

Lab for Section 15.4

Use good notation and show appropriate work.

Name _____

- Consider a data set with $\mu = 25$ and $\sigma = 3$. Use the 68-95-99.7 rule to find each of the following probabilities.
 - $P(x > 25)$
 - $P(x < 19)$
 - $P(22 < x < 28)$
 - $P(25 < x < 28)$
 - $P(x > 19)$
 - $P(x > 34)$
 - $P(x < 25)$
 - $P(25 < x < 34)$
 - $P(x > 28)$
 - $P(19 < x < 28)$
- Use Table 15.16 to find the percentage of the data that lie in the following regions for a standard normal distribution.
 - between $z = 0$ and $z = 1.84$
 - between $z = 1.34$ and $z = 1.62$
 - between $z = -1.4$ and $z = 1.6$
 - for $z \leq 1.4$
 - $z \geq 1.52$
- Find a z -score such that
 - 40% of the area under the standard normal curve is above the z value.
 - 70% of the area under the standard normal curve is below the z value.
 - 5% of the area under the standard normal curve is below the z value.
- Assume a set of data has a normal distribution with a mean of 74 and a standard deviation of 6.
 - Determine the z -score if the raw score is
 - 89
 - 65

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

(i) -2.5

(ii) 1.7

5. 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) between 9 and 11 ounces?

(b) more than 10 ounces?

(c) more than 7.6 ounces?

(d) between 7 and 8.6 ounces?

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?

7. 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?