Elementary algebra
Class notes
Simplifying Algebraic Expressions (section 2.1)

The skill of simplifying expressions will be invaluable.

Factors versus terms:

terms: things we are adding (or subtracting)
expls: $\underline{x} + \underline{4}$ or $\underline{2x} + \underline{3}$ or $\underline{4x^2} + \underline{3x} - \underline{6}$

factors: things we are multiplying (or dividing)
expls: $\underline{5} \cdot \underline{x}$ or $\underline{3}(\underline{x+2})$ or $\underline{4} \cdot \underline{x^2}$

Could be thought of as $4 \cdot x \cdot x$ or $2 \cdot 2 \cdot x \cdot x$. What are the factors then?

Combining like terms:

Like terms are terms that have the same variable(s) raised to the same exponents. We will combine them to simplify expressions.

expl 1: Simplify by combining like terms.
   a.) $4x + 7x$

Do you see the distribution property in there?

   b.) $a + 6a - 5 - 9a$

We use the commutative, associative, and distribution properties a lot but do not often call them by name.

   c.) $4y + 6 - 3y - 2$

Definition: Coefficient: the plain number (or non-variable) part of a term, usually written first. Sometimes it is described as the numerical factor of the term.

expl 2: Identify the coefficients of the terms below.

   a.) $4x$ d.) $7t^2$

   b.) $-y$ e.) $y \cdot 5$
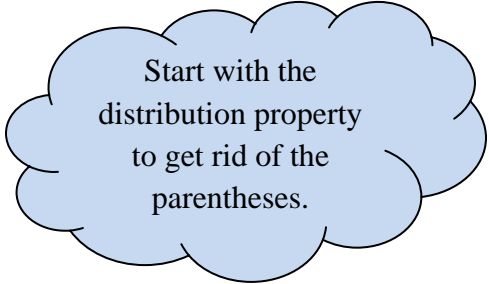
   c.) a f.) 5
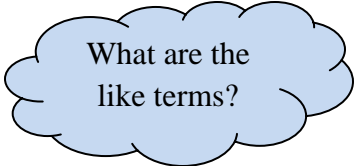
expl 3: Simplify.
    a.) $8(r - 5)$

Start with the distribution property to get rid of the parentheses.

    b.) $3(6t + 7x - 5)$

    c.) $5(2x - 3) + 4(x + 2) - 6(x - 2)$

What are the like terms?

    d.) $6x^2 - (4x^2y + 2x^2) + 7x^2y$

Using Variables:

expl 4: Write the following phrase as an algebraic expression. Simplify if possible.
    subtract 2x + 3 from 5x – 9

expl 5: Convert the phrase to algebra and simplify if possible. Let x represent the unknown number.
    a.) *nine added to triple a number*

    b.) *the difference of 5 and a number, added to twice the number*

expl 6: Write an expression with four terms that would simplify to $2x + 7$.