In Lab or when doing a formula problem in chemistry, How do you determine where to round the number? How many decimal places to keep? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

It is important to be honest when reporting a measurement, so that it does not appear to be more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than the equipment used to make the measurement allows. We can achieve this by controlling the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_, or **significant figures**, used to report the measurement.

|  |  |
| --- | --- |
| All \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ numbers are significant | **12.34 \_\_\_\_\_\_sig figs** |
| Zeros \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ non-zero figures are significant | **10,204 \_\_\_\_\_\_sig figs** |
| Zeros \_\_\_\_\_\_\_\_ the first non zero number are not significant | **0.01234 \_\_\_\_\_\_sig figs** |
| Zeros After the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are not significant unless they are followed by a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_or they are to the right of a decimal point | **123,400 \_\_\_\_\_\_sig figs****123,400. \_\_\_\_\_\_ sig figs****12.3400 \_\_\_\_\_\_ sig figs** |

**How many Significant Figures are there?**

|  |  |
| --- | --- |
| 1. **23.505 \_\_\_\_\_\_\_\_\_\_\_\_\_**
2. **620 \_\_\_\_\_\_\_\_\_\_\_\_\_**
3. **0.062 \_\_\_\_\_\_\_\_\_\_\_\_\_**
4. **620 \_\_\_\_\_\_\_\_\_\_\_\_\_**
 | 1. **2500 \_\_\_\_\_\_\_\_\_\_\_\_\_**
2. **2500. \_\_\_\_\_\_\_\_\_\_\_\_\_**
3. **250.0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_**
 |

**Addition and Subtraction**

The sum or difference of measurements should be rounded to the place value of the ­­­­\_\_\_\_\_\_\_\_\_\_\_\_ precise measurement. (The \_\_\_\_\_\_\_\_\_\_\_\_ number of decimal places)

 123.567 \_\_\_\_\_\_\_decimal places 987.654 \_\_\_\_\_\_\_\_\_ decimals places

 78.9 \_\_\_\_\_\_\_ decimal place - 32.10 \_\_\_\_\_\_\_\_\_\_decimals places

 63.25 \_\_\_\_\_\_\_decimal places 955.554

**Final Rounded Answer with Sig Figs**

 + 372.644 \_\_\_\_\_\_\_decimal places

**Final Rounded Answer with Sig Figs**

 638.361

**Multiplication and Division**

The product of quotient of measurement should have the ­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ number of significant figures as the least precise measurement.

 (You must count significant figures….­­­\_\_\_\_\_\_\_\_\_\_ decimal places)

 10.6 cm 825g / 1100 cm3 = .75 g/cm3

**Final Answer with Sig Figs**

 x 12.3 cm

130.38 cm2

**Final Answer with Sig Figs**

**Significant Figures in Scientific Notation**

When counting significant figures with scientific notation, all of the numbers in front of the x 10n are significant.

* 3 x103 \_\_\_\_\_\_\_ significant figures
* 3.0 x103 \_\_\_\_\_\_\_ significant figures
* 3.00 x103 \_\_\_\_\_\_\_ significant figures