Unit 5.1 Exponents

1. Simplify the following exponential expressions with positive exponents only

a. $8^3 \times 8^0 =$ _____

b. $3^2 \times 3 =$ _____

c. $3^{-1} =$ _____

d. $5^{-2} =$ _____

e. $(-2)^4 \times (-2)^0 =$ _____

f. $3(2^{-3}) =$ _____

g. $x^2 \cdot x^3 =$ _____

h. $2x^{-1} =$ _____

i. $\frac{10^3}{10^4} =$ _____

j. $\frac{x^{-2}}{x^2} =$ _____

k. $3y \cdot y^4 =$ _____

l. $(4x^3)(9x^1) =$ _____

m. $\frac{-10x^5}{2x} =$ _____

n. $\frac{10^4 \cdot 10^3}{10^{-2}} =$ _____

o. $(-3xy)(-5x^2y^{-3}) =$ _____

p. $\frac{-8x^2y^4}{4x^3y^2} =$ _____

2. Use the rules for raising exponents to a power to simplify the expressions with positive exponents only

a. $4(-3x^2)^3 =$ _____

b. $5(x^2y^{-1}) =$ _____

c. $-2(3x^5y^{-2})^{-3} =$ _____

d. $\left(\frac{-4x}{y^2}\right)^2 =$ _____

e. $\left(\frac{-7^2x^2y}{y^3}\right)^{-1} =$ _____

f. $\left(\frac{3xy^3}{4x^2y^{-3}}\right)^{-1}\left(\frac{2x^3y^{-1}}{9x^{-3}y^{-1}}\right)^2 =$ _____

3. Perform the indicated operation and write each of the resulting numbers in scientific notation

   a. $0.0003 \times 0.0000025 =$ _____

   b. $300 \times 0.00015 =$ _____

   c. $\frac{3900}{0.003} =$ _____

   d. $\frac{0.005 \times 650 \times 3.3}{0.0011 \times 2500} =$ _____