

More Linear Models

- The cost of renting a 26-foot U-Haul truck is \$39.95 per day and \$0.59 per mile. Let $f(x)$ represent the cost of renting a truck for a day and driving it “ x ” miles.
 - How much will it cost to rent a truck for a day if the driver goes a total of 32 miles?
 - What is the slope of the line given by this calculation of cost?
 - If $x = 0$, how much does it cost to rent the truck for a day?
 - Find the equation of the line.
- A certain long distance company charges \$5 a month for their service plus an additional \$0.05 per minute on calls. If “ x ” represents the total number of minutes of long distance used during any given month and “ $f(x)$ ” represents the cost of the bill for that month, find the following:
 - Find the cost of a bill during a month where 250 minutes of long distance were used.
 - What is the slope of the line given by this calculation of cost?
 - If no long distance calls were made during a particular month, how much is the bill?
 - Find the equation of the line.
 - What does $f(50)$ represent?
- After 8 minutes, the altitude of an airplane above the runway is 6 thousand feet. After 12 minutes, the altitude of the same airplane is 9 thousand feet.
 - What is the rate of change of the altitude per minute?
 - What is the altitude of the airplane after 15 minutes?
- According to the Census, the population of the Metro-Augusta area in 1990 was 415,184 and in 2000 was 477,441. Let “ x ” represent the year after 1990 and “ $f(x)$ ” represent the number of people in Augusta “ x ” years after 1990.
 - What is the rate of change of the population per year?
 - If the rate of change remains the same, what is the expected population in 2010?
- Assume that the sales of a certain appliance dealer are approximated by a linear function. Suppose that sales were \$13,500 in 1982 and \$65,500 in 1987. Let $x = 0$ represent 1982.
 - What x -value represents 1987?
 - If yearly sales is “ y ”, what is the slope of this line?
 - Find the equation giving yearly sales.
- Green Glass Recycling uses the function given by $F(t) = -5000t + 90,000$ to determine the salvage value in dollars of a waste removal truck t years after it has been put into use.
 - What is the salvage value of the truck after it has been in operation for 6 years?
 - How many years can the truck be used before the salvage value of the truck is \$25,000?
 - When is the value of the truck \$0?
 - What is the value of the truck at time of purchase?
- The mathematical model $C(x) = 450x + 25,000$ represents the cost in dollars a company has in manufacturing “ x ” computers during a month. Based on this:
 - How much does it cost the company if no computers are made a certain month?
 - How many computers can be made for \$115,000 in a certain month?
 - How much will it cost the company during a month where 350 computers are made?
- It is estimated that there were $C(x) = 2.4x + 24$ million homes in the U.S. with computers from 1991 to 2005. If “ x ” represents the years after 1991, find the following:
 - What value of “ x ” represents 2000?
 - Find the estimated number of computers in U.S. homes in the year 2000.
 - In what **year** is it estimated that there are 50 million computers in U.S. homes?