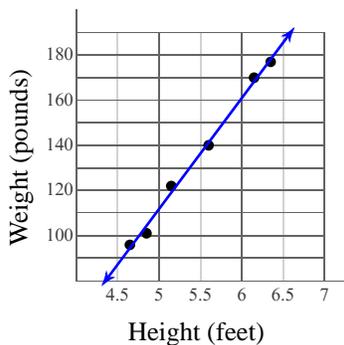


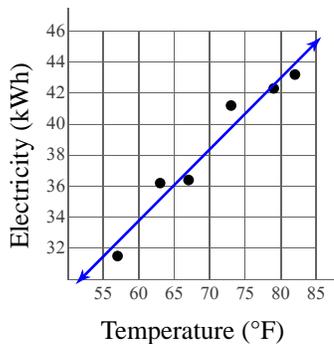
## Using Statistical Models

- 1) The height and weight of adults can be related by the equation  $y = 49.2x - 134$  where  $x$  is height in feet and  $y$  is weight in pounds.



- a) What does the slope of the line represent?
- b) What does the y-intercept of this function represent?

- 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  $y = 0.46x + 6.17$  where  $x$  is the temperature in  $^{\circ}\text{F}$  and  $y$  is the amount of electricity consumed in kilowatt-hours (kWh).

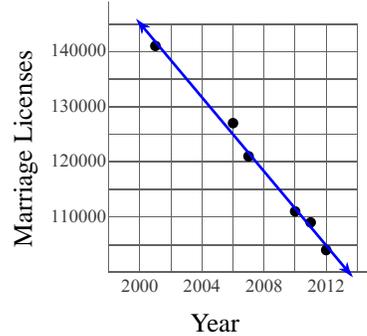


- a) What does the slope of the line represent?
- b) What does the y-intercept of this function represent?

- 3) The number of marriage licenses issued by Clark County Nevada, the county where Las Vegas is located, has been decreasing since the year 2000:

Year	Marriage Licenses
2001	141,000
2006	127,000
2007	121,000
2010	111,000
2011	109,000
2012	104,000

This can be modeled by the equation  $y = -3358.1x + 6861400$  where  $x$  is the year and  $y$  is the number of marriage licenses issued.

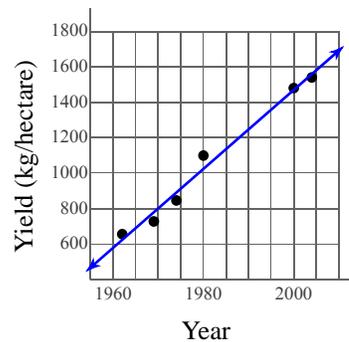


- a) According to the model, how many marriage licenses were issued in 2004? Round your answer to the nearest hundred.
- b) Using this model, how many marriages licenses would you expect to be issued in 2023? Round your answer to the nearest hundred.
- c) According to the model, in what year did Clark County issue 140,000 marriage licenses? Disregard years before 1990. Round your answer to the nearest year.

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

Year	Yield (kg/hectare)
1962	656
1969	728
1974	846
1980	1,100
2000	1,480
2004	1,540

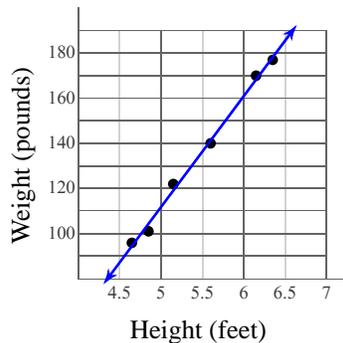
The crop yield can be described by the equation  $y = 22.3x - 43100$  where  $x$  is the year and  $y$  is the grain yield in kilograms per hectare (kg/ha).



- a) According to the model, what was the crop yield in 1988? Round your answer to the nearest whole number.
- b) Assuming that this trend continues, what crop yield is predicted for the year 2022 by the model? Round your answer to the nearest whole number.
- c) The model indicates that a crop yield of 1300 kg/hectare was achieved in what year? Round your answer to the nearest year.

## Using Statistical Models

- 1) The height and weight of adults can be related by the equation  $y = 49.2x - 134$  where  $x$  is height in feet and  $y$  is weight in pounds.



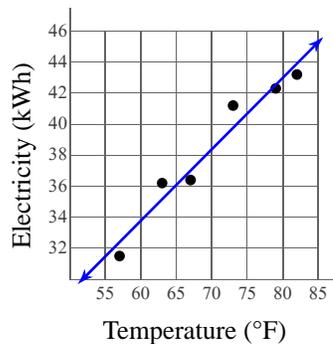
- a) What does the slope of the line represent?

The number of pounds heavier an adult one foot taller would weigh

- b) What does the y-intercept of this function represent?

The weight of an adult zero feet tall

- 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  $y = 0.46x + 6.17$  where  $x$  is the temperature in  $^{\circ}\text{F}$  and  $y$  is the amount of electricity consumed in kilowatt-hours (kWh).



- a) What does the slope of the line represent?

The additional electricity consumption for each additional degree Fahrenheit

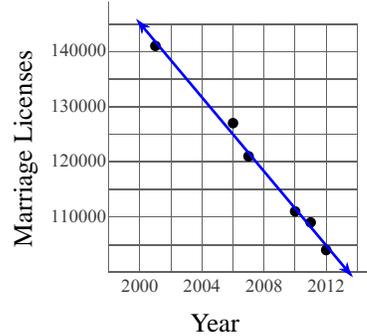
- b) What does the y-intercept of this function represent?

The average electricity consumption for a daily average temperature of  $0^{\circ}\text{F}$

- 3) The number of marriage licenses issued by Clark County Nevada, the county where Las Vegas is located, has been decreasing since the year 2000:

Year	Marriage Licenses
2001	141,000
2006	127,000
2007	121,000
2010	111,000
2011	109,000
2012	104,000

This can be modeled by the equation  $y = -3358.1x + 6861400$  where  $x$  is the year and  $y$  is the number of marriage licenses issued.



- a) According to the model, how many marriage licenses were issued in 2004? Round your answer to the nearest hundred.

131,800

- b) Using this model, how many marriages licenses would you expect to be issued in 2023? Round your answer to the nearest hundred.

68,000

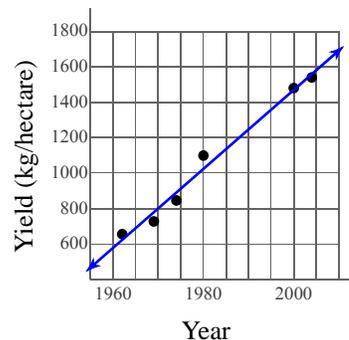
- c) According to the model, in what year did Clark County issue 140,000 marriage licenses? Disregard years before 1990. Round your answer to the nearest year.

2002

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

Year	Yield (kg/hectare)
1962	656
1969	728
1974	846
1980	1,100
2000	1,480
2004	1,540

The crop yield can be described by the equation  $y = 22.3x - 43100$  where  $x$  is the year and  $y$  is the grain yield in kilograms per hectare (kg/ha).



- a) According to the model, what was the crop yield in 1988? Round your answer to the nearest whole number.

1,232 kg/ha

- b) Assuming that this trend continues, what crop yield is predicted for the year 2022 by the model? Round your answer to the nearest whole number.

1,991 kg/ha

- c) The model indicates that a crop yield of 1300 kg/hectare was achieved in what year? Round your answer to the nearest year.

1991