Name: ______________________ Key: ____________________ Date: __________ Per: ___

7.3A Multiplication Properties of Exponents (separate)

Product of Powers Property

$$a^m \cdot a^n = a^{m+n}$$

Ex) [illegible] Ex) [illegible]

1. When multiplying powers that have the same base, all you have to do is add the exponents
   - You can NOT do this if the bases are not the same.
   - Always write the numbers first, and then go in alphabetical order.

Simplify.

1. $x^{[illegible]} \cdot x^{[illegible]}$
2. $y^{[illegible]} \cdot y^{[illegible]}$
3. $2^{[illegible]} \cdot 2^{[illegible]}$
4. $x^{[illegible]} \cdot x^{[illegible]} \cdot x^{[illegible]}$
5. $p^{[illegible]} \cdot p^{[illegible]} \cdot p$
6. $4x^{[illegible]} \cdot x^{[illegible]} \cdot 5x^{[illegible]}$
7. $a^{[illegible]} \cdot b^{[illegible]} \cdot a^{[illegible]}$
8. $x^{[illegible]} \cdot y^{[illegible]} \cdot x \cdot y$
9. $5x^{[illegible]} \cdot y^{[illegible]} \cdot 2y^{[illegible]} \cdot x$

Power of a Power Property

$$\left(a^m\right)^n = a^{m \cdot n}$$

Ex) [illegible] Ex) [illegible]

1. When you have a power to a power, all you have to do is multiply the exponents.
   - Always write the numbers first, and then go in alphabetical order when simplifying.

Simplify.

10. $\left(x^{[illegible]}\right)^{[illegible]}$
11. $\left(m^{[illegible]}\right)^{[illegible]}$
12. $\left(2^{[illegible]}\right)^{[illegible]}$
13. $\left(y^{[illegible]}\right)^{[illegible]}$
14. $\left(d^{[illegible]}\right)^{[illegible]}$
15. $\left(x^{[illegible]}\right)^{[illegible]}$
16. $\left(x^{[illegible]}\right)^{[illegible]} \cdot \left(y^{[illegible]}\right)^{[illegible]}$
17. $\left(y^{[illegible]}\right)^{[illegible]} \cdot \left(x^{[illegible]}\right)^{[illegible]}$
18. $\left(x^{[illegible]}\right)^{[illegible]} \cdot \left(y^{[illegible]}\right)^{[illegible]}$