**Subject area/course**: Mathematics/Algebra 2

**Grade level/band**: 11-12

**Task source**: Educational Policy Improvement Center (EPIC)

**Spreads Like (Exponential) Wildfire**

**STUDENT INSTRUCTIONS**

1. **Task context**:

What do rumors and wildfires have in common? They are two things that can fan out rapidly, even wildly, over time. Rumors and wildfires are also examples of two things that can be described by exponential functions. They grow exponentially.

Imagine that the math department at your school is going to be holding a math competition and each member of your class is required to submit a problem that involves exponential growth or decay. First, you will need to research or invent a situation that involves exponential growth or decay. If you find information on the Internet, remember that you must credit your source by using correct citations.

Next, write up the problem and its solution, as they would appear in the competition handbook. Throughout this task, remember that you are trying to create an imaginative application of exponential functions for your classmates. The situation and the math involved can be as complicated as you wish it to be.

The write-up should include:

* A clear description of the situation
* All assumptions that are made concerning the initial population and growth rate, and other elements of the situation if necessary
* Use written and visual information to tell a compelling story
* A detailed solution to the problem

1. **Final product**:

Write up your math problem for other students to solve. You will need to include actual or simulated data that you use to solve the problem. Be sure to organize your data using scatterplots, tables, or other means of organizing data. Include graphs and the equation for the exponential function in your well-organized solution.

**Additional Information**

1. **Knowledge and skills you will need to demonstrate on this task:**

* Understand exponential function, growth factor, growth rate, initial population
* Design and conduct a simulation that models a situation involving exponential growth or decay
* Collect data, fit an exponential function to the data, and draw conclusions from the data

1. **Materials needed:**

* Graphing calculator
* Access to a computer to write your final product

1. **Time requirements:**

You will have approximately 3 days to complete this project. Your teacher may give you in-class time to work or require you to do most of the assignment outside of class.

1. **Scoring:**

Your work will be scored using the SCALE Math Performance Assessment Rubric (Grades 9-12). You should make sure you are familiar with the language that describes the expectations for proficient performance.