



Learning Works Charter School



*Integrated Math 2A*  
Module 3

Student Name: \_\_\_\_\_ Teacher Name: \_\_\_\_\_

As you work through the chapters in your Integrated Math 2 course, you will be encouraged to think and to make conjectures while you persevere through challenging problems and exercises. You will make errors – and that’s okay! Learning and understanding occur when you make errors and push through mental roadblocks to comprehend and solve new and challenging problems.

**Text:** *Integrated Math 2*, Big Ideas, 2016

**To ensure you are learning, you must show your work for all exercises.  
YOU WILL NOT EARN CREDIT FOR ANSWERS WITHOUT WORK.**

**Chapter 3: Graphing Quadratic Functions (3.1-3.7)**

- \_\_\_\_\_ Maintaining Mathematical Proficiency (page 121): Complete exercises #1-9 all
- \_\_\_\_\_ 3.1 Graphing  $f(x) = ax^2$ : Read the lesson and complete exercises #1, 2, 5, 7, 9, 12, 13, 15, 17, 20 (free graphing calculator: [www.desmos.com/calculator](http://www.desmos.com/calculator))
- \_\_\_\_\_ 3.2 Graphing  $f(x) = ax^2 + c$ : Read the lesson and complete exercises #1, 2, 3, 5, 7, 9, 11, 13, 16, 18, 19, 24, 27, 42, 43, 44
- \_\_\_\_\_ 3.3 Graphing  $f(x) = ax^2 + bx + c$ : Read the lesson and complete exercises #1, 3, 5, 7, 10, 13, 15, 19, 21, 27, 50, 52
- \_\_\_\_\_ 3.4 Graphing  $f(x) = a(x - h)^2 + k$ : Read the lesson and complete exercises #19, 20, 21, 23, 27, 31, 32, 33, 35-41 all, 43, 80, 81, 82
- \_\_\_\_\_ 3.5 Graphing  $f(x) = a(x - p)(x - q)$ : Read the lesson and complete exercises #5, 7, 8, 9, 16, 18, 29, 31, 33, 41, 42, 43, 45, 47
- \_\_\_\_\_ 3.7 Comparing Linear, Exponential, and Quadratic Functions: Read the lesson and complete exercises #1, 5-9 all, 11, 14, 15, 16, 38

*Students must complete the Chapter Review and Project with a teacher or tutor at school.*

- \_\_\_\_\_ Chapter Review (pages 180-184): Complete exercises #1-23 all, 23, 25, 26, 27, 28, 33
- \_\_\_\_\_ Complete the attached Project (No project = No credit)

A teacher or tutor reviewed the Chapter Review and Project with the student.

Date: \_\_\_\_\_ Signature: \_\_\_\_\_

<i>Grade</i>
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**Integrated Math 2 Project**  
**Module 3: Graphing Quadratic Functions**  
**Textbook Pages: 121-186**

**Angry Birds**

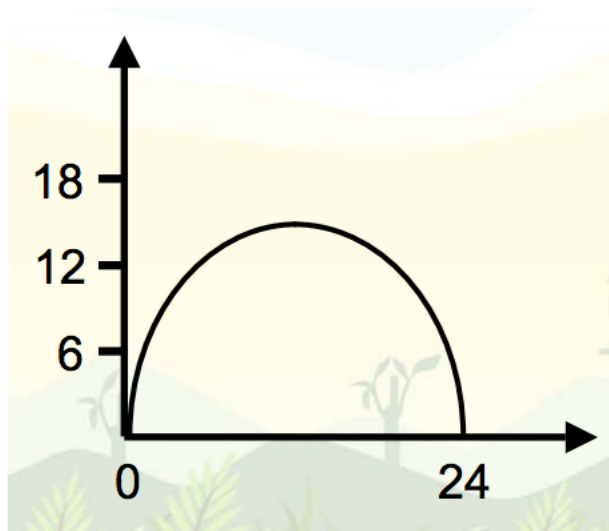
Red Bird, Yellow Bird, Blue Bird, and Black Bird are angry with the pigs. The pigs stole the bird's eggs. The birds want their eggs and will stop at nothing to get them back! The flight path of the birds can be modeled with a parabola. Use "x" as the distance and "y" as the height. Use yards for units.

**Step 1:** The data for each bird is represented in different forms. For each bird, determine the following:

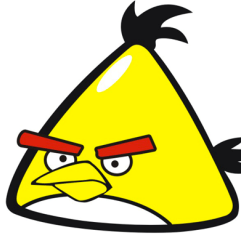
1. The axis of symmetry
2. The maximum height
3. The horizontal distance traveled



Red Bird



1. Axis of Symmetry:  $x =$  \_\_\_\_\_
2. Maximum Height: \_\_\_\_\_ yards (An approximation is fine here.)
3. Distance Traveled: \_\_\_\_\_ yards



Yellow Bird

The table below contains partial data points of Yellow Bird's Trajectory. Complete the table.

X	12	13	14	15	16	17	18	19	20	21	22		
Y	0	11	20	27	32	35	36	35	32				

1. Axis of Symmetry:  $x =$  \_\_\_\_\_

2. Maximum Height: \_\_\_\_\_ yards

3. Distance Traveled: \_\_\_\_\_ yards



Blue Bird

Blue bird starts his flight from point (6, 0). His flight path reaches a maximum height of 22 yards and lands at point (26, 0).

1. Axis of Symmetry:  $x =$  \_\_\_\_\_

2. Maximum Height: \_\_\_\_\_ yards

3. Distance Traveled: \_\_\_\_\_ yards



Black Bird

Black Bird's flight path can be modeled by the quadratic equation:

$$Y = -x^2 + 16x - 39$$

(Hint: See lessons 8.3 and 8.5)

1. Axis of Symmetry:  $x =$  \_\_\_\_\_

2. Maximum Height: \_\_\_\_\_ yards

3. Distance Traveled: \_\_\_\_\_ yards

**Step 2:** Now, on a piece of graph paper, graph each bird's trajectory. All 4 birds should be on the same coordinate plane, and you might want to graph them in their respective colors. Plot King Pig and Moustache Pig on the same coordinate plane. (Feel free to go crazy creative on this if you want to! You could draw pictures and color the entire page! 😊)



King Pig is located at point (22, 20)



Moustache Pig is located at point (11, 16)

**Step 3:** Answer the following questions:

1. Which bird flew the highest (vertical distance)?
2. Which bird flew the furthest (horizontal distance)?
3. Which bird hit King Pig?
4. Which bird hit Moustache Pig?