



SKILL 4: Exponents

In 5^4 , the 4 is the **exponent**. It tells that 5 is to be used as a factor 4 times.

$$\begin{array}{c} \nearrow 5^4 \nwarrow \\ \text{base} \quad \text{exponent} \end{array}$$

5^4 is read "5 to the fourth power."

4^2 is read "4 to the second power."

To compare numbers in exponential form, first find the standard form. Then compare.

$$\begin{array}{ccccc} & & 5^4 & = & 5 \times 5 \times 5 \times 5 & = & 625 & & \\ & & \uparrow & & \underbrace{\hspace{2cm}} & & \uparrow & & \\ \text{exponential form} & \text{---} & & & & & & \text{---} & \text{standard form} \\ & & & & \uparrow & & & & \\ & & & & \text{expanded form} & & & & \end{array}$$

Example

Compare: 5^3 \bigcirc 3^5 .

We know that $5^3 = 5 \times 5 \times 5$, and $3^5 = 3 \times 3 \times 3 \times 3 \times 3$.

$$5 \times 5 \times 5 \quad \bigcirc \quad 3 \times 3 \times 3 \times 3 \times 3$$

Write in standard form and compare. $125 < 243$

So, $5^3 < 3^5$.

Guided Practice

1. Write $7 \times 7 \times 7 \times 7 \times 7 \times 7$ in exponential form.

a. What will the exponent be? _____ b. So, $7 \times 7 \times 7 \times 7 \times 7 \times 7 =$ _____.

2. Write 2^5 in standard form.

a. Write 2^5 in expanded form. _____

b. Multiply the factors in your answer above. _____

3. Compare: 3^4 \bigcirc $3 + 3 + 3 + 3$. Use $<$, $>$, or $=$.

a. Write 3^4 in expanded form. _____

b. Multiply the factors in the expanded form of 3^4 . _____

c. Find the value of $3 + 3 + 3 + 3$. _____

d. Compare: 3^4 \bigcirc $3 + 3 + 3 + 3$.