Problem-Based Task 1.2.3: Population Change

On opposite sides of a major city two suburban towns are experiencing population changes. One town, Town A, is growing rapidly at 5% per year and has a current population of 39,000. Town B has a declining population at a rate of 2% per year. Its current population is 55,000. Economists predict that in 5 years the populations of these two towns will be about the same, but the residents of both towns are in disbelief. The economists also claim that ten years after that, Town A will double the size of Town B. Can you verify the predictions based on the data given? Do you think these predictions will come true?

Problem-Based Task 1.2.3: Population Change

Coaching

a. Is Town A experiencing population growth or decay? What is the equation for Town A's population change after 5 years?

b. What is the solution to the equation in part a?

c. Is Town B experiencing population growth or decay? What is the equation for Town B's population change after 5 years?

d. What is the solution to the equation in part c?

e. Are your solutions to parts b and d similar? What can you conclude about the economists' prediction about the populations of the two towns being about the same after 5 years?

f. What will the variable, t, equal if the towns experience the same rates of growth or decline for 10 more years after that?

g. What are the equations for each town's population change?

h. Based on your calculations, was the economists' prediction for the town populations after 10 more years correct?

i. What factors might influence whether or not the economists' predictions come true?