Interpretation and Definition of the Linear Regression Equation Practice Problems

This handout was developed to provide practice on topics presented in the “Interpretation and Definition of the Linear Regression Equation” handout from the SFSU CARP website.

This handout will:

- Allow students to practice finding x given y or y given x using “real world” applications of linear regression.
- Provide problems where students interpret the slope and y intercept in “real world” applications of linear regression.

Practice Problems

1. Cricket chirps increase with temperature according to the following equation: \( y = 12.18x + 27.559 \) where y is the number of chirps per minute and x is the temperature in degrees Fahrenheit. Please answer the following questions:

   a) How many chirps per minute is a cricket expected to make at 70°F? 80°F? 90°F? Round your answer to the nearest chirp per minute.

   b) If a cricket is making 1000 chirps per minute, what is the temperature most likely to be? How about 1200 chirps per minute?

   c) Interpret the slope of the equation relating cricket chirps to temperature.
d) Interpret the y intercept of the equation relating cricket chirps to temperature.

e) Does your answer for (d) make “real world” sense? Why or why not?

2. A preschool has kept track of its enrollment from 1980 to 2015. The following linear regression equation shows the relationship between enrollment at the preschool and the year: 

\[ y = 1.1595x - 2283 \]

where y is the number of students enrolled and x is the year. Please answer the following questions:

a) How many students is the preschool expected to have in 2017? 2025?

b) What year is it if there are 75 students enrolled in the preschool?
c) Interpret the slope of the equation relating number of preschool students to year.

d) Interpret the y intercept of the equation relating number of preschool students to year.

e) Does your answer for (d) make “real world” sense? Why or why not?
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Works Cited