

## EXPLORATION 5.16 Precision and Decimals

---

As mentioned in the textbook, one of the reasons for the development of fractions and decimals was that whole numbers are simply not precise enough for many situations. The purpose of this exploration is to better understand the magnitude of the invention of decimals and the invention of the metric system.

For this exploration, you will need a ruler with inches on one side and centimeters on the other side.

1. Select a rectangular region to measure—for example, the front cover of this textbook, the front cover of a notebook, a sheet of paper (not  $8\frac{1}{2}$  by 11 inches).
  - a. Measure the dimensions of the region to the nearest inch.
  
  - b. Determine the area.
  
2.
  - a. Measure the dimensions of the region you chose for this exploration as accurately as you can, using the inches side of the ruler.
  
  - b. Represent the area in the form  $a\frac{b}{c}$  square inches.
  
3.
  - a. Measure the dimensions of the region as accurately as you can, using the centimeter side of the ruler.
  
  - b. Represent the area as a decimal.
  
4. Determine a means to convert square centimeters to square inches or use the conversion your instructor gives you.
  
5. Compare the three values. Which value do you think is closest to the actual area? Why?
  
6. Describe a real-life situation in which the accuracy given by inches and fractions of inches is not sufficient.