

## Vocabulary Storytellers: Extended Example

**EXAMPLE 3:** A high school math teacher challenged her students to demonstrate their understanding of the similarities and differences between linear and quadratic functions by writing a story. One student's story is shown below.\*

Bobby got home from school around 3:30 on Monday. "Mom! Mom! There was a new kid in class today, Mom! He was weird!!" "New Bobby," his mother replied; "that's not very nice. How can you insult him if you haven't even met him?" "Well, Bobby began, "he was... quadratic!" "That doesn't mean he's weird. It's just different. Special, maybe," his mother said. "Sure, he's different, but in some ways, he's very much like yourself."

Little Bobby is a linear function. There are many ways in which quadratic functions are different from those linear in nature, so that's why Bobby was confused by the new student's presence. For example, Bobby's linear anatomy represents a straight line, which has slope, rises or falls, or has a slope of 0, or even no slope at all, whereas the little quadratic kid's function is a "parabola" or curved line, having a vertex, 1 y-intercept, and 2, 1, or 0 x-intercepts.

Also, if you looked at their pictures:

Bobby

Q:

you would notice they do look quite different. Bobby + Q's relatives look different, too: *not your relatives please!*

Q's family:

Grandma Vertex

Big Uncle Joe's

Bobby's family:

Cousin Slope

Aunt Point Slope

Great Grandpa Constant

As you can tell, one family would seem quite unique by the other's standards.

Yet another way these groups are different are the methods they might use to solve each other. The Quadratic species can be solved by completing the square, or by factoring. But in order to solve the linear walk of life, one must use the (substitution, addition, multiplication, division) property of equality, the distributive property, or some other such method.

Mind, you, that these families do have some similarities, too. For instance, both families can be solved by the simple process of graphing. They don't look the same on paper, but the idea is the same! Also, Q's grandma vertex looks a lot like Bobby's aunt point slope! (See pictures). They both have an "x" and a "y" co-ordinate, as well as a steepness gradient ("a" and "m"). That is how the families are alike. *right*

"Wow!" answered Bobby, after his mother told him all this. "I had no idea we were so much like them!"

"Well, I'm glad you learned a lesson!"

"Yeah, and tomorrow, I'm gonna go make friends with him, and maybe we can learn more about each other!"

"Good!" Bobby's mom said. "That's very nice of you."

Wonderful!

\* This is the complete version of the story shown in part on p. 171 of *Tools for Thoughtful Assessment*.