

Investigation 2.1 Linear Models

- Standard form of a line— $y = mx + b$
- x is the **independent variable**
- y is the **dependent variable**
- m is the **slope/pattern in table/constant rate of change**
- $m = \text{rise/run}$
- b is the **y-intercept/starting point**

Part A—Refer to the graph on page 25 “First State Bridge-Painting Costs.”

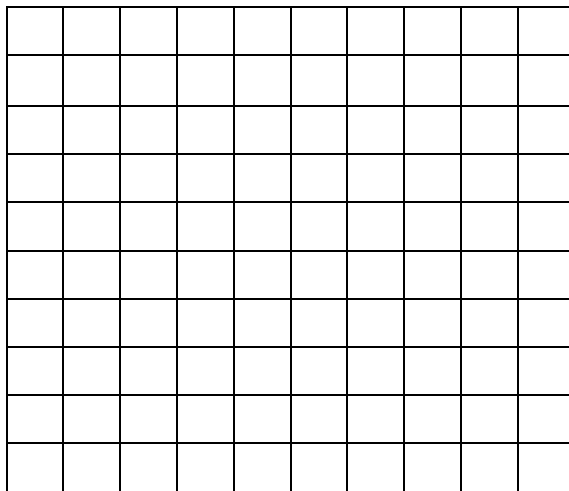
1. Write an equation for the line that models the data in $y = mx + b$ form.

2. Use the line of the equation to estimate painting costs for a bridge that is:
 - a. 175 feet long _____
 - b. 280 feet long _____
3. Use the line or the equation to estimate lengths for a bridge that costs:
 - a. \$ 10,000 _____
 - b. \$ 60,000 _____

Part B--First State Bridge-Painting Costs

Bridge Number	Length (ft)	Painting Costs
3	150	\$50,000
4	300	\$80,000
5	500	\$140,000

1. On the graph below, plot these data points.



2. Write an equation for your line in $y = mx + b$ form.

3. Use your equation or line to estimate the painting cost for a bridge that is 200 feet long.

4. Use your equation or line to estimate the length of a bridge that costs \$100,000 to paint.
