14.4 Normal Distributions

1. Use table 14.16 to find the percentage of the data (area under the curve) that lie in the following regions for a standard normal distribution.

   a) between $z = 0$ and $z = 1.84$. _____

   b) between $z = 1.34$ and $z = 1.62$. _____

   c) between $z = -1.4$ and $z = 1.6$. _____

   d) to the left of $z = 1.4$. _____

   e) to the right of $z = 1.52$. _____

2. Find a $z - score$ such that

   a) 40% of the area under the standard normal curve is above the z value. _____

   b) 70% of the area under the standard normal curve is below the z value. _____

   c) 5% of the area under the standard normal curve is below the z value. _____

3. Assume a set of data has a normal distribution with a mean of 74 and a standard deviation of 6.

   a) Determine the z-score if the raw score x is

   i)   89 . _____

   ii)   65 _____

   b) Determine the value of the raw score x if the z-score is

   i)   −2.5 _____

   ii)   1.7 _____

4. Assume the weights of individual apples in a large collection of apples have a normal distribution with a mean of 9 ounces and a standard deviation of 2 ounces. What percentage of the apples weigh

   a) more than 9 ounces?   _____

   b) between 9 and 11 ounces?   _____

   c) more than 10 ounces?   _____

   d) more than 7.6 ounces?   _____

   e) between 7 and 8.6 ounces?   _____

5. Assume that among the members at a men's gym, the distribution of body weights has a mean of 172 pounds and a standard deviation of 20 pounds. If 250 men are members of this gym, how many of them would you expect to weigh more than 200 pounds?

                                                             _____

6. Assume a certain tire manufacturer produces a new tire. Tests show that the number of miles these tires last before blow-out has a normal distribution with mean 60,000 miles and standard deviation 4000 miles.

   a) Should they warrant their tires for 60,000 miles? Why or why not?

   b) If they warrant their tires for 52,000 miles, what percentage of the tires would they expect to blow out while still under warranty?

                                                             _____

   c) How many miles should they warrant their tires for, if they are willing to pay-off on 5% of their tires?

                                                             _____