Lesson Notes 5.6

Lesson Objectives

- Use factors of numbers to introduce exponents and powers.
- Demonstrate an understanding of exponents and powers and an understanding of when to use exponents and powers in expressions.
- Define negative exponents.
- Solve problems with exponents and powers.

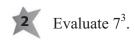
Subtopic 1 Exponents and Powers

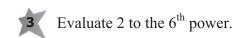
- An _____ is a number that tells how many times a _____ is used as a factor.
- 4 is used as a factor times, so 4 to the 3rd power is written as .
- A _____ is a number raised to an exponent.
- In $4^3 = 64$, 4 is the _____ and 3 is the _____.
- A negative number raised to a positive odd power has a ______ value.
- A negative number raised to a positive even power has a _____ value.



Write in exponential form.

$$(-6) \times (-6) \times (-6) \times (-6) \times (-6)$$





Subtopic 2 **Using Exponents and Powers in Expressions**

Evaluate each expression.

4
$$(-4)^2 \times (-3)^3$$
 5 $2(9-6)^2$ **6** 3^3-2^3



$$2(9-6)^2$$



$$3^3 - 2^3$$

Subtopic 3 **Zero and Negative Exponents**

- Any nonzero number raised to the zero power equals _____.
- $b^0 = (b \neq)$
- Any nonzero number raised to a negative power is the same as one over the number raised to the _
- $\bullet \quad b^{-n} = \frac{1}{} \quad (b \neq \underline{})$

Evaluate each expression.



$$3^{-4}$$

$$2^6 \times 8^0$$

Subtopic 4 **Solving Problems with Exponents and Powers**



Computer memory can be measured in bits, bytes, or kilobytes. There are 2³ bits in a byte and 2¹⁰ bytes in a kilobyte. How many bits are there in a kilobyte?

Module 5 Decimal Operations, Exponents, and Powers

Lesson 6 Powers and Exponents



Irma won a math contest. On the first day she received \$4. Then, for each day after the first day, she received double the preceding day's amount. How much money did Irma receive on the fifth day?