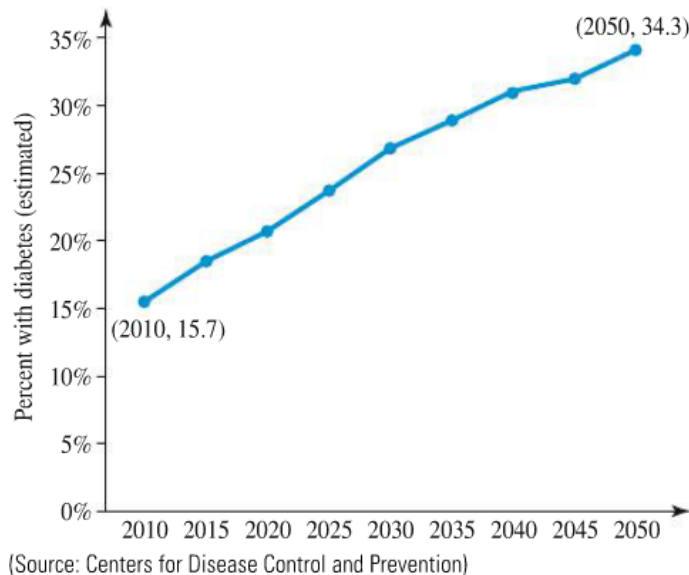


College Algebra, Section 1.3, #44  
Linear Functions

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**Diabetes** The figure below shows the projected percent of U.S. adults with diabetes for the years 2010 through 2050. What is the average rate of growth over this period of time? <sup>1</sup>



Let's first notice when and how horizontal and vertical axes are defined. The horizontal axis represents time in years from 2010 through 2050 while the vertical axis represents the percent of adults with diabetes.

We are asked to find the “average rate of growth” over this 40-year period. The key word here is “average” so we need to find the constant rate of change, or slope, of the line connecting the first and last point.

I'll let (2010, 15.7) be the first point and (2050, 34.3) be the second point.

$$\begin{aligned} \text{Slope} &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{34.3 - 15.7}{2050 - 2010} \\ &= \frac{18.6}{40} \\ &= 0.465 \end{aligned}$$

The average rate of change is 0.465 percentage points per year.

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<sup>1</sup>Harshbarger/Yocco, *College Algebra In Context*, 5e, p. 57, #44.