Key

Algebra 1
Unit 1, Lesson 2 Notes
Properties of Addition and Multiplication

**Essential Question:** How do I use properties of addition, multiplication, and division to help me simplify problems?

| Property | Addition | Multiplication |
|---|---|---|
| Associative - grouping doesn't matter when you add or multiply | $(2+3)+4 = 2+(3+4)$ | $(2\cdot3)\,4 = 2\cdot(3\cdot4)$ |
| Commutative - order doesn't matter when you add or multiply | $2+3+4 = 4+2+3$ | $2\cdot3\cdot4 = 2\cdot4\cdot3$ |
| Identity: Any # + 0 = Same # <br> Any # • 1 = Same # | $7+0=7$ | $7\cdot1=7$ |
| Inverse: A # + its opposite = 0 <br> A # • its reciprocal = 1 | $5+(-5)=0$ | $5\cdot\frac{1}{5}=1$ |

* Distributive property (from U1L1) $a(b+c) = ab+ac$ $a(b-c) = ab-ac$

Examples: Identify the properties

1) $7 + 9 = 9 + 7$

Commutative property of addition

2) $13 \cdot \frac{1}{13} = 1$

Inverse property of multiplication

3) $(2 \cdot 3) \cdot 9 = 2 \cdot (3 \cdot 9)$

Associative property of multiplication

4) $15 + 0 = 15$

Identity property of addition

5) $4(x + 3) = 4 \cdot x + 4 \cdot 3$

Distributive property

6) $1 \cdot 43 = 43$

Identity property of multiplication