MAT.08.ER.3.0000F.E.205 Claim 3

Sample Item ID:	MAT.08.ER.3.0000F.E.205
Grade:	08
Claim(s):	**Claim 3: Communicating Reasoning** Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.
Secondary Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Primary Content Domain:	Functions
Secondary Content Domain(s):	
Assessment Target(s):	3 E: Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is. 1 E: Define, evaluate, and compare functions. 1 A (Gr 7): Analyze proportional relationships and use them to solve real-world and mathematical problems. 3 F: Base arguments on concrete referents such as objects, drawings, diagrams, and actions.
Standard(s):	8.F.3, 7.RP.3
Mathematical Practice(s):	1, 2, 4, 7
DOK:	3
Item Type:	ER
Score Points:	2
Difficulty:	M
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-Specific Attributes (e.g., accessibility issues):	Calculators may be used on this item.
Notes:	Part of PT set.

Samir was assigned to write an example of a linear functional relationship. He wrote this example for the assignment.

> The relationship between the year and the population of a county when the population increases by 10% each year

Part A

Complete the table below to create an example of the population of a certain county that is increasing by 10% each year.

Year	Population of a Certain County
0	
1	
2	
3	
4	

Part B

State whether Samir's example represents a linear functional relationship. Explain your reasoning.

Sample Top-Score Response:

Part A

Year	Population of a Certain County
0	100,000
1	110,000
2	121,000
3	133,100
4	146,410

Part B

Samir's example is not a linear functional relationship. The population does not increase by the same amount each year, so the relationship is not linear.

Scoring Rubric:

Responses to this item will receive 0-2 points, based on the following:

2 points: The student shows a thorough understanding of how to distinguish between linear and nonlinear relationships. The student correctly completes the table showing a 10% increase in population each year, states that the relationship is not linear, and provides a clear and complete explanation of why the relationship is not linear. Rounding to the nearest whole number for the population is permitted.

1 point: The student shows a partial understanding of how to distinguish between linear and nonlinear relationships. The student makes calculation errors in the table but gives a response in *Part B* that corresponds with the numbers in the table OR the student completes the table correctly but provides an incorrect explanation in *Part A*.

0 points: The student shows inconsistent or no understanding of how to distinguish between linear and nonlinear relationships. The student makes major errors when completing the table and gives a response in *Part B* that does not correspond to the values entered in the table.