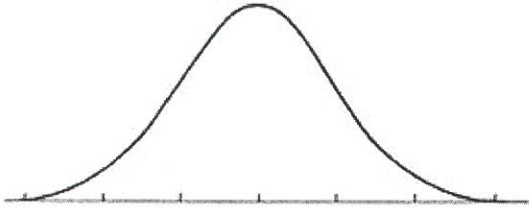


Review 1.6-1.9

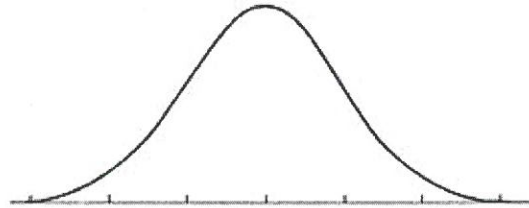
Key

Sketch a normal curve for each distribution. Label the x-axis at  $\pm 1$ ,  $\pm 2$ , and  $\pm 3$  standard deviations from the mean.

1.  $mean = 64$ ; standard deviation = 8



2.  $mean = 47$ ; standard deviation = 3



3. A set of data has a normal distribution with a mean of 10.3 and a standard deviation of 1.2.

a. Sketch a normal curve for the distribution.

b. Find the percent of data within the interval of 11.5 and 12.7

13.59%

c. Find the percent of data greater than 12.7.

2.28%

d. Find the percent of data within the interval of 9.1 and 11.5.

48.26%

e. Find the percent of data less than 9.1.

15.87%

f. Find the percent of data less than 10.3.

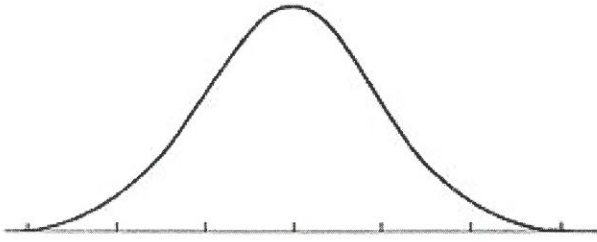
50%

g. Find the percent of data within the interval of 9.1 and 10.3.

34.13%

Unit 4 1.10

4. The number of nails of a given length is normally distributed with a mean length of 3.00 inches and a standard deviation of 0.02 inches.

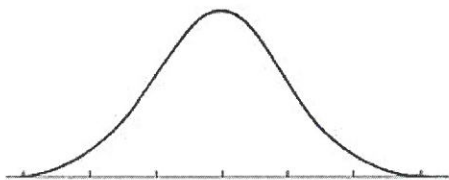


- a. Find the number of nails in a bag of 120 that are less than 2.96 inches long. 2.736
- b. Find the number of nails in a bag of 120 that are between 2.98 and 3.02 inches long. 81.912
- c. Find the number of nails in a bag of 120 that are over 3.02 inches long. 19.044
5. On a standardized test, Riya's scored an 85, exactly one standard deviation above the mean. If the standard deviation for the test was 6, what is the mean score for the test?

79

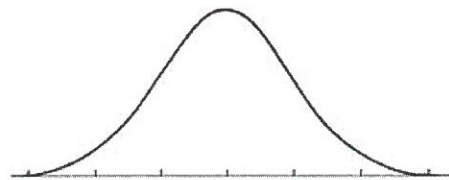
In exercises 6-8 assume that men's heights are normally distributed with a mean given by  $\mu = 68.7$  in and a standard deviation given by  $\sigma = 2.8$  in. Also assume that a man is randomly selected. Draw a graph and find the indicated probability.

6.  $P(68.7 \text{ in.} < x < 72.3 \text{ in.})$



40.15%

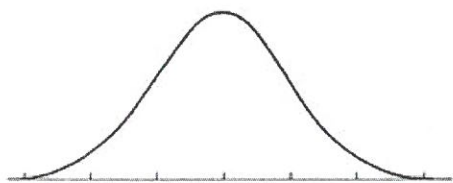
7.  $P(x < 74.0 \text{ in.})$



97.06%

Unit 4 1.10

8.  $P(65.1 \text{ in.} < x < 70.6 \text{ in.})$



65.32%

9. Replacement times for microwave ovens are normally distributed with a mean of 9.2 years and a standard deviation of 1.3 years. Find the probability that a randomly selected TV set will have a replacement time less than 8.0 years.

17.88%

10. Replacement times for light bulbs are normally distributed with a mean of 1.1 years and a standard deviation of 0.2 years. Find the probability that a randomly selected light bulb will have a replacement time more than 1.3 years.

15.87%

11. The gestation times for elephants are normally distributed with a mean of 312 days and a standard deviation of 18 days. If we stipulate that an elephant is *premature* if born at least 3 weeks early, what percentage of elephants are born prematurely?

12.1%

Unit 4 1.10

12. Boys age 16-18 spend an average of 12 hours per month driving. The amounts are normally distributed with a standard deviation of 2.3 hours. If a boy is randomly selected in that age category, what is the probability that he spends between 13 and 15 hours driving in one month?

23.68%

In exercises 13-15 assume that men's heights are normally distributed with a mean given by  $\mu = 68.7$  in and a standard deviation given by  $\sigma = 2.8$  in. Also assume that a man is randomly selected. Find the height for the given percentile.

13.  $P_{80}$  71.052

14.  $P_{66}$  69.848

15.  $P_{15}$  65.788

16. Assume the weights of plastic discarded by households each week are normally distributed with a mean of 16.4 lbs. and a standard deviation of 4.8 lbs. Find the weight that separates the bottom 33% from the top 67%.

14.288

17. IQ scores are normally distributed with a mean of 100 and a standard deviation of 15. If we define a genius to be someone in the top 2% of IQ scores, find the score separating the geniuses from the rest of us. This score could be used by a "think tank" company as one criterion for employment.

130.75

Unit 4 1.10

18. To be eligible for the U.S. Navy, a woman must have a height between 60 in. and 74 in. Recall that heights of women are normally distributed with a mean of 63.6 in. and a standard deviation of 2.5 in.

a. Find the percentage of women that satisfy that requirement.  $92.5\%$

b. If the requirement is changed to exclude the shortest 2% and the tallest 2%, find the heights that are acceptable.

$$58.475 < X < 68.725$$

**Determine whether each situation would produce a random sample. Write *yes* or *no* and explain your answer.**

19. Asking people in St. Paul MN, about their level of excitement for ice hockey to determine the typical level of excitement for ice hockey in the United States.

No

20. Using snowfall amounts in Bangor Maine to determine average snowfall on the East Coast.

No

21. Surveying every twentieth person who walked by you on the street to find out about political party preferences in that part of the country.

No

22. Interviewing fans at an NFL football game to gauge their support for a new government funded football stadium in their city.

No

In problem 23, find the margin of sampling error to the nearest tenth of a percent.

23. a)  $p=55\%$ ,  $n=250$

b)  $p=12\%$ ,  $n=100$

$6.3\%$

$6.5\%$

Unit 4 1.10

24. Olive Garden keeps records of reservations and no-shows. When 150 Saturday reservations are randomly selected it found that 40 of them were no-shows. Find the 95% confidence interval for the percentage of no-shows.

$$26.7\% \pm 7.2\%$$

25. In a study of store checkout scanners, 186 items were checked and 12 of them were found to be overcharges. Using the sample data construct the 95% confidence interval for the proportion of all such scanned items that are overcharges.

$$6.45\% \pm 3.6\%$$