

Base  $\rightarrow$   $2^4$  ← Exponent  
 $2 \cdot 2 \cdot 2 \cdot 2$

Exponent Properties Involving Multiplication Day 1

1. Product of Powers  $a^m \cdot a^n = a^{m+n}$

Ex.  $5^6 \cdot 5^4 = \boxed{5^{10}}$

Ex.  $9^1 \cdot 9^8 \cdot 9^2 = \boxed{9^{11}}$

Ex.  $(-5)^1(-5)^6 = \boxed{(-5)^7}$

Ex.  $x^3 \cdot x^4 = \boxed{x^7}$

2. Power of a Power  $(a^m)^n = a^{mn}$

Ex.  $(3^4)^2 = \boxed{3^8}$

Ex.  $(x^2)^5 = \boxed{x^{10}}$

Ex.  $[(-6)^3]^4 = \boxed{(-6)^{12}}$

★  $[(y+2)^6]^2 = \boxed{(y+2)^{12}}$

3. Power of a Product  $(ab)^m = a^m b^m$

Ex.  $(23^1 \cdot 17^1)^5 = \boxed{23^5 \cdot 17^5}$

\* Never distribute an exp to a sum or diff

Ex.  $(9^1 x^1 y^1)^2 = 9^2 x^2 y^2$   
 $= \boxed{81x^2y^2}$

Ex.  $5 \cdot (5^1 x^2)^4 = 5^1 \cdot 5^4 x^8$   
 $= 5^5 x^8$   
 $= \boxed{3125x^8}$

Ex.  $(-4^1 z^2)^2 = (-4)^2 z^4$   
 $= \boxed{16z^4}$