

Wave Applications Project: Build a Simple Instrument

Name: _____ Date: _____

LEARNING OBJECTIVE

The student will design and build a simple musical instrument that demonstrates sound wave principles and present how it works.

MATERIALS NEEDED

- a shoebox or tissue box (open on one side)
- 3-5 rubber bands of different thicknesses
- a paper towel tube (optional)
- tape
- poster board or paper for a diagram
- markers

HANDS-ON ACTIVITY

1. Stretch 3-5 rubber bands of different thicknesses across the open side of a shoebox or tissue box, spacing them evenly, to build a simple 'guitar.'
2. Pluck each rubber band and listen carefully, ranking them from lowest pitch to highest pitch, and record which thickness produced which pitch.
3. Experiment with stretching one rubber band tighter or looser and note how that changes its pitch, recording your observation.
4. On poster board, draw a labeled diagram of your instrument identifying where vibration occurs, and write 2-3 sentences connecting your instrument to concepts from this quarter (vibration, frequency, pitch, amplitude).
5. Perform a short demonstration (for a family member or recorded) explaining how your instrument produces sound and how you can change its pitch.

QUESTIONS

1. Which rubber band produced the lowest pitch, and which produced the highest? What was different about them?

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2. What happened to the pitch when you tightened a rubber band, and why?
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3. Using vocabulary from this quarter (vibration, frequency, amplitude, pitch), explain how your instrument makes sound.

4. If you wanted to add a rubber band that plays an even higher pitch than your current highest one, what change would you make?
