Homework 6; Wednesday, April 15

NAME:

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1) What percentage of the area under the normal curve lies:

a. to the left of μ

b. between $\mu - \sigma$ and $\mu + \sigma$

c. between $\mu - 3\sigma$ and $\mu + 3\sigma$

d. to the right of μ

e. between $\mu - 2\sigma$ and $\mu + 2\sigma$

f. to the right of $\mu + 3\sigma$

2) Assuming that the heights of college women are normally distributed with mean 65 inches and standard deviation 2.5 inches, answer the following questions:

a. What percentage of women are taller than 65 inches?

b. What percentage of women are shorter than 65 inches?

c. What percentage of women are between 62.5 inches and 67.5 inches?

d. What percentage of women are between 60 inches and 70 inches?

3) At Burnt Mesa Pueblo, archaeological studies have used the method of tree-ring dating to determine when prehistoric people lived in the pueblo. Wood from several excavations gave a mean of (year) 1243 with a standard deviation of 36 years. Assuming that the distribution of dates is normally distributed, estimate:

a. a range of years centered about the mean in which 68% of the data will be found

b. a range of years centered about the mean in which 95% of the data will be found

c. a range of years centered about the mean in which 99.7% of the data will be found

4) Determine the area under the standard normal curve that lies to the left of:

a. -0.87 b. 3.56 c. 5.12

5) Find the area under the standard normal curve that lies to the right of:

b. -2.19 b. 0.8 c. 1.74

6) Find the area under the standard normal curve that lies between:

a. -0.88 and 2.24

b. -2.5 and -2

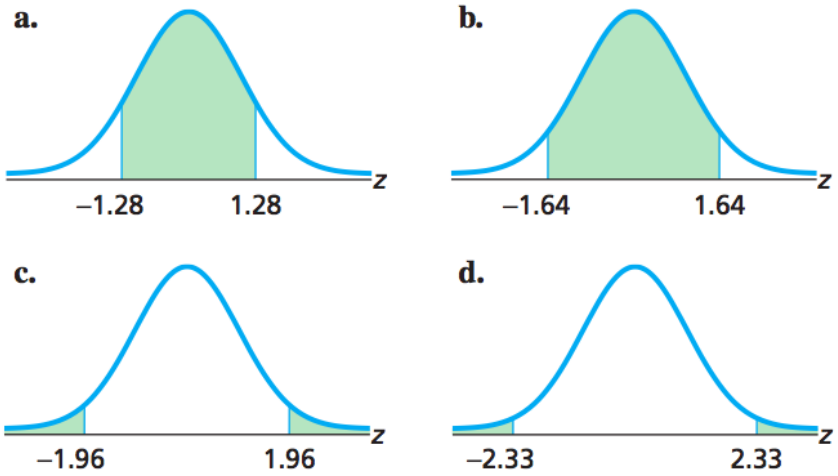
c. 1.48 and 2.72

7) Find the area under the standard normal curve that lies:

d. either to the left of -2.12 or to the right of 1.67

e. either to the left of 0.63 or to the right of 1.54

8) Use the table of the standard normal curve to obtain the following shaded areas:



9) Z-scores:

a. Obtain the z-score for which the area under the standard normal curve to its left is 0.025.

b. Determine the z-score for which the area under the standard normal curve to its left is 0.01.

c. Find the z-score that has an area of 0.75 to its left under the standard normal curve.

d. Obtain the z-score

e. Obtain the z-score that has an area of 0.80 to its left.

f. Obtain the z-score that has an area of 0.96 to its right.

g. Determine $z_{0.33}$

h. Determine $z_{0.015}$

10) A normal distribution has mean 30 and standard deviation 5

a. Find the z-score corresponding to x = 25

b. Find the z-score corresponding to x = 42

c. Find the raw score corresponding to z = -2

d. Find the raw score corresponding to z = 1.3

11) A normal distribution has $\mu = 100$ and $\sigma = 2$

e. Find the z-score corresponding to x = 12

f. Find the z-score corresponding to x = 4

g. Find the raw score corresponding to z = 1.5

h. Find the raw score corresponding to z = -1.2

12) The scores on the comprehensive final exam for a college course were normally distributed, and the *z*-scores for some of the students are shown below:

Robert: 1.10	Juan: 1.70	Susan: -2.00
Joel: 0.00	Jan: -0.80	Linda: 1.60

a. Which of these students scored above the mean?

b. Which of these students scored on the mean?

c. Which of these students scored below the mean?

d. If the mean score was $\mu = 150$ with standard deviation $\sigma = 20$, what was the final exam score for each student?

13) The times of the finishers in the New York City 10-km run are normally distributed with mean 61 minutes and standard deviation 9 minutes.

a. Determine the percentage of finishers with times between 50 and 70 minutes.

b. Determine the percentage of finishers with times less than 75 minutes.

c. Obtain the first and third quartiles for the finishing times.

14) Adult green sea urchins are normally distributed with mean 52.0 grams and standard deviation 17.2 grams.

a. Find the percentage of adult green sea urchins with weights between 50g and 60g.

b. Obtain the percentage of adult green sea urchins with weights above 40g.

c. Determine the 90th percentile for the weights of adult green sea urchins.

15) Attendance at large exhibition shows in Denver averages about 8000 people per day, with standard deviation of about 500. Assume that the daily attendance figures follow a normal distribution:

a. What is the probability that the daily attendance will be fewer than 7200 people?

b. What is the probability that the daily attendance will be more than 8900 people?

c. What is the probability that the daily attendance will be between 7200 and 8900 people?

16) The amount of money spent weekly on cleaning, maintenance, and repairs at a large restaurant was observed over a long period of time to be approximately normally distributed, with mean $615 and standard deviation $42.

a. If $646 is budgeted for next week, what is the probability that the actual costs will exceed the budgeted amount?

b. How much should be budgeted for weekly repairs, cleaning, and maintenance so that the probability that the budgeted amount will be exceeded in a given week is only 0.10?