

Pitch and Frequency: Water Glass Xylophone

Name: _____ Date: _____

LEARNING OBJECTIVE

The student will investigate the relationship between water level and pitch to model frequency.

MATERIALS NEEDED

- 5-6 identical drinking glasses
- water (measuring cup optional)
- a metal spoon
- ruler
- paper
- pencil

HANDS-ON ACTIVITY

1. Line up 5-6 identical glasses and fill them with different amounts of water, from nearly empty to nearly full, measuring and recording the water height in each glass in inches or centimeters.
2. Gently tap the side of each glass with a spoon (not the water) and listen to the pitch it produces.
3. Order the glasses from lowest pitch to highest pitch based on what you hear, and record this order alongside your water-height measurements.
4. Compare the order of pitches to the order of water heights — determine whether more water produces a higher or lower pitch.
5. Try to arrange the glasses (adjusting water levels if needed) to play a simple 3-note pattern, and describe what adjustments you made.

QUESTIONS

1. List your glasses in order from lowest to highest pitch, along with their approximate water heights.
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2. Does more water in the glass produce a higher or lower pitch? Explain why, based on vibration.
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3. How is pitch related to frequency?

4. What adjustment did you make to create your 3-note pattern, and did it work as expected?
