Exponents

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Exponents

Exponents denote a type of multiplication –

$$X^n = \underbrace{X \cdot X \cdot X \cdot \ldots \cdot X}_{n \text{ times}}$$

$$5^3 = 5 \cdot 5 \cdot 5 = 125$$

Exponents – Special Cases

Any number raised to the zeroth power is equal to 1

$$X^0 = 1$$

$$(3488)^0 = 1$$

Exponents – Special Cases

Any number raised to the first power is equal to itself

$$X^1 = X$$

$$(890)^1 = 890$$

Adding Exponents

When adding exponents, you can only add terms that have the same “power”

$$2X^4 + 3X^4 = 5X^4$$

$$X^2 + X^4 \neq X^6$$

Multiplying Exponents

When multiplying expressions with exponents, you can only do so if they have the same “base”

$$3^2 \cdot 3^4 = (3 \cdot 3)(3 \cdot 3 \cdot 3 \cdot 3) = 3^6$$

$$X^{10} \cdot X^{14} = X^{24}$$

Negative Exponents

A negative exponent is the same as the reciprocal of the positive exponent

$$X^{-2} = \frac{1}{X^2}$$

$$X^{17} = \frac{1}{X^{-17}}$$

Language/Terminology

X squared = X^2

X cubed = X^3

X to the 47th power = X^{47}

X raised to the 47th power = X^{47}

X to the power of 47 = X^{47}

Takeaways

We learned/remembered what exponents are and how they operate

We practiced with a few short examples

We discussed the specific terminology of expnents