

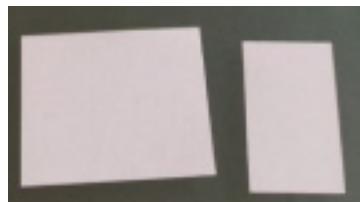
Bee Hummer

Directions:

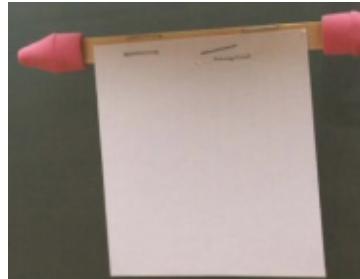
1. Put a cap eraser on each end of the popsicle stick.



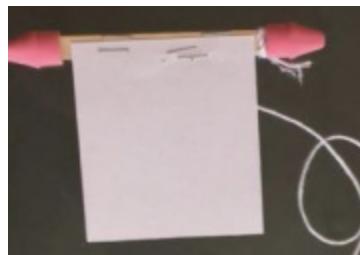
2. Use the scissors to trim the index card about a quarter of the way, so that it fits in the space between the two caps on the popsicle stick.



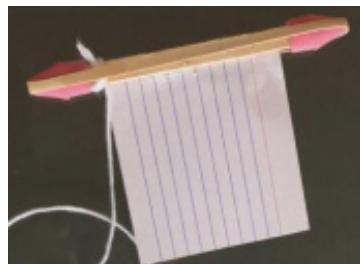
3. Staple the index card to the popsicle stick. It should stick out about 2 inches (or about 5 centimeters) from the popsicle stick.



4. Tie one end of the string to one end of the popsicle stick underneath the cap eraser. Tie several knots so it's secure!



5. Stretch the rubber band around the popsicle stick from one cap to the other, making sure it's secure and snug! **Make sure the string isn't touching the rubber band!**



6. **Try it!** Make sure there's enough space for you to safely swing the Bee Hummer around. Then, hold the end of the string and swing your Bee Hummer around! You should hear a sound like a swarm of bees buzzing!



What's Going On?

When you spin your Bee Hummer, moving air makes the rubber band vibrate. The air flowing over the rubber band makes it vibrate the same way that wind blowing over a flag makes it wave.

Sound is produced by those vibrations, in the same way that vibrating strings on a guitar or violin produce sound. The index card amplified the sound.

If your Bee Hummer doesn't seem to be working, check to be sure the rubber band isn't twisted, and that the string isn't touching the rubber band. Either of these things could stop the sound!

Going Further

Experiment by changing how the Bee Hummer is made and used. What happens when the index card is slit, curved, or folded? How does the sound change if you change the size of the rubber band? If you spin the Bee Hummer faster or slower? Use a longer or shorter length of string? You can also modify the materials: Try using balls of clay on each end instead of erasers, or several thin rubber bands instead of one thick one.

