



## SINGING ROD

### Ingredients

- Aluminum Rod
- Rosin

### Science Terms

- **Sound** – A form of energy that is transmitted by an object moving.
- **Friction** – The force, or resistance, caused when two things rub together.

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### Instructions

**STEP 1:** Rub the rosin on your pointer finger and your thumb.

**STEP 2:** Pinch the rod with the other hand at exactly the middle point and hold the rod into the air.

**STEP 3:** Gently stroke the aluminum rod from the center to the end of the rod using your rosin coated pointer finger and thumb. Repeat and slightly increase the pressure of your stroking hand until you hear a high-pitched tone.

### Explanation

When you hold the aluminum rod in the center and stroke it with rosin coated fingers, your fingers slip and stick as they slide along the rod. This causes the rod to start moving with one of its natural frequencies of vibration - a half-wave tone. As you continue to stroke the rod, the vibrations increase and the loudness increase. The node is a place on the object that is not moving. An anti-node is a place on the object with maximum vibration. Touching a node will not dampen the sound; touching an anti-node will.



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