11-4 Additional Practice

Normal Distributions

A sleep study found that the number of hours each person slept was normally distributed. The study found that the average person slept 8.2 hours with a standard deviation of 0.7 hours.

1. What range of hours of sleep are the 99.7% closest to the mean?
   6.1 to 10.3 h

2. The 2.5% of the people who slept the most got more than how many hours of sleep?
   9.6 h

3. The 16% of the people who slept the least got less than how many hours sleep?
   7.5 h

The actual weights of bags of pet food are normally distributed about the mean of 50.0 lb. with a standard deviation of 0.2 lb.

4. About what percentage of bags of pet food weigh between 49.8 lb and 50.2 lb?
   68%

5. About what percentage of bags weigh less than 49.8 lb?
   16%

6. In a group of 250 bags, what percentage of bags would you expect to weigh more than 50.4 lb?
   2.5%

7. Hugo averages 32 home runs per season with a standard deviation of 2.5. Jacob averages 27 home runs per season with a standard deviation of 1.6. Last season Hugo hit 36 home runs and Jacob hit 31 home runs. Who had more home runs relative to their usual seasonal average? Explain.

   Jacob; Hugo homered 1.6 standard deviations above his average while Jacob homered 2.5 standard deviations above his average.

Find the percent of all values in a normal distribution described by each z-score.

8. $z \leq 1.24$ **89.25%**   9. $z \geq 3.45$ **0.03%**   10. $z \leq -0.98$ **16.35%**

11. The number of miles traveled by a car before a certain part fails is normally distributed with a mean of 60,000 mi and a standard deviation of 5,000 mi. What is the probability that the part will fail before 55,000 mi or after 65,000 mi?
    32%