Lens 2: Purposes of Argumentation Tasks

What do you want students to learn from the mathematical argumentation task?

Review each task and use the following guiding questions to identify what you want students to learn from the argumentation task.

- Does the task help students produce better arguments?
- Does the task help students develop conceptual understanding?
- Does the task help students to mathematize contextualized problems and interpret the meanings of solutions?
- Does the task help students make sense of and compare across multiple approaches and multiple representations?

Task 1

The coordinates of the four vertices of figure ABCD are A(4, 3), B(8, 3), C(4, 6) and D(8, 6). Based on the differences between the coordinate points, Jasmine believes figure ABCD is a square. Do you agree with her? Write a mathematical argument to support your answer.

Task 2

Alexa is training to bike 70 miles. During her first week of training she bikes 12 miles. During her second week she bikes 24 miles, and by her third week she bikes 36 miles. If Alexa continues with the same biking pattern each week, when will she be able to bike 70 miles? Write a mathematical argument to support your reasoning.

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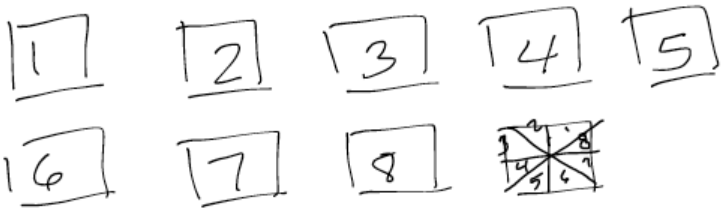
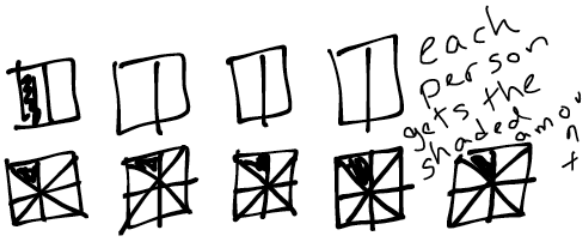
Task 3

Jenna shows 9 people sharing 8 brownies this way:



Giselle shows 9 people sharing 8 brownies this way:



Who is right?

Task 4

Kay is squaring numbers. She notices that when she squares a number, the result is *larger* than the original number.

Here are some of her examples:

$3^2 = 9$ $10^2 = 100$ $(-4)^2 = 16$

She conjectures "the square of a number is always larger than the number."

a. Find another example that supports Kay's conjecture.

b. Is this conjecture always true (for all numbers)? If so, explain how you know. If not, revise Kay's conjecture so that it is a true statement.