Math 65
Week 1: Tuesday, April 2

Agenda:
Introduction
Pass out syllabus & Learning Center information
Lessons 1.1, 1.2, start 1.3
Trip to Learning Center for anyone interested
1.1 - Order of Operations

What is it?
A standard for simplifying expressions.

Why do we use it?
So everyone agrees on the answer.

P - parentheses ( ); [ ]; { }
E - exponents $2^3$
M - multiplication $2 \cdot 5; 2 \times 5; 2(5)$
D - division
A - addition
S - subtraction

Example: $1 + 5 (6 + 2) - 4 \cdot 3^3$

Practice:

$\frac{(6-5)^2 + 3 \cdot 4}{2}$

$\frac{1^2 + 3 \cdot 4}{2}$

$\frac{1 + 12}{2}$

$\frac{1 + 6}{7}$

$100 \div (3+2)^2 - 7 \cdot 2 + 16$

$100 \div (5)^2 - 7 \cdot 2 + 16$

$100 \div 25 - 7 \cdot 2 + 16$

$4 - 7 \cdot 2 + 16$

$4 - 14 + 16$

$-10 + 16$

$6$
1.1 - Order of Operations

Fractions

Example:

\[
\frac{(5(2-1)^2 + 16 \div 2^3)}{(3 \cdot 2^2 - 3 \cdot 2)}
\]
1.1 - Order of Operations

Example:

\[
\frac{3^2 + 2(1-4)}{4(-1)-(-1)^3}
\]
1.1 - Order of Operations

Using a calculator

Example:

\[ 2 \times 3^2 + (8-1)^3 \]

\[ 2 \cdot 3^2 + (8-1)^3 \]

Practice:

\[ \frac{(3 \times 4^3 + 1/2)}{(4(1-2)^2)} \]

Translate the calculator keystrokes given into an equivalent algebraic statement.

\[ \frac{3 \cdot 4^3 + 1/2}{4(1-2)^2} \]
1.2 - Terminology

Constant: A quantity whose value never changes.
   Examples: Hours in a day.
             Minutes in a hour.

Variable: A quantity whose value may change.
   Examples: Height.
             Age.
             # of chairs in room.
1.2 - Terminology

Coefficient:
A constant multiplied by a variable.

Examples:
\[
\begin{align*}
3a & \quad -abc \\
5x - 3y + z & \quad -1 \\
5 & \quad -3 & \quad 1
\end{align*}
\]

Term:
A product of constants and/or variables.

Examples:
\[
\begin{align*}
3a + 5b - 3c & \quad \leftarrow 3 \text{ terms} \\
4abc & \quad \leftarrow 1 \text{ term} \\
4a - 2a + 3b + c & \quad \leftarrow 4 \text{ terms} \\
2a + 3b + c & \quad \leftarrow 3 \text{ terms}
\end{align*}
\]

Like terms:
Terms that have identical variable parts.

Examples:
\[
3x^2 - 4x \quad \leftarrow \text{no like terms}
\]
1.2 - Terminology

Practice combining like terms:

\[
\begin{align*}
3a - 2b + a + 3b - 5c &= 4a + b - 5c \\
X^2 + 4x + 5 - x^2 - x + 1 &= 3x + 6 \\
2(x - 1) - 3(2x + 1) &= 2x - 2 - 6x - 3 \\
&= -4x - 5 \\
\end{align*}
\]

\[
\frac{x}{2} = \frac{1}{2}x
\]

\[
\frac{2a}{5} = \frac{2}{5}a
\]
Today:

Order of Operations
- Use order of operations to simplify expressions by hand
- Use order of operations to simplify expressions on a calculator

Terminology
- Identify a constant quantity
- Identify a variable quantity
- Identify the coefficient of a variable
- Identify and combine like terms

Linear Equations in One Variable
- Solve linear equations in one variable
- Check a solution to a linear equation by hand and with a calculator

Tomorrow:

Linear Equations in One Variable

Linear Inequalities

Homework:

Brush Up for Module 1 (in packet)
1.1 - 1, 2, 3, 5, 7, 9, 11, 12, 13, 15, 17, 19, 20, 21, 22, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 45, 47, 49
1.2 - 1, 2, 3, 5, 7, 9, 11, 12, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39
1.3 - 1, 4, 5, 7, 10, 11, 13, 14, 15, 17, 19, 23, 25, 29, 31, 32