APES BASIC MATH SKILLS

Perform the following calculations WITHOUT a calculator! These problems have been set up with numbers that multiply and divide evenly to produce whole number answers, just like you would find on a typical APES exam.

1. 14000 millimeters = ? meters   _____

2. 6544 liters = ? milliliters   _____

3. 0.078 kilometers = ? meters   _____

4. 17 grams = ? kilograms   _____

5. Expand the following:

   a. 2.96×10^{7}

   b. 6.02×10^{-3}

   c. 6.67×10^{-11}

   d. 9.8×10^{5}

6. Put the following in scientific notation:
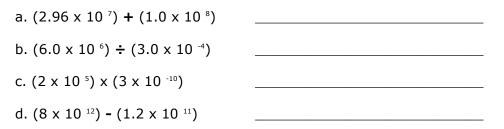
   a. 0.025

   b. 1150000

   c. 0.0000550

   d. 6070

7. Perform the following calculations without a calculator and write the answers in scientific notation:

   a. $(2.96 \times 10^{7}) + (1.0 \times 10^{7})$ _____

   b. $(6.0 \times 10^{6}) \div (3.0 \times 10^{4})$ _____

   c. $(2 \times 10^{5}) \times (3 \times 10^{10})$ _____

   d. $(8 \times 10^{12}) - (1.2 \times 10^{12})$ _____

8. Perform the following calculations without a calculator and write the answers in scientific notation:

   a. $(2.96 \times 10^{7}) + (1.0 \times 10^{8})$ _____

   b. $(6.0 \times 10^{6}) \div (3.0 \times 10^{-4})$ _____

   c. $(2 \times 10^{5}) \times (3 \times 10^{-10})$ _____

   d. $(8 \times 10^{12}) - (1.2 \times 10^{11})$ _____

9. Perform the following calculations without a calculator (but show some work) and write the answers in scientific notation:

      a. $(2.96 \times 10^{7}) \div (3.7 \times 10^{8})$ _____

      b. $(6.8 \times 10^{6}) \div (1.7 \times 10^{-4})$ _____

      c. $(2.1 \times 10^{5}) \times (3.1 \times 10^{10})$ _____

      d. $(9.6 \times 10^{12}) \div 160{,}000$ _____

Work space:

Show ALL work for these problems below:

10.   What is 45% of 1800?

11. A gas engine is 6% efficient. What portion of a full 21 gallon tank of gas is wasted?

12. The Greenland Ice Sheet contains 2,850,000 cubic kilometers of ice. It is melting at a rate of .006% per year. How many cubic kilometers are lost each year?

13. In a small oak tree, the biomass of insects makes up 3000 kilograms. This is 4% of the total biomass of the tree. What is the total biomass of the tree?