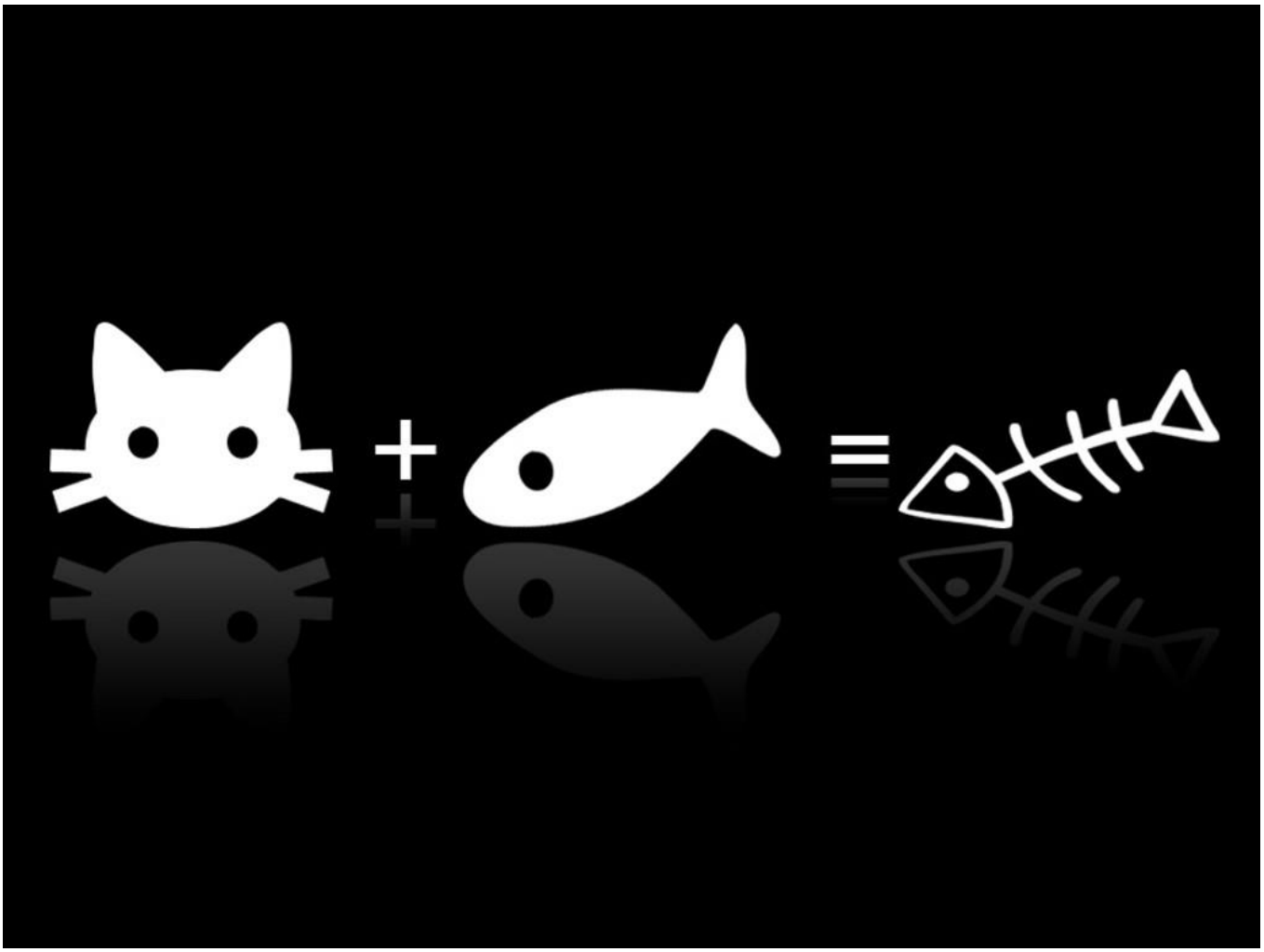
# Algebra 2

## Quarter Two (Pt 1)



**"I have never let my schooling interfere with my education" –Mark Twain**

## Overview

The first half of this quarter, we will be taking a closer look at linear systems, and how to apply matrix notation to manipulate large sets of data. In doing so, we will be able to transform values we know to find multiple ones we are looking for. Applications of this include the use of excel spreadsheets, the organization of business profits and expenses, as well as more theoretical breakthroughs such computer science algorithms and the formulation of quantum physics. In addition, we will take a short look at quadratic equations and get a glimpse of how to graph equations containing the term $x^2$.

## Lessons: Linear Systems and Matrices, Quadratic Equations

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|---|---|
| ____ **3.3:** Graph Systems of Linear Inequalities | } **10/23 - 10/27** |
| ____ **3.5:** Perform Basic Matrix Operations | |
| ____ **3.6:** Multiply Matrices | } **10/30 – 11/3** |
| ____ **3.7:** Evaluate Determinants and Apply Cramer's Rule | } **11/6 - 11/9** |
| ____ **4.1:** Graphing Quadratic Functions in Standard Form | |
| ____ **4.2:** Graph Quadratic Functions in Vertex or Intercept Form | } **11/13 - 11/17** |
| ____ **4.3:** Solve $x^2 + bx + c = 0$ by Factoring | |

## Individual/Group Work

**Guiding question 3:**

**How can you use systems of linear equations to solve systems of linear equalities? How do we address solving for 3 variables? Four Variables? Five variables? What is the best method of organizing that much data?**

____ ***19)*** Vocabulary: **system of linear inequalities, solution, matrix, dimensions** (of a matrix), **element, scalar, scalar multiplication,** (do one of the below).

a. Write the words, their definitions, and an example for each of the above terms in your notebook.

b. Create a mind-map with connections, a story, or a drawing with captions that shows the connections between the above terms.

c. Create vocabulary cards of the above terms. Be sure to include an example for each.

____ ***20)*** **Problem Sets:** You will find the problems in the textbooks in the classroom **OR** in the pdf form on Google Classroom. You must complete the whole set (and show your work) for full credit. Make sure you use the selected answers in the back of the book to check your work.

____ a. 3.3: Graph Systems of Linear Inequalities (p.171 #'s 3-19 odds, 31, 33, 35)

____ b. 3.5: Perform Basic Matrix Operations (p.191 #'s 5 through 27 odds, 31)

____ c. 3.6: Multiply Matrices (p. 199 #'s 3 through 17 odds, 31, 37)

____ ***21)*** **Video Notes:** Watch the Kahn Academy video "Intro to Linear Equations in Three Dimensions" posted on Google Classroom and take notes on it.

____ ***22)*** ***ASSESSMENT:*** Linear Equalities and Introduction to Matrices (3.3, 3.5, 3.6)

**(Friday, November 3rd)**

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**Guiding question 4:**

**How can we summarize a matrix as a single number, and what physical applications does this number have? How do you model an object's trajectory as it travels through the air?**

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____ ***23)*** Vocabulary: **determinant, quadratic function, parabola, vertex, axis of symmetry, minimum value, maximum value, vertex form, intercept form, monomial, binomial, trinomial** (do one of the below).

a. Write the words, their definitions, and an example for each of the above terms in your notebook.

b. Create a mind-map with connections, a story, or a drawing with captions that shows the connections between the above terms.

c. Create vocabulary cards of the above terms. Be sure to include an example for each.

____ ***24)*** **Problem Sets:** You will find the problems in the textbooks in the classroom **OR** in the pdf form on Google Classroom. You must complete the whole set (and show your work) for full credit. Make sure you use the selected answers in the back of the book to check your work.

____ a. 3.7: Evaluate Determinants (p.207 #'s 3 through 13 odds, 23, 25, )

____ b. 4.1: Graph Quadratic Functions in Standard Form

(p.240 #'s 3 through 13 odds, 21, 23, 25, 33, 35, 37)

____ c. 4.2: Graph Vertex or Intercept Form (p.249 #'s 9 through 19, 29 through 39 odds, 47)

____ d. 4.3: Solve $x^2 + bx + c = 0$ by Factoring (p. 255 #'s 3 through 29 odds)

____ ***25)*** **Parts of a Parabola:** Complete the worksheet by identifying the different parts of a parabola (ask me for this!). These parts can be found in your vocabulary list.

____ ***26)*** **Types of Quadratics:** Complete the graphic organizer and staple into your notebook. This organizer outlines all necessary information you will need to graph a parabola given any quadratic form.

____ ***27)*** ***ASSESSMENT:*** Matrices, Quadratic Equations, Parabolas (3.7, 4.1-4.3)

**(Friday, November 17th)**