

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Forces



**What makes things start moving, speed up, slow down, change direction, or stop?**

Think of something that moves. What did you think of? Was it a baseball or soccer ball? Was it a race car or waves at the beach? Was it a skateboarder gliding, curving, and crashing on his skateboard?

For something to start moving, speed up, slow down, change direction, or stop, there has to be a push, a pull, or a twist. Scientists call this a **force**. Forces are all around us. We can't see them, but we can often see what they do.

Look at the boy on the skateboard. What made the skateboard start to move? It moved when the boy pushed his foot against the sidewalk.



Now look at the boy playing soccer. What made the soccer ball start to move? It moved when the boy kicked (or pushed) it with his foot.



**STOP AND THINK:** What two things touched to make the skateboard move? What two things touched to make the soccer ball move?

Forces can also work on things that aren't touching. What happens if you hold a Ping-Pong ball in the air and then let go. Does the ball move? It seems to fall to the ground all by itself. That's because a force called **gravity** is pulling the ball toward the ground. Gravity always pulls things toward Earth, even when they aren't touching the ground!



**STOP AND THINK:** The girl in the picture is jumping. What force makes her go up? What force makes her come back down?

Try it. Stand next to your desk. Now jump. Did you feel your feet pushing against the floor? That push is a **force**. Did you feel yourself being pulled back down to Earth? That pull is **gravity**.



**Summary:** A **force** is a push, a pull, or a twist that causes a change in motion. A force can make something start moving, speed up, slow down, change direction, or stop. Usually two things need to touch to make something move. Some forces, like gravity, work even if two objects aren't touching.