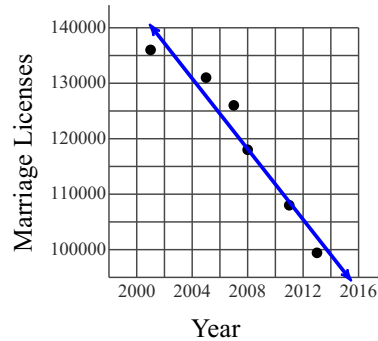
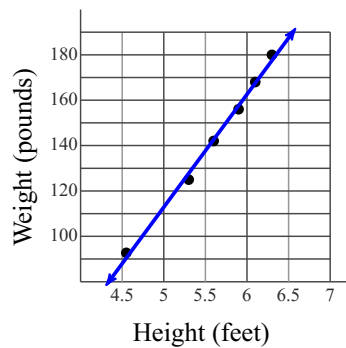


8.SP.3 Day 4

- 1) The number of marriage licenses issued by Clark County Nevada, the county where Las Vegas is located, has been decreasing since the year 2000. This can be modeled by $y = -3178.1x + 6499900$ where x is the year and y is the number of marriage licenses issued.

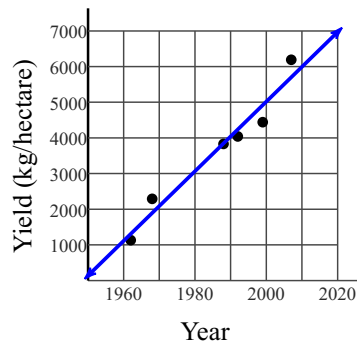


- a) What does the slope of the line represent?
- b) What does the y-intercept of this function represent?
- 2) The height and weight of adults can be related by the equation $y = 49.7x - 136$ where x is height in feet and y is weight in pounds.

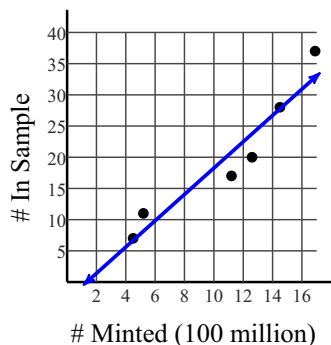


- a) What does the slope of the line represent?
- b) What does the y-intercept of this function represent?

- 3) Scientists have steadily increased the amount of grain that farms can produce each year. The yield for farms in China is given by $y = 97.6x - 190000$ where x is the year and y is the grain yield in kilograms per hectare (kg/ha).

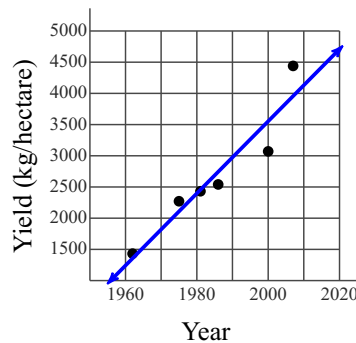


- a) What does the slope of the line represent?
- b) What does the y-intercept of this function represent?
- 4) The number of nickels from a particular year found in a sample of 1,000 is related to the number of nickels that were minted that year. This can be expressed as $y = 2.11x - 2.82$ where x is the number of nickels minted in a particular year in hundreds of millions and y is the number of nickels from that year in a sample of 1,000.

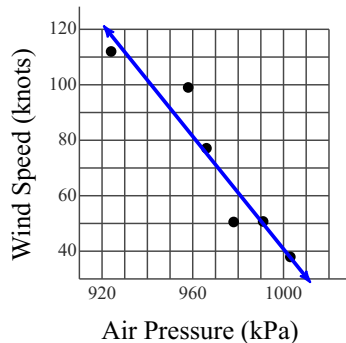


- a) According to the model, how many nickels from a year in which 23 hundred million were minted would you expect to find in a sample of 1,000? Round your answer to the nearest whole number.
- b) A sample of 1,000 nickels contains 10 from a particular year. According to the model, how many would you expect to have been minted that year? Round your answer to the nearest tenth of a hundred million.

- 5) Scientists have steadily increased the amount of grain that farms can produce each year. The yield for farms in Colombia is given by $y = 57.8x - 112000$ where x is the year and y is the grain yield in kilograms per hectare (kg/ha).



- a) Assuming that this trend continues, what crop yield is predicted for the year 2026 by the model? Round your answer to the nearest whole number.
- b) The model indicates that a crop yield of 3200 kg/hectare was achieved in what year? Round your answer to the nearest year.
- 6) There is a close relationship between the air pressure inside a hurricane and its maximum sustained wind speed: $y = -1.02x + 1060$ where x is the air pressure in millibars (kPa) and y is the wind speed in knots (nautical miles per hour).



- a) According to the model, a hurricane with an air pressure of 888 kPa would have what wind speed? Round your answer to the nearest knot.
- b) The model indicates that a wind speed of 110 knots is associated with what air pressure? Round your answer to the nearest millibar.