

Name: _____

Date: _____

Echoes

If you stood in a tunnel and yelled “Hello!” chances are good that you would hear an echo. As you have learned, sound reflects, or bounces off different surfaces, such as walls. Reflected sound is called an echo. Your voice echoes when the sound of it hits the cave walls and bounces back to your ear. The question is now; does sound always echo the same?

If you stand in a field and clap loudly there is only air (a gas) in front of you. Do you hear an echo? Of course not, sound does not reflect off of a gas. If you stand in front of a wall and repeat the procedure, do you hear an echo? Try it. Why is the result different?

In today’s experiment you will test echoing a sound off of different surfaces. Can you predict in which order the volume of the echo will be?

Equipment:

- Cookie Sheet
- Cardboard Tubes
- Cloth
- Watch That Ticks
- Flat Cardboard
- Cotton

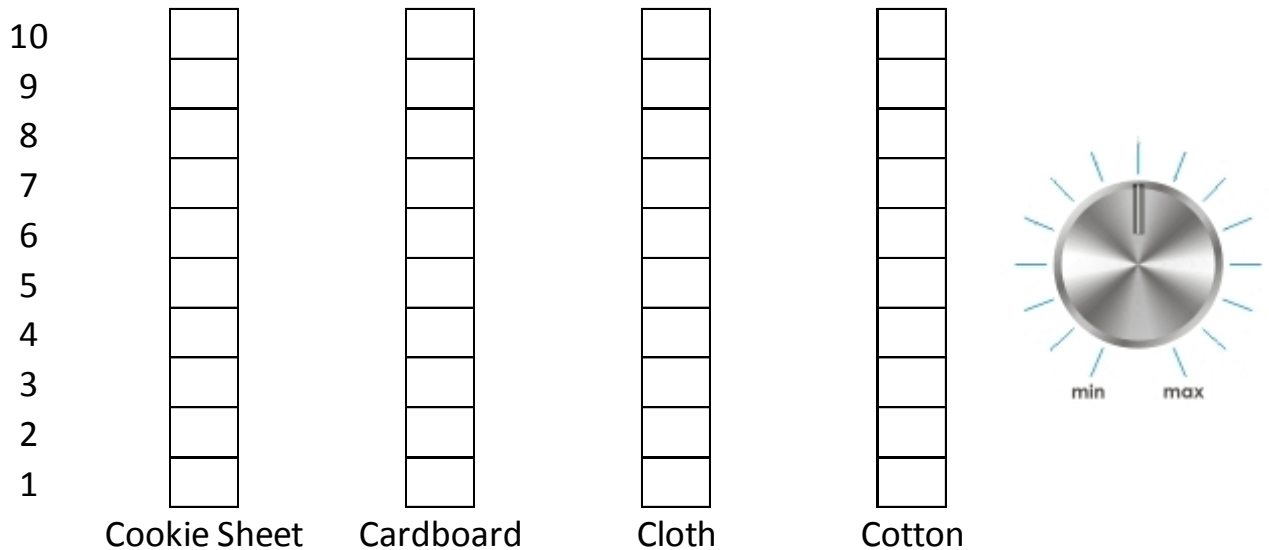
Procedure:

1. Rest the cookie sheet against something so that it stands on its side.
2. Place the cardboard tubes in front of the cookie sheet as shown in the diagram.
Note: Do not let the tubes touch each other, and keep them only a couple centimetres from the cookie sheet.
3. Place the watch close to the end of one of the tubes.
4. Put your ear close to the end of the second tube.
5. Adjust the angle of the tubes until you can hear the watch clearly.
6. Fasten the tubes in place so they do not move.
7. Compare the echo created off of the four different surfaces.



Observations:

Once you have listened to the watch echo off of each of the surfaces, plot the volume on the graphic below. Full volume is what the watch sounds like at the end of the tube, with no echo. No volume means that there is no sound heard.



Discussion:

1. What kind of material do you need to make an echo?

2. What material did sound bounce off of the best? What material did sound bounce off of the worst? Can you explain why?

3. Look at the ceiling in the classroom, describe what you see and discuss why you think the ceiling is made the way it is?
