axle to make heavy things easy to move. The weight is balanced on the dolly. You move the weight by rolling the dolly on its wheels. That is much easier than pushing a heavy object across the floor. The wheel and axle is a simple machine that makes many hard jobs easy to do.

5. Inclined Plane



An inclined plane is one kind of simple machine. It is a smooth, sloped surface. Inclined planes help to move things to a higher level. A ramp is an inclined plane. Imagine that you have a heavy box. You need to move it from the ground and up three steps. The box is too heavy to pick up. You could get a friend to help you carry it. You could also use a simple machine to help you move it by yourself! You could use a board to build an inclined plane. You would place one end of the board on the ground and the other end of the board at the top of the third step. The inclined plane would make it easy for you to push the box up the ramp by yourself. The inclined plane, and all simple machines, make it easier to do hard work.



Lever

5. The lever is one kind of simple machine. A lever is a bar that balances on a point. The point is called the **fulcrum**. You can move the fulcrum to make work easier. A crowbar is a lever. It helps to pry things apart. A see-saw is also a kind of lever. It is a board that balances on a point. The fulcrum is on the middle of the board. This makes it easy to balance and move back and

forth. A see-saw works best if the people on it are close to the same weight. A child weighs much less than an adult. A child sitting on one side of the see-saw could not lift an adult sitting on the other side. The see-saw is a simple machine. Moving the fulcrum can make lifting easier. Moving the fulcrum closer to the adult will help. Even though the weights do not change, it will be easier for the child to lift the adult. The lever makes work easier to do.



Wedge

A wedge is one kind of simple machine. It helps us to push things apart. Shovels, nails, and axes are all kinds of wedges. We use shovels to remove dirt from one area. The shovel works by placing the sharp, pointed end against the ground. You can then use your foot to put a force on the shovel. The force pushes the shovel into the ground and separates one area of the ground from another. Nails are used to hang pictures, but they are a kind of wedge. Sometimes, a nail will cause a piece of wood to crack and split. An ax is a wedge on a handle that is used to split wood. The point of the wedge is very sharp. To split wood, you must grab the handle of the ax and force the point of the wedge into a piece of wood. The wedge causes the wood to split. If you hit the wood with the wedge a second time, you can make the split even bigger. Eventually, you can separate the large piece of wood into two smaller pieces. Without wedges, many jobs would be much harder to do.

http://www.edheads.org/activities/simple-machines/frame_loader.htm