

BLOSSOMS at Home III

Flaws of Averages

Key Words: Modeling, applied mathematics, critical thinking, active learning, reflective learning, fun
Grade levels: 8 – 12.

Dear Student@Home!~

Hi from MIT in Cambridge, Massachusetts, USA! We have a super cool project for you to do over the next week. It requires you to look at and think about an MIT BLOSSOMS video lesson, “***Flaws of Averages,***” try to answer questions posed within the video, and then write a short essay addressing new questions we pose here. Total estimated time to do all these things: only 4 hours or less! Send me your short essay (300 words or less), I promise to read it, and send comments to you! Really great essays will get a Gold Star from us. You might want to share your essay and our communication with your teacher, and your friends as well! Maybe even your parents!

Watch the BLOSSOMS lesson shown below and then write an integrated essay in response to our three questions. Have fun! Looking forward to your emailed essay!

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Flaws of Averages

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

Questions:

1. The video lesson presented three ways in which “thinking in terms of averages” may be misleading. Please describe each of these in your own words and provide an illustrative example of each, an example NOT in the video or on its web pages. My favorite (no, I have this one!): *The Center of Mass of a doughnut is in the doughnut hole, where there is only air, no doughnut!* Can you write your answer in such a way that your best friend would understand it?
2. National movie theaters tend to be open seven days a week, 52 weeks a year, starting at 11:00 AM and going to 10:00 or 11:00PM. All seats are for sale for all showings. Think about when you and your friends go to the movies: Write down an estimate of the fraction of seats having customers for the movies you see. Now I provide you with business information: For a national chain of movie theaters, management reports that on average they sell only 5% of the seats offered for sale. 95% of offered seats remain empty! In terms of this lesson, explain the difference between what you wrote down and what the movie theater management is reporting. Can you also apply this logic to airplane travel? To other industries?
3. In your own school life, can you think of situations in which one or more of the three flaws of averages apply to you and your classmates? For examples, think of test grades, the cafeteria, sports, friendships, getting to and from school each day, weather, etc. Please describe briefly.