

## Screw



A screw is an inclined plane that wraps around a rod. The thread of a screw is the inclined plane. When you turn a screw, the thread goes into the wood. Screws hold two things together. Screws can also move things by pushing them along using the thread.



An inclined plane wraps around the center of a screw. As the screw turns, it moves into the object.



Screws hold things together.

## Lever



A lever is a machine that can move heavy things. A lever has two parts. One part is a board or bar. The board rests on a point called the fulcrum. The board pivots, or turns, on the fulcrum.



A seesaw is a lever. On a seesaw, you can balance with someone much heavier than you.



When the fulcrum is close to an object, the object can be lifted more easily but not as high.



With the fulcrum far away from an object, the object is harder to lift, but it can be lifted higher.

If you put the object you want to move close to the lever's fulcrum, it is easier to move. If you put the object on the lever far from the fulcrum, it is harder to move.

**First-Class  
Lever**



**Second-Class  
Lever**

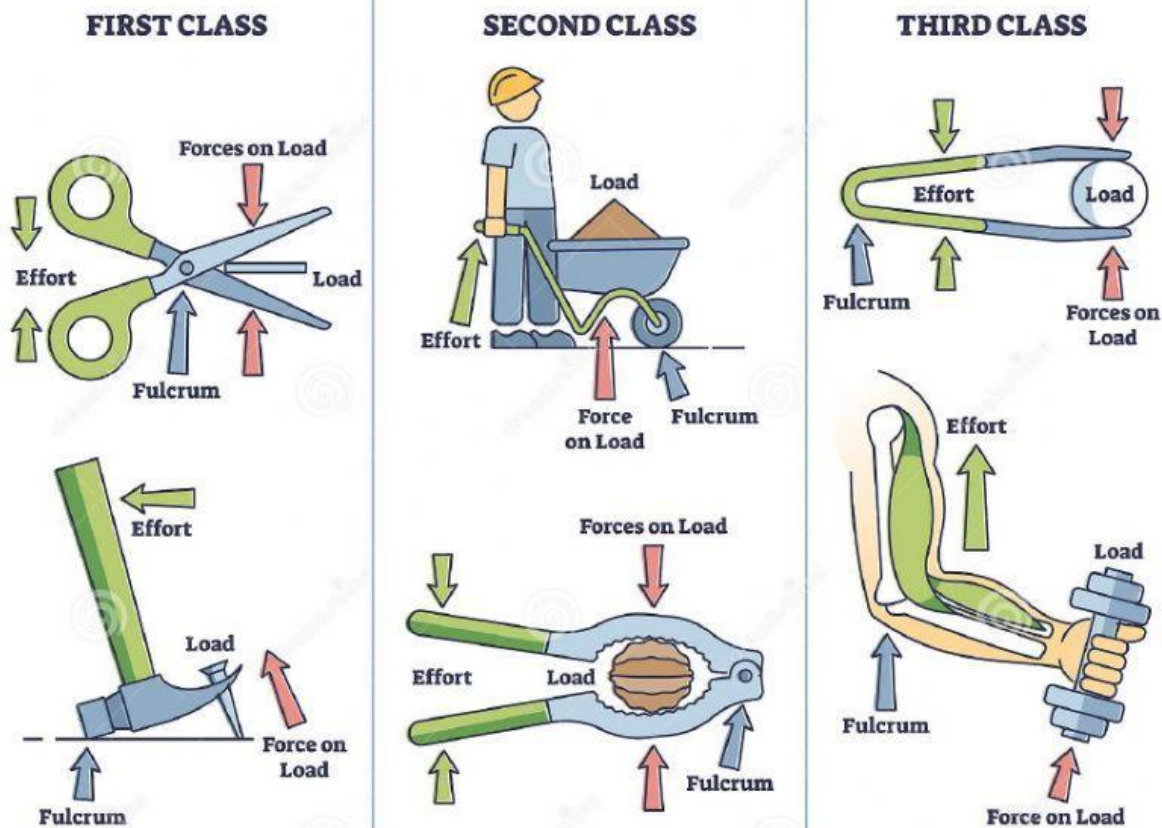


**Third-Class  
Lever**





You can put the fulcrum in different places.



## Wheel and Axle

A wheel and axle is another simple machine. It is made of a wheel on a rod, or axle.

The wheel is wider than the axle.



Examples of wheels and axles

## Gear

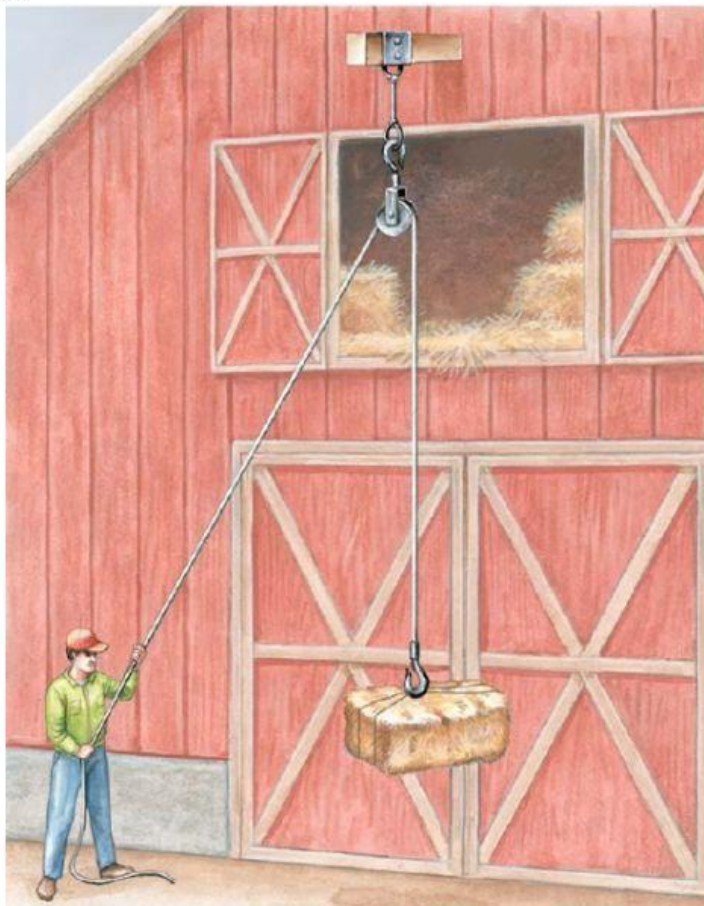
A gear is a wheel with teeth. Gears are attached to axles. They can make an object move faster or slower. They can make it take more or less force to move. A large gear turns more slowly than a small gear.



Every time the large gear turns, the small gear turns more than once. The large gear has more force. The small gear turns faster.

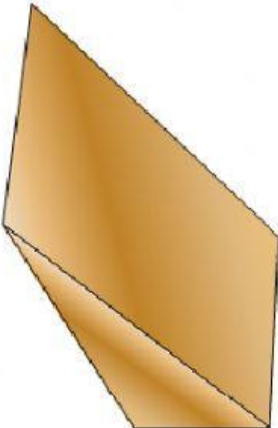
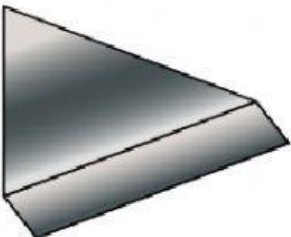




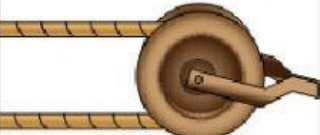
## Pulley

A pulley is a wheel and a rope that work together. The rope changes a force's direction.



Pulling down on the rope makes the hay rise.

## Simple Machine Summary

Simple Machine and Use	Drawing
<u>Inclined Plane</u> To raise or lower heavy objects	
<u>Wedge</u> To split things apart	
<u>Screw</u> To hold things together	
<u>Lever</u> To lift heavy things	
<u>Wheel and Axle</u> To reduce friction and make it easier to move something	
<u>Gear</u> To reduce the force needed to move something	
<u>Pulley</u> To lift heavy objects	



## Complex Machines

Complex machines are made of simple machines. A wheelbarrow is a lever with a wheel and axle.

A bicycle has pulleys, gears, and wheels and axles. A can opener uses a wedge, a lever, and a gear.

Complex machines make hard, complicated, or dangerous tasks easier. Electric mixers help us mix batter. Cranes help us build buildings. Robots help us build cars.

