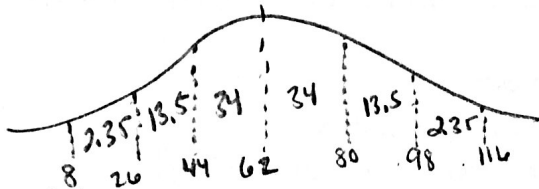


## Normal Distribution Practice

1. Consumer Reports Magazine wrote an article stating that monthly charges for cell phone plans in the U.S. are normally distributed with a mean of \$62 and a standard deviation of \$18.

a) Draw a picture of the normal curve with the cell phone charges for 1, 2 and 3 standard deviations above and below the mean.

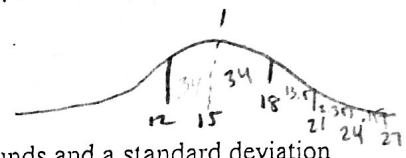


b) What percent of people in the U.S. have a cell phone bill between \$62 and \$80 per month?  $34\%$

c) Between what two cell phone charges are the middle 95% of people?  $26 - 98$

d) What percent of people in the U.S. have a monthly cell phone bill between \$26 and \$44?  $13.5\%$

e) Find the cell phone bill below which 99.85% of bills fall.  $116$



2. The weights of adult male rhesus monkeys are normally distributed, with a mean of 15 pounds and a standard deviation of 3 pounds. A rhesus monkey is randomly selected.

a) Find the probability that the monkey's weight is less than 13 pounds.  $(-99.99, 13, 15, 3) = 25.2\%$

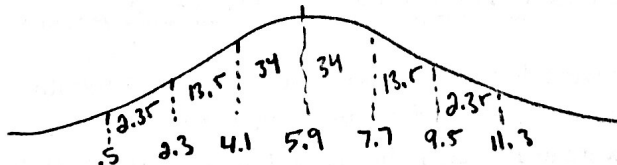
b) Find the probability that the weight is between 15 and 17 pounds.  $(15, 17, 15, 3) = 24.8\%$

c) If 50 rhesus monkeys are randomly selected, about how many would you expect to weigh less than 12 pounds?

$16\%$  less than 12 lbs  $50 \cdot .16 = 8 \text{ monkeys}$

d) A particularly large monkey weighs in the top 1% of all monkeys. How much does he weigh?  $> 27 \text{ lbs}$

3. Assume the mean annual consumption of peanuts is normally distributed, with a mean of 5.9 pounds per person and a standard deviation of 1.8 pounds per person. What percent of people annually consume less than 3.1 pounds of peanuts per person? Would it be unusual for a person to consume less than 3.1 pounds of peanuts in a year? Explain your reasoning.



Yes because 99% consume more than that

4. A set of mathematics exam scores has a mean of 70 and a standard deviation of 8. A set of English exam scores has a mean of 74 and a standard deviation of 16. For which exam would a score of 78 have a higher standing?

Math because it is one full standard deviation above the mean

5. The same test was given to 100,000 students in Alabama and 100,000 students in California. Assume that the scores were normally distributed in Alabama as a population, and they were normally distributed in California as a population.

In the Alabama data, person A had a z-score of 1.04. In the California data, person C had a z-score of -0.42. Could person C have gotten a higher raw score on the test? Explain. You may use hypothetical raw scores to assist your explanation.

Yes depends upon the scores of all the other students