MFM2PI – *Unit 3: Linear Systems – Lesson 7*  Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Real World Applications of Linear Systems**

1. **Real World? Seriously?**

Yes! Linear systems are found in the real world where a comparison takes place between two different alternatives in the same situation or there are multiple ways to compare two values. Let’s look at some real world applications, while considering which of our three methods of solving linear systems will be most applicable in each case.

1. **Worked Examples**

*Example 1: The cost to print a book with Printer A includes a set-up cost of $225, plus $6 for every page printed;
 the cost to print a book with Printer B includes a set-up cost of $375, plus $4 for every page printed.
 The total cost for using each printer can be represented by the following equations,
 where* ***p*** *is the number of pages in the book and* ***c*** *is the cost of printing in dollars:*

*Printer A: *

*Printer B: *

*a) At how many pages will the cost of using both Printer A and Printer B be the same?
 b) If your book has 40 pages, should you use Printer A or Printer B?*

*c) If your book has 90 pages, should you use Printer A or Printer B?*

*Example 2: The student council is selling T-shirts. The cost of the T-shirts includes an $800 design and set-up
 charge, plus $4 for every T-shirt printed. The shirts will sell for $20 each.
 The cost and revenue can be represented by the following equations,
 where* ***x*** *is the number of T-shirts sold and* ***y*** *is the value in dollars:*

*Cost: *

*Revenue: *

*How many T-shirts does the student council have to sell to break even?*

*Example 3: A store had a sale on cordless phones. Basic cordless phones were on sale for $50, while deluxe
 cordless phones were on sale for $79. The receipts from the sale of 36 phones totaled $2409.
 The number of phones sold and the value of the phones sold can be represented by the following
 equations, where* ***x*** *is the number of basic phones sold and* ***y*** *is the number of deluxe phones sold:*

*Phones sold: *

*Value of phones: *

*How many of each type of phone was sold?*

 **HW: *Worksheet – “Solving Linear System Word Problems”***