

A New School

Researchers at a school board have developed models to predict population changes in the three areas they service. The models are $A(t) = \frac{360}{t+6}$ for area A, $B(t) = \frac{30t}{t+1}$ for area B, and $C(t) = \frac{50}{41-2t}$ for area C, where the population is measured in thousands and t is the time, in years, since 2007. The existing schools are full, and the board has agreed that a new school should be built.



- ?** In which area should the new school be built, and when will the new school be needed?
- Graph each population function for the 20 years following 2007. Use your graphs to describe the population trends in each area between 2007 and 2027.
 - Describe the intervals of increase or decrease for each function.
 - Determine which area will have the greatest population in 2010, 2017, 2022, and 2027.
 - Determine the intervals over which
 - the population of area A is greater than the population of area B
 - the population of area A is greater than the population of area C
 - the population of area B is greater than the population of area C
 - Determine when the population of area B will be increasing most rapidly and when the population of area C will be increasing most rapidly.
 - What will happen to the population in each area over time?
 - Decide where and when the school should be built. Compile your results into a recommendation letter to the school board.

Task Checklist

- ✓ Did you show all your steps?
- ✓ Did you draw and label your graphs accurately?
- ✓ Did you support your choice of location for the school?
- ✓ Did you explain your thinking clearly?