

Team names: \_\_\_\_\_ Date: \_\_\_\_\_

# Sound Booth Engineers

## Ask

**DISCUSS** with your team.

How does sound travel?

How can you dampen the sound created inside the sound booth?

How do different materials affect the ability of sound to travel?

## Imagine

We think that the combination of \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ will make the box most sound-proof because...

## **Building Materials**

- box
- scissors
- ruler
- pencil
- Elmer's glue
- tape
- Choose three of the following materials (**circle your choices**):
  - 40 jumbo cotton balls
  - 40 wide popsicle sticks
  - 20 paper towels
  - 30 tissues
  - 1 large sheet of craft foam
  - 1 large sheet of construction paper

## Plan

Draw a picture of your design. Specify materials and amounts.

## Create

1. Cut along one edge of the box.
2. Lay your box flat and paste your materials **ONLY** on the inside of the box.
3. To seal the box, place the tape on the outside of the box along the open edges.  
Remember to leave one end of the box open so that the speaker will fit.
4. Write your group members' names on your box.

## Testing Materials

- computer or device that can play audio
- small speaker
- sound meter

## Testing Instructions

1. Connect a computer or to a small speaker.
2. Place the speaker inside the sound booth with the booth positioned like an upside-down cup.
3. Play an audio clip with the sound meter placed outside of the booth but next to it.
4. Record the maximum decibel level reached for the audio clip for each group in the "Data Collection" section below. (Tip: Use the same audio clip for testing each sound booth.)
5. Share your sound booth to the class by describing your design and the materials used to dampen the sound.
6. Listen to each group explain how they designed their sound booths and write down a description of each group's design and note the supplies they used.

## Data Collection

Group #	Design Description	Sound Level (dB)
1		
2		
3		

<b>4</b>		
<b>5</b>		
<b>6</b>		

### Improve

1. Talk with your team and compare your results with the best performing sound booth in the classroom.
2. Write to tell which materials improved the performance of the sound dampening in the audio booth.

Describe the design improvements you could make to your sound booth if you had more time and/or supplies: