

BLOSSOMS@Home for Students@Home VII

Tragedy of the Commons

https://blossoms.mit.edu/videos/lessons/tragedy_commons

Key Words: math modeling, free public resources, overuse, abuse, metaphor, reflective thinking
Grade levels: 8 – 12.

Dear Student@Home!~

Hi from MIT in Cambridge, Massachusetts, USA! This lesson most likely finds you at home, not in your school, due to the Coronavirus. Well, if you want to indulge your mind and imagination in a class of important real-world problems, we have just the project for you! The subject deals with many of our most important societal issues: clean air, clean water, public lands, highways, internet communication, and more. While doing this, you'll have some fun! And you'll develop a new appreciation for how simple math ideas can have profound impacts in our world.

Here is your voluntary assignment: Watch the assigned BLOSSOMS video (*Tragedy of the Commons*), maybe twice! Try to work out your responses to the questions that end each video segment (when you will need to pause the video). Take one or two of your favorite responses, and include them in your report to me. We're especially interested in your thought processes. You'll learn about metaphors! In addition, your short report (300 words or less), should include your responses to the two questions we ask below. Again, we are less interested in numerical "answers" to anything and more interested in your processes of approaching and attacking the problem. Explain clearly in words! Total estimated time to do all these things: Only 4 hours or less! Send me your report, and I promise to read it and send comments back to you! Maybe you'll get a Gold Star from us. You might want to share your report with your teacher, and your friends as well!

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Also include in your report, paragraph text answers to these two questions:

1. You have learned the metaphor, *Tragedy of the Commons*. In your own words, written for a friend or family member, explain this metaphor. Describe how it may apply to an important problem in your own community, and knowing what you know now, how thinking in this way may lead to new policies to reduce the seriousness of this problem.
2. There is also "*Reverse Tragedy of the Commons*." This occurs when people in a population do things that are (selfishly) good for themselves and – paradoxically – then found to be good for everyone else as well! Do good for yourself, and that is good for everyone! Sound impossible? Well, think of the current Coronavirus and personal behaviors of Social Distancing and Impeccable Hygiene. Can you explain *Reverse Tragedy of the Commons* in this situation? To do this, you may have to study a little on the web about infectious diseases and how they are spread from person to person. The key math parameter is R_0 , the basic reproductive number, defined to be the mean number of new infections generated by a newly infected person. A friendly and accessible resource is the BLOSSOMS lesson, *Flu Math Games*.

<https://bit.ly/2UtqfCF>

