

# BLOSSOMS at Home IV

## *Coronavirus Math Games*

**Key Words:** Modeling infectious disease, probability, coronavirus, critical thinking, reflective learning

**Grade levels:** 7 – 12.

### **Dear Student@Home!~**

Hi from MIT in Cambridge, Massachusetts, USA! We have a unique project for you to do over the next week. It builds from the MIT BLOSSOMS video lesson, “**Flu Math Games.**” This BLOSSOMS lesson was created in August 2009, as a way to educate high school students on the then-current world-wide respiratory disease pandemic, the H1N1 influenza. We wanted the students who experienced this lesson to return home and educate their siblings and parents. That is our goal now, 11 years later, with the next respiratory disease pandemic, the Coronavirus, technically called COVID-19. It turns out that the fundamental math modeling of the flu and COVID-19 are the same. So, we can use the flu math modeling video for a COVID-19 math modeling video!

The 2009 video was created thinking that a teacher would show it on a large screen on front of a classroom of students. And then the students would perform up to four different “student simulations,” “infecting” each other with the H1N1 virus. We can’t do that here, @Home. So, at each break in the video when such a student simulation is to be done, when possible, you will try to match that simulation using one of the animated computer-based simulations we have on our web site!

We want you to write a short report addressing the issues we pose here. Total estimated time to do all these things: only 4 hours or less! Send me your report (300 words or less), I promise to read it, and send comments to you! Maybe you’ll get a Gold Star from us. You might want to share your essay with your teacher, and your friends as well! Maybe even your parents and siblings!

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## Flu Math Games

[https://blossoms.mit.edu/videos/lessons/flu\\_math\\_games](https://blossoms.mit.edu/videos/lessons/flu_math_games)

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### **For your report:**

Watch the video, maybe twice! At each break think about the issues that the three presenters in the video are trying to develop. Then, when the video is over, thinking like a scientist, become familiar with the six animated Simulations on the web site. Think of these as test laboratories. Play with the simulations so you become comfortable with them. (Adobe Flash Player is required.) Then, design and implement a simulation plan that exhibits many if not most of the ideas that would be developed in live student simulations.

You want to write a summary report for your parents and friends that explains, via the simulation results and verbal arguments, the fundamental physics of respiratory disease spread. In particular, you want to show how the use of NPI’s (Non-Pharmaceutical Interventions, NPIs) can greatly reduce disease spread. View your work as an applied science project report. Have fun! I can’t wait to see your results!