

# AP Stats

## Chap 7 Classwork

Name \_\_\_\_\_ Pd \_\_\_\_\_

### *Flight Distances and Fares.*

How related are the distances and accompanying fares for flights from the Atlanta International Airport to several other cities? Use the data at the right – and the given summary statistics – to answer the following questions.

Atlanta to:	Distance	Fare
Baltimore	568	219
Boston	933	222
Dallas	720	249
Denver	1190	308
Detroit	602	249
Kansas City	683	141
Las Vegas	1719	252
Miami	589	229
Memphis	327	183
Minneapolis	894	209
New Orleans	419	199
NY	749	248
Okla City	749	301
Orlando	392	238
Philadelphia	657	205
St Louis	461	232
Salt Lake	1565	371
Seattle	2150	343
<b>Summary Statistics</b>		
Mean	853.7	244.33
St Dev	497.8	56.37
Correlation	0.694	

- Find  $r^2$ . 1. \_\_\_\_\_
- Explain what  $r^2$  means in this context.
- Find the slope of the regression line. 3. \_\_\_\_\_
- Find the y-intercept of the regression line. 4. \_\_\_\_\_
- Write the equation of the linear model.
- Estimate the fare for a 200-mile flight. 6. \_\_\_\_\_
- Estimate the fare for a 2000-mile flight. 7. \_\_\_\_\_
- Using your estimates, draw the Line of Best Fit on the scatterplot.
- Explain what the y-intercept means in this context.
- Explain what the slope means in this context.
- The fare to fly to Los Angeles, 1719 miles from Atlanta, is \$212. Find the residual. 11. \_\_\_\_\_

Use the following original scatterplot, residual plot, and computer analysis to answer the following.  
(Hint: Refer to page 188 of your text book for help!)

Dependent variable is: fare

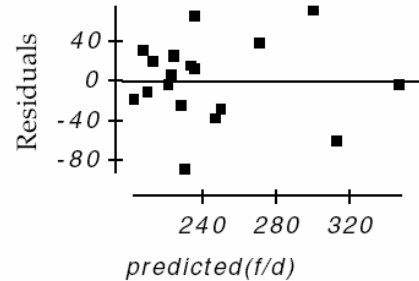
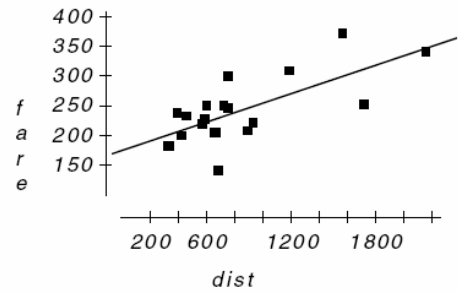
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$R^2 = 48.2\%$   $R^2 \text{ (adjusted)} = 45.0\%$

$s = 41.82$  with  $18 - 2 = 16$  degrees of freedom

Source	Sum of Squares	df	Mean Square	F-ratio
Regression	26037.4	1	26037.4	14.9
Residual	27980.6	16	1748.79	

Variable	Coefficient	s.e. of Coeff	t-ratio	prob
Constant	177.215	19.99	8.86	$\leq 0.0001$
dist	0.078619	0.0204	3.86	0.0014



12. Is the linear model appropriate for estimating airfare from the distance flown? Why?

13. How strong is this model? Explain.

14. Identify any possible outliers. Why are they unusual?

15. Write the equation of this model.

15. \_\_\_\_\_

16. Predict the airfare for a 1000-model flight.

16. \_\_\_\_\_