Class Notes: Significant Figures

Significant Figures (Sig Figs): all the digits in a number that are known, plus a last digit that is estimated

Ex. 0.534 (the 4 is estimated)

*cannot claim accuracy that was greater than what was achieved

Rules:

1.Non zeros count

(Ex. 24.7 , 0.743 , 714 - all have 3 sig figs)

2. Zeros in front never count as SF (but must be calculated)

(Ex. 0.0071 , 0.000099 - both have 2 sig figs)

3. Zeros in middle always count

(Ex. 7003 , 1.503 , 40.79 – all have 4 sig figs)

4. Zeros at end: Count with decimal point

(Ex. 43.00 , 1.010 - both have 4 sig figs)

5. Zeros at end: Do not count without decimal point

(Ex. 300 - 1 sig fig, 27210 - 4 sig figs)

6. Only the numbers in the coefficient of a number written in scientific notation are significant

(Ex. $1.030 \times 10^3 = 1030$ - has 4 sig figs)

Class Notes: Sig Figs in Calculations

Sig Figs in Calculations: cannot be more accurate than least accurate data point

*Answers should be rounded off

Choose the last number you want to keep:

-if next digit is 0 – 4, drop remaining numbers

-if next digit is 5 – 9, round up

Addition/Subtraction: round off to the left most estimated place in the data

*(use decimal place)

Ex. 1.1 + 1.11 = 2.2

Ex. 100.1 + 1.11 = 101.2 (1.012×10^2)

Multiply/Divide: Answer cannot have more Sig Figs than least number of Sig Figs in any data

-Decimal places are irrelevant

Ex. $2 \times 1111 = 2000$ (2×10^3)

Ex. $1.0 \times 1234 = 1200$ (1.2×10^3)