

## Section 1.2 Exponents and Powers.

$$\text{Base} \longrightarrow 3^4 \longleftarrow \text{exponent}$$

Powers are expressions like  $3^4$  (we say 3 to the 4<sup>th</sup>). The 3 is called the base and the 4 is the exponent. The expression  $3^4$  means 3 multiplied by itself 4 times ( $3 \cdot 3 \cdot 3 \cdot 3 = 243$ ).

**Example:** Evaluate  $x^4$  when  $x = 2$ .

1. Substitute the value for  $x$ : 24
2. Use the definition of exponents to evaluate:  $2^4 = 2 \cdot 2 \cdot 2 \cdot 2 = 16$

**Example:** Evaluate  $4x^3$  when  $x = 5$

Substitute 5 in for  $x$ :  $4(5)^3$

Evaluate the power:  $4(5 \cdot 5 \cdot 5) = 4(125)$

Multiply by the 4: **500**

*Note: The number out in front is called the coefficient and is not part of the base.*