

Lab Assignment #6

This lab is due at 9:35 AM on Wednesday 2/7 and is worth 6 points. This may be done individually, or in a group of 2 or 3 people.

1) Explain the difference between a normal distribution and a uniform distribution.
(2-4 sentences)

2) Give a fresh example (not from the lecture or this assignment) of something in real life that has a variable that is approximately distributed.

3) For a population of 500 high school football teams, the average number of hours of practice per week is 14.3, with a standard deviation of 3.9. Assume this variable is approximately normally distributed. What fraction of teams practice...

a) between 10 and 14 hours per week?

b) less than 15.3 hours per week?

c) more than 17.5 hours per week?

4) The average amount of money earned by a video store* in one day is $\mu = \$820$, and the standard deviation is $\sigma = \$205$.

Assume this variable is approximately normally distributed.

- a) What proportion of days does the store make more than \$900?
- b) What proportion of days does the store make less than \$1650?
- c) What proportion of days does the store make between \$600 and \$800?

* This problem was on a test in 2008.

5) Height (in inches) is a continuous variable that is usually rounded to the nearest whole number. For example, if a person's height is 72.3 or 71.6 inches, it can be rounded to 72 inches. Assume heights of math teachers are normally distributed with $\mu = 68.3$ inches and $\sigma = 3.8$ inches. What fraction of math teachers have a height that would be rounded to 70 inches?

6) A large sample of mushrooms purchased from a grocery store shows that the distribution of weight of mushrooms is approximately normal, with mean 0.62 ounces and standard deviation 0.21 ounces.

- a) What is the probability that a mushroom, chosen randomly, is greater than 0.84 ounces?
- b) What fraction of mushrooms weigh less than 0.30 ounces?
- c) What is the probability that a mushroom weighs between 0.70 and 0.80 ounces?
- d) What fraction of mushrooms weigh more than two standard deviations above the mean?

7) The time it takes you to solve the Sassy Sphere is normally distributed, with average 3.8 minutes, and standard deviation 1.3 minutes.

- a) What percent of the time will you solve the Sassy Sphere less than 3 minutes?
- b) What percent of the time will it take you more than 5 minutes?
- c) What percent of the time will it take between 4 and 4.5 minutes?

8) Head circumference for 7-year-old girls is normally distributed with mean 43.3 cm and standard deviation 2.6 cm.

- a) What fraction of 7-year-old girls have a head circumference more than 46.0 cm?
- b) What fraction of 7-year-old girls have a head circumference smaller than 40.0 cm?
- c) What fraction have a circumference of 41 cm, rounded to the nearest centimeter?