MFM2PI – *Unit 3: Linear Systems – Lesson 1*  Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Exploring Linear Systems**

1. **What Is a Linear System?**

In this third unit, we will be working with and solving linear systems.

A linear system is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Since we will continue to work with linear relations, we will need some of the skills we acquired in the last unit. For example, we need to be able to graph linear from slope y-intercept form and identify the slope and y-intercept of linear equations.

*Review #1: Graph each of the following linear relations,
after indicating its slope and y-intercept*

1. y = x – 1
2. b) y = – 4x + 1
3. **What Does It Mean To “Solve” a Linear System?**

Great question! To “***solve***” a linear system, which is two or more linear relations, is to find the point of intersection. The ***point of intersection*** is the shared point where the two lines cross.

But is one point of intersection the only option for a system of linear equations? Let’s explore!

*Option #1: Option #2: Option #3:*

Slopes: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Slopes: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Slopes: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Y-Intercepts: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Y-Intercepts: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Y-Intercepts: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Consolidation – What Did I Just Learn?**

There are three ways that a system of linear relationships can interact on the coordinate plane:

1. If the slopes are different, then there will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. If the slopes are the same and y-intercepts are different, there will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. If the slopes are the same and y-intercepts are the same, there will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. **Practice!**

*Determine the number of points of intersection in the following systems of equations.*

*Then graph both lines to check your answer.*

1.  

 *Prediction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

1.  

*Prediction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*
2.  
 *Prediction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

**HW: *None tonight! Just complete this side of the note!***

 ***Practice The Skill: How Many Solutions Will This Linear System Have?***

1.  
2.  
3.  
4.  
5.  
6.  
7.  
8.  
9.  
10.  