

1. The number of firearm-related deaths in the United States for various years are shown in the table below.

Firearm-Related U.S. Deaths	
Year	Firearm-Related Deaths (thousands of deaths)
1993	40
1995	36
1997	32
1999	29
2000	28

Source: Centers for Disease Control & Prevention

- (a) Use your graphing calculator to plot a scattergram of the data. Then use the space below to find the equation of a line that approximates the data well.

Let n represent the number (in thousands) of firearm-related deaths t years since 1990.

$$m = \frac{(3, 40) - (10, 28)}{10 - 3} \rightarrow \frac{-12}{7} \approx -1.71$$

$$P_1: (3, 40)$$

$$\left. \begin{array}{l} n = -1.71t + b \\ 40 = -1.71(3) + b \\ 40 = -5.14 + b \\ \quad +5.14 \quad +5.14 \\ 45.14 = b \end{array} \right\} \rightarrow n = -1.71t + 45.14$$

- (b) What is the slope of your model and what does it mean in this situation?

$$m = -12/7 \approx -1.71 \rightarrow \text{THE NUMBER OF FIREARM RELATED DEATHS IN THE U.S. IS DECREASING AT A RATE OF 1700 EVERY 7 YRS OR ABOUT 1700/YR.}$$

- (c) What is the n -intercept and what does it mean in this situation?

$$n - \text{int}: \text{WHEN } t = 0 \text{ SO } n = 45.14$$

\rightarrow IN 1990 THERE WERE ABOUT 45 000 FIREARM RELATED DEATHS IN THE U.S.

- (d) When does your model predict there will be no firearm-related deaths in the U.S.?

$$0 = -1.71t + 45.14$$

$$\begin{array}{r} -45.14 \\ -45.14 \end{array} \qquad \begin{array}{r} -45.14 \\ -45.14 \end{array}$$

$$-45.14 = -1.71t$$

$$\begin{array}{r} -45.14 \\ -1.71 \end{array} = \begin{array}{r} -1.71t \\ -1.71 \end{array}$$

$$26.3 \approx t \rightarrow \text{IN 2016}$$

