

Spinning Tops



What Do I Need?

- round recycled plastic lids
- skewers
- hot glue gun
- washers or pennies

What Do I Do?

1. **Tops come in many sizes and shapes. One example is shown for you here.**
2. For the body of the top, you will need a round-shaped plastic lid such as a bottle cap or margarine lid. Use a razor or sharp object to poke a hole through the center.
3. A skewer can be used for the spindle. Cut the skewer to the length you would like and poke it through the hole in the body of the top.
4. You may need to use a hot glue gun to secure the spindle to the body of the top.
5. Test your top. Did it spin the way you had hoped?

Now Try This!

By building, testing and rebuilding you may discover some of the things that make a top spin well. Change the length or thickness of the spindle. Use a different material for the body of your top to make it wider or narrower. Add weight to the body by taping pennies near the center or at the edge.

What's Going On?

The spindle of the top is an axis. As long as the top is spinning, it has a stability that allows it to balance on a point. The spinning produces angular momentum that helps the top resist the force of gravity. This is similar to balancing on a bicycle while the wheels are rotating. Once the wheels stop, gravity takes over and the bicycle can topple over. The top will eventually slow down due to friction. As it slows, the top begins to wobble, a phenomenon that scientists call precession. If you look closely you will discover that the wobbling axis traces out little circles in the air.

Did you notice that the top with weight at the edge of the body kept spinning longer than the other tops? This is because the top has more inertia. The greater the inertia of a spinning object, the harder it is to make it stop spinning. Of course, tops with more inertia are also more difficult to rotate. You probably had to twist a little harder to get this top started.

