LAB

Design Your Own

# Blocking Noise Pollution

**Goals**

- **Design** an experiment that tests the effectiveness of various types of barriers and materials for blocking out noise pollution.
- **Test** different types of materials and barriers to determine the best noise blocks.

**Possible Materials**

radio, CD player, horn, drum, or other loud noise source
shrubs, trees, concrete walls, brick walls, stone walls, wooden fences, parked cars, or hanging laundry
sound meter
meterstick or metric tape measure

## Real-World Problem

What loud noises do you enjoy, and which ones do you find annoying? Most people enjoy a music concert performed by their favorite artist, or the booming displays of fireworks on the Fourth of July. Most people enjoy these loud sounds for short periods of time. However, certain other loud noises, such as traffic, sirens, and loud talking, can be annoying. Constant, annoying noises are called noise pollution. What can be done to reduce noise pollution? What types of barriers will best block out noise pollution?

## Form a Hypothesis

Based on your experiences with loud noises, form a hypothesis that predicts the effectiveness of different types of barriers at blocking out noise pollution.

## Test Your Hypothesis

**Make a Plan**

1. Complete the safety form.
2. **Decide** what type of barriers or materials you will test.
3. **Describe** exactly how you will use these materials.

## Using Scientific Methods

4. **Identify** the controls and variables you will use in your experiment.
5. **List** the steps you will use and describe each step precisely.
6. **Prepare** a data table in your Science Journal to record your measurements.
7. **Organize** the steps of your experiment in logical order.

### Follow Your Plan

1. Ask your teacher to approve your plan and data table before you start.
2. **Conduct** your experiment as planned.
3. **Test** each barrier two or three times.
4. **Record** the results from each test in your data table in your Science Journal.

## Analyze Your Data

1. **Identify** the barriers that most effectively reduced noise pollution.
2. **Identify** the barriers that least effectively reduced noise pollution.
3. **Compare** the effective barriers and identify common characteristics that might explain why they reduced noise pollution.
4. **Compare** the natural barriers you tested with the artificial barriers. Which type of barrier best reduced noise pollution?
5. **Compare** the different types of materials the barriers were made of. Which type of material best reduced noise pollution?

## Conclude and Apply

1. **Evaluate** whether your results support your hypothesis.
2. **Predict** how your results would differ if you used a louder source of noise such as a siren.
3. **Infer** from your results how people living near a busy street could reduce noise pollution.
4. **Identify** major sources of noise pollution in or near your home. How could they be reduced?
5. **Research** how noise pollution can be unhealthy.

### Communicating Your Data

Draw a poster illustrating how builders and landscapers could use certain materials to better insulate a home or office from excess noise pollution.