

Name: _____

Date: _____

Lines of Best Fit Algebra (Grade 8)

Exercise #1:

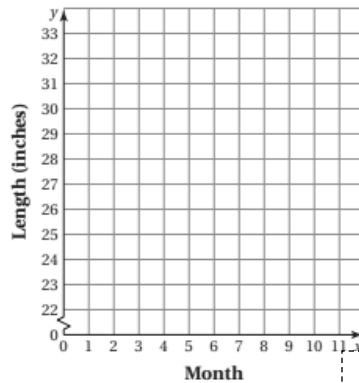
Work with a partner. You have been working on a science project for 8 months. Each month, you measured the length of a baby alligator.

The table shows your measurements.

| | September | | | | April | | | |
|-------------------|-----------|------|------|------|-------|------|------|------|
| | ↓ | | | | ↓ | | | |
| Month, x | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Length (in.), y | 22.0 | 22.5 | 23.5 | 25.0 | 26.0 | 27.5 | 28.5 | 29.5 |

Use the following steps to predict the baby alligator's length next September.

- a. Graph the data in the table.
- b. Draw a line that you think best approximates the points.
- c. Write an equation for your line.
- d. **MODELING** Use the equation to predict the baby alligator's length next September.



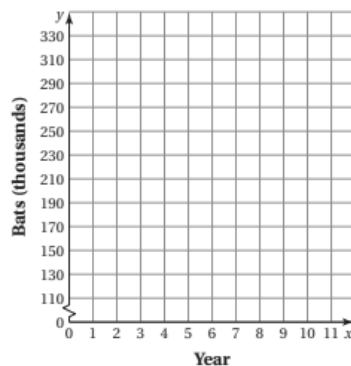
Exercise #2:

You are asked to predict the number of bats that will be living in an abandoned mine after 10 years.

To start, you find the number of bats that have been living in the mine during the past 8 years.

| | 7 years ago | | | | this year | | | |
|-----------------------|-------------|-----|-----|-----|-----------|-----|-----|-----|
| | ↓ | | | | ↓ | | | |
| Year, x | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Bats (thousands), y | 327 | 306 | 299 | 270 | 254 | 232 | 215 | 197 |

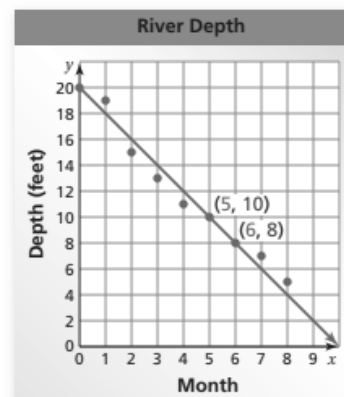
- a. Graph the data in the table.
- b. Draw a line that you think best approximates the points.
- c. Write an equation for your line.
- d. **MODELING** Use the equation to predict the number of bats in 10 years.



A **line of fit** is a line drawn on a scatter plot close to most of the data points. It can be used to estimate data on a graph.

Steps:

1. Scatter Plot
2. Draw a reasonable **line of best fit**.
3. Find two points.
4. Find equation of the line using the two points.

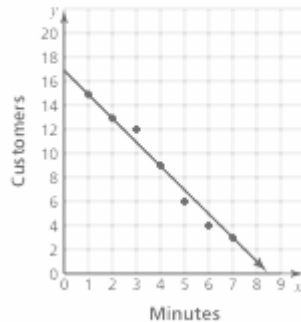


Exercise #2:

The table shows the number y of customers in line at a bank x minutes after noon.

| Minutes, x | Customers, y |
|--------------|----------------|
| 1 | 15 |
| 2 | 13 |
| 3 | 12 |
| 4 | 9 |
| 5 | 6 |
| 6 | 4 |
| 7 | 3 |

a. Make a scatter plot of the data and draw a line of fit.



b. Write an equation of the line of fit.

c. Interpret the slope and the y-intercept of the line of fit.

d. Predict the number of customers in line 8 minutes after noon.

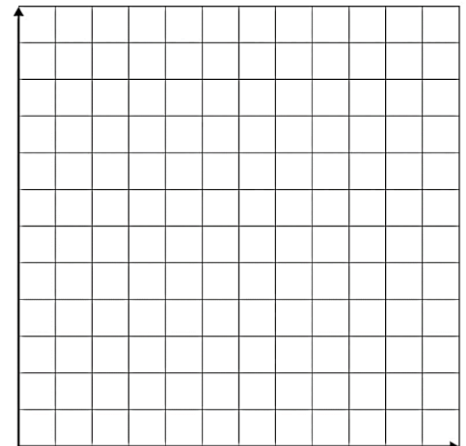
Exercise #3:

HOT CHOCOLATE The table shows the daily high temperature ($^{\circ}\text{F}$) and the number of hot chocolates sold at a coffee shop for eight randomly selected days.

| Temperature ($^{\circ}\text{F}$), x | 30 | 36 | 44 | 51 | 60 | 68 | 75 | 82 |
|---|----|----|----|----|----|----|----|----|
| Hot Chocolates, y | 45 | 43 | 36 | 35 | 30 | 27 | 23 | 17 |



- Make a scatter plot of the data and draw a line of fit.
- Write an equation of the line of fit.
- Interpret the slope and the y-intercept of the line of fit.
- Predict the number of hot chocolates sold when the high temperature is 20°F .



Exercise #4:

VACATION The table shows the distance you are away from home over a 6-hour period of your vacation.

| Hours, x | Distance (miles), y |
|------------|-----------------------|
| 1 | 62 |
| 2 | 123 |
| 3 | 188 |
| 4 | 228 |
| 5 | 280 |
| 6 | 344 |

- Make a scatter plot of the data and draw a line of fit.
- Write an equation of the line of fit.
- About how many miles per hour do you travel?
- About how far were you from home when you started?
- Predict the distance from home in 7 hours.

