In almost all problems, I have given the answers to four significant digits. If your answer is slightly different from one of mine, consider that to be roundoff error and mark the closely matching one. If your answer differs from the closest one of mine by more than one percent (meaning the ratio of yours to mine is less than 0.99 or greater than 1.01), then mark "J) None of the preceding". The first fifteen problems are the ones randomly chosen from the homework exercises. If you do all of them correctly, you can breathe more easily (since you will have reached a passing level of D−) as you head into the ten non-homework questions.

1. Because of the difficulty of weighing a bear in the woods, researchers caught and measured 64 bears, recording their weight, neck size, length, and sex. How many "whats" did they obtain?
A) 1 B) 2 C) 4 D) 8 E) 16 F) 32 G) 64 H) 128 I) 256 J) None of the preceding

2. A company held a blood pressure screening clinic for its employees. The results are summarized in the table below by age group and blood pressure level. Find the conditional distribution of blood pressure level within each age group, and then report the sum of the three conditional percentages of having low blood pressure.

Age / Pressure	Under 30	30-49	Over 50
Low	37	47	41
Normal	58	101	103
High	33	61	83

A) 54.97 B) 59.80 C) 64.63 D) 69.46 E) 74.29 F) 79.12 G) 83.95 H) 88.78 I) 93.61 J) None of the preceding

3. A clerk entering salary data into a company spreadsheet accidentally put an extra "0" in the CEO's salary, listing it as $3,000,000 instead of $300,000. Which two summary statistics will be the most greatly affected by this error?
A) IQR and mean B) IQR and median C) IQR and standard deviation D) median and standard deviation E) first and third quartiles F) first quartile and median G) third quartile and median H) mean and standard deviation I) mean and median J) third quartile and mean

4. A study examining the health risks of smoking measured the cholesterol levels of people who had smoked for at least 25 years. The following eleven values were recorded: 209, 284, 288, 280, 275, 287, 266, 155, 309, 305, and 351. Find the IQR of these data. Use the definition given in the textbook.
A) 24 B) 26 C) 28 D) 30 E) 32 F) 34 G) 36 H) 38 I) 40 J) None of the preceding

5. A study examining the health risks of smoking measured the cholesterol levels of people who had smoked for at least 25 years. The following eleven values were recorded: 209, 284, 288, 280, 275, 287, 266, 155, 309, 305, and 351. Find the distance between the ends of the lower and upper whiskers in the boxplot of these data.
A) 34 B) 37 C) 40 D) 43 E) 46 F) 49 G) 52 H) 55 I) 58 J) None of the preceding

6. An auctioneer sold a herd of cattle whose minimum weight was 930 pounds, median was 1234 pounds, standard deviation 94 pounds, and IQR 123 pounds. They sold for 45 cents a pound, and the auctioneer took a $25 commission on each animal. Find the median of the net sale prices.
A) 355.30 B) 389.30 C) 405.30 D) 430.3 E) 455.30 F) 48.30 G) 505.30 H) $530.30 I) 555.30 J) None of the preceding

7. The 500-m speed skating times of 25 men in the Winter Olympics had a mean of 70.3 seconds and a standard deviation of 0.76 seconds. If the Normal model is appropriate, what percent of the times should fall between 70 seconds and 72 seconds?
A) 48.52% B) 52.41% C) 56.30% D) 60.19% E) 64.08% F) 67.97% G) 71.86% H) 75.75% I) 79.64% J) None of the preceding

8. Roller coasters get all their speed by dropping down a steep initial incline, so it makes sense that the height of that drop might be related to the speed of the coaster. Calculate the correlation between speed and drop for the following five roller coasters.

Coaster Name	Drop	Speed
Goliath	255	85
Xcelerator	130	82
Invertigo	138	55
Incredible Hulk	105	67
Canyon Blaster	66	41

A) 0.6736 B) 0.7063 C) 0.7390 D) 0.7717 E) 0.8044 F) 0.8371 G) 0.8698 H) 0.9025 I) 0.9352 J) None of the preceding

9. The following output was obtained from a regression of nicotine versus tar in cigarettes:

Dependent variable is: nicotine
R squared = 71.3%

Variable	**Coefficient**
Constant	0.162045
Tar	0.071349

If a cigarette is 1.5 standard deviations above average in nicotine content, how many standard deviations above average do we expect it to be in tar content?
A) 1.267 B) 1.310 C) 1.353 D) 1.396 E) 1.439 F) 1.482 G) 1.525 H) 1.568 I) 1.611 J) None of the preceding

10. The *Worldwide Cost of Living Survey City Rankings* determine the cost of living in the 25 most expensive cities in the world. These rankings scale New York City as 100, and express the cost of living in other cities as a percentage of the New York cost. The cost of living in Tokyo in 2001 was 134.0, down from 164.9 in 2000. The regression equation predicting the 2001 cost of living from the 2000 figure is Cost2001 = 25.41 + 0.69 × Cost2000. Use this equation to find the residual for Tokyo.
A) −8.855 B) −7.023 C) −5.191 D) −3.359 E) −1.527 F) 0.305 G) 2.137 H) 3.969 I) 5.801 J) None of the preceding

11. Some species of monkeys have a life expectancy of 20 years. From the following regression information, estimate the expected gestation period (in days) of one of these monkeys:

Dependent variable is: GestDays
R squared = 72.2%

Variable	**Coefficient**
Constant	−27.2614
YrsLifeExp	17.83902

A) 307.3 B) 318.4 C) 329.5 D) 340.6 E) 351.7 F) 362.8 G) 373.9 H) 385.0 I) 396.1 J) None of the preceding

12. The table below shows stopping distances in feet for a car tested 2 times at each of five speeds. We hope to create a model that predicts Stopping Distance from the Speed of the car. After re-expressing the data to straighten the scatterplot, as in your homework, fit the model and estimate the stopping distance for a car traveling 100 mph.
A) 598.8 B) 644.0 C) 689.2 D) 734.4 E) 779.6 F) 824.8 G) 870.0 H) 915.2 I) 960.4 J) None of the preceding

Speed (mph)	**Stopping Distances (feet)**
20	64, 62
30	104, 110
40	150, 165
50	221, 207
60	311, 325

13. A statistics instructor created a linear regression equation to predict students' final exam scores from their midterm exam scores. The regression equation was Final = 10 + 0.85 Midterm. Suppose that the standard deviation of the final was 13 points and the standard deviation of the midterm was 9 points. What is the correlation between the two tests?
A) 0.3926 B) 0.4579 C) 0.5232 D) 0.5885 E) 0.6538 F) 0.7191 G) 0.7844 H) 0.8497 I) 0.9150 J) None of the preceding

14. Here are summary statistics for Olympic long jumps and high jumps, in inches:

Long jump: Mean = 307.23 StdDev = 21.92
High jump: Mean = 84.04 StdDev = 6.86
Correlation between long and high: $r = 0.883$

What is the slope of the line of regression for estimating high jump from long jump?
A) 0.1699 B) 0.1832 C) 0.1965 D) 0.2098 E) 0.2231 F) 0.2364 G) 0.2497 H) 0.2630 I) 0.2763 J) None of the preceding

15. Here are summary statistics for Olympic long jumps and high jumps, in inches:

Long jump: Mean = 307.23 StdDev = 21.92
High jump: Mean = 84.04 StdDev = 6.86
Correlation between long and high: $r = 0.883$

What is the intercept of the line of regression for estimating long jump from high jump?

A) 41.01 B) 45.86 C) 50.71 D) 55.56 E) 60.41 F) 65.26 G) 70.11 H) 74.96 I) 79.81 J) None of the preceding

16. Find the standard deviation of the following four exam scores:

85, 92, 45, 20

A) 17.47 B) 20.78 C) 24.09 D) 27.04 E) 30.71 F) 34.02 G) 37.33 H) 40.64 I) 43.95 J) None of the preceding

17. Zilpha received a score of 95 on a chemistry examination for which the mean was 63 and the standard deviation was 17. What was her Z-score on that exam?
A) 1.882 B) 1.993 C) 2.104 D) 2.215 E) 2.326 F) 2.437 G) 2.548 H) 2.659 I) 2.770 J) None of the preceding

18. At A Certain Midwestern University, the math SAT scores of entering freshpersons are normally distributed with mean equal to 710 and standard deviation 45. What percent of entering freshpersons have math SAT scores greater than 740? Assume the scores are continuous, that is, not rounded to the nearest 10 points.
A) 22.31% B) 25.25% C) 28.19% D) 31.13% E) 34.07% F) 37.01% G) 39.95% H) 42.89% I) 45.83% J) None of the preceding

19. At A Certain Midwestern University, the math SAT scores of entering freshpersons are normally distributed with mean equal to 710 and standard deviation 45. What percent of entering freshpersons have math SAT scores greater than 740? Assume the scores have been discretized by being rounded to the nearest 10 points.
A) 18.69% B) 20.26% C) 21.83% D) 23.40% E) 24.97% F) 26.54% G) 28.11% H) 29.68% I) 31.25% J) None of the preceding

20. For a normal distribution, find the ratio of the IQR to the standard deviation.
A) 1.064 B) 1.121 C) 1.178 D) 1.235 E) 1.292 F) 1.349 G) 1.406 H) 1.463 I) 1.520 J) None of the preceding

21. In the textbook it was stated that one of the authors asked John Tukey why he chose to define the fences for the boxplot whiskers to be 1.5 IQR above and below the quartiles. He answered that one IQR was too small and 2 IQR was too large. Assuming that we have a lot of data that follows a perfect normal distribution, what percentage of data values will lie beyond the fences (and thus be examined as possible outliers)? By the way, this is a close match to the criterion used by William Chauvenet, Professor of Mathematics and Astronomy and second Chancellor (1862-1869) of Washington University.
A) 0.3791% B) 0.4322% C) 0.4853% D) 0.5384% E) 0.5915% F) 0.6446% G) 0.6977% H) 0.7508% I) 0.8039% J) None of the preceding

22. Most people think that the "normal" adult body temperature is 98.6 °F. That figure, based on a 19th century study, has recently been challenged. In a 1992 article in the *Journal of the American Medical Association*, researchers reported that a more accurate figure for the mean may be 98.2 °F. Furthermore, the standard deviation appeared to be 0.7 °F. Assume that a normal model is appropriate. What fraction of people would be expected to have a body temperature above 99.0 °F?
A) 0.1132 B) 0.1265 C) 0.1398 D) 0.1531 E) 0.1664 F) 0.1797 G) 0.1930 H) 0.2063 I) 0.2196 J) None of the preceding

23. Using the information in Problem 22, how many degrees less than 98.6 are the coolest 5% of people?
A) 1.180 B) 1.233 C) 1.286 D) 1.339 E) 1.392 F) 1.445 G) 1.498 H) I) 1.551 J) None of the preceding

24. Use the following data to estimate the miles per gallon of a Chevy Suburban with gross vehicle weight 8600 pounds. Be sure to use the transformation specified in the book. Otherwise, you'll get a negative number.
A) 3.810 B) 4.553 C) 5.296 D) 6.039 E) 6.782 F) 7.525 G) 8.268 H) 9.011 I) 9.754 J) None of the preceding

Miles per Gallon	Weight (pounds)
32	2524
23	3088
22	3260
18	3908
16	4469
15	4802
15	4968

25. The value of a log is based on the number of board feet of lumber the log may contain. To estimate the amount of lumber in a log, buyers measure the diameter inside the bark at the smaller end. Then they look in a table based on the Doyle Log Scale. The table below shows the Doyle Log Scale estimates for logs 16 feet long.

Log Diameter (inches)	12	16	20	24	28
Board Feet	64	144	256	400	576

According to the model represented in this table, how many board feet of lumber does a log that is 16 feet long and 33 inches in diameter contain?
A) 625 B) 650.25 C) 676 D) 702.25 E) 729 F) 756.25 G) 784 H) 812.25 I) 841 J) None of the preceding