Learning Works Charter School

Algebra 1B
Module 7

Student Name: _____ Teacher Name: _____

As you work through the chapters in your Algebra 1 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: *Algebra 1 Common Core,* Big Ideas, 2015

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

Chapter 7: Polynomial Equations and Factoring (7.1-7.8)

_____ Maintaining Mathematical Proficiency (page 355): Complete exercises #1-13 **all**

_____ 7.1 Adding and Subtracting Polynomials: Read the lesson and complete exercises
#5, 6, 8, 10, 11, 13, 14, 16, 17, 18, 23, 24, 25, 27, 31-35 **all**, 39, 40

_____ 7.2 Multiplying Polynomials: Read the lesson and complete exercises
#3, 4, 9, 11, 13, 14, 16, 18, 20, 21, 23, 24, 29, 35, 37, 39, 55, 56, 57, 58

_____ 7.3 Special Products of Polynomials: Read the lesson and complete exercises
#3, 4, 5, 6, 10-18 **all**, 21, 31, 48, 49, 50

_____ 7.4 Solving Polynomial Equations in Factored Form: Read the lesson and complete exercises
#3, 4, 5, 7, 8, 10, 12, 22, 23, 25, 26, 29, 31, 34, 37, 49, 50, 51, 52

_____ 7.5 Factoring x^2+ bx + c: Read the lesson and complete exercises
#1, 3, 4, 5, 6, 9, 10, 12, 15, 16, 20, 21, 29, 30, 33, 34, 46, 52, 53, 54

_____ 7.6 Factoring ax^2 + bx + c: Read the lesson and complete exercises
#3, 4, 6, 9, 10, 13, 15, 23

_____ 7.7: Factoring Special Products: Read the lesson and complete exercises
#1, 3, 4, 5, 6, 8, 15-19 all, 22, 23, 27, 29, 30, 3 5, 36, 37, 38

_____ 7.8 Factoring Polynomials Completely: Read the lesson and complete exercises
#3, 4, 5, 7, 11, 12, 15, 22, 23, 24, 26, 29, 33, 42

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

_____ Chapter Review (pages 410-412): Complete exercises #1-40 **all**

_____ Complete the attached Project **(No project = No credit)**

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

Date: _____ Signature: _____

Grade

Continued on next page

Algebra 1 Project
Module 7: Polynomial Equations and Factoring
Textbook Pages: 355-414

Flight Path of a Bird

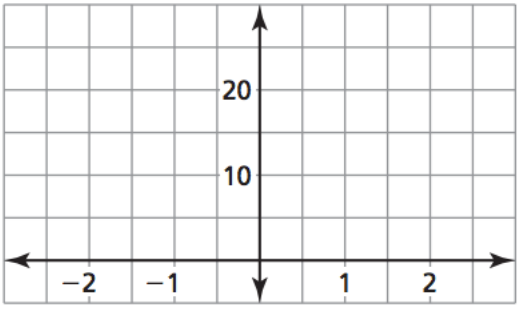
Be sure to answer questions in complete sentences.

Some birds, like parrots, have strong, large beaks to break open nuts and shells. But other birds, like crows, crack open their food by dropping it to the ground. How can a bird change its flight path to protect its falling food from other hungry birds?

Walnuts must fall at least 12 feet to the ground to break open. This creates a fall time that leaves the walnut vulnerable to theft by other birds. Scientists have studied crows dropping their food, and have concluded that the birds actually strategize about where to drop their food. A crow optimizes its path to find the shortest fall time that will return a broken nut.

1. The equation $y = h_0 - 16t^2$ models the height, y, of a walnut based on the initial height h_0 of the walnut, and the number of seconds, t, after the walnut is dropped. Write an equation representing the position of the walnut when a crow is flying and carrying the walnut at a height of 25 feet.

2. Graph your equation from Exercise 1. Label your axes appropriately.



a. What does the y-axis represent?

b. What does the x-axis represent?

c. Are negative values of x meaningful? Explain your reasoning.

d. What is the meaning of the y-intercept?

e. What is the meaning of the positive x-intercept?

3. Using your graph, will it take less than 1 second, 1 second exactly, or more than 1 second for the walnut to hit the ground?

4. How can you use your equation to calculate the exact time at which the walnut will hit the ground?

5. Use factoring to solve your equation. When will the walnut hit the ground?