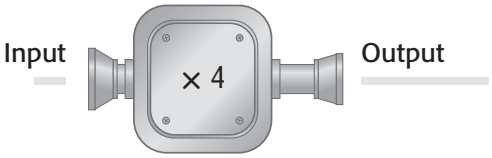
Dear Family,

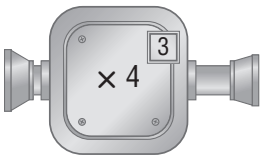
The class is about to begin Chapter 2 about exponents and extremely large or small numbers. Exponents can be thought of as a shortcut method of expressing repeated multiplication. For example, $4 \cdot 4 \cdot 4$ is the same as 4^3. The base is 4, which is the number to be multiplied. The exponent is 3, which is the number of 4s that are multiplied together.

Key Concept–Exponents

Students will use a machine model to help learn about exponents. *Stretching machines* are a model of multiplication. They stretch any input by the number on the machine. This machine will stretch something 4 times. Suppose you put a one-inch piece of gum into the machine. How long will it be when it comes out the machine?



A *repeater machine* is a special type of stretching machine that models exponents. Look at the repeater machine at the right. It will stretch an input 4 times, then 4 times again, and then 4 times again. A one-inch piece of gum goes through the ×4 machine 3 times, for a total of 64 stretches, and comes out 64 inches long.



Chapter Vocabulary

base	**least common multiple**
common factor	**multiple**
common multiple	**order of operations**
composite number	**power**
exponent	**prime factorization**
factor	**prime number**
factor pair	**product law of exponents**
greatest common factor	**relatively prime**

Home Activities

- Have your student think about common uses of exponents.
- Listen to the news and represent large numbers, such as national debt, annual credit spending in the United States, and so on, using exponents.