



# MAKER JOURNAL

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Project/Unit: Design a Noise Cancelling Device

Lesson: 3

Follow the protocol below for testing materials for sound transmission. Record your measurements and calculations in the data table.

1. Place the sound source at the bottom of the sound box and turn it on with volume set at medium.
2. Cover the sound source with the first material to be tested. For larger materials such as cardboard cut it up into pieces that can be layered over the sound source. For smaller pieces of material such as beads, fill the box to cover the sound source. Add enough material to fill the sound box 2-3 inches above the sound source.
3. Place the sound meter device over the top of the sound box or hold it over the top. Make sure it is placed in the same position for each test in order to ensure consistency during testing.
4. Measure and record the sound output three times for each material and then calculate the average value.
5. Remove the sound meter device and then empty the material out of the sound box.
6. Repeat steps 1-5 for the remaining materials to be tested.

Material Name	Characteristics	Sound Transmission (dBA)
Cardboard	Thin strips, flexible, about $\frac{1}{4}$ " thick, made of 4-5 different layers of paper material	1: <u>  30  </u> Ave: <u> 32.3 </u> 2: <u>  36  </u> 3: <u>  31  </u>
		1: _____    Ave: _____ 2: _____ 3: _____
		1: _____    Ave: _____ 2: _____ 3: _____
		1: _____    Ave: _____ 2: _____ 3: _____
		1: _____    Ave: _____ 2: _____ 3: _____



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*Discuss the questions below with your group.*

## Analysis and Reflection

*Answer the following questions.*

1. What was the range of sound data you collected (largest value - smallest value)?
2. Which material transmitted the most sound? The least? How different was the data for these materials?
3. What are the attributes that you think made those materials able to transmit sound well or not so well?
4. What happened to the portion of the sound that was not transmitted well?
5. What do your results mean in terms of materials to choose if you wanted to soundproof your house? Provide two examples to support your thinking.