RAFT IDEAS

Topics: Sound, Hearing, Vibrations, Waves

Materials List
- ✓ Balloon
- ✓ Hex nut

This Activity can be used to teach:

- Sound and Sound Waves (CA Science Standards: Grade 2, 1.g; Grade 3, 1.d)
- Investigation and Experimentation (CA Science Standards: Grades K-3)

raft resource area for teaching
1355 Ridder Park Drive San Jose, CA 95131
www.raft.net

Ballooniacs

Crazy Noise Makers by Balloons Gone Nuts!

Take these balloons for a spin to create fun sounds and great science investigations!

Assembly
1. Place the hex nut inside the balloon.
2. Blow up the balloon and tie a knot.

To Do and Notice
1. Move the balloon in a circular motion and notice the sound created by the enclosed hex nut.
2. Try increasing the speed of the hex nut. What happens to the sound? Notice that the pitch goes up when the speed increases.

The Science Behind the Activity
Sound is caused by vibrations that travel in compression waves through the air (the medium) and into the ear. Once hitting the eardrum, the sound is sent to the brain's auditory cortex where it is analyzed and interpreted.

Objects make different sounds (louder, higher pitch, etc.) because of their size, density, and intensity of collisions. Higher pitched sounds are higher frequency waves. The hex nut is not smooth. When traveling around the inside of the balloon, each time the nut falls to change sides and "roll", it produces a very small sound. When the hex nut travels quickly enough, it seems to almost hum with a recognizable pitch. Increasing the speed of the hex nut increases the frequency of nut/balloon collisions, and therefore increases the pitch of the created sound.

Taking it Further
- Try placing other objects into the balloon, like marbles, washers, and coins. Do they make sounds?
- Place more than 1 nut into the balloon at a time. How does the presence of more than 1 nut affect the sound?

Web Resources - Visit www.raft.net/more for how-to videos and more ideas!

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