Human Cannonballs, Trapeze Artists, and Evil Geniuses: Using Humor to Engage College Algebra Students

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The Evil Genius!

- An evil genius was present at your birth. Unbeknownst to your or your mom, you were injected with 100 cc's of a docile radioactive material. You have recently discovered the unauthorized addition and want to know how much of the substance is still in your body. You craftily figure out the formula for deterioration of the substance and are ready for some answers. The formula to determine the amount left in your body:

$$Y = \frac{100}{a^2 + 1}$$

- Find the amount of material remaining in your and share your findings with the class.

The Evil Genius!

- First Response to a Classmate
  - Calculate the amount of the docile radioactive material in a classmate's body two years from today.

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- Second Response to a Classmate
  - Share any appropriate and interesting scenario that may explain the injection!

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Why Include Humor?

- Chabeli (2008)
  - Use of humor stimulated an engaged and relaxed atmosphere.
- Matarazzo, Durik, and Delaney (2010)
  - Students reported greater task interest in math when their learning was humorous rather than non-humorous.

Chabeli, M. (2008). Humor: a pedagogical tool to promote learning. Curationis, 31(3), 51-59.

Matarazzo, K. L., Durik, A. M., & Delaney, M. L. (2010). The effect of humorous instructional materials on interest in a math task. Motivation & Emotion, 34(3), 293-305. doi:10.1007/s11031-010-9178-5

Quadratic Equations

- Which method of solving quadratics is your favorite: factoring, completing the square, or the quadratic formula? Why?

  Choose a quadratic equation from the list and solve it using your preferred method.

- First Response to a Classmate: Choose a classmate's problem and solve their quadratic using a different method.

- Second Response to a Classmate: Choose a different classmate and check their problem.

Human Cannonball

- You are being shot out of a cannon. Use the equation to determine how many seconds it will take for you to hit the ground.

$$Y = -16t^2 + vt + h$$

Since we want the time required for you to land (safely!) on the ground, let $Y = 0$. Use factoring, completing the square, or the quadratic formula to solve this quadratic equation for t.

- Response to a classmate: Create a scenario explaining why your classmate was shot out of a cannon. Include details of the events leading up to the incident.

Trapeze Artist

- A circus trapeze can be through of as a pendulum. The formula for the time it takes for a pendulum, or trapeze artist, to make one full swing (the period) can be calculated using the following formula:

$$T = 2\pi\sqrt{\frac{L}{g}}$$

- Using your height for the length of the pendulum, how long would it take to make one full swing on the pendulum?

Trapeze Artist

- If another member of the circus lengthened the trapeze by one foot, how long would it take the trapeze artist to complete one full swing with their new length?

- Share any appropriate and interesting scenarios that may explain the change in length of the trapeze.

Caffeine

- The half-life of caffeine is found using the formula:

$$A = C(0.5)^{\frac{2}{k}}$$

- Find the amount of caffeine in your favorite beverage. Be sure to find the amount of caffeine in the entire container, not just in one serving. Assume you drink the entire beverage in one sitting. Share the name of your favorite caffeinated beverage, the amount of caffeine in the beverage, and your calculations for how much caffeine will be left in your system after 2 hours.

Caffeine

- How much caffeine would be left in their system after 2 hours if they completely drank 3 beverages in one sitting?

- Share any appropriate and interesting scenarios that may explain the decision to triple the caffeine intake.

The Evil Genius! – Your Turn!

- First Response to a Classmate
  - Calculate the amount of the docile radioactive material in a classmate's body two years from today.
- Second Response to a Classmate
  - Share any appropriate and interesting scenario that may explain the injection!

Questions?

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