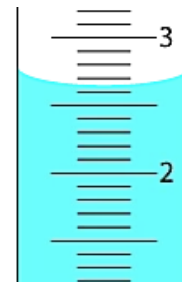


Counting Significant Figures (“Sig Figs”)

The number of significant figures of a measurement is the number of certain digits, plus one uncertain digit. There are 2 rules to recall.



The graduated cylinder is read as 2.65 mL. Here, the 5 is an estimated, uncertain digit.

1. All nonzero digits are significant.

- 5.37 cm (3) (three “sig figs” here, the 7 is the uncertain digit)
- 61.294 g (5) (the 4 is uncertain, mass is likely between 61.293 and 61.295)

2. Starting with the left-most nonzero digit, count it and all remaining digits to the right (aside from Ambiguity Rule below).

- | | |
|--------------------------|---|
| <u>1</u> .00200 mg (6) | <u>2</u> .098 × 10 ⁸ m (4) |
| 0.000 <u>2</u> 05 km (3) | <u>2</u> 0.980 × 10 ⁻⁸ m (5) |

Ambiguity Rule - What about 500 g? How many significant digits? 1 or 3?

To be perfectly clear, use a decimal point or **scientific notation**.*

For 3 sig. figs. use: 500. g or **5.00 × 10² g**

If no decimal version of the number is available, do NOT count the trailing zeros.

For “500 g” the zeros are NOT significant; there is just 1 sig. fig.

* **Scientific Notation has only 1 non-zero digit left of the decimal.** (no ambiguity)

6.000 × 10² km (4) 2.4 grams (2) 3.00750 × 10⁻⁴ m (6)

Optional: You may encounter a longer list of sig fig rules with jargon like this:

- Zeros preceding the first nonzero digit in a number are NEVER significant.
“Leading” or “Placeholder” zeros 0.000025 m (2)
- Zeros between nonzero digits are significant.
“Captive” zeros 1.002 mm (4)
- Zeros after the decimal point at the end of a number are significant.
“Trailing” zeros 8.00 mL (3)