MFM2PI – *Unit 1: Linear Equations – Lesson 1*  Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Simplifying, Expanding, and Substituting**

1. **Simplifying**

One of the skills required when working with linear equations is *simplifying*.   
***Simplifying*** means gathering all the like terms together using addition and subtraction. We use the same integer rules with signs when we simplify.

We identify “like terms” because they have the *same variables*.

2x + 3 = 5x – 4 + x2

*Simplify the following expressions:*

1. 4x + 5x b) 5y – 8y + 2y c) 2a + 4 – 5a + 3

d) 7x – (– x) + 2y – 5 e) – 6b – 5 – (+2b) + (– 3) f) 4a + (– 2) – 5 – (– 3a) + b

1. **Expanding**

Sometimes, before we can simplify expressions, we have to expand them.  
***Expanding*** means multiplying the term in front of the brackets by each term inside the brackets. This is called the distributive property!

When expanding, don’t forget to include the signs!

4x(3x + 1) = 5(x – 6)

*Expand and simplify the following expressions:*

a) 2(x – 2) + 3x – 4 b) (y + 1) – (2y + 5) c) (z – 1) + 3(3 + z)

d) 3(a + b) – 2b(2 + a) e) (q + 4) – 3q(5 – q) f) 5(x – 1) – (– 1 + 5x)

1. **Substituting**

After all the simplifying and expanding has taken place, we will sometimes be asked to substitute for a variable.  
***Substituting*** means replacing a variable with a numerical value and evaluating it!

When substituting, remember to watch the signs!

*Expand and simplify the following before evaluating for the given value:*

a) 3x + 1 *for x = 4* b) – 2w – 8 *for w = – 3*

c) 2y + 2 + 3y – 6 *for y = 3* d) 3(a + 1) – (a + 2) *for a = – 1*

e) b(b – 1) + 2(b + 2) *for b = 2* f) 2(z + 3) – z(1 – z) *for z = – 2*

**HW: *Worksheet – Unit 1 – Lesson 1***