Unit 2: Quadratic Functions Lesson 2.3

Game On!

(2) 1. The solutions to $nx^2 + px + q = 0$ are 4 and $-\frac{2}{5}$. What information does this tell you about the graph of $f(x) = nx^2 + px + q$?

(4) 2. Determine the roots of the equation $3x^2 - x - 4 = 0$ by factoring. Verify the roots and be sure to show all work.

(3) 3. Determine the exact roots of $0 = x^2 - 7x + 7$ using the quadratic formula.

(2) 4. Use technology to solve the following equation. List the steps you used to find the solution(s).

$5x^2 + 2x + 15 = 3x^2 + 13x + 27$

(4) Several methods of determining the roots of a quadratic equation were discussed in *Lesson 2.3*. Select one of the methods to determine the roots of the equation $5x^2 + 2x + 15 = 4x^2 + 13x - 15$. Verify the roots.

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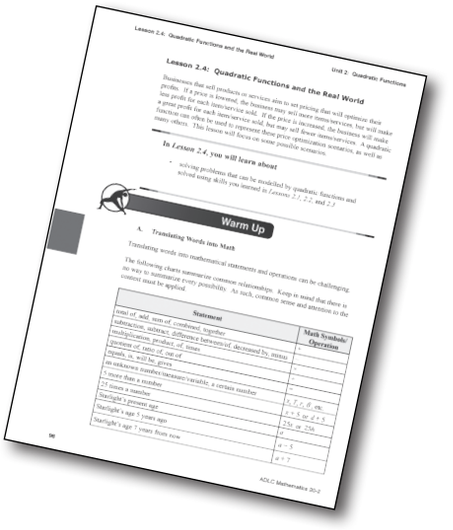
You have completed *Lesson 2.3 Game On!* Please return to the *Module* and continue your training with *Lesson 2.4*.


Lesson 2.4: Quadratic Functions and the Real World

Unit 2: Quadratic Functions

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Businesses that sell products or services aim to set pricing that will optimize their profits. If a price is lowered, the business may sell more items/services, but will make less profit for each item/service sold. If the price is increased, the business will make a great profit for each item/service sold, but may sell fewer items/services. A quadratic function can often be used to represent these price optimization scenarios. A quadratic many others. This lesson will focus on some possible scenarios.

In *Lesson 2.4*, you will learn about

- solving problems that can be modelled by quadratic functions and solved using skills you learned in *Lesson 2.1, 2.2,* and *2.3*

Warm Up

A. **Translating Words into Math**

Translating words into mathematical statements and operations can be challenging. no way to summarize every possibility. As such, common sense and attention to the context must be applied.

Statement	Math Symbols/ Operation
(total of, add, sum of, combined, together,	
subtraction, minus, difference between/of, decreased by, minus	
multiplication, product of, times	
quotient of, ratio of, out of	
equals, is, will be, gives	
an unknown number/measure/variable, a certain number	
3 more than a number	
2/3 times a number	
Starlight's present age	
Starlight's age 5 years ago	
Starlight's age 7 years from now	