Name_____   Date_____   Period_____   Algebra 2H

The Normal Distribution & Z-Scores Practice
Section 11.5

1. The daily July surface temperatures of a lake at a resort are normally distributed with a mean of 82° and a standard deviation of 4.2°. If you prefer to swim when the temperature is at least 80°, about what percent of the days in July does the temperature meet your preference?

2. An oven manufacturer tries to make the temperature setting on its ovens as accurate as possible. However, if one measures the actual temperatures in the ovens when the temperature setting is 350°F, they will differ slightly from 350°F. The set of actual temperatures for all the ovens is normally distributed around 350°F with a standard deviation of 0.8°F. About what percentage of ovens will be between 350°F and 351°F when their temperature setting is 350°F?

3. The time that a certain brand of light bulb will last before burning out is normally distributed. About 2.5% of the bulbs last longer than 6800 hours and about 16% of the bulbs last longer than 6500 hours. How long does the average bulb last?

4. The scores on a personality test are normally distributed with $\mu = 250$ and $\sigma = 30$. What percentage of people taking the test can be expected to score between 229 and 325?

5. A large group of students took a test in Physics and the final grades have a mean of 70 and a standard deviation of 10. If we can approximate the distribution of these grades by a normal distribution, what percent of the students...

   a) scored higher than 80?

   b) should pass the test (grades≥60)?

   c) should fail the test (grades<60)?

6. The scores on a test administered to prospective employees are normally distributed with a mean of 100 and a standard deviation of 12.3.

   a) About what percent of the scores are between 85 and 115?

   b) About what percent of the scores are over 115?

   c) About what percent of the scores are lower than 90 or higher than 100?

   d) If 150 people take the test, how many would you expect to score higher than 130?

   e) If 200 people take the test, how many would you expect to score lower than 75?

7. A shoe manufacturer collected data regarding men's shoe sizes and found that the distribution of sizes exactly fits the *normal curve*. If the mean shoe size is 11 and the standard deviation is 1.5, find:

   a) the probability that a man's shoe size is greater than 11.

   b) the probability that a man's shoe size is greater than 12.5.

   c) the probability that a man's shoe size is greater than 8.

8. The weights of ripe watermelons grown at Mr. Smith's farm are normally distributed with a standard deviation of 2.8 lb. Find the mean weight of Mr. Smith's ripe watermelons if only 16% weigh less than 18.5 lb.

9. The height of students at school are normally distributed. Find the mean and standard deviation of a normal distribution given that 95% of the students are between 63 inches and 72 inches tall.