Math Review for CHEM 3

Chemistry uses mathematics as a language to express quantitative relationships between measurable, physical quantities. The questions below involve prerequisite mathematics that will be necessary to solving common problems encountered in chemistry. **Try your best to work through these problems WITHOUT the use of a calculator. SHOW YOUR WORK.**

Exponents:

Simplify the expressions below.

1) $10^2 \cdot 10^5 =$

2) $10^{-3} \cdot 10^5 =$

3) $10^{-2} \cdot 10^{-4} =$

4) $(10^3)^4 =$

5) $(10^{-2})^4 =$

6) $\frac{10^3}{10^5} =$

7) $\frac{10^2}{10^{-8}} =$

8) $\frac{(10^3)^{-3}}{10^{-6}} =$

9) $\frac{10^9}{10^{-2} \cdot 10^5} \cdot \frac{10^{-7}}{(100^3)} =$

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

Scientific Notation:

1) $(5.7 \times 10^{-25}) - (1.3 \times 10^{-25}) =$

2) $(4.0 \times 10^2) + (3.00 \times 10^3) =$

3) $(2.80 \times 10^{-2}) - (1.0 \times 10^{-3}) =$

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Algebra:

Solve for x.

Hint: Sometimes it may be helpful to express quantities in scientific notation and then simplify.

1) $50x = 5000$

2) $3x + 25 = 55$

3) $3 \times (2x) = 30$

4) $4 \times (2x - 100) = 800$

5) $\frac{x}{5} = \frac{2500}{25}$

6) $200 = \frac{10}{x}$

7) $\frac{400}{20} = \frac{80}{x}$

8) $10 = \frac{200}{(x+10)}$

9) $400 = x^2$

10) $1003 = x^3 + 3$

11) $\frac{(x+3)}{5} = \frac{30}{0.15}$

12) $\frac{600}{(2x+16)} = \frac{200}{10}$