Comparing Measures with the Proportioner

In these activities, you'll predict and compare various dimensions of objects on a theatre stage. Use the interactive tool called the Proportioner, which you can find at: **http://seeingmath.concord.org/resources_files/Proportioner.html**

Note: On the Proportioner, use the Zoom In and Zoom Out buttons to see more of the screen.

Challenge A: Show Time!

You are on the set design crew for a theater production of "Honey, I Shrunk the Students." You are responsible for two props: a cardboard door and a telephone booth.

The director wants the actors to look about one-third their actual size on stage.

As a starting point, assume that a standard door is 3 ½ feet wide by 7 feet high, and that a standard phone booth is 3 ½ feet wide by 8 feet high by 3 ½ feet deep.

Use the Proportioner to guide you and record your reasoning. Use may also make some sketches.

1. What should the dimensions of your door be? How did you arrive at that conclusion?

2. How much cardboard will you need to construct your door, compared to a standard door?

3. What should the dimensions of the phone booth be? Why?

This sample activity is provided as part of the Seeing Math™ Secondary "Proportional Reasoning" course.

More info is available at http://seeingmath.concord.org.

Challenge B: Designing a Dollhouse

A toy manufacturer wants to design a dollhouse that will be proportional to an actual home. The ideal specifications show the dollhouse having about one-fourth the size of the home, but the manufacturer is not sure if the dimensions will work.

The toy manufacturer has contracted an architect—you—to help design parts of the dollhouse. You are considering three items: the outside door, a dollar bill left on the floor of one of the bedrooms, and a clock on the kitchen table.

Standard dimensions are as follows:

Door	3.5 feet wide by 7 feet high
Dollar bill	2.5 inches wide by 6 inches long
Clock	4 inches wide by 4 inches long

First make some predictions, before you try out your ideas on the Proportioner.

1. Predict how you think the dimensions of the three items above will change, and what the final dimensions might be for the dollhouse. Make some sketches on graph paper to guide you.

Now use the Proportioner to explore the problem further. Make sure you record your reasoning.

Note: In the Proportioner screen, consider the units as *feet* when working on the door and as *inches* when working on the dollar bill and clock

---

2. What should the dimensions of the door be? How did you reach your conclusion?

3. What should the dimensions of the clock be? How did you reach your conclusion?

4. What should the dimensions of the dollar bill be? How did you reach your conclusion?

5. The dollhouse is designed in natural wood, and then it is covered with a non-toxic paint. How much paint is needed to cover the door of the dollhouse, as compared to a standard door? Explain your reasoning and the method you used.