# Rounding and Significant Digits

## What are significant digits?

3.14159 has six significant digits (all the numbers give you useful information)

1000 has one significant digit (you don't know anything for sure about the hundreds, tens, or units places; the zeroes may just be placeholders; they may have rounded something off to get this value)

1000.0 has five significant digits (the ".0" tells us something interesting about the presumed accuracy of the measurement being made: that the measurement is accurate to the tenths place, but that there happen to be zero tenths)

0.00035 has two significant digits (only the 3 and 5 tell us something; the other zeroes are placeholders, only providing information about relative size)

0.000350 has three significant digits (that last zero tells us that the measurement was made accurate to that last digit, which just happened to have a value of zero)

1006 has four significant digits (the 1 and 6 are interesting, and we have to count the zeroes, because they're between the two interesting numbers)

### Examples

Round 0.07284 to four, three, and two significant digits:

1. 0.07284 (four significant digits)
2. 0.0728 (three significant digits)
3. 0.073 (two significant digits)

Round 231.45 to four, three, and two significant digits:

1. 231.5 (four significant digits)
2. 231 (three significant digits)
3. 230 (two significant digits)

## Basic Rules for Significant Digits:

1. All nonzero digits are significant.
2. All zeroes between significant digits are significant.
3. All zeroes which are both to the right of the decimal point and to the right of all non-zero significant digits are themselves significant.

## Accuracy and Place Value

* 3.14159 is accurate to the hundred-thousandths place
* 1000 is accurate to the thousands place
* 1000.0 is accurate to the tenths place
* 0.00035 is accurate to the hundred-thousandths place
* 0.000350 is accurate to the millionths place (note the extra zero)
* 1006 is accurate to the units place

## Significant Digits in Multiplication & Division

In a calculation involving multiplication or division, the number of significant digits in an answer should equal the least number of significant digits in any one of the numbers being multiplied or divided.

### Significant Digits in Addition and Subtraction

When quantities are being added or subtracted, the number of decimal places (not significant digits) in the answer should be the same as the least number of decimal places in any of the numbers being added or subtracted.