Dear Parents
Below you will find a list of concepts that your child will use and understand while completing Unit 2 Exponents. Also included are references, vocabulary and examples that will help you assist your child at home.

Concepts Students will Use and Understand
- An irrational number is a real number that can not be written as a ratio of two integers.
- All real numbers can be plotted on a number line.
- Exponents are useful for representing very large or very small numbers.
- Square roots can be rational or irrational.
- Some properties of real numbers hold for all irrational numbers.
- Solving multi-step equations
- Evaluate square and cubed roots

Vocabulary

Additive Inverse: The sum of a number and its additive inverse is zero. Also called the opposite of a number. Example: 5 and -5 are additive inverses of each other.

Irrational number: A real number whose decimal form is non-terminating and non-repeating that cannot be written as the ratio of two integers.

Radical: A symbol (√) that is used to indicate square roots.

Scientific Notation (Exponential Notation): A representation of real numbers as the product of a number between 1 and 10 and a power of 10, used primarily for very large or very small numbers.

Square root: One of two equal factors of a nonnegative number. For example, 5 is a square root of 25 because 5×5 = 25. Another square root of 25 is -5 because (-5)×(-5) = 25. The +5 is called the principle square root

Addition property of equality: Adding the same number to each side of an equation produces an equivalent expression.

Multiplicative inverse: Numbers are multiplicative inverses of each other if they multiply to equal the identity, 1.

http://intermath.coe.uga.edu/ for additional help.
Math 8 Unit 2 Exponents Practice Problems

Example 1
1. Simplify the following without negative exponents:
   a. $4^{-2}$
   b. $\frac{3^2x}{2^{-3}x^2}$
   c. $7a^{-4}b^3y^{-2}$
2. Change to standard form: $8.51 \times 10^{-2}$
3. Change to scientific notation: $107,000,000,000$

Example 2
4. Find the following square roots, graph the results on a number line and explain why each result is rational or irrational:
   a. $\sqrt{144}$
   b. $\sqrt{56}$
5. Estimate the square root of 18.
6. What are the two square roots of 36?
7. Find the following cube roots: a) $\sqrt[3]{8}$ b) $\sqrt[3]{27}$

Example 3
8. Solve the following equation: $2x + 3(4x - 3) = 8 - 3x$

Answer Key
Example 1
1 a. $\frac{1}{16}$
   b. $72x^3$
   c. $\frac{7b^3}{a^3y^2}$
2. 0.0851
3. $1.07 \times 10^{11}$

Example 2
4. a. 12, rational because it can be written as a ratio.
   b. about 7.48, irrational because the exact value is a non-terminating, non-repeating decimal.
5. Between 4 and 5; closer to 4; about 4.2
6. ±6
7. a) 2 b) 3

Example 3
8. $x = 1$