




Spin-tastic Science!

HAVE YOU EVER wondered why the earth orbits (goes around) the sun? The answer is *centripetal* (sen-TRIH-puh-tul) *force*. Centripetal force keeps an object moving along a circular path with a force that is center seeking. For example, the earth circles the sun because the gravity of the sun pulls on the earth like an invisible string.

Centripetal force also keeps our moon and satellites in orbit around the earth.

God created forces like centripetal force to keep order in his creation. These forces are called laws of nature. Because these laws don't change, we can do scientific experiments with reliable outcomes.

Because of Adam's sin, the world is fallen. But even in its brokenness, we can see God's goodness and mercy in the work of his creation—including in the consistency of his laws of nature.

Now it's time to go outside and explore centripetal force yourself!



I'm **Mr P.**, the host of *Unlocking Science* on Answers TV. Let's have some fun as we investigate God's amazing creation.

➤ Let's do it!

What You'll Need

- Empty gallon-sized ice cream bucket
- Water
- Open outdoor space

What to Do

1. Fill about a third of the ice cream bucket with water. Make sure that you can lift it easily to carry it outside!
2. Lift the bucket and start spinning in a circle. As you spin faster, can you tilt the bucket a little? Can you raise the bucket higher? What happens?
3. Slow down carefully and set the bucket down. If you are too dizzy, try sitting down and closing your eyes.
4. Try spinning it with one hand at your side and swinging it slowly back and forth, and then begin making full circles over your head. What happens?

Think About It

When you spun really fast and started lifting the bucket, did any of the water come out? No! Even if you were able to hold the bucket sideways, all the water stayed pressed against the back of the bucket. Centripetal force was at work keeping the water from spilling out.

Centripetal Force in Your Life

Centripetal force is at work not just in outer space. Here are some places it commonly shows up.

- **Tetherball.** Have you ever played tetherball? The ball spins around the pole using centripetal force of the tension on the rope!
- **A washing machine.** Washing machines use centripetal force when they spin the water out of your clothes. When the machine is in the spin cycle, the clothes get pressed against the sides, and the water is forced through the small holes in the sides of the bin.
- **Roller coasters.** When you go around a curve on a rollercoaster and get pushed toward the center by the side of the seat, you experience centripetal force.