

CHAPTER
12 **Project**
By Design**Activity 1: All in Perspective** *Use with Lesson 12-1*

Artists paint objects smaller and closer together to make them appear farther away. This activity will show you why.

1. Work with a partner. First get a ruler and a book. Have your partner hold the book 3 ft away from you at about shoulder height. Hold the ruler at arm's length and measure the height of the book. Have your partner move 1 ft farther away from you. Measure the height of the book again. Continue measuring until you've collected enough data to fill the table.

Distance (ft)	Height (in.)
3	
4	
5	
6	
7	
8	

2. Graph your data.

3. What do you notice if you multiply the height by the distance for each set of data?

4. Write an equation to represent your graph. What kind of equation is this? Explain your reasoning.

5. Can you predict the height of the book at 12 ft away?

CHAPTER
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Activity 2: Package Design *Use with Lesson 12-3*

In this activity, you will design a new yogurt drink container for children. Imagine an eight-year-old child as your target audience. The container must be a cylinder that children can easily hold in their hands.

1. To determine a comfortable hold on a cylinder, test several different cylinders (e.g., cups, juice cans, water bottles). Estimate the measure your thumb and longest finger make around each cylinder. For example, do your thumb and longest finger extend about halfway, three-fourths of the way, or all the way around the container? Which is the most comfortable hold?

2. Measure the distance from the tip of your longest finger to the tip of your thumb. Measure your height. Collect the same data from at least 10 other people.

3. Create a scatter plot of your data and find the line of best fit.

4. Use your line of best fit to find the measure from the longest finger to the thumb for an average eight-year-old. (Research to find the average height of an eight-year-old.)

5. Use your answers to Problems 1 and 4 to estimate the circumference of a comfortable cylinder for an eight-year-old. Find the radius.

6. Design your yogurt drink container. Explain the dimensions you chose.
