


Dear Math Genius,

I am writing to offer you an opportunity to be a part of a groundbreaking new television show I'm producing. In an attempt to revive interest in reality TV, FOX has hired me to execute the most incredible reality show ever created! It's going to be called THE ULTIMATE SURVIVOR, and the premise is the following. Picture a mid-sized US city, population 400,000, suddenly contaminated with the most deadly super-virus ever created! Some might call this a catastrophic disaster. I call it the opportunity of a lifetime! Each person in the city will be given the chance to win 1 million dollars! We've decided to award this generous cash prize to the last 10 survivors of the deadly virus. Imagine that—if they can live for 24 hours, they can be millionaires!

You're probably thinking, "That's a fantastic idea, but what do I have to do with all of this?" So here's where you come in. We have a world-class scientist working for us. (Perhaps you've heard of her—Dr. Chirhen?) She has asked us to find an equation for her which models the expected population, given how many hours have passed since the release of the virus. She said that it was important to tell you that the rate of change in the population is directly proportional to the population itself. You'll also need to assume that we're starting with 400,000 people and after 24 hours, we'd like there to be only 10 remaining. When you find this equation, I'd be curious to know how many people you expect there to be remaining after 10 hours and after 20 hours. So, are you up to the task?

It's all around town that you are the mathematician to work with if there's any math that needs to be done, so it's you that I want on this project. If you accept, I'll be more than happy to spotlight your name in the credits. Just send me a reply with your answers and an explanation of how you solved the problem, and make sure it's written so that it's understandable to Dr. Chirhen. Also, it's important that it gets here by Friday, February 24th, so don't delay. Thanks for your consideration of this matter!

Sincerely,



Matthew Sedanner