

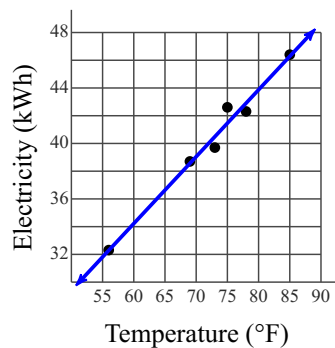
8.SP.3 Use line of best fit to answer questions Day 2

- 1) The cost of a flight is related to the distance traveled:

| Miles | 225 | 800 | 1,375 | 1,675 | 1,950 | 2,250 |
|-----------|------|-----|-------|-------|-------|-------|
| Cost (\$) | 49.8 | 111 | 130 | 171 | 205 | 265 |

This can be modeled by the equation $y = 0.0972x + 21.2$ where x is distance in miles and y is cost in dollars.

- What does the slope of the line represent?
 - What does the y-intercept of this function represent?
 - Using this model, what would be the cost of a flight that travels 1100 miles? Round your answer to the nearest dollar.
 - What distance corresponds to a cost of \$72? Round your answer to the nearest mile.
- 2) The average amount of electricity consumed by a household in a day is strongly correlated to the average daily temperature for that day. This relationship is given by $y = 0.482x + 5.28$ where x is the temperature in $^{\circ}\text{F}$ and y is the amount of electricity consumed in kilowatt-hours (kWh).



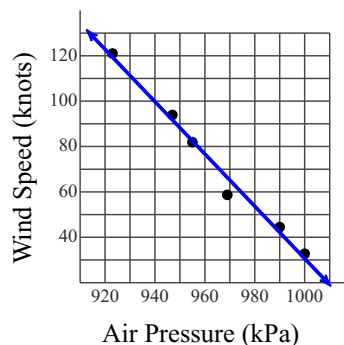
- What does the slope of the line represent?
- What does the y-intercept of this function represent?
- Using the model, how much electricity would be consumed if the average daily temperature was 62°F ? Round your answer to the nearest kilowatt-hour.
- What temperature would it need to reach in order for 36 kWh to be consumed? Round your answer to the nearest degree.

- 3) With the help of scientists, farmers in the United Kingdom have been able to produce more and more grain per hectare each year. Here are the crop yields for several years:

| Year | 1962 | 1970 | 1982 | 1993 | 2000 | 2006 |
|--------------------|-------|-------|-------|-------|-------|-------|
| Yield (kg/hectare) | 3,780 | 4,130 | 5,310 | 5,490 | 6,530 | 5,740 |

The crop yield can be described by the equation $y = 55x - 104000$ where x is the year and y is the grain yield in kilograms per hectare (kg/ha).

- What does the slope of the line represent?
 - What does the y-intercept of this function represent?
 - According to the model, what was the crop yield in 1987? Round your answer to the nearest whole number.
 - The model indicates that a crop yield of 4700 kg/hectare was achieved in what year? Round your answer to the nearest year.
- 4) There is a close relationship between the air pressure inside a hurricane and its maximum sustained wind speed: $y = -1.15x + 1180$ where x is the air pressure in millibars (kPa) and y is the wind speed in knots (nautical miles per hour).



- What does the slope of the line represent?
- What does the y-intercept of this function represent?
- Using the model, what would be the wind speed of a hurricane with an air pressure of 979 kPa? Round your answer to the nearest knot.
- The model indicates that a wind speed of 100 knots is associated with what air pressure? Round your answer to the nearest millibar.

Answers to 8.SP.3 Use line of best fit to answer questions Day 2

- 1) Slope: The additional cost for each additional mile
Y-intercept: The cost of a flight that doesn't go anywhere
\$128, 523 miles
- 2) Slope: The additional electricity consumption for each additional degree Fahrenheit
Y-intercept: The average electricity consumption for a daily average temperature of 0°F
35 kWh, 64°F
- 3) Slope: The increase in crop yield every year
Y-intercept: The crop yield in year zero
5,285 kg/ha, 1976
- 4) Slope: The change in wind speed for every 1 kPa increase in air pressure
Y-intercept: The wind speed of a hurricane with an air pressure of 0 kPa
54 knots, 939 kPa