

## Section 3.1

Scientific Notation

Ex: 3,453,000,000

$3.453 \times 10^9$

Ex: .000050

$5.0 \times 10^{-5}$

Accuracy + Precision



Hit what you  
are aiming @



hit the same  
place every time

$$\% \text{ Error} = \frac{\text{Difference}}{\text{accepted Value}} \times 100$$

Ex: Start w/ 10g NaCl before  
mixing w/ sand. After distillation we  
end up w/ 8.5g NaCl. Find the % error

$$\% \text{ Error} = \frac{10 - 8.5}{10} \times 100 = 15\%$$

Significant Figures

Rules

- 1) Every nonzero digit is significant
  - 2) Zeros between nonzero digits are significant. Ex: 2035 4 sig figs
  - 3) Zeros left of non zeros are NOT significant. Ex: .0004  
Trailing 4 sig figs
  - 4) Zeros Rt of a decimal pt are significant. Ex: 3.00  $\rightarrow$  3 sig figs
  - 5) Zeros to the right are not 300 1 sig fig
- \*In scientific notation all recorded digits are significant. Ex:  $3.14 \times 10^2$  3 sig figs

Adding and Subtracting Sig Figs

Round to least # of Decimal places

Ex: 3.21

7.1  
+ 1.123  

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11.433

11.4

Multiplying + Dividing Sig Figs

Round to least # of Sig Figs

Ex: (3.21)(10.5432) = 33.843672

3 sig figs 6 sig figs

33.8

