Simplifying Expressions

Combining like terms

$5 + 7 = $ _____

$5x + 7x = $ _____

$5a + 7a = $ _____

$\dfrac{5}{7} + \dfrac{5}{7} = $

Example 1:

$$\dfrac{7}{2} + \dfrac{4}{2} + \dfrac{3}{2} =$$

We can add these terms together because they are like terms.

Example 2:

$$\dfrac{3}{4} + \dfrac{2}{5} =$$

These are **NOT** like terms, so we must make them like terms. We need to find the least Common Denominator (LCD).

LCD: _____

$$\dfrac{3}{4}\left(\dfrac{5}{5}\right) + \dfrac{2}{5}\left(\dfrac{4}{4}\right)$$

$$= \dfrac{15}{20} + \dfrac{8}{20}$$

$$= \boxed{\dfrac{23}{20}}$$

$$4x + 3 - 2$$

If we rewrite this expression so that everything is being added, we can add in any order.

$$4x + 3 - 2$$

$$= 4x + 3 + (-2)$$

$$= 4x + 1$$

We cannot combine these two terms since they are **NOT** like terms.

Example 4:

$$-3 + 2x - 5 - x$$

$$= -3 + 2x + (-5) + (-x)$$

$$= \boxed{-8 + x \quad OR \quad = x - 8}$$

At times we must use the **distributive property** in order to simplify.

Example 5:

$$-3 + 4(x - 2) - 7x$$

$$= -3 + 4(x) + 4(2) - 7x$$

$$= -3 + 4x + 8 - 7x$$

$$= \boxed{5 - 3x \quad OR \quad = -3x + 5}$$

Example 6:

Translate the following phrase into a mathematical expression using **x** as the variable, then simplify the expression.

"A number multiplied by -3, subtracted from the sum of **9** and **4** times the number."

$$(9 + 4x) - x(-3)$$
$$= 9 + 4x + 3x$$
$$= \boxed{9 + 7x}$$

Simplifying each expression:

1. $7 - 4x + 3x - 10 + 2x$

2. $7 - 9(x - 4) + 2(x - 1)$

3. Translate the following phrase into a mathematical expression using **x** as the variable, then simplify the expression.

"The sum of **8** and **5** times a number subtracted from twice the number."