

## MATH HANDBOOK TRANSPARENCY WORKSHEET

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## Scientific Notation

Use with Appendix B,  
Scientific Notation

1. Express each of the following numbers in scientific notation.

a. 230

$$2.3 \times 10^2$$

b. 5601

$$5.601 \times 10^3$$

c. 14 100 000

$$1.41 \times 10^7$$

d. 56 million

$$= 56\,000\,000 = 5.6 \times 10^7$$

e. 2/10

$$= 0.2 = 2 \times 10^{-1}$$

f. 0.450 13

$$4.5013 \times 10^{-1}$$

g. 0.089

$$8.9 \times 10^{-2}$$

h. 0.000 26

$$2.6 \times 10^{-4}$$

i. 0.000 000 698

$$6.98 \times 10^{-7}$$

j. 12 thousandth

$$= \frac{12}{1000} = 0.012 = 1.2 \times 10^{-2}$$

2. Express each of the following measurements in scientific notation.

a. speed of light in a vacuum, 299 792 458 m/s

$$2.99792458 \times 10^8 \text{ m/s}$$

b. number of seconds in a day, 86 400 s

$$8.6400 \times 10^4 \text{ s}$$

c. mean radius of Earth, 6378 km

$$6.378 \times 10^3 \text{ km}$$

d. density of oxygen gas at 0°C and pressure of 101 kPa, 0.001 42 g/mL

$$1.42 \times 10^{-3} \text{ g/mL}$$

e. radius of an argon atom, 0.000 000 000 098 m

$$9.8 \times 10^{-11} \text{ m}$$

## Chemistry: Scientific Notation

**Part A:** Express each of the following in standard form.

1.  $5.2 \times 10^3$  5200

5.  $3.6 \times 10^1$  36

2.  $9.65 \times 10^{-4}$  0.000965

6.  $6.452 \times 10^2$  645.2

3.  $8.5 \times 10^{-2}$  0.085

7.  $8.77 \times 10^{-1}$  0.877

4.  $2.71 \times 10^4$   
27100

8.  $6.4 \times 10^{-3}$  0.0064

**Part B:** Express each of the following in scientific notation.

1. 78,000  $7.8 \times 10^4$

5. 16  $1.6 \times 10^1$

2. 0.00053  $5.3 \times 10^{-4}$

6. 0.0043  $4.3 \times 10^{-3}$

3. 250  $2.50 \times 10^2$

7. 0.875  $8.75 \times 10^{-1}$

4. 2,687  $2.687 \times 10^3$

8. 0.012654  $1.2654 \times 10^{-2}$

**Part C:** Use the exponent function on your calculator (EE or EXP) to compute the following.

1.  $(6.02 \times 10^{23})(8.65 \times 10^4)$   
 $5.21 \times 10^{28}$

8.  $\frac{(5.4 \times 10^4)(2.2 \times 10^7)}{4.5 \times 10^5}$   $2.6 \times 10^6$

2.  $(6.02 \times 10^{23})(9.63 \times 10^{-2})$   
 $5.80 \times 10^{22}$

9.  $\frac{(6.02 \times 10^{23})(-1.42 \times 10^{-15})}{6.54 \times 10^{-6}}$   $-1.31 \times 10^{14}$

3.  $\frac{5.6 \times 10^{-18}}{8.9 \times 10^8}$   $6.3 \times 10^{-27}$

10.  $\frac{(6.02 \times 10^{23})(-5.11 \times 10^{-27})}{-8.23 \times 10^5}$   $3.74 \times 10^{-9}$

4.  $(-4.12 \times 10^{-4})(7.33 \times 10^{12})$   
 $-3.02 \times 10^9$

11.  $\frac{(3.1 \times 10^{14})(4.4 \times 10^{-12})}{-6.6 \times 10^{-14}}$   $-2.1 \times 10^{16}$

5.  $\frac{1.0 \times 10^{-14}}{4.2 \times 10^{-6}}$   $2.4 \times 10^{-9}$

12.  $\frac{(8.2 \times 10^{-3})(-7.9 \times 10^7)}{7.3 \times 10^{-18}}$   $-8.9 \times 10^{20}$

6.  $\frac{7.85 \times 10^{26}}{6.02 \times 10^{23}}$   $1.3 \times 10^3$

13.  $\frac{(-1.6 \times 10^5)(-2.4 \times 10^{15})}{8.9 \times 10^3}$   $4.3 \times 10^{16}$

7.  $(-3.2 \times 10^{-7})(-8.6 \times 10^{-9})$   
 $2.8 \times 10^{-15}$

14.  $(7.0 \times 10^{28})(-3.2 \times 10^{-20})(-6.4 \times 10^{35})$   
 $1.4 \times 10^{45}$