

## Activity:

**Activity Objective:** To spin the pinwheel through following all of the steps correctly.

**Essential Question:** Following the steps, how can you get the pin wheel to spin?

**Introduction:** Discuss with the class the idea of everything you do having a reaction. When you drop a pencil, it will fall to the ground and hit the ground. If you snap your fingers, you will hear the snapping noise it makes. Explain what reaction you will be looking for with this experiment.

**Kid-Friendly Stated Purpose of Activity:** To make the pin wheel spin.

**Activity Instructions** (15 Minutes):

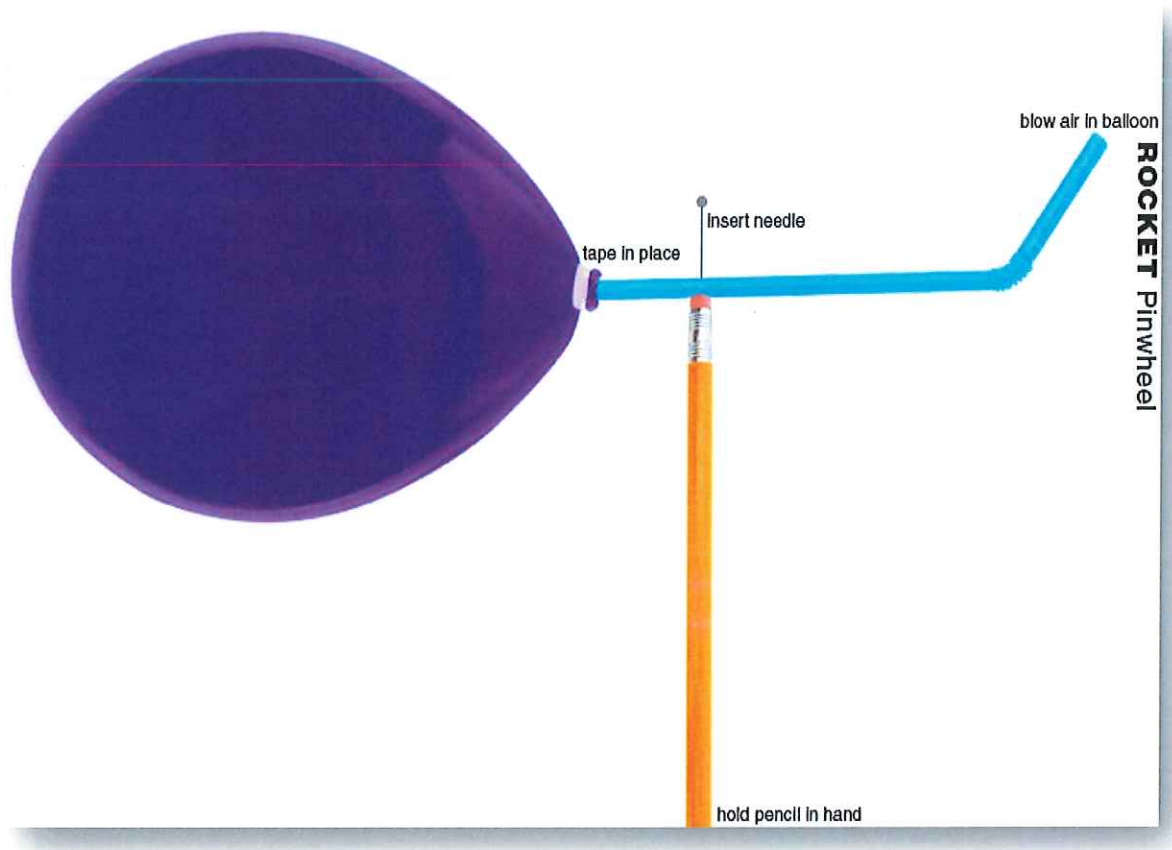
1. Have the students take the balloon and attach it to the straw with duct tape. Be sure to create a tight seal, you should be able to inflate the balloon by blowing on the straw.
2. Then attach the straw to the pencil with a straight pin. **You will want to put the pin at the balance point. To find this, balance the straw with the balloon attached on the end of your finger.**
3. On the spot where the straw balanced on your finger, stick a pin through the straw into the eraser of the pencil. If the pin is stuck in any other spot other than the balance point, it won't spin and the experiment will not work.
4. Bend the neck of the straw. Blow into the straw and inflate the balloon. Let go of the balloon and watch the balloon spin!
5. "This project demonstrates Newton's third law of motion which says that for every action, there is an equal and opposite reaction. As air rushes out of the straw, it pushes the straw in the opposite direction... [the pin's] exerting centripetal force on the straw, causing it to move in a circular motion.

**Extensions:**

**Level Adjustments:**

Beginner: Guide students to find the balance point very clearly. You can also guide students to attaching their balloon to the straw.

Advanced: Give a couple small tips, but do not do anything for the students.



**Notes:**

- The straw needs to be on the balance point or the experiment will NOT work.
- If a child is struggling, make sure to help guide them to success rather than doing it for them

**Processing:**

**Strategy:** Have you followed all of the steps to achieve success?

**Questions:** Is your balloon on the balance point?

**Reflection** (5-10 minute reflection on the essential question after the activity):

**Strategy:** Was finding the balance point easier or harder than you thought it would be? How important was it to find the balance point?

**Questions:** Was your balloon on the balance point? Did it take more than one try to get your pin wheel to spin?