

REVIEW 7.1 and 7.2

Enter the MYSTERY data on the right into your calculator. Then answer the questions.

1. Look at the scatterplot. How would you describe the correlation? Be sure to mention positive or negative, strong/weak/moderate, and form (curved/linear).

2. ESTIMATE the correlation coefficient (r) by looking at the graph. Is it closest to 1, -1 or 0? Why?

3. Do STAT > CALC > 4 to get your regression equation, r and r<sup>2</sup>. Record them here.

$$\hat{y} = \underline{\hspace{2cm}} x + \underline{\hspace{2cm}}$$

$$r = \underline{\hspace{2cm}} \text{ (this is called } \underline{\hspace{2cm}} \text{)}$$

$$r^2 = \underline{\hspace{2cm}} \text{ (this is called } \underline{\hspace{2cm}} \text{)}$$

4. Predict the property value for 42 spaces past go. Show work.

5. How many spaces past go would you expect a \$725 property value to be? Show work.

6. Find the residual for x = 37. Remember residual = actual – predicted Show work.

7. Find residual for x = 3 Show work.

8. Why is one of the residuals you found positive and the other negative?

9. What percentage of the data can be explained by the regression line? **This question is super easy. You just have to look at problem #3.**

10. We have established that for the game of monopoly, there is a strong positive correlation (r = .878) between the number of places past go (X) and the cost of the property (Y). Here are the summary statistics for the data.

Number of places past go (X)	Average = 20.03	Standard Deviation = 10.94
Cost of the property (Y).	Average = 203.21	Standard Deviation = 84.51

Use the summary data and the value of r to find the equation of the LSRL using the formulas below. Compare your answer to what you got in #3.

$$a = r \frac{s_y}{s_x} \quad b = \bar{y} - a\bar{x}$$

**Prob/Stat/Discrete**  
**Unit 7 (7.3-7.5) Review Worksheet**

**Name**\_\_\_\_\_

**Provide an appropriate response.**

- 1) A random sample of 150 students has a grade point average with a standard deviation of 0.78. Find the margin of error if  $c = 0.90$ .
  
  
  
  
  
  
  
  
  
  
- 2) A random sample of 40 students has a mean annual earnings of \$2650 and a standard deviation of \$702. Find the margin of error if  $c = 0.95$ .
  
  
  
  
  
  
  
  
  
  
- 3) A group of 35 bowlers showed that their average score was 211 with a standard deviation of 7. Find the 95% confidence interval of the mean score of all bowlers.
  
  
  
  
  
  
  
  
  
  
- 4) In a random sample of 60 computers, the mean repair cost was \$150 with a standard deviation of \$36. Construct a 99% confidence interval for the population mean.

5) In a recent study of 84 eighth graders, the mean number of hours per week that they watched television was 22.3 with a standard deviation of 5.8 hours.

a) Find the 90% confidence interval of the mean.

b) If the standard deviation is doubled to 11.6, what will be the effect on the confidence interval?

6) The number of wins in a season for 32 randomly selected professional football teams are listed below. Construct a 90% confidence interval for the true mean number of wins in a season. (Round to nearest tenth).

9	9	9	8	10	9	7	2
11	10	6	4	11	9	8	8
12	10	7	5	12	6	4	3
12	9	9	7	10	7	7	5

7) In order to efficiently bid on a contract, a contractor wants to be 95% confident that his error is less than two hours in estimating the average time it takes to install tile flooring. Previous contracts indicate that the standard deviation is 4.5 hours. How large a sample must be selected?

A 4                      B) 5                      C) 20                      D 19

8) In order to fairly set flat rates for auto mechanics, a shop foreman needs to estimate the average time it takes to replace a fuel pump in a car. How large a sample must he select if he wants to be 99% confident that the true average time is within 15 minutes of the sample average? Assume the standard deviation of all times is 30 minutes.

A 6                      B) 27                      C) 5                      D 26

- 9) In a random sample of 28 families, the average weekly food expense was \$95.60 with a standard deviation of \$22.50. Determine whether a normal distribution or a t-distribution should be used or whether neither of these can be used to construct a confidence interval. Assume the distribution of weekly food expenses is normally shaped.
- A) Use normal distribution.
  - B) Use the t-distribution.
  - C) Cannot use normal distribution or t-distribution.

- 10) Construct a 90% confidence interval for the population mean,  $\mu$ . Assume the population has a normal distribution. A sample of 15 randomly selected students has a grade point average of 2.86 with a standard deviation of 0.78.

- 11) Construct a 95% confidence interval for the population mean,  $\mu$ . Assume the population has a normal distribution. In a random sample of 26 computers, the mean repair cost was \$130 with a standard deviation of \$36. (Round to nearest hundredth).

- 12) The grade point averages for 10 randomly selected high school students are listed below. Assume the grade point averages are normally distributed. (Round to nearest hundredth).

2.5 3.0 1.5 3.2 0.7 4.0 3.2 2.7 3.1 0.9

Find a 95% confidence interval for the true mean.

13) A survey of 100 fatal accidents showed that 44 were alcohol related. Find a point estimate for  $p$ , the population proportion of accidents that were alcohol related.

14) A survey of 280 homeless persons showed that 63 were veterans. Construct a 90% confidence interval for the proportion of homeless persons who are veterans.

15) A survey of 2450 golfers showed that 281 of them are left-handed. Construct a 98% confidence interval for the proportion of golfers that are left-handed.

16) A pollster wishes to estimate the proportion of United States voters who favor capital punishment. How large a sample is needed in order to be 90% confident that the sample proportion will not differ from the true proportion by more than 4%?