

3.1.D2 - LINEAR REGRESSION

Use a graphing calculator to determine the linear regression equation and the correlation coefficient (rounded to 4 decimal places) for each given set of data. Then use the equation to make the prediction. Refer to the 3.1 example "Using Linear Regression to Model Data and Make Predictions" in the Chapter 3 Summary.

1. The table shows the attendance for the annual spring concert at Eva's high school for 6 years. *The year 2007 is represented by $x = 0$.*

YEAR	ATTENDANCE
2007	789
2008	805
2009	773
2010	852
2011	884
2012	902

- Linear regression equation:
- Correlation coefficient:
- Predict the attendance in 2016.

2. The table shows the monthly record sales of a recording artist over 6 months. *January is represented by $x = 1$.*

MONTH	RECORD SALES
January	60,000
February	54,000
March	58,000
April	46,000
May	43,000
June	30,000

- Linear regression equation:
- Correlation coefficient:
- Predict the record sales total for December.

Identify the independent and dependent quantities (including units) in each problem situation. Assign a variable to each quantity. Then write a function to represent the problem situation. Refer to the 2.1 example "Identifying Dependent & Independent Quantities and Writing an Expression" in the Chapter 2 Summary.

3. Tonya is walking to school at a rate of 3 miles per hour.

Independent quantity: _____ Variable: _____

Dependent quantity: _____ Variable: _____

Function: _____

4. A bathtub filled with 50 gallons of water is drained. The water drains at a rate of 5 gallons per minute.

Independent quantity: _____ Variable: _____

Dependent quantity: _____ Variable: _____

Function: _____

Write and solve an inequality to answer the question. Refer to the 2.3 example "Writing & Solving Inequalities" in the Chapter 2 Summary.

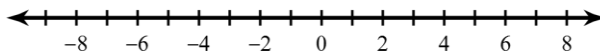
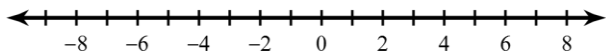
5. You walk dogs in your neighborhood after school. You earn \$4.50 per dog. How many dogs do you need to walk to earn at least \$75?

6. On a trip from Buffalo, New York to St. Augustine, Florida, a family wants to travel at least 250 miles in the first 5 hours of driving. What should their average speed be in order to meet this goal?
7. Leon plays on the varsity basketball team. So far this season he has scored a total of 52 points. He scores an average of 13 points per game. The function $f(x) = 13x + 52$ represents the total number of points Leon will score this season. How many more games must Leon play in order to score fewer than 85 points?

Solve each inequality and graph the solution set. Refer to the 2.3 example "Solving an Inequality with a Negative Rate of Change" in the Chapter 2 Summary.

8. $6 - 6x \leq -42$

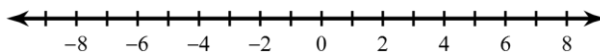
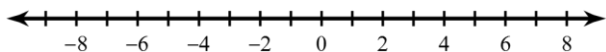
9. $8(5 - 5x) > 360$



Solve each compound inequality and graph its solution set. Refer to the 2.4 example "Solving Compound Inequalities" in the Chapter 2 Summary.

10. $3 < 3 + 4x \leq 31$

11. $2 + 7x \leq -54$ or $-8x - 5 < 35$



12. $-3 < \frac{2x + 5}{3} \leq 5$

13. $3 < \frac{5 - 2x}{3} < 5$

