NAME DATE PERIOD

Lesson 22 Summary

Combining like terms is a useful strategy that we will see again and again in our future work with mathematical expressions. It is helpful to review the things we have learned about this important concept.

- Combining like terms is an application of the distributive property. For example:

$2x + 9x$
$(2 + 9) \cdot x$
$11x$

- It often also involves the commutative and associative properties to change the order or grouping of addition. For example:

$2a + 3b + 4a + 5b$
$2a + 4a + 3b + 5b$
$(2a + 4a) + (3b + 5b)$
$6a + 8b$

- We can't change order or grouping when subtracting; so in order to apply the commutative or associative properties to expressions with subtraction, we need to rewrite subtraction as addition. For example:

$2a - 3b - 4a - 5b$
$2a + -3b + -4a + -5b$
$2a + -4a + -3b + -5b$
$-2a + -8b$
$-2a - 8b$

- Since combining like terms uses properties of operations, it results in expressions that are equivalent.

- The like terms that are combined do not have to be a single number or variable; they may be longer expressions as well. Terms can be combined in any sum where there is a common factor in all the terms. For example, each term in the expression $5(x + 3) - 0.5(x + 3) + 2(x + 3)$ has a factor of $(x + 3)$. We can rewrite the expression with fewer terms by using the distributive property:

$5(x + 3) - 0.5(x + 3) + 2(x + 3)$
$(5 - 0.5 + 2)(x + 3)$
$6.5(x + 3)$