

Most of...

What You Need to Know About Logarithms

A. The meaning of a Logarithm

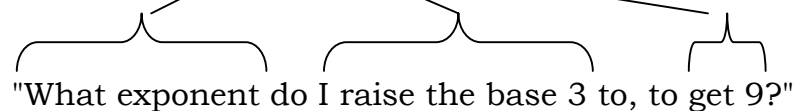
Key Fact: "A logarithm is an exponent." When we talk about logarithms, we're really talking about exponents.

Key Skill: You should be able to read aloud a logarithmic expression $\log_3 9$ is read, "the log, to the base of 3, of 9."

Don't overlook this early skill. When you can read a logarithmic expression you are telling yourself some vital information.

Key Skill: You should be able to interpret a simple logarithmic expression.

For instance, if $\log_3 9$ is asking a question, that question is,



"What exponent do I raise the base 3 to, to get 9?"

So, what's the answer: What exponent do you raise 3 to in order to get 9?"

Since the answer is 2, then $\log_3 9 = 2$.

Practice reading each of the following, then interpret the question being asked, and answer the question:

1. $\log_2 8 =$ _____

2. $\log_4 16 =$ _____

3. $\log_5 125 =$ _____

4. $\log_{10} 10,000 =$ _____

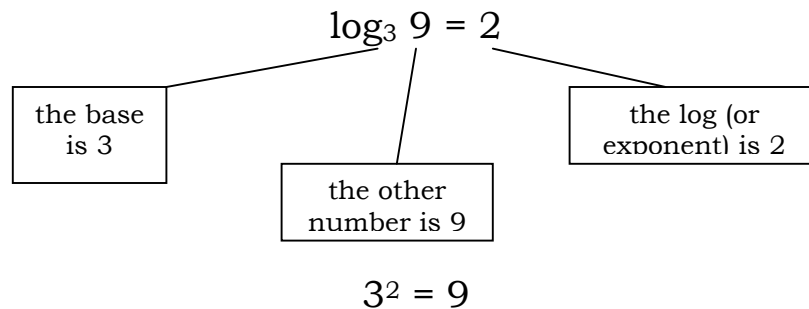
5. $\log_{25} 5 =$ _____

The answers are: 3, 2, 3, 4, and 1/2

B. Changing Forms (This skill will be used later in solving equations)

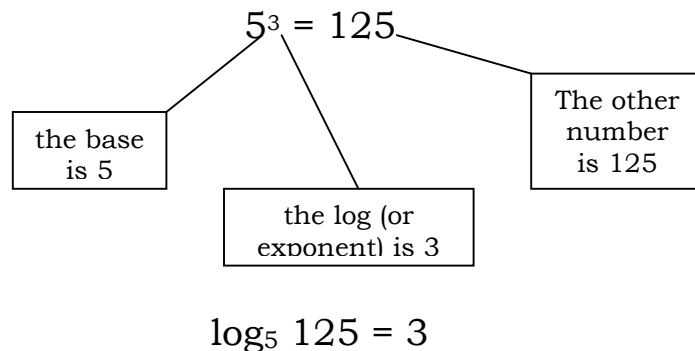
Key Skill: You should be able to change from logarithmic to exponential form.

Ex: Change the following expression from logarithmic to exponential form:



Key Skill: You should be able to change from exponential to logarithmic form:

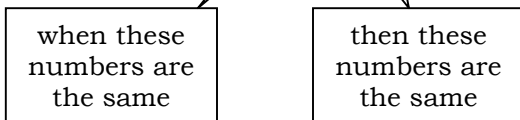
Ex: Change the following from exponential to logarithmic form:



C. Two Theorems

Two theorems which provide shortcuts for evaluating logarithmic expressions:

1. $\log_a a^x = x$



Ex: Evaluate: $\log_7 7^3$

