

## Exercise 43

For the following exercises, use the median home values in Indiana and Alabama (adjusted for inflation) shown in Table 3. Assume that the house values are changing linearly.

Year	Indiana	Alabama
1950	\$37,700	\$27,100
2000	\$94,300	\$85,100

Table 3

If these trends were to continue, what would be the median home value in Indiana in 2010?

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### Solution

To predict the median home value in Indiana in 2010, an equation of the home price  $P$  has to be written. Let  $t$  be the number of years after 1950. When  $t = 0$ ,  $P = 37\,700$ , and when  $t = 50$ ,  $P = 94\,300$ :  $(0, 37\,700)$  and  $(50, 94\,300)$ . Determine the slope.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{94\,300 - 37\,700}{50 - 0} = \frac{56\,600}{50} = 1132$$

Now use the point-slope formula with either of the two points to get the equation of the line.

$$y - 37\,700 = 1132(t - 0)$$

$$y - 37\,700 = 1132t$$

$$y = 1132t + 37\,700$$

Plug in  $t = 60$  to determine the home value in 2010.

$$y = 1132(60) + 37\,700 = 105\,620$$

Therefore, the median home price in Indiana in 2010 will be \$105,620, assuming the rate of home value increase remains constant.