Extending Exponents

Student Activity

Name _____

Class _____

In these activities, you will use exponents as a compact way to write expressions involving whole number multiplication. After completing the activities, discuss and/or present your findings to the rest of the class.

Activity 1 [Page 1.3]

1. Find at least three ways to write each of the following:

   a. $\frac{1}{64}$

   b. 0.001

Activity 2 [Page 2.3]

1. Write the following in scientific notation. Use the TNS activity to check your answers.

   a. 345,000 b. 0.0007902 c. 3.14159

2. Each of the following problems involves very large or small numbers.

   a. Human hair grows at a rate 1.98×10^{-4} meters/hour. How long does human hair grow in a year?

   b. Juno sent a message from its orbit around Jupiter (540,000,000 miles away) in July 2016. Radio waves travel at the speed of light, which is 186,000 miles per second. How long did the message take to make the trip? Express your answer in seconds using scientific notation. How many minutes is this?

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c. One mole of hydrogen has a mass of 1.008 grams. If there are approximately 6.022×10^{23} hydrogen atoms in one mole, what is the approximate mass of one hydrogen atom?

d. The United States' budget deficit in 1998 was $\$5.653 \times 10^{12}$. The budget deficit is projected to be 19.3 trillion dollars at the end of 2016. How many times larger will the budget deficit be then, compared to 1998?