

Motion and Design Unit Summary

Important Concepts

- On a falling weight system, the force is the weight being pulled down by gravity.
 - In our classroom experiment we used washers to represent weight. The force on the vehicle was the washers being pulled by gravity.

- The greater the force pulling the vehicle the quicker the vehicle with travel.

- When a vehicle carries a load, the heavier mass slows the vehicle down.
- A heavier vehicle requires greater force to get the vehicle to move.
- A car with less mass will move faster than a car with more mass and equal force.

- **Newton's Three Laws of Gravity**
 - 1st Law- An object at rest will stay at rest unless acted upon by an outside force.
 - 2nd Law- The greater the force, the greater the change of motion; the greater the mass of the object, the smaller the change in motion.
 - 3rd Law- For every action there is an equal and opposite reaction.

Definitions

force-	a push or pull
mass-	the amount of material in an object
weight-	the amount of force gravity exerts on an object's mass
blueprint-	detailed plan

1. **Where does the energy to wind the rubber band come from?**
Your muscles, fueled by sugar in your blood.
2. **How do you store energy in the rubber band?**
Wind it around the axle
3. **How do you release the energy stored in the rubber band?**
Let go of the vehicle
4. **What happens when the stored energy in the rubber band is released?**
The vehicle gains energy of motion (kinetic energy); the axle turns.
5. **How does the number of turns on the rubber band affect the distance the vehicle travels?**
The more turns of the rubber band means more stored energy and the farther the distance the vehicle will travel.
6. **What is another word for stored energy?**
Potential Energy
7. **What is the energy of motion?**
Kinetic Energy
8. **What is a variable?**
The variable is the part of the experiment that is changed and causes different results. Variables in previous experiments- number of washers, number of blocks, number of winds – **Be able to explain how variables can change the results of an experiment.**
9. **Friction can change work into heat.**
10. **What is the force that opposes motion? FRICTION**
11. **Study the chart “What made our vehicle move fast or slow”**

What made our vehicle move slower?	What made our vehicle move faster?
<ol style="list-style-type: none"> 1. Add friction 2. Add weight to the vehicle/ make it heavier. 3. Pull it with only a little force 	<ol style="list-style-type: none"> 1. Make the vehicle lighter. 2. Pull it with a lot of force. 3. Reduce friction on the vehicle.