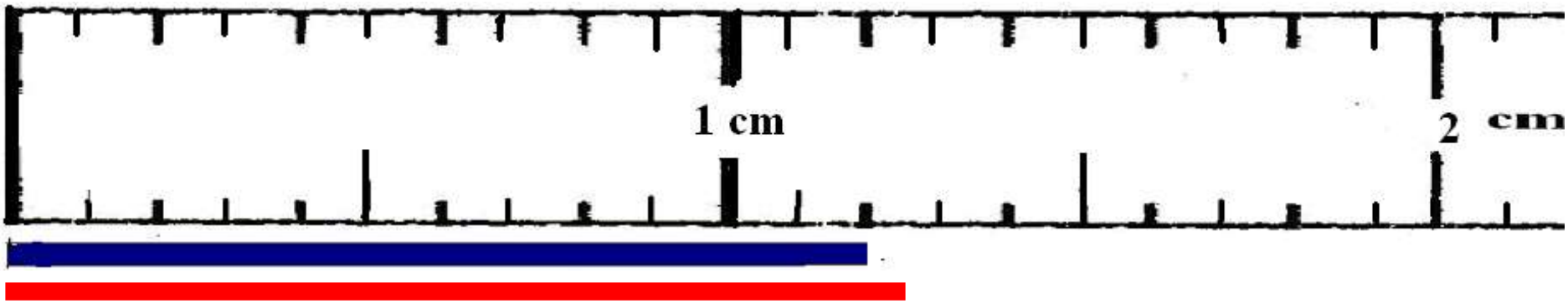
Bell Work, August 26– 29, 2013

Significant Figures, Mass and Change

Bell Work, Monday, Aug 26

1. Record the length of the blue line and the red line in millimeters (mm) using one uncertain digit.
2. Underline the digits with certainty (certain digits).
3. What are significant figures?
4. How many significant figures are in the measurements? Why?



1. Blue: 12.0 mm Red: 12.5 mm

Bell Work, Monday, Aug 26

2. (first 2 digits are underlined)

3. Significant figures in a measurement consist of all the digits known with certainty plus one final digit, which is uncertain or is estimated.

4. Three significant figures.

All figures are significant except zeros in front of a non-zero digit.

Example: 0.00300 has 3 significant figures.

The leading zeros are never significant. They are placeholders.

Bell Work, Tuesday, Aug 27

1. **How many significant figures are there in 0.092010500**

2. **How many significant figures are there in 9,200,000**

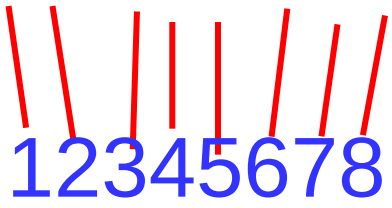
3. **How many significant figures are there in 9002.00**

4. **How many significant figures are in $1.09000 \times 10^{3?}$**

5. **What is matter?**

Bell Work Answers, Tuesday, Aug 27

1. 0.092010500



Leading zeros are not significant.

8 significant figures

2. 9200000

Trailing zeros with no decimal are not significant.

2 significant figures

3. **9002.00** All zeros & digits are significant.

6 significant figures

Bell Work Answers, Tuesday, Aug 27

4. 1.09000×10^3 **is 6 sig figs**

All digits written in scientific notation are significant.

$1.09000 \times 10^3 = 1090.00$

5. Matter is anything that takes up space (volume) and has mass

Bell Work, Wednesday, Aug 28

1. Round off **0.092050500** to three significant figures.

2. Round off **0.092010499** to five significant figures.

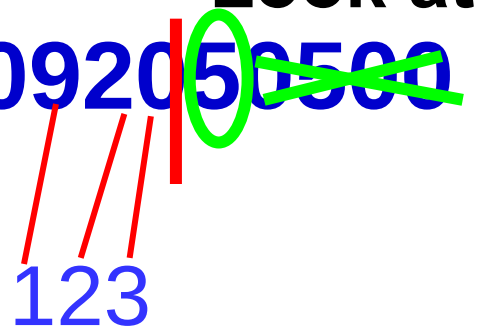
3. What is mass?

Bell Work Answers, Wednesday, Aug 28

Round off?

Look at only the "4th significant digit "

1. 0.092050500



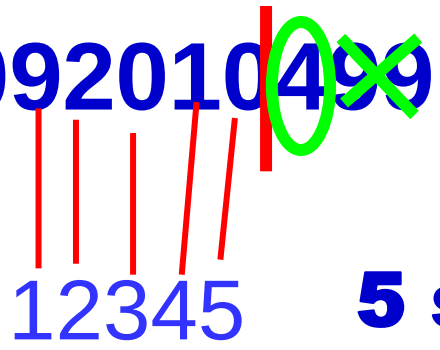
Round off rule: **>= 5, round up,**
otherwise, do not round.

3 sig. figs. (significant figures)

0.0921

Look at only the "6th significant digit "

2 0.092010499



5 sig. figs.

0.092010

Bell Work, Wednesday, Aug 28

- 3. What is mass?
- **Mass is a property of matter that we can <u>measure</u> to determine how much "stuff" we have.**
- **Mass is a property of an object that tells how much matter is present.**

Bell Work, Thursday, Aug 29

1. To two significant figures, the measurement 0.0255 g should be reported as

a. 0.02 g.
b. 0.025 g.
c. 0.026 g.
d. 2.5×10^2 g.

2. These mass values were recorded as the mass of products when a chemical reaction was carried out three separate times: 8.83 g; 8.84 g; 8.82 g. The mass of products from that reaction is 8.60 g. The values are

a. accurate, but not precise.
b. precise, but not accurate.
c. both accurate and precise.
d. neither accurate nor precise.

3.Identify the unit that would be most appropriate for expressing the mass of a car

a. Grams b. micrograms c. kilograms d. kiloliters