

Shopping List for Unit #6: Sound

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How many of these items do you already have? We've tried to keep it simple for you by making the majority of the items things most people have within reach (both physically and budget-wise), and even have broken down the materials by experiment category so you can decide if those are ones you want to do.

Wave Demonstrations

3' & 10' string or rope
Weight that can be tied to the end of the string
A timer or stopwatch
Masking tape
2 slinky toys (both are the same size)
Optional: Bathtub, water, ball

Noise Makers

3 popsicle sticks (tongue depressor size)
2 index card (3x5")
Scissors, tape, hot glue gun
2 film canisters (or plastic snap-lid containers)
Straw
Three 7-9" balloons
2 water balloons
3' string
Rubber bands (four 3"x 1/8" and four 3" x 1/4")
Disposable cup (plastic, foam, paper...)
Hexnut (1/4" or smaller)
Razor or drill to make hole in the film canister
Optional: Violin rosin (it's worth it if you can find it!)

Properties of Sound

Empty glass bottle AND plastic water bottle
Metal fork
2 sheets of stiff paper
3 feet of each: yarn, string, thread, fishing line
Disposable cup
Empty soup can
7-9" balloon
Flashlight or laser (if you have it)
Scissors, tape
Small mirror (from a compact or makeup kit, or use a 1" mosaic mirror from the craft store)
Sand (10-12 cups)
5' string
Dish towel

Optional Speaker Project:

Record player (the turntable type... no kidding!)
Margarine tub
Tack
Old record that can be scratched

For Grades 9-12:

Build Real Speakers

You'll be making three different kinds of speakers!

Foam plate (paper and plastic don't work as well)
Sheet of copy paper
3 business cards
Magnet wire AWG 30 or 32 (RS#278-1345)
2 neodymium magnets** (*see notes below*)
Disc magnet (1" donut magnet) (RS#64-1888)
Index cards or stiff paper
Plastic disposable cup
Tape
Hot glue gun
Scissors
1 audio plug (RS #42-2420) or other cable that fits into your stereo (iPODs and other small devices are not recommended for this project – you need something with built-in amplifier)

OPTIONAL: Chladni Resonance

(Hint – this experiment has the potential for a jaw-dropping science fair project. Watch the experiment video before buying your materials.)

- Salt (*get two containers, both with a pour spout*)
- Scrap of metal plate (*anything that's flat will work that's at least 6" square, preferably 12"*)
- Clamp (to hold your plate to the table)
- Bass fiddle bow (*rent or borrow one if you can – this experiment is totally worth it!*)
with lots of violin rosin

****Special Note About Magnets**** If you're ordering magnets, here's a list for future projects we're covering this year as well. (Keep these FAR AWAY from anything electronic!! And be very careful not to let them jump together, or they will crack and fracture because they are so powerful, *especially* the gold-plated ones!)

Here's a list of the magnets we will be using in e-Science (you can order these online from <http://www.kjmagnetics.com>)

- 9 nickel-plated ball bearings (NSBA) for the Linear Accelerator
- Two 5/8" x 1/4" high (DA4) for the Speakers
- Four 1/2" gold plated cubes (B888) for the Linear Accelerator
- Two tiny bead magnets (R211 and/or R311) for the Curie Heat Engine
- Two disc magnets (D21) for the Rail Accelerator
- Two gold-plated disc magnets (D41G) for the Rail Accelerator
- Five disc magnets (DC2) for the DC Motor
One ceramic magnet for the Curie Heat Engine