Name: _____

Solve the following problems **without a calculator**. You _MUST_ show your work. *NO WORK = NO CREDIT.*

1. Write the number in scientific notation. a) 0.0007 b) 32,000000 c) 0.00014	2. The distance from Earth to the Moon is 238,900 miles. What is the distance expressed in scientific notation?

3. Write the number in standard form.
 	
a) 2.06×10^6
 	
b) 5×10^{-3}
 	
c) 4.62×10^7
	4. Which number is written correctly in scientific notation?
	
	  a. 0.76×10^3
	
	  b. 28×10^{-4}
	
	  c. 1.4×10^{-6}
	
	  d. 36.2×10^3

Solve the following problems **without a calculator**. You _MUST_ show your work. *NO WORK = NO CREDIT.*

1. Write the number in standard notation. a) 1.41×10^6 b) 5.5×10^{-3} c) 2.09×10^4	2. Grandfather Mountain has an elevation of about 5.945×10^3 meters. Kitty Hawk, North Carolina has an elevation of about 2.0 meters. About how many times greater is the elevation of Mount Everest than the elevation of Kitty Hawk?

3. A scientist uses 2.8×10^{12} cells in one experiment. She uses two times that many cells in a second experiment. How many cells did the scientist use? Write your answer in scientific notation.	4. Simplify in exponential form.
	
	  a) $\dfrac{5 \cdot 4^2 \cdot 5^9}{4^3 \cdot 5^9 \cdot 5^4}$
	
	  b) $(2^2 \times 3^4)^2 (3^5)$

Solve the following problems **without a calculator**. You *MUST* show your work. ***NO WORK = NO CREDIT.***

1. Simplify in scientific notation.	2. Simplify in exponential form.
a) $(4.7 \times 10^6)(2.9 \times 10^8)$ b) $(1.5 \times 10^5)(3.46 \times 10^{12})$	$$\frac{4^2 \cdot 3^7 \cdot 4^8}{3^6 \cdot 4^2 \cdot 3^2}$$
3. Which number is written correctly in scientific notation? e. 5.4×10^6 f. 0.98×10^4 g. 10×10^{-4} h. 12.4×10^{-3}	4. A light year is defined as the distance light travels in one year. One light year is 9.46×10^{12} kilometers. A galaxy is about 150,000 light years wide. About how many kilometers wide is the galaxy?

Solve the following problems **without a calculator**. You *MUST* show your work. ***NO WORK = NO CREDIT.***

1. The population of Virginia is about 8.3×10^6. The population of Australia is about 2.4×10^7. Approximately how many times larger is the population of Australia than Virginia?	2. A glass marble factory produces 4.5×10^4 marbles in 1,800 minutes. What is the factory's unit rate of production in marbles per minute? Write the answer in scientific notation.
3. Evaluate. $$\frac{(5.6 \times 10^6) \times 340{,}000}{2 \times 10^3}$$	4. Simplify in scientific notation. $$\frac{6 \times 10^{x+y}}{3 \times 10^x}$$