

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the number of standard deviations from the mean. Round to the nearest hundredths.

- 1) The average number of babies born in Ellensburg each year is 286 with a standard deviation of 28. 1) _____
How many standard deviations from the mean is a year with 387 babies born?
- A) About 3.61 standard deviations below the mean
B) About 3.61 standard deviations above the mean
C) About 1.80 standard deviations above the mean
D) About 1.80 standard deviations below the mean
E) About 1.35 standard deviations above the mean

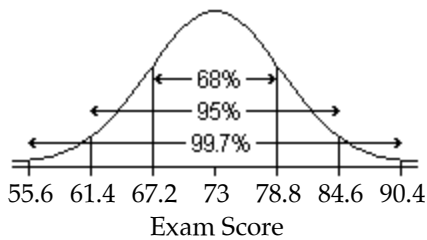
Solve the problem.

- 2) The mean weight of babies born in Central hospital last year was 6.3 pounds. Suppose the 2) _____
standard deviation of the weights is 2.1 pounds. Which would be more unusual, a baby weighing
4 pounds or a baby weighing 8.5 pounds? Explain.
- A) A 4 pound baby is more unusual ($z = -1.05$) compared with an 8.5 pound baby ($z = -1.10$).
B) A 4 pound baby is more unusual ($z = -1.10$) compared with an 8.5 pound baby ($z = 1.05$).
C) An 8.5 pound baby is more unusual ($z = 1.90$) compared with a 4 pound baby ($z = 4.05$).
D) An 8.5 pound baby is more unusual ($z = -1.05$) compared with a 4 pound baby ($z = -1.10$).
E) An 8.5 pound baby is more unusual ($z = -1.10$) compared with a 4 pound baby ($z = -1.05$).

Draw the Normal model and use the 68–95–99.7 Rule to answer the question.

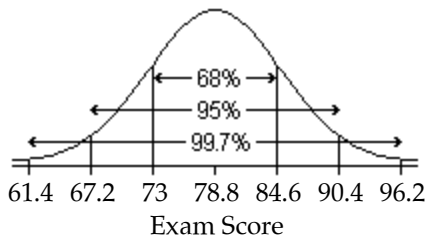
- 3) An English instructor gave a final exam and found a mean score of 73 points and a standard 3) _____
deviation of 5.8 points. Assume that a Normal model can be applied. Draw and label the Normal
model for the exam scores. Describe the scores of the top 2.5%.

A)



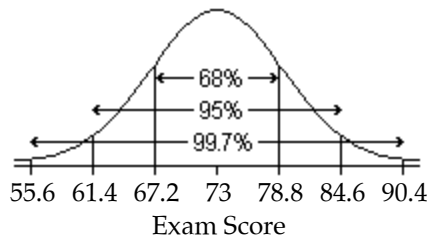
; Higher than 84.6 points

B)



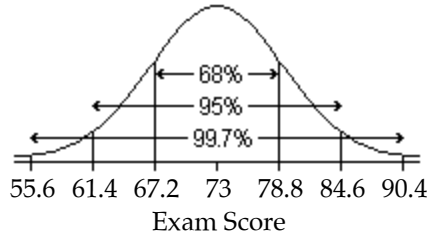
; Higher than 90.4 points

C)



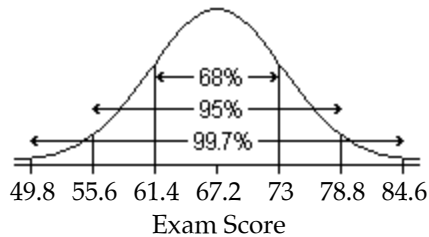
; Higher than 78.8 points

D)



; 84.6 points

E)



; Higher than 78.8 points

Solve the problem.

- 4) The test scores from a recent Mathematics test are as follows: 95.5, 65.9, 93.2, 88.6, 56.8, 50, 86.4, 54.5, 40.9, 77.3, 79.5, 65.9, 70.5, 77.3, 81.8, 50, 79.5, and 68.2. The mean score was 71.2 with a standard deviation of 15.5. If the Normal model is appropriate, what percent of the scores will be greater than 86.7? 4) _____
- A) 16% B) 10% C) 34% D) 0.15% E) 2.5%
- 5) A town's average snowfall is 49 inches per year with a standard deviation of 5 inches. According to the Normal model, what percent of snowfall is less than 3 standard deviations from the mean? 5) _____
- A) 16% B) 2.5% C) 5% D) 0.15% E) 0.3%
- 6) For a recent English exam, use the Normal model $N(73, 9.2)$ to find the percent of scores under 58. Round to the nearest tenth of a percent. 6) _____
- A) 1.63% B) 5.2% C) 4.2% D) 95.8% E) 94.8%

Assume that X has a normal distribution, and find the indicated probability.

- 7) The mean is $\mu = 15.2$ and the standard deviation is $\sigma = 0.9$. Find the probability that X is greater than 16.1. 7) _____
- A) 0.1587 B) 0.1550 C) 0.8413 D) 0.1357
- 8) The mean is $\mu = 15.2$ and the standard deviation is $\sigma = 0.9$. Find the probability that X is between 14.3 and 16.1. 8) _____
- A) 0.6826 B) 0.1587 C) 0.3413 D) 0.8413

Solve the problem.

9) A bank's loan officer rates applicants for credit. The ratings are normally distributed with a mean of 200 and a standard deviation of 50. Find P_{60} , the score which separates the lower 60% from the top 40%. 9) _____

- A) 207.8 B) 211.3 C) 187.5 D) 212.5

10) Scores on an English test are normally distributed with a mean of 31.5 and a standard deviation of 7.3. Find the score that separates the top 59% from the bottom 41% 10) _____

- A) 35.8 B) 29.8 C) 27.2 D) 33.2

Find the indicated probability.

11) A bank's loan officer rates applicants for credit. The ratings are normally distributed with a mean of 200 and a standard deviation of 50. If an applicant is randomly selected, find the probability of a rating that is between 170 and 220. 11) _____

- A) 0.3811 B) 0.2257 C) 0.1554 D) 0.0703

12) The diameters of pencils produced by a certain machine are normally distributed with a mean of 0.30 inches and a standard deviation of 0.01 inches. What is the probability that the diameter of a randomly selected pencil will be less than 0.285 inches? 12) _____

- A) 0.4332 B) 0.0596 C) 0.9332 D) 0.0668

Solve the problem. Round to the nearest tenth.

13) Based on the Normal model for snowfall in a certain town $N(57, 8)$, how many inches of snow would represent the 85th percentile? 13) _____

- A) 49 inches B) 48.5 inches C) 65 inches D) 65.3 inches E) 48.7 inches

14) Based on the Normal model for car speeds on an old town highway $N(77, 9.1)$, what is the cutoff value for the lowest 30% of the speeds? 14) _____

- A) about 81.7 mph
B) about 72.3 mph
C) about 53.9 mph
D) about 23.1 mph
E) about 60.9 mph

15) Based on the Normal model for car speeds on an old town highway $N(77, 9.1)$, what are the cutoff values for the middle 70% of the speeds? 15) _____

- A) about 70.2 mph, about 83.1 mph
B) about 23.1 mph, about 130.9 mph
C) about 67.5 mph, about 86.5 mph
D) about 50.1 mph, about 103.9 mph
E) about 60.2 mph, about 93.7 mph

Solve the problem.

16) The scores for a recent English exam can be represented by the Normal model $N(75, 8.0)$. What score would you expect to be unusually high for this exam? 16) _____

- A) 79 B) 99 C) 67 D) 51 E) 83

- 17) The annual snowfall in a town can be represented by the Normal model $N(46, 6.8)$. What amount of snowfall would you expect to be unusually low for this town? 17) _____
- A) 42.6 inches B) 25.6 inches C) 39.2 inches D) 66.4 inches E) 52.8 inches

Find the indicated probability.

- 18) The lengths of human pregnancies are normally distributed with a mean of 268 days and a standard deviation of 15 days. What is the probability that a pregnancy lasts at least 300 days? 18) _____
- A) 0.4834 B) 0.0166 C) 0.9834 D) 0.0179
- 19) Assume that the weights of quarters are normally distributed with a mean of 5.67 g and a standard deviation 0.070 g. A vending machine will only accept coins weighing between 5.48 g and 5.82 g. What percentage of legal quarters will be rejected? 19) _____
- A) 1.96% B) 0.0196% C) 2.48% D) 1.62%

Solve the problem.

- 20) A math teacher gives two different tests to measure students' aptitude for math. Scores on the first test are normally distributed with a mean of 20 and a standard deviation of 5.3. Scores on the second test are normally distributed with a mean of 69 and a standard deviation of 11.8. Assume that the two tests use different scales to measure the same aptitude. If a student scores 28 on the first test, what would be his equivalent score on the second test? (That is, find the score that would put him in the same percentile.) 20) _____
- A) 85 B) 87 C) 77 D) 88

Answer Key

Testname: CHAPTER 6 WITH TECHNOLOGY

- 1) B
- 2) B
- 3) A
- 4) A
- 5) D
- 6) B
- 7) A
- 8) A
- 9) D
- 10) B
- 11) A
- 12) D
- 13) D
- 14) B
- 15) C
- 16) B
- 17) B
- 18) B
- 19) A
- 20) B