Name _____ 8.EE.A

Multiplication and Powers of Exponents

When multiplying exponents, it is important to remember the following properties:

1. When multiplying powers having the same base, add the exponents, keeping the same base. (Remember: in a^3, a is the base, 3 is the exponent, and a^3 is the power.) For example, $x^3 \cdot x^5 = x^{3+5} = x^8$.
2. When finding a power of a power, multiply the exponents. For example, $(x^3)^2 = x^6$.
3. When finding the power of a product, find the power of each factor and multiply. For example, $(x \cdot y)^2 = x^2 \cdot y^2$.

Simplify $(5x^3)^2(xy)^3$
$(5^2x^6)(x^3y^3)$
$= 25x^9y^3$

Simplify $(2x^4)^3(^-x^2)^3$
$(2^3x^{12})(^-x^6)$
$= ^-8x^{18}$

1. What do you do with the exponents when multiplying powers that have the same base?

2. Label the base, the exponent, and the power in x^3.

3. Explain what you are to do when finding the power of a product.

Simplify each expression.

4. $3x \cdot x^2$

5. $(^-6xy)^2(x^2y)^3$

6. $(8xy)^2$

7. $^-4x^4 \cdot x^3$

8. $(^-3x^2y)^3$

9. $(4c^2)(^-5c^7)$

10. $(^-x^2)(^-x)^2$

11. $^-xy(^-xy)^2$

12. $(3x^3)(5x^5)$

13. $(x^3y^3)^3$