

MUSIC WITH BOTTLES

TEAM MATERIALS

- 8 clear glass bottles or drinking glasses (sizes can vary)
- food coloring
- funnels
- markers or colored pencils
- metal spoons
- ruler
- towels, newspaper, or absorbent mats
- water



TEACHER PREPARATION: Arrange areas where students can work with water. Discuss safety issues when working with the glass bottles.

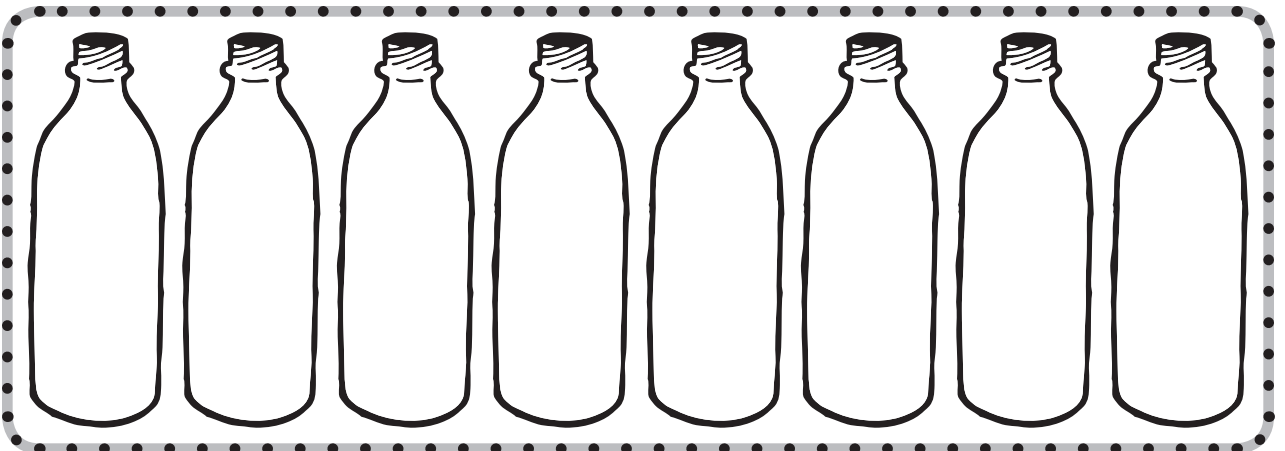
SETTING UP THE BOTTLES

1. Carefully arrange the eight glass bottles in a line on a towel, newspaper, or a mat. If the bottles are different sizes, arrange them by size with the tallest bottle at one end and the shortest on the other end.
2. Start at the end that has the shortest bottle and use a funnel to add 1" water to the first bottle and 2" of water to the second bottle. (Either end will work if the bottles are the same size.)
3. Add one more inch of water to each bottle. The last bottle should have 8 inches of water.
4. Use food coloring to color the water in each bottle. Mix your own colors or make a rainbow using the "recipe" below.

- Bottle 1**—4 drops of red food coloring
- Bottle 2**—1 drop of red food coloring and 2 drops of yellow to make orange
- Bottle 3**—4 drops of yellow food coloring
- Bottle 4**—2 drops of blue food coloring and 2 drops of yellow to make green
- Bottle 5**—2 drops of blue food coloring
- Bottle 6**—3 drops of blue and 1 drop of red to make indigo (dark blue)
- Bottle 7**—2 drops of blue and 2 drops of red to make violet (lighter than purple)
- Bottle 8**—leave water clear or create a color and fit it into the rainbow.



5. Sketch the final row of containers showing the heights of the water and the colors used.



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PLAYING THE BOTTLES

1. Use a metal spoon to tap each bottle in the middle. Do you hear different sounds?

YES NO

Describe the different sounds you hear.

2. Now tap each bottle near the bottom and then near the top. Does it make a difference in the sounds you hear when you hit the bottles at different heights? Explain.

3. Move from one end of the row of bottles to the other and back. Listen to the sounds created by the vibrations. What do you notice?

4. If you tap each bottle, starting with the one with the least amount of water and ending with the one with the most water, what do you notice happening to the sound?

5. Now do the reverse. Start with the bottle that is holding the most water and end with the bottle having least amount of water. What do you notice? Is the sound the same or different?

Explain. _____

VARIATIONS

1. Adjust the water levels or rearrange the bottles to create different sounds.
2. Make a personal set of bottles so that you can blow over the tops to create different sounds (without spreading germs!).

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JOURNAL ENTRY

1. What was the most surprising thing about playing the bottles?

2. Did the types of sounds change if you played the bottles at the top, in the middle, or at the bottom?

3. What causes the vibrations when you play bottles? _____

Explain. _____

4. What adjustments did you make to the water levels to create different sounds?

DESIGN PROCESS REVIEW—MUSIC WITH BOTTLES

Share your observations, experiences, documentation, and journal entries about bottle music with your classmates in a discussion led by your teacher.