

NAME: _____

DATE: _____

BLOCK: _____

Multiplication with Exponents

Lesson 23

When multiplying numbers with exponents and the **BASES** are the **SAME**, we **ADD** the **EXPONENTS** and **KEEP** the **BASE** the **SAME**.

EXAMPLES:

$$1.) \quad 5^3 \times 5^2 = 5 \times 5 \times 5 \times 5 \times 5 = \boxed{5^5}$$

$$= 5^{(3+2)} = \boxed{5^5}$$

$$2.) \quad 7^2 \cdot 4^3 \cdot 7^8 \cdot 4^6 = (7^{2+8}) \times (4^{3+6}) = \boxed{7^{10} \times 4^9}$$

We add the exponents of the bases that are the same.

$$3.) \quad (3^4)(5^2)(8^3) = \boxed{(3^4)(5^2)(8^3)}$$

No bases are the same, so we cannot add the exponents.

$$4.) \quad 3^{-2} \times 3^{-4} = 3^{(-2)+(-4)} = \boxed{3^{-6}}$$