

Go to All in Learning and  
complete the bell-ringer.

Aug 28-7:24 AM

Learning Objectives: Students will be able to determine how many significant figures a number has and how to correctly round mathematical answers.

## Scientific Notation

\*Only one number to the left of the decimal.

\*Always end in  $\times 10^{\text{^}}$  (exponent)

\*Big numbers have positive exponent

\*Numbers less than 1 have negative exponent

If you move the decimal to the left, it will have a positive exponent.

If you move the decimal to the right, it will have a negative exponent.

Aug 28-7:48 AM

Put the following in Scientific Notation (try these before class, we will go over them in class)

34.342

0.00202

3,430,000

230,000

11.424

0.0003

0.00342

50,043

123.456

Aug 28-7:53 AM

### Importance of Significant Figures

\*in measurements

\*consistency

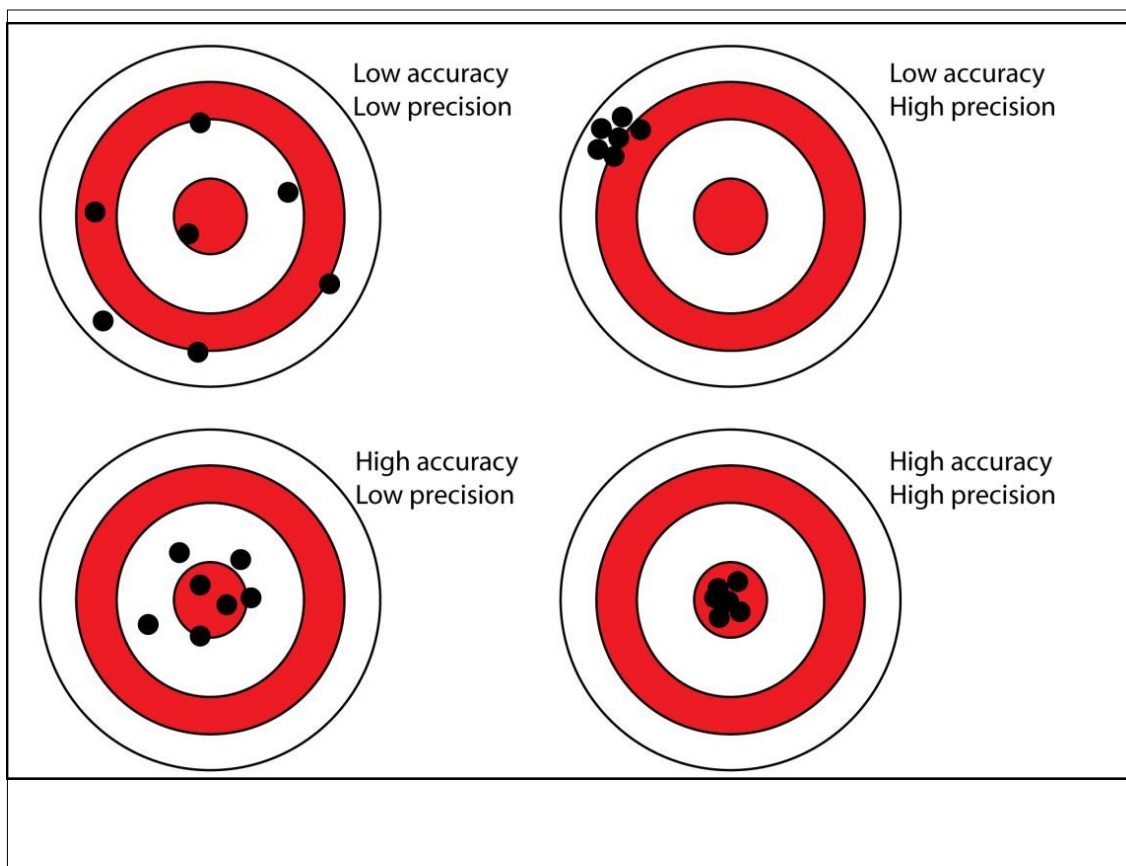
\*does not over inflate accuracy or precision

### Precision vs Accuracy

Precision is how good you are

Accuracy is how good the equipment is

Aug 28-8:05 AM



Aug 28-8:10 AM

## Rules for significant figures

1) all non-zeros are significant

2423.21 has 6 sig figs

2) all counting numbers infinitely significant

12 people has 2 sig figs. 100 computers has 3 sig figs

3) all conversion factors are infinitely significant

12 inches per foot and 100 cm per meter have infinite sig figs

4) any number between significant figures is significant

3005 has 4 sig figs because the 3 and 5 are non-zeros and the zeros are significant because they are between sig figs.

5) zeros that act as place holders are NOT significant

0.004 only has 1 sig fig. 2500 has only one sig fig.

6) all numbers before the  $\times 10^{\text{exp}}$  are significant in scientific notation

$3.36 \times 10^{-12}$  and  $1.00 \times 10^3$  both have 3 sig figs

7) Zeros at the end of a whole number if it is followed by a decimal.

2500 has 2 sig figs, but 2500. has 4 sig figs.

Aug 28-8:00 AM

## Covering up zeros and "extra effort"

If you cover up a zero and the value changes, then it is not significant.

If you cover up a zero and the value does NOT change, it is significant.

Aug 28-8:13 AM

How many sig figs do each of the following have?

342.023

 $3.230 \times 10^{-3}$ 

43000

0.000432

320.030

0.00321

14.0345

5000

3200.2

0.00330

320

20.0001

Aug 28-8:11 AM

### How to round:

Determine how many sig figs you are keeping, look at the number after the one you are keeping and round up if it is  $>5$ , round down if it is  $<5$ .

If the next number is  $=5$  and there are any numbers after the 5, round up, otherwise round even.

Consider the number: 46,355

Rounded to 1 sig fig 50,000

Rounded to 2 sig figs 46,000

Rounded to 3 sig figs 46,400

Rounded to 4 sig figs 46,360

### Rules for Multiplying and Dividing with Sig Figs

- 1) Determine how many sig figs each number in the calculation has.
- 2) Multiply/Divide the numbers
- 3) Round the answer to the least number of sig figs

Rules for adding/subtracting with sig figs

1) Make sure all numbers are in the same unit of measurement.

2) Add or Subtract

4) Round the answer to the least number of decimal places

\*note - you can gain or lose sig figs when adding or subtracting

Aug 28-8:20 AM

Complete the assignment on Significant Figures in Google Classroom.