8.4: Use Scientific Notation

Goals: *Read and Write numbers in scientific notation
*Order numbers written in scientific notation
*Multiply and Divide numbers written in scientific notation

Standard Form:

Scientific Notation:

If the power of ten is positive, it tells you:

If the power of ten is negative, it tells you:

Write the following numbers in scientific notation:

Ex: 42,590,000 = _____ X $10^{?}$

Ex: 0.0000574 = _____ X $10^{?}$

Ex: 539,000 = _____

Ex: 267,500,000 = _____

Ex: 0.000486 = _____

Write the following numbers in standard form:

Ex: $2.0075 \times 10^{6} =$ _____

Ex: $1.685 \times 10^{-4} =$ _____

Ex: $7.0235 \times 10^{5} =$ _____

Ex: $3.096 \times 10^{-7} =$ _____

Ex: $4.5 \times 10^{-4} =$ _____

Order numbers in scientific notation:

Ex: Order 103,400,000; 7.8×10^{8}; 80,760,000 from least to greatest.

Ex: Order 93,000,000; 9.2×10^{6}; 9,028,000 from least to greatest.

Multiply or divide numbers in scientific notation:

Ex: $(8.5 \times 10^{2})(1.7 \times 10^{6})$

Ex: $(1.5 \times 10^{-3})^{2}$

Ex: $(5.7 \times 10^{3})(2.6 \times 10^{4})$

Ex: $(2.4 \times 10^{-4})^{2}$

Ex: $(1.3 \times 10^{-5})^2$

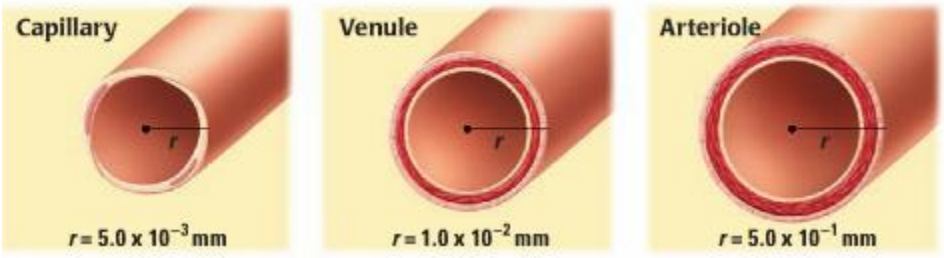
Ex: $(1.1 \times 10^{7})(4.2 \times 10^{2})$

Ex: $\frac{1.2\times10^{4}}{1.6\times10^{-3}}$

Ex: $\frac{4.5\times10^{5}}{1.5\times10^{-2}}$

Ex: $\frac{2.4\times10^{5}}{2.5\times10^{-4}}$

Ex: Blood flow is partially controlled by the cross-sectional area of the blood vessel through which the blood is traveling. Three types of blood vessels are venules, capillaries and arterioles.



a) Let r_1 be the radius of a venule, and let r_2 be the radius of a capillary. Find the ratio of r_1 to r_2. What does the ratio tell you?

b) Let A_1 be the cross-sectional area of a venule and A_2 be the cross-sectional area of a capillary. Find the ration of A_1 to A_2. What does the ratio tell you?