**Multi-Step Equations using the Distributive Property**

**Solving Equations:** Equations are not fixed - they can be rearranged as long as the equality of the two sides is maintained. (**Think: whatever I do to one side…I have to do to the other**) We rewrite equations in order to make them simpler, or to solve them. The **goal** is to isolate the variable.

Ex: 2x = 4 x = 2 **Does the answer change if you add two on both sides?**

 2x + 2 = 4 + 2 **No, x will still be equal to 2.**

**Properties that help rearrange an equation but MAINTAIN equality on both sides:**

* **Commutative property:** The order in which numbers are added or multiplied does not change the sum or product.

a + b = b + a and a • b = b • a

* **Associative Property:** The way in which numbers are grouped when added or multiplied does not change the sum or product.

(a + b) + c = a + (b + c) and (a • b) • c = a • (b • c)

* **Additive and Multiplicative Inverses**: For every a, there is an inverse (opposite operation)

a + (-a) = (-a + a) = 0 and a • 1/a = 1/a • a = 1

* **Distributive Property:** For any numbers a, b, and c:

a (b + c) = ab + ac and (b+c)a = ba + ca

a(b - c) = ab – ac and (b-c)a = ba – ca

**Steps to Solving Multi-Step Equations:**

1. **Distribute to clear the parenthesis**
2. **Combine like terms**
3. **Use addition/ subtraction to get the variables on one side**
4. **Add or subtract to isolate the variable**
5. **Multiply or divide to isolate the variable**

**Guided Practice:**

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