STATISTICS HANDOUT
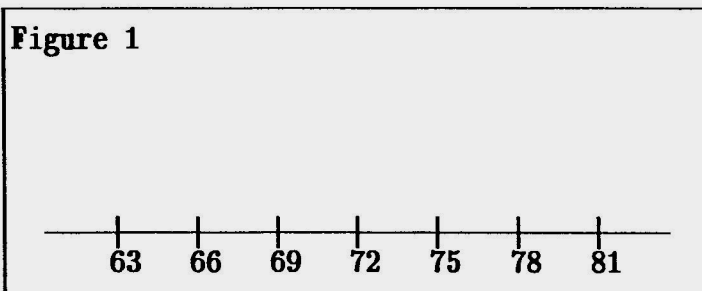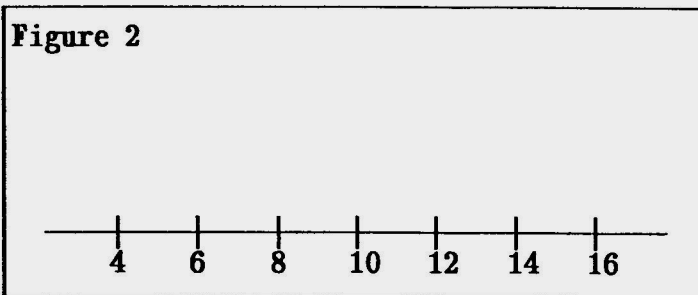## (NORMAL DISTRIBUTION)

1. The scores for a certain group of students on a Math   Test are normally distributed with a mean of 90 and a standard deviation of 5.

    a. What percentage of the students have scores between 85 and 105?
    b. What percentage of the students have scores between 90 and 110?

2. The scores on a statistics exam for a class of 50 students were approximately normally distributed with a mean of 30 and a standard deviation of 5.

    a. Approximately how many of the students scored above 35?
    b. Approximately how many of the students scored above 40?
    c. Approximately how many of the students scored below 25?
    d. Approximately how many of the students scored between 20 and 35?

3. A statistician recorded the ages of 1,000 senior citizens. A frequency polygon of the heights approximated the normal curve in Figure 1.

    a. What is the mean age for this set of senior citizens?
    b. What is the standard deviation?
    c. What percentage of the senior citizens were between 66 years and 75 years old?
    d. How many senior citizens were less than 66 years old?

Figure 1

4. It has been shown that the lifetime for a certain type of car is approximately normally distributed with a mean of 40,000 miles and a standard deviation of 5,000 miles.

    a. What percentage of these cars will last more than 50,000 miles?
    b. What percentage of these cars will last less than 35,000 miles?
    c. What percentage of these cars will last between 35,000 and 50,000 miles?
    d. What percentage of these cars will last between 30,000 and 55,000 miles?

5. A group of students recorded the age of 2,000 cars in the student parking lot at their school. A frequency polygon of the age approximated the normal curve in Figure 2.

    a. What is the mean age for this set of cars?
    b. What is the standard deviation?
    c. What percentage of cars were less than 12 years old?
    d. How many were more than 12 years old?

Figure 2

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        |    |    |    |    |    |    |
        4    6    8   10   12   14   16
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6. Testing indicates that the lifetime of a shipment of light bulbs is normally distributed with a mean of 1,000 hours and a standard deviation of 100. A shipment contains 5,000 of these bulbs.

    a. Approximately how many of the bulbs will last more than 1,100 hours?
    b. Approximately how many of the bulbs will last more than 1,200 hours?
    c. Approximately how many of the bulbs will last less than 700 hours?
    d. Approximately how many of the bulbs will last between 800 and 1,100 hours?

7. An examination is given to all entering students at a certain college. The scores are approximately normally distributed with a mean of 100 and a standard deviation of 15.

    a. What percentage of the students have scores between 85 and 115?

    b. What percentage of the students have scores between 70 and 130?

    c. What percentage of the students have scores between 55 and 145?

    d. What percentage of the students have scores above 115?

8. Test scores for a class of math students are approximately normally distributed with a mean of 100 and a standard deviation of 10. Use Table 9-17 in this section to find

    a. the percentage of students with a score between 95 and 115.

    b. the percentage of students with a score between 93 and 119

    c. the percentage of students with a score between 115 and 119

    d. the percentage of students with a score greater than 122

    e. the percentage of students with a score less than 117.

9. The lifespan of butterflies is normally distributed with a mean of 30 days and a standard deviation of 2 days.

    a. What percentage of butterflies live less than 28 days?

    b. What percentage of butterflies live between 28 and 34 days?

    c. If there are 10,000 butterflies, how many live between 26 and 30 days?

    d. What percentage of butterflies live more than 36 days?

10. The weights of 500 sixth graders are normally distributed with a mean of 80 pounds and a standard deviation of 5.

    a. How many children weigh less than 80 pounds?

    b. How many children weigh between 75 and 85 pounds?

    c. How many children weigh 90 pounds or more?

    d. How many children weigh less than 70 pounds or more than 85 pounds?