

Experiment 1.1: Determining the Relationship Between Inches and Centimeters

Data:

Width of the book in cm: 14.00 cm

Width of the book in inches: 5.51 in

Length of the book in cm: 21.55 cm

Length of the book in inches: 8.50 inches

Width of the spine in cm: 1.25 cm

Width of the spine in inches: 0.50 inches

Calculations:

Centimeters divided by inches using the width: $14.00 \text{ cm} \div 5.51 \text{ in} = 2.54 \frac{\text{cm}}{\text{in}}$

Centimeters divided by inches using the length: $21.55 \text{ cm} \div 8.50 \text{ inches} = 2.54 \frac{\text{cm}}{\text{in}}$

Centimeters divided by inches using the spine: $1.25 \text{ cm} \div 0.50 \text{ inches} = 2.5 \frac{\text{cm}}{\text{in}}$

Summary:

In this experiment, I measured the width and length of a book as well as the width of the book's spine. I measured those values in both inches and centimeters. When I divided centimeters by inches, I got the conversion relationship between the two units. Within the significant figures of the experiment, my values were consistent with the correct value: 2.54 cm/in.

(Please note: If your answers are within a couple of digits in the last significant figure, say 2.51 cm/in or 2.56 cm/in, you can still say they are consistent with 2.54 cm/in, since there is always some error in the last significant figure. If they were far from that, say 2.48 cm/in, you should try to come up with some reason as to why your answers didn't come out correct. For example, you could say, "My results were not consistent with the accepted value. This could be a result of me not carefully reading the ruler or bending the book as I measured it.")