

Normal Probability Calculations (Chapter 3)
More Practice

1. Assume the cholesterol levels of adult American women can be described by a normal model with a mean of 188 mg/dL and a standard deviation of 24.
- a) What percent of adult women do you expect to have cholesterol levels over 200 mg/dL?
 - b) What percent of adult women do you expect to have cholesterol levels between 150 and 170 mg/dL?
 - c) Estimate the interquartile range of the cholesterol levels.
 - d) Above what value are the highest 15% of women's cholesterol levels?

Ans: a) 30.85%
b) 16.95%
c) $Q1 = 171.92$ and $Q3 = 204.08$, so $IQR = 32.16$
d) 212.96

2. A tire manufacturer believes that the treadlife of its snow tires can be modeled by a normal distribution with a mean of 32,000 miles and a standard deviation of 2500 miles.
- a) If you buy a set of these tires, would it be reasonable for you to hope they'll last 40,000 miles?
 - b) Approximately what percent of these tires can be expected to last less than 30,000 miles?
 - c) Approximately what percent of these tires can be expected to last between 30,000 and 35,000 miles?
 - d) Estimate the IQR of the treadlives.
 - e) In planning a marketing strategy, a local tire dealer wants to offer a refund to any customer whose tires fail to last a certain number of miles. However, the dealer does not want to take too big a risk. If the dealer is willing to give refunds to no more than 1 of every 25 customers (i.e., no more than 4%), for what mileage can he guarantee these tires to last?

Ans: a) Probably not. These tires last 40,000 or more miles only .07% of the time.
b) 21.2%
c) 67.3%
d) $Q1 = 30,325$ and $Q3 = 33,675$, so $IQR = 3,350$
e) 27625 miles

3. Companies who design furniture for elementary school classrooms produce a variety of sizes for kids of different ages. Suppose the heights of kindergarten children can be described by a normal model with a mean of 38.2 inches and standard deviation of 1.8 inches.
- a) What percent of kindergarten kids should the company expect to be less than 3 feet tall?
 - b) In what height interval should the company expect to find the middle 80% of kindergarteners?
 - c) At least how tall are the biggest 10% of kindergarteners?

Ans: a) 11.12%
b) (35.9, 40.5) inches
c) 40.5 inches