Chapter 12 Review Sheet
Inference for Linear Regression

1. The data in the above table gives the top 15 states in terms of per pupil expenditure in 1985 and the average teacher salary in the state for that year.

State/ Salary	MN 27360	CO 25892	OR 25788	PA 25853	WI 26525	MD 27186	DE 24624	MA 26800	RI 29470	CT 26610	DC 33990	WY 27224	NJ 27170	NY 30678	AK 41480
Pupil Exp	3982	4042	4123	4168	4247	4349	4517	4642	4669	4888	5020	5440	5536	5710	8349

   a. Find a model that allows us to predict teacher salary from per pupil expenditure and justify that it is appropriate. Interpret the slope of the regression line in the context of the problem.

   b. Predict the teacher salary if the pupil spending is $4600.

   c. For the model, identify the standard error of the residuals and the error of the slope of the regression line.

   d. Construct a 95% confidence interval for the slope of the population regression line.

   e. Perform a significance test of the hypotheses that there is a positive slope.

2. The following data relates the number of times a dog chases its tail (x) with average hours of sleep per week (y)

x	4.3	4.55	5.55	5.65	5.95	6.3	6.45	6.45
y	8.0	8.3	7.8	7.25	7.7	7.5	7.6	7.2

   a. Is there significant evidence at the 10% level to show there is a linear relationship between a dog chasing their tail and hours of sleep?

   b. The researchers believe that there is a decrease in the average hours slept per tail chase. Is there enough evidence at the 5% to support the researchers claim?

   c. Construct a 98% confidence interval for the slope of the population regression line.

Chapter 12 Review Sheet
Inference for Linear Regression

Consider the following Minitab print out with a sample size of 14:

Predictor	Coef	St Dev	*t* ratio	*p*
Constant	282.459	3.928	71.91	.000
x	0.63383	0.07039	9.00	.000
s = 9.282	R-sq = 81.0%	R-sq(adj) = 80.0%		

a. What is the equation of the regression line?

b. What is the standard error of the residuals?

c. What is the standard error of the slope?

d. Do the data strongly indicate a linear relationship between *x* and *y*? Explain.

e. Assuming all conditions are met. Provide a 95% confidence interval for the above data.