

Humming Balloon

Overview: You can easily make a humming, screeching balloon using just a little bit of physics knowledge about sonic vibrations.

What to Learn: Sound is made by vibrating objects and can be described by its pitch and volume.

Materials

- hex nut
- balloon
- optional: other small options (washer, various coins, marble, etc.)

Lab Time

1. Place a hex nut OR a small coin in a large balloon.
2. Inflate the balloon and tie it.
3. Swirl the balloon rapidly to cause the hex nut or coin to roll inside the balloon. The coin will roll for a very long time on the smooth balloon surface.
4. At high coin speeds, the frequency with which the coin circles the balloon may resonate with one of the balloon's "natural frequencies," and the balloon may hum loudly.

Humming Balloon Data Table

Object inserted into balloon	Did you swirl the balloon slow, medium, or fast?	Noise made? Volume?

Reading

Sound is a form of energy that our ears can hear when sound vibrations reach them. Sound's energy vibrations travel in waves to our ears.

The pitch tells us how high or low a sound is. Pitch represents the frequency of sound vibrations. High vibrations are high frequency and high pitch. Low vibrations are low frequency and low pitch.

In this experiment, students will be able to change the pitch depending on how fast the hex nut is spinning. They'll also be able to feel the vibrations which produce the sound.

Exercises Answer the questions below:

1. How does sound travel?
2. What is pitch?
3. How is frequency related to pitch?

Answers to Exercises: Humming Balloon

1. How does sound travel? (via vibrating waves)
2. What is pitch? (how high or low a sound is)
3. How is frequency related to pitch? (High frequency means high pitch, low frequency means low pitch.)