LOGARITHMS

From indices we have that $2^3 = 8$ where 2 is the base and 3 is the power. On the other hand, we can write that the log of 8 to base 2 is equal to 3, denoted thus:

$$log_2 8 = 3$$

Also $5^2 = 25$ which means that $log_2 25 = 2$. Therefore, generally if $m^a = n$, we say that $log_m n = a$, where m = base, a = index, n = product.

The logarithm of any number *n* to any base *m* is the *index* or *power* to which the base *m* must be raised to equal the number *n*.

i.e. if *x* is the logarithm of a number *N* to base *b* then $N = b^x$. i.e. if $log_b N = x$ then $N = b^x$.

Example: if (i) $log_2 16 = 4$ then $16 = 2^4$
(ii) $log_9 81 = 2$ then $81 = 9^2$
Conversely, if (i) $16 = 2^4$ then $log_2 16 = 4$
(ii) $81 = 9^2$ then $log_9 81 = 2$

Briefly put, logarithm finds the index while indices finds the product of the index.