NEW MATERIAL (Sections 9.1, 9.2, 10.1, 10.2 & 12.1)

1. Section 9.1, p. 424 #9. Use *P*-Value Method.

2. Section 9.2, p. 439 #10(a,c). Use the Critical Value Method.

3. Given the data set

x	2	0	10	3	5
y	-0.8	-1.3	-4.5	-1.6	-4.1

(a) Construct a scatter plot, **(b)** Find the correlation coefficient r, **(c)** Find the *P*-value, **(d)** Use a significance level of $\alpha = 0.05$ to determine whether evidence supports the claim of a linear correlation, and **(e)** If a linear correlation exists, find the regression equation and use it to find the best predicted y-value for $x = 4$. If a linear correlation does not exist, what value is the best predicted y-value for $x = 4$.

4. The following table gives the cost of advertising (in thousands of dollars) and the number of "Latest-Greatest-Kid's-Toy" sold (in thousands):

Advertising Cost	x	9	2	3	4	2	5	9	10
Number Sold	y	85	52	55	68	67	85	83	73

The regression equation is $\hat{y} = 55.628 + 2.795x$.

(a). Use the regression equation to predict the number of toys sold if $7500 is spent on advertising. Explain whether this prediction is a reliable result.

(b). Use the regression equation to predict the number of toys sold if $75,000 is spent on advertising. Explain whether this prediction is a reliable result.

5. The following paired data give the hours of study and the test scores for 6 randomly selected students:
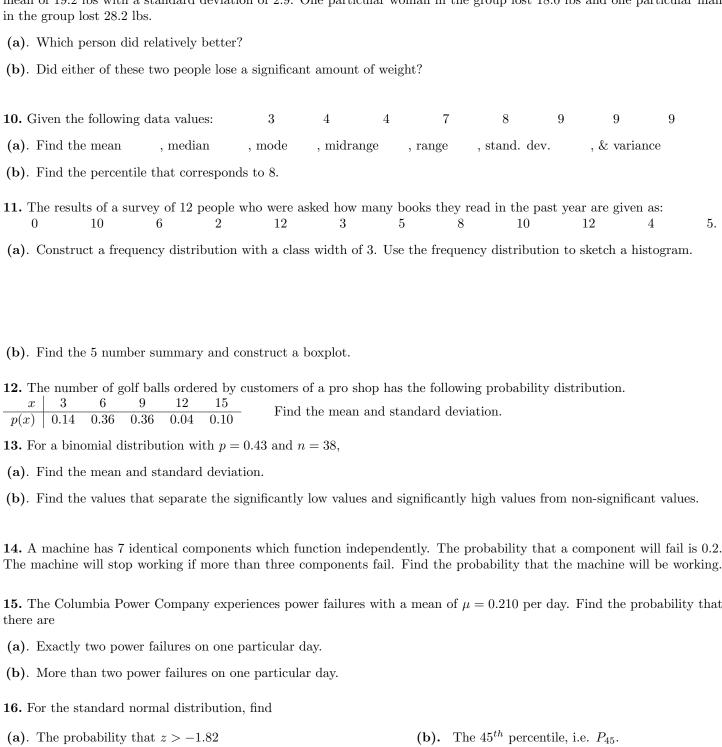
Hours of Study	x	5	1	9	5	6	3
Test Score	y	75	43	92	94	76	72

(a). Find the linear correlation coefficient use a significance level of 0.05 to determine if a linear correlation exists.

(b). If a linear correlation exists, find the regression equation and use it to find the best predicted grade if a student studies for 8 hours.

6. Chapter 12 Review Exercises, p. 593: #2.

THE REMAINDER OF THIS REVIEW COVERS "OLD MATERIAL" FROM EXAMS 1, 2 AND 3

7. In a survey of 78 students who were asked whether they have a job off campus, 34 of them said "yes" and 44 said "no". Of those who said "yes", 20 were male and of those who said "no", 25 were male.

(a). If one student is randomly selected, what is the probability that the student answered "yes" or was male?

(b). If one student is randomly selected, what is the probability that the student answered "yes" given that is is a male?

(c). If two students are selected without replacement, what is the probability that both students answered "yes"?

8. For a literature course you must choose 4 books to read from a list of 15 books.

(a). How many different groups of 4 books can be formed?

(b). If 7 of the 15 books are nonfiction, how many ways can groups of 4 books be formed if 2 of them must be nonfiction?

9. Women on a certain weight-loss program lost a mean of 14.6 lbs with a standard deviation of 2.4 lbs. The men lost a mean of 19.2 lbs with a standard deviation of 2.9. One particular woman in the group lost 18.0 lbs and one particular man in the group lost 28.2 lbs.

(a). Which person did relatively better?

(b). Did either of these two people lose a significant amount of weight?

10. Given the following data values: 3   4   4   7   8   9   9   9

(a). Find the mean   , median   , mode   , midrange   , range   , stand. dev.   , & variance

(b). Find the percentile that corresponds to 8.

11. The results of a survey of 12 people who were asked how many books they read in the past year are given as:
    0   10   6   2   12   3   5   8   10   12   4   5.

(a). Construct a frequency distribution with a class width of 3. Use the frequency distribution to sketch a histogram.

(b). Find the 5 number summary and construct a boxplot.

12. The number of golf balls ordered by customers of a pro shop has the following probability distribution.

x	3	6	9	12	15
$p(x)$	0.14	0.36	0.36	0.04	0.10

Find the mean and standard deviation.

13. For a binomial distribution with $p = 0.43$ and $n = 38$,

(a). Find the mean and standard deviation.

(b). Find the values that separate the significantly low values and significantly high values from non-significant values.

14. A machine has 7 identical components which function independently. The probability that a component will fail is 0.2. The machine will stop working if more than three components fail. Find the probability that the machine will be working.

15. The Columbia Power Company experiences power failures with a mean of $\mu = 0.210$ per day. Find the probability that there are

(a). Exactly two power failures on one particular day.

(b). More than two power failures on one particular day.

16. For the standard normal distribution, find

(a). The probability that $z > -1.82$ **(b).** The 45th percentile, i.e. P_{45}.

17. The diameters of pencils are normally distributed with a mean of 0.30 inches and a standard deviation of 0.01 inches.

(a). What is the probability that the diameter of a randomly selected pencil will be between 0.258 and 0.340 inches?

(b). What would the diameter be that separates the largest 8% of pencils from the rest?

18. Use the following information to construct an 85% confidence interval estimate for the population proportion p: $n = 358, x = 222$ [Remember $x = $ number of successes in the sample.]

19. A survey is to be conducted to estimate the proportion of songs that are downloaded rather than purchasing a CD in a store. If you want to be 90% confident that you are within 1 percentage point of the true percentage, how many randomly selected song purchases must be surveyed to determine the percentage that were obtained by downloading?

20. An archaeologist discovers new species of (extinct) miniature horse. To date they have found only seven known skeletons. The shoulder heights in centimeters is given below. Construct a 99% confidence interval for the mean shoulder height of the entire population of such horses. Assume that the population of shoulder heights is approximately normal.

> 45.3   47.1   44.2   46.8   46.5   45.5   47.6

21. A sample of 65 applicants for car loans had a mean of 598 and standard deviation of 88 on their FICO credit score. Construct a 95% confidence interval for the standard deviation of FICO scores for all car loan applicants. Assume that the sample comes from a normally distributed population.

22. For the given claim, express the null hypothesis and alternative hypothesis in symbolic form. Be sure to use the correct symbol (p, μ, σ) for the indicated parameter.

The mean height of female flight attendants is no more than 64 inches.

23. A survey of 1023 households found that 674 have more than one car. Test the claim that more than 64% of households in the United States have more than one car. Use both the Critical Value Method and the P-Value Method.

24. Section 8.3, p. 397: #17 Use the P-Value Method.

25. Section 8.4, p. 406: #15 Use the Critical Value Method.

Also, look at your exams, quizzes, and past review sheets. [You can find blank copies online]