

## Scientific Notation

- \* Scientific notation is used to express very large or very small numbers easily by using powers of 10.
- \* The general form is  $m \times 10^n$  where  $m$  is between 1 and 10 and  $n$  is an integer.
- \* To convert between standard form (regular number) and scientific notation, multiply or divide by 10 repeatedly.
- \* All numbers must fall between 1 and 9 when using Scientific Notation

Feb 5-8:37 PM

- Example 1:
  - › Write the following numbers to 2 significant digits:  
1903847585950382.  $1.9 \times 10^{15}$
- Example 2:
  - › Write the following numbers to 3 significant digits:  
32478003456.  $3.25 \times 10^{10}$
- Example 3:
  - › Write the following numbers to 4 significant digits:  
345600.  $3.456 \times 10^5$

Feb 5-8:36 PM

- Example 1:

- Write the following numbers to 2 significant digits:  
• 0.0000093

$$\underline{\underline{9.3}} \times 10^{-6}$$

- Example 2:

- Write the following numbers to 3 significant digits:  
• 0.000067589

$$\underline{\underline{6.76}} \times 10^{-5}$$

Feb 5-8:36 PM

Write in scientific notation - Can use all SDs.

$$1) \underline{\underline{224700}} \quad 2.247 \times 10^5$$

$$2) \underline{\underline{92.741}} \quad 9.2741 \times 10^1$$

$$3) \underline{\underline{0.0003417}} \quad 3.417 \times 10^{-4}$$

$$4) \underline{\underline{-12887}} \quad -1.2887 \times 10^4$$

$$5) \underline{\underline{-0.123}} \quad -1.23 \times 10^{-1}$$

Feb 5-8:36 PM

Write in standard form

1)  $9.5407 \times 10^6$  9540700

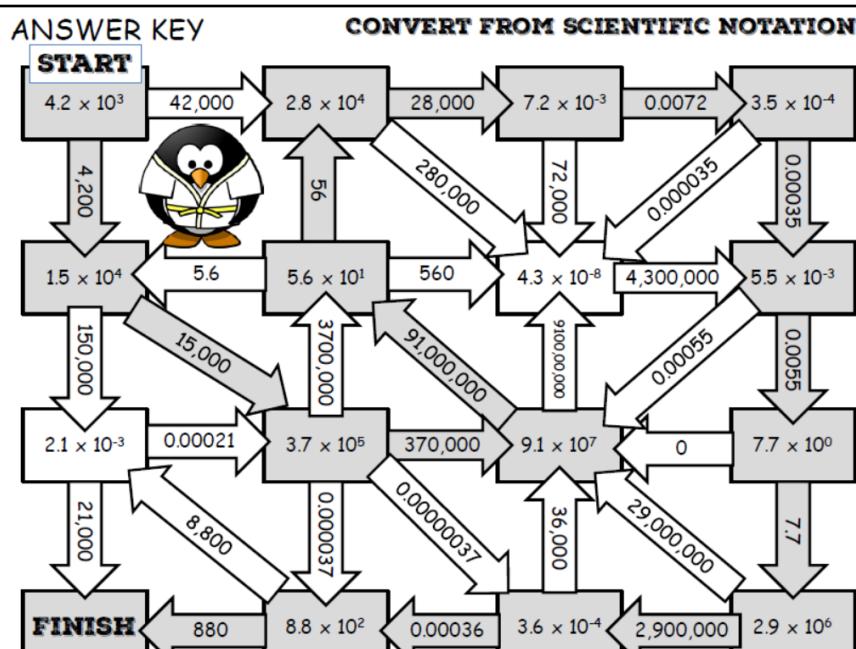
2)  $6.78 \times 10^5$  678000

3)  $-7.55 \times 10^9$  -7550000000

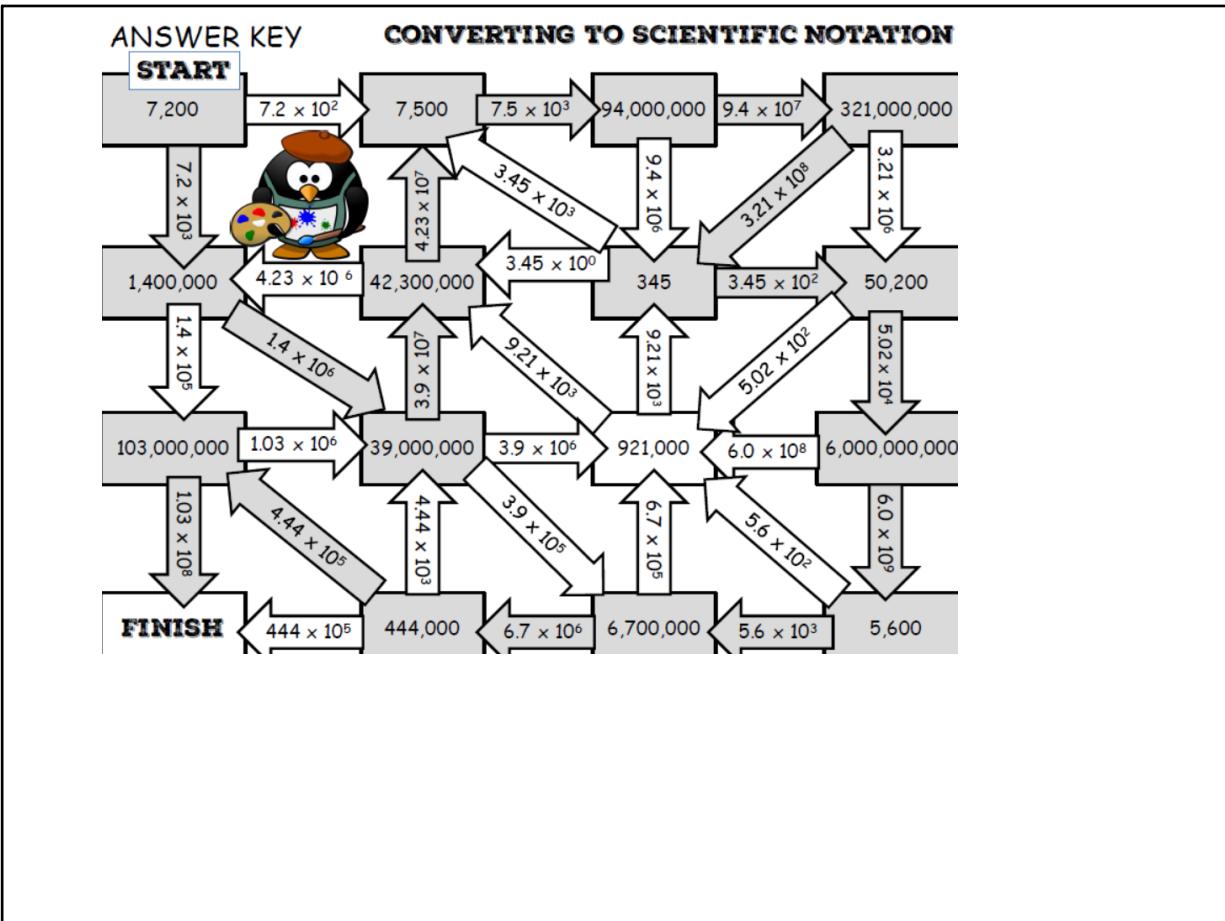
4)  $1.9257 \times 10^{-3}$  0.0019257

5)  $-3.38 \times 10^{-2}$  -0.0338

Feb 5-8:36 PM



Mar 3-3:26 PM



Mar 3-3:26 PM

## Converting Measurements

Conversions you need to know:

$$60 \text{ s} = 1 \text{ min}$$

Conversion Factors

$$\frac{60\text{s}}{1\text{min}} \quad \frac{1\text{min}}{60\text{sec}}$$

$$60 \text{ min} = 1 \text{ h}$$

$$\frac{60\text{min}}{1\text{h}} \quad \frac{1\text{h}}{60\text{min}}$$

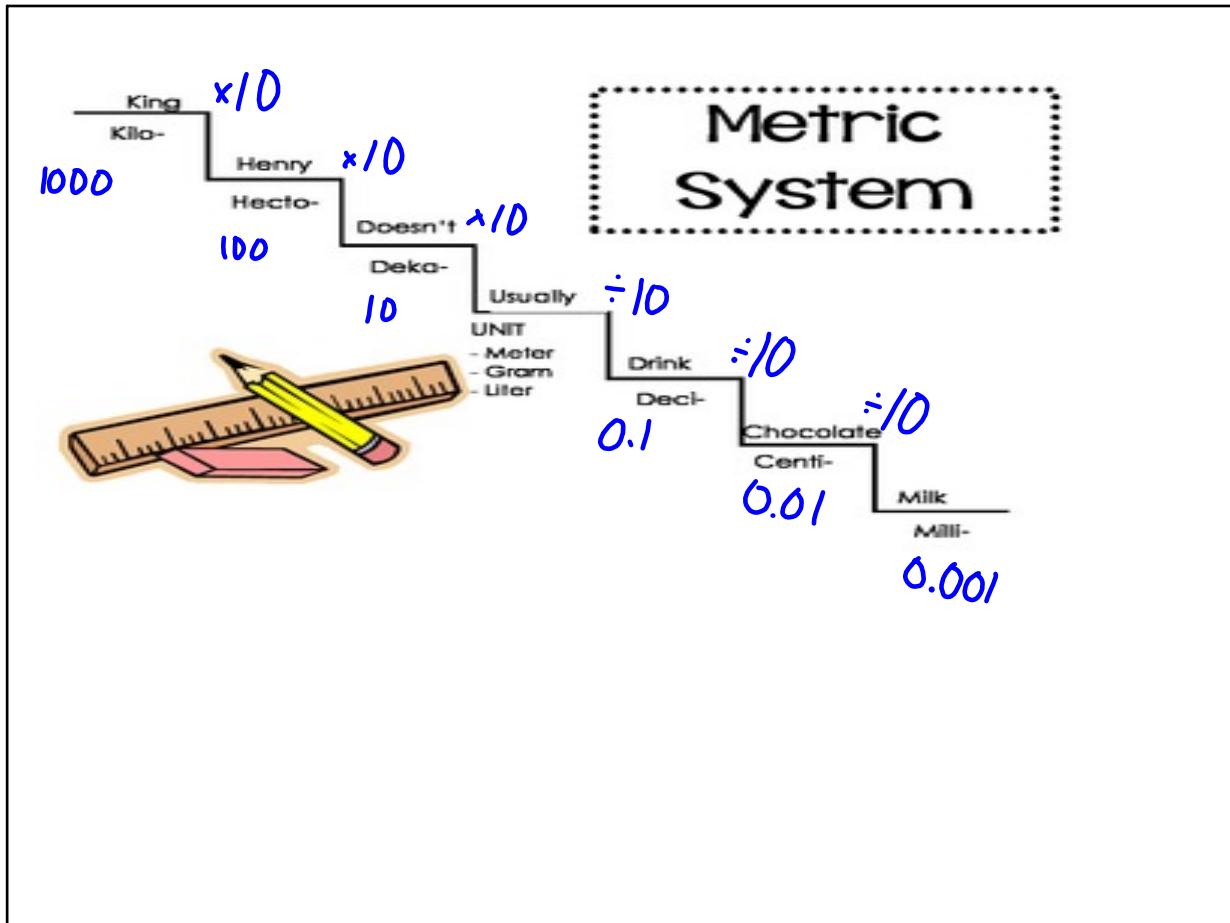
$$1000 \text{ m} = 1 \text{ km}$$

$$\frac{1000\text{m}}{1\text{km}} \quad \frac{1\text{km}}{1000\text{m}}$$

$$100 \text{ cm} = 1 \text{ m}$$

$$\frac{100\text{cm}}{1\text{m}} \quad \frac{1\text{m}}{100\text{cm}}$$

Feb 5-8:37 PM



Feb 5-9:08 PM

**Basic Conversion Practice**

We will use fractions to figure out unit conversions.

Example: 1.42 hours = 85.2 minutes

8.6 kg = 8600 g

$$1.42 \cancel{\text{h}} \times \frac{60 \text{ min}}{1 \cancel{\text{h}}} = 85.2 \text{ min}$$

$$8.6 \cancel{\text{kg}} \times \frac{1000 \text{ g}}{1 \cancel{\text{kg}}} = 8600 \text{ g}$$

Feb 5-8:37 PM

- 1) How many hours is 20.5 minutes?

$$20.5 \cancel{\text{min}} \times \frac{1 \text{ h}}{60 \cancel{\text{min}}} = 0.341666667 \text{ h}$$

- 2) How many m/s is 5km/h?

$$\cancel{\frac{5 \text{ km}}{\text{h}}} \times \frac{1 \text{ h}}{60 \cancel{\text{min}}} \times \frac{1 \cancel{\text{min}}}{60 \cancel{\text{s}}} \times \frac{1000 \cancel{\text{m}}}{1 \cancel{\text{km}}} = 1.38 \text{ m/s}$$

Feb 5-9:08 PM

1 km = <u>1000</u> m	1 m = <u>0.001</u> km
1 min = <u>60</u> s	1 h = <u>3600</u> s
1 Kg = <u>1000</u> g	1 g = <u>0.001</u> Kg
1.2 h = <u>72</u> min	4.3 min = <u>258</u> s
1117 s = <u>0.31</u> h	79.92 g = <u>0.07992</u> Kg

Feb 5-9:08 PM

Converting m/s to Km/h

Examples:

$$25.6 \text{ Km/h} = \underline{71} \text{ m/s}$$

$$147 \text{ m/s} = \underline{52.2} \text{ Km/h}$$

Feb 5-9:08 PM

Mar 3-10:45 PM