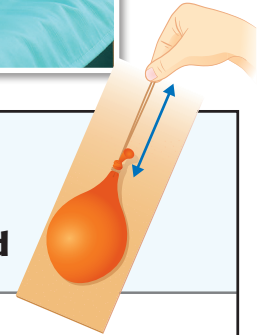

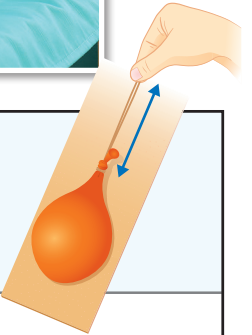


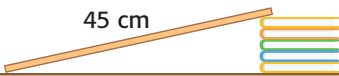




FORCE VS. DISTANCE

Results of Ramps of Three Different Lengths



Length of Ramp	Length of elastic band before stretching 	Length of stretched elastic band 
 <p>15 cm</p>		
 <p>30 cm</p>		
 <p>45 cm</p>		

- How long did the elastic band stretch?  
 15-cm ramp: \_\_\_\_\_      30-cm ramp: \_\_\_\_\_      45-cm ramp: \_\_\_\_\_
- Compare the forces needed to drag the load up each ramp. Label them from 1 to 3 (1 is the least and 3 is the greatest).  
 15-cm ramp: \_\_\_\_\_      30-cm ramp: \_\_\_\_\_      45-cm ramp: \_\_\_\_\_
- The longer the ramp was, the **greater / lesser** force was needed to drag the load up.



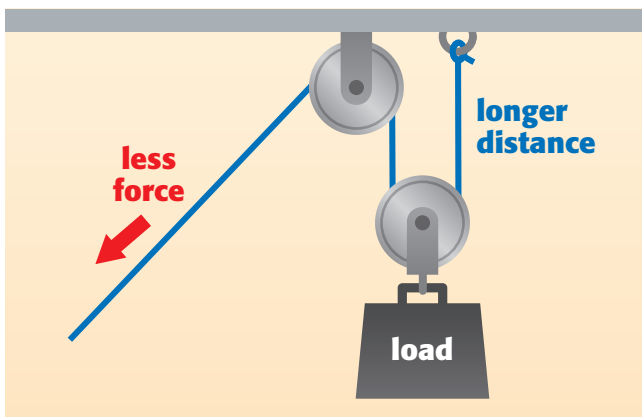
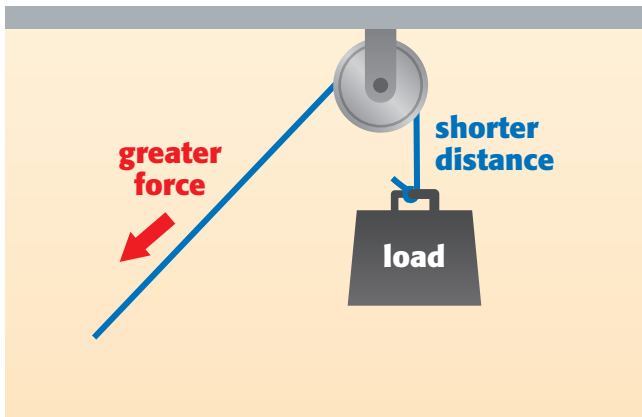
## FORCE VS. DISTANCE

# The Secret of Simple Machines

We all know that simple machines make work easier. But did you know how simple machines are able to do this? The secret lies in the relationship between force and distance. This relationship applies not only to inclined planes but also to other simple machines, like pulleys and levers.

### Pulleys

Pulleys are able to reduce the force needed to lift a load when more pulleys are used.



### Levers

Levers are able to reduce the force needed when the distance increases between the fulcrum and where the force is applied.

