Mathletes Problem of the Week #18

Factorial Factory

x!

This week, we will explore factorials. A factorial is the product of a whole number and all the whole numbers below it, and is written using the exclamation point. For example, 4! is equal to 4 x 3 x 2 x 1, which is 24. Try out the factorial challenges below.

a) Try to calculate 1! , 2! , 3! … all the way up to 10!
b) What is the largest power of 2 that is a factor of 10! ? What is the largest power of 3 that is a factor of 10! ? The largest power of 4? 5? 6? 7? 8? 9? 10?
c) If $n! = 2^{15}$ x 3^6 x 5^3 x 7^2 x 11 x 13, what is the value of n?
d) Did you know that we have been out of school for 6 weeks? How many seconds is that? What does that have to do with the factorials you've been exploring?

Solutions & Explanations: (Try one or try them all! Record your answers below, on the back or a separate sheet of paper.)

Name _____   Class _____

      (First and last name, please!)   **Solutions due: May 1st**