QUIZ: USING NUMBERS

1. When writing a number in scientific notation, place how many digits to the left of the decimal?
   A) 0 B) 1 C) 2 D) Any number.

2. When a number is written in scientific notation,
   A) a number > 1 has a positive exponent.
   B) a number < 1 has a positive exponent.
   C) a number > 1 has a negative exponent.
   D) a number < one has an exponent that is also smaller than one.
   E) None of these answers are correct!

3. What does a negative exponent in scientific notation indicate?
   A) The number is negative.
   B) The number is larger than one.
   C) The number is less than one.
   D) The number is positive and negative simutaneously.
   E) Nothing. It literally does not mean anything.

4. Rewrite using scientific notation: the Stefan-Boltzman constant: 0.0000000567 ($W/m^2 \cdot K^4$)
   A) 5.67×10^{7} ($W/m^2 \cdot K^4$)
   B) 5.67×10^{8} ($W/m^2 \cdot K^4$)
   C) 5.67×10^{-7} ($W/m^2 \cdot K^4$)
   D) 5.67×10^{-8} ($W/m^2 \cdot K^4$)

5. Rewrite using scientific notation: the Coulomb force constant: 8,988,000,000 ($N \cdot m^2/C^2$)
   A) 8.988×10^{6} ($N \cdot m^2/C^2$)
   B) 8.988×10^{9} ($N \cdot m^2/C^2$)
   C) 8.988×10^{-6} ($N \cdot m^2/C^2$)
   D) 8.988×10^{-9} ($N \cdot m^2/C^2$)

6. Multiply: $(3.8 \times 10^{-4}) \cdot (5.2 \times 10^{10})$
   A) 1.98×10^{6}
   B) 1.98×10^{7}
   C) 1.98×10^{14}
   D) 7.56×10^{-6}
   E) 7.31×10^{-14}

7. Divide: $(4.6 \times 10^{-5}) \div (1.7 \times 10^{4})$
   A) 2.71×10^{-9} B) 2.71×10^{-1} C) 7.82×10^{-9} D) 7.82×10^{-1} E) 7.82×10^{9}

8. There are a million (10^6) books in the UCA library. If a person reads three books a week, how long would it take him or her to read the whole library?
   A) About 64 days, which could be done over summer vacation.
   B) About 64 months. A little over 5 years. This is about how much reading a typical undergraduate does before graduation.
   C) About 64 years, or a lifetime. You would not get anything else done, but you would have read the books!
   D) About 6400 years, which would be impossible.

9. A 12oz bag of chocolate chips typically makes about 4 dozen 2½-inch cookies. *About* how many chips are in the bag?
   A) 5,000 chips
   B) 500 chips
   C) 50 chips
   D) 5 chips
   E) None. I ate them all before I could make any cookies.

10. True or false: Using units of inches is more precise than using units of centimeters to make a measurement.

11. True or false: Using units of inches is more accurate than using units of centimeters.

12. Precision relates to
    A) the measuring instrument. The smaller the unit of measurement, the more precise the tool is.
    B) the measurer. The more carefully a person uses the tool, the more precise the measurement.

13. Accuracy relates to
    A) the measuring instrument. The smaller the unit of measurement, the more accurate the tool is.
    B) the measurer. The more carefully a person uses the tool, the more accurate the measurement.

14. True or false: Replacing a measuring tool with a more precise one will automatically improve the accuracy of your measurements.

15. Your estimates in centimeters may be less accurate than your estimates in inches because
    A) inches are simply a much more accurate system of units to use than centimeters.
    B) estimates are inherently inconsistent. You can't ever expect to be able to estimate anything accurately.
    C) you are more used to using inches, and therefore have a better idea of the size of the unit.

16. You estimated the length of your chapstick to be 6cm. When you measured it, you found it to be 6.5cm long. What is the percent error in your estimate?
    A) 0.077% B) 0.083% C) 7.7% D) 8.3%