



Significant Figures

Experimental Design Unit
Day 23
September 19th, 2006

Objectives for Day 23 Tuesday, 09/19/06

- *Define* the term "Significant Figures"
- *Discuss* the importance and usefulness of significant figures
- *Calculate* the number of significant figures in given examples.

Significant Figures

- The digits in a measurement known with certainty
- The number of digits known with certainty is called the number of "significant figures"



Why Bother?

- Quantities should always be reported in a way that shows their level of precision

Taking measurements with a ruler:

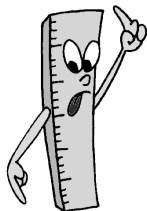
Which more accurately reflects my level of certainty?

The book is 22.6603554 cm wide

The book is 22.5 cm wide

Significant Figures Rules

1. All digits 1-9 **are** significant
2. Zeroes within a number **are** significant
3. Zeroes that are simply holding the place of the decimal point **are not** significant
4. "Trailing" zeroes that are *not* needed to hold the decimal point **are** significant.



Let's look at some Examples...

1. **5.6543**
5 (all are significant because they are 1-9)
2. **2,600,000**
2 (the zeroes are not because they just hold the decimal point in place)
3. **2.600000 x 10⁶**
7 (all zeroes *are* significant because they are "trailing" and not holding the decimal)