Lesson 1.0 - Terminology Review

Difference between a subscript and a superscript

Before we began, we need to discuss the difference between a subscript and a superscript. A **subscript** can be a letter or number that appears smaller than the normal sized text and appears slightly below the text. A **superscript** can be a letter or number that appears smaller than the normal sized text and appears slightly above the text. Superscripts are commonly used in math to represent exponents. Subscripts are commonly used in formulas to label different variables.

Examples – Label the superscripts and subscripts for each expression below.

$$x_2 \qquad H_2O \qquad 12^5 \qquad (y_2 - y_1)^2$$

Terminology Review

In order to express a number in **exponential notation** we use a base and an exponent. The **base** to an expression in exponential form is written using the normal font size. The **exponent** is written using a superscript and floats above the line to the right of the base. When an exponential expression is expanded the base is multiplied to itself the amount of times that the exponent indicates. The examples below show expressions in exponential notation being expanded.

$6^4 = \underbrace{6 \times 6 \times 6 \times 6}_{4 \text{ times}}$	$13^2 \cdot 9^5 = \underbrace{13 \cdot 13}_{2 \text{ times}} \cdot \underbrace{9 \cdot 9 \cdot 9 \cdot 9 \cdot 9}_{5 \text{ times}}$

A number in exponential notation represents a power of a number. The **power** of an expression is determined by looking at the exponent when it is in exponential form. If a number is in standard form, converting it to exponential notation may be needed to determine the base and its power.

Use the terms below to label the diagrams on the right. If needed, refer back to the reading for guidance.

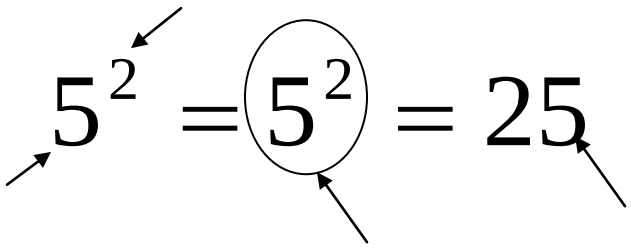
TERMS

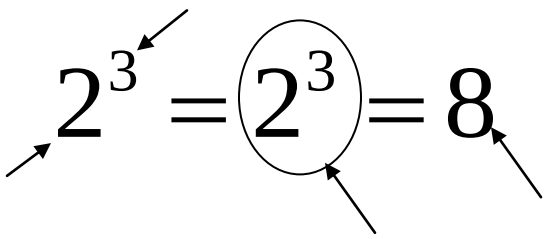
Power (standard form)

Exponent

Power (exponential form)

Base





Questions

1. 25 is what power of 5? _____ 8 is what power of 2? _____

2. In the second example, how many times is 2 being multiplied to itself? _____

_____

In 6th grade we used bases that contained whole-number exponents. **Whole numbers** are 0 and the counting numbers 1, 2, 3, and so on. In this unit we will expand our abilities and use integer exponents. **Integers** include all the whole numbers (0, 1, 2, 3, …) and the negatives. Integers can be represented in this manner: (…, -3, -2, -1, 0, 1, 2, 3, …).

Perfect Square and Perfect Cube

A **perfect square** is a number that can be expressed in exponential notation using a whole number base and an exponent of 2. A **perfect cube** is a number that can be expressed in exponential notation using a whole number for the base and an exponent of 3.

We will use the tables below to identify numbers that are perfect squares and perfect cubes.

Identifying Perfect Squares

Whole Number Inputs (x)	x^2	Perfect Squares
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

Identifying Perfect Cubes

Whole Number Inputs (x)	x^3	Perfect Cubes
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		