The X and Y Files

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The use of themes in teaching mathematics has the potential to increase students' interest in mathematical content. It is always a challenge for teachers to find connections that students find motivating. I believe that linking mathematical content to a well-known person, a popular TV show, a celebrated movie or a familiar phrase can have a powerful effect.

I am a student from the University of Alberta completing my preservice education. In my mathematics methods course we have been discussing the use of themes to engage students' interest. I used a theme for the Systems of Equations unit in Math 10 that is based on the popular TV show *The X Files*. Because this unit involved solving systems of linear equations in two unknowns, I modified the title to "The X and Y Files." Here are some of the examples I created which incorporate the theme into a lesson dealing with the substitution and elimination method for solving linear systems.

Example 1. Supernatural Beings have landed on Earth and have entered a virus into the U.S. government computer system, but in doing so they left a number trail behind them. Mulder and Scully are trying to use the number trail to find the latitude and longitude of the Beings' position. They know that the sum of two of the numbers is 176, and the difference of the two numbers is 48. By solving by substitution, can you help Mulder and Scully find the two numbers? (Hint: let x be the latitude and y be the longitude.)

Example 2. Mulder and Scully leave their office in separate cars on their way to the scene of an unusual event. Mulder travels on a path given by $3(x + 2y) = 48$. Scully's path is $(1/4)(x - 3y) = (1/2)x - 5$. Will they meet somewhere along the way? At what point?

Example 3. Mulder and Scully have information contacts in Halifax. They both call their own contact. Scully talks for 12 minutes and it costs her $12.24. Mulder talks for 5 minutes and it costs him $5.52. To find the cost k, for the first 3 minutes and the charge n for each minute after that, use these equations:

$$k + 9n = 12.24$$
$$k + 2n = 5.52$$

Find the basic charge and the charge per minute of Mulder and Scully's long-distance company.

Example 4. Scully has $3.70 in nickels and quarters. She has 4 more nickels than quarters. Mulder wants to borrow $2.50 in quarters. Does Scully have enough quarters for him? How many quarters and nickels does she have?

Example 5. Mulder is 4 times as old as his secret daughter. Five years ago he was 7 times as old as his secret daughter. Let x be Mulder's age and y be his secret daughter's age. What are their ages right now?

There are endless possibilities in creating themes such as this one. As new movies, TV shows and personalities become popular, new themes can be added to an already vast creativity bank. Another theme that I have used stems from the recently re-released *Star Wars* movie. For the Math 13 unit of Coordinate Geometry, I used this theme and titled it "May the slope be with you." A simple stroke of the pen can transform a common example into one which fits with the theme.

If Han Solo is traveling on a path represented by the equation $y = 3/4x + 2$ and Darth Vader is traveling on a path that passes through the points $(5,1)$ and $(9,4)$, are their paths going to cross?

Star Wars could also serve as the basis for a theme for the Math 20 Power unit that involves exponents. Here the slogan could be, "May the power be with you."

The key to using a theme is to find a topic that interests students at whatever level you are teaching. Using the popular movie *Star Wars* for a theme caused interesting discussions in my Math 13 class. Students became involved in writing the examples with me by volunteering characters and then the mathematics. I have students who are coming up to me in the hallways asking me if I've seen the latest re-released movie of the trilogy and asking me to use a certain character in my examples the next day. When I first used some of these examples in my Math 13 class, there were cheers or groans, the students were making connections, adding meaning and facilitating recall, but most importantly, they were having fun.