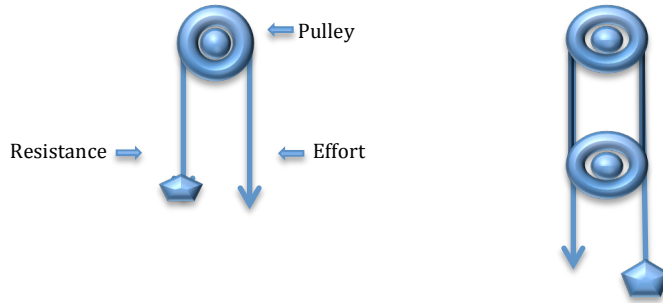


Pulleys and Friction



Smooth Surface		
Student	One Pulley	Two Pulleys
One		
Two		
Three		
Four		
Five		

Rough Surface		
Student	One Pulley	Two Pulleys
One		
Two		
Three		
Four		
Five		

Each student will pull on each of the two pulley systems attempting to move a log.

- On the first round the log will be pulled across a smooth surface.
- On the second round the log will be pulled across a rough surface.

After each attempt they will record but not share their perception of the effort required on a scale of 1 to 10 with 1 being the easiest and 10 the hardest. They will pass on their record to the group recorder at the end of the experience.

Friction Basics

Friction is a **force** that holds back the movement of a sliding object. That's it. Friction is just that simple.

You will find friction everywhere that objects come into contact with each other. The force acts in the **opposite** direction to the way an object wants to slide. If a car needs to stop at a stop sign, it slows because of the friction between the brakes and the wheels. If you run down the sidewalk and stop quickly, you can stop because of the friction between your shoes and the cement.

What happens if you run down the sidewalk and you try to stop on a puddle? Friction is still there, but the liquid makes the surfaces smoother and the friction a lot less. Less friction means it is harder to stop. The low friction thing happens to cars when it rains. That's why there are often so many accidents. Even though the friction of the brakes is still there, the brakes may be wet, and the wheels are not in as much contact with the ground. Cars **hydroplane** when they go too fast on puddles of water.