

## Section 11-2: Multiplying Variables with Exponents



## Objectives:



- To multiply variables together that contain exponents.
- To evaluate an exponent raised to another exponent.
- To know what it means to have an exponent of zero.

Ex 1: 
$$3^2 \cdot 3^4 = 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 = (3^4)$$

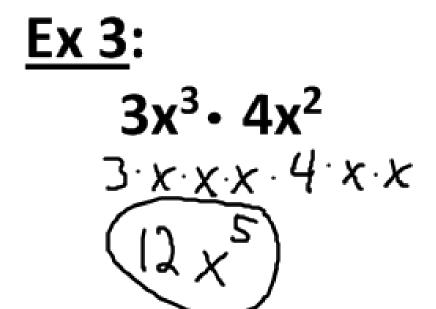


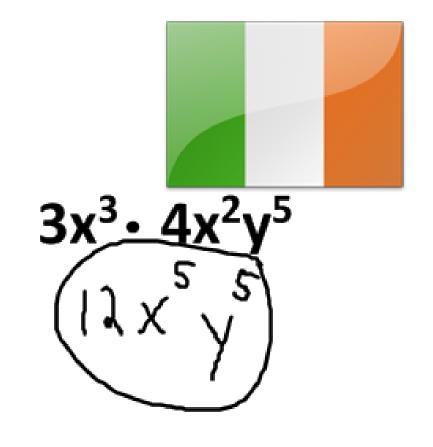


Rule #1: When multiplying variables with exponents, <u>ADD</u> the exponents.

(Bases <u>must</u> match.)







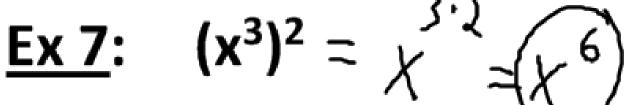
\*Multiply whole #'s together, put them in front, then write variables alphabetically in exponential form.

$$\underline{\mathsf{Ex}\; \mathsf{4}} \colon \quad \mathsf{w}^{\mathsf{4}} \cdot \mathsf{w}^{\mathsf{1}} \cdot \mathsf{w}^{\mathsf{3}} = \left( \sqrt{\mathsf{8}} \right)$$

Ex 5: 
$$(x^3)(y^4)(x^2) = (x^3)(y^4)(x^2)$$



Ex 6: 
$$(2^3)^2 \rightarrow (8)^2 = 64$$









Rule #2: When an exponent is raised to another exponent, MULTIPLY the exponents.



<u>Ex 8</u>:

$$(2xy^2)^3 = 2^3 \cdot x^3 \cdot (x^3)^3 = 8x^3y^4$$

$$(2xy^{3})\cdot(2xy^{2})\cdot(2xy^{2})$$



\*\*

 $(Anything)^0 = 1$ 



But 0º is undefined/error.

Ex 9: 
$$\left(\frac{5682x^{81}y^{42}}{q^{17}p^9}\right)^0 = 1$$

