Motion and Forces

Force and motion describe the everyday thing that is happening all the time. Hundreds of times every day, you use force and motion. Did you just pick up a pencil? – (force and motion). Did you turn a page? – (force and motion). Raise your hand? Kick the desk in front of you? Pack your backpack? All of these are examples of force and motion.

Out on the playground, you can see even bigger and better examples of force and motion. Climbing, jumping, running, chasing, throwing, and sliding all use force and motion.







Force and motion are also parts of a complicated branch of science, called **physics**. Now that you know what force and motion are, the next thing that you should know are some definitions.



The scientific definition of **force** is a push or a pull. When you throw a baseball, you are pushing it through the air. When you pick up a baseball bat, you are pulling it up from the ground. When you hit the ball, you use both pushing and pulling motions.



Motion is another word with a scientific meaning. Motion means moving something from one place to another. When you used force to swing the bat and hit a baseball, they both moved from one place to another. That's what motion is. In fact, the word motion is a form of the word move.

Let's stick with our baseball example for a little bit longer. Some kids can hit a baseball harder than others can. You could say that their baseball travels at a

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faster rate. One way to describe the motion of an object is its speed. **Speed** is a scientific term that means the rate of motion, or how fast something travels.



OK, enough about baseball. Now think about rocks. Why can you throw a little pebble farther than you can throw a huge boulder? The boulder is heavier; it has more weight.



The Earth's gravity causes everything on Earth to have weight. **Gravity** is a force that **pulls everything toward the center of the Earth**. Gravity is holding both the pebble and the boulder down, at the same time that you are trying to throw them. Gravity is a force acting against your force. Gravity's force is stronger on heavier objects. That's why it is not too hard to throw a pebble, but very hard to throw a boulder. Weight is the measure of gravity's force. Since gravity is holding the boulder with more force than the pebble, the boulder has more weight.

Force, motion, speed, gravity, and weight -- everyday words with special meanings in the science called physics.

Define the following: (8 points)

1. Motion

   _____

2. Gravity

   _____

3. Speed

   _____

4. Force

   _____

5. In which branch of science are the words force, speed, gravity, and motion are found? (2 points)

   _____

6. Write yes or no beside each picture below to state whether or not the player is using a force that will make the ball change direction. (2 points)



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