2.6 Ft. Collins temperature data (Data file: `ftcollinstemp`) The data file gives the mean temperature in the `fall` of each year, defined as September 1 to November 30, and the mean temperature in the following `winter`, defined as December 1 to the end of February in the following calendar year, in degrees Fahrenheit, for Ft. Collins, CO (Colorado Climate Center, 2012). These data cover the time period from 1900 to 2010. The question of interest is: Does the average `fall` temperature predict the average `winter` temperature?

2.6.1 Draw a scatterplot of the response versus the predictor, and describe any pattern you might see in the plot.

2.6.2 Use statistical software to fit the regression of the response on the predictor. Add the fitted line to your graph. Test the slope to be 0 against a two-sided alternative, and summarize your results.

2.6.3 Compute or obtain from your computer output the value of the variability in `winter` explained by `fall` and explain what this means.

2.6.4 Divide the data into 2 time periods, an early period from 1900 to 1989, and a late period from 1990 to 2010. You can do this using the variable `year` in the data file. Are the results different in the two time periods?