

Chem 100

In-class worksheet

Working with scientific notation

1. Write the following in scientific notation:

10,000

1×10^4

450.01

4.5001×10^2

8,000,001

8.000001×10^6

0.0001001

1.001×10^{-4}

0.4569

4.569×10^{-1}

10

10^1

120

1.20×10^2

0.0202

2.0202×10^{-2}

2. Convert this scientific notation to the conventional decimal format.

 5.0×10^{-3}

0.005

 8.25×10^6

$8,250,000$

 $1.4 \times 10^2 \times 10^{-2}$ 140×10^{-2}

1.4

 88×10^4

$= 8.8 \times 10^5$

880000

3. Without using a calculator, solve the following problems:

$$\frac{10^6 \times 10^5}{10^{-3}} = \frac{10^{11}}{10^{-3}} = 10^{14}$$

$$\frac{10^4}{(10^2 \times 10^{-3})} = \frac{10^4}{10^{-1}} = 10^5$$

$$\frac{(1 \times 10^6)(1 \times 10^{-7})}{0.1} = \frac{10^{-1}}{10^{-1}} = 1$$

$$\frac{(0.01)(10^4)(10^{-12})}{10^{-6}} + 10^2 = \frac{10^{-10}}{10^{-6}} + 10^2$$

$$10^{-4} + 10^2 = 100.0001$$

$$\frac{10^2 + 10^3}{10^3} = 10^{-1} + 1 = 1.1$$

4. Go back and do problem 3 using your calculators. Do you get the same answers?