PROBLEM SET 12-7
(Normal Distributions)

A set of data with a mean of 62 and standard deviation of 5.7 is normally distributed. Find each value given its distance from the mean.

1. +3 standard deviations

2. – 1 standard deviation

A set of data has a normal distribution with a mean of 50 and a standard deviation of 8. Find the percent of data with each interval.

3. from 42 to 58

4. greater than 34

5. less than 50

The distribution of heights of adult American men is approximately normal with mean 69 inches and standard deviation 2.5 inches:

6. What percent of men are taller than 74 inches?

7. Between what heights do the middle 95% of men fall?

8. What percent of men are shorter than 66.5 inches?

9. A height of 71.5 inches corresponds to what percentile of adult make American heights?

A normal distribution has a mean of 100 and standard deviation of 10. Find the probability that a values selected at random is in the given interval.

10. from 80 to 100

11. from 70 to 130

12. from 90 to 120

13. at least 100

14. at most 110

15. at least 80

In a set of data, the value that is – 3 standard deviations from the mean is 86. The value that is +1 standard deviation from the mean is 250.

16. Find the mean

17. Find the standard deviation

18. The interval from _____ to 250 contains about 81.5% of the data

19. The weights of Better Butter tubs are normally distributed with an average weight of 1.0 pound and a standard deviation of .06 pound. At a quality control checkpoint, 12 of the tubs taken as samples weighed less than .88 pound. How many tubs of butter were taken as samples?

Use the Standard Normal Cumulative Probability Table to find the proportion of observations from a standard normal distribution that satisfies each of the following statements.

20. $z < 2.85$ **21.** $z > 2.85$ **22.** $z > -1.66$ **23.** $-1.66 < z < 2.85$

Use the Standard Normal Cumulative Probability Table to find the value of *z* that comes closest to satisfying each of the following conditions.

24. The point *z* with 70% of the observations falling below it.

25. The point *z* with 85% of the observations falling above it.

26. The point z with 80% of the observations falling below it.

27. The point z with 90% of the observations falling above it.

Scores on the Wechsler Adult Intelligence Scale (an IQ test) for the 20 to 34 age group are approximately normal with mean 110 and standard deviation 25.

28. What percent of people age 20 to 34 have IQ scores above 100?

29. What percent have scores above 150?

30. How high an IQ score is needed to be in the highest 25%?