Directions: Draw and label normal distribution curves, then answer the questions.

1. The weights of the 50 football players are normally distributed with a mean of 178 pounds and a standard deviation of 8 pounds.	**a)** What percent of the players weigh between 178 lbs and 194 lbs?
	b) What is the probability that a player weighs at most 170 lbs?
	c) What is the probability that a player weighs less than 162 lbs or greater than 194 lbs?
	d) How many players weight between 170 lbs and 186 lbs?
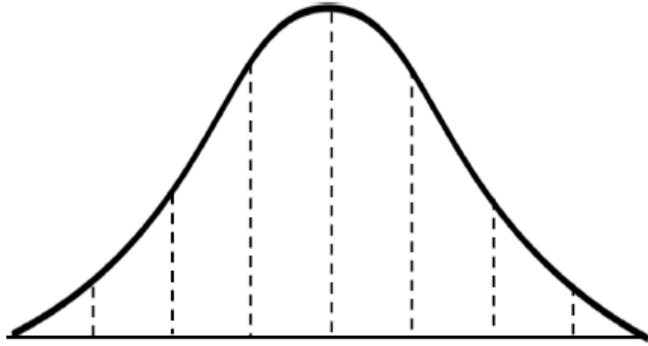
2. Identify the population and the sample:

a) A survey of 1353 American households found that 18% of the households own a computer.

b) A recent survey of 2625 elementary school children found that 28% of the children could be classified obese.

c) The average weight of every sixth person entering the mall within 3 hour period was 146 lb.

3. Determine whether the numerical value is a parameter or a statistics (and explain):

a) A recent survey by the alumni of a major university indicated that the average salary of 10,000 of its 300,000 graduates was 125,000.

b) The average salary of all assembly-line employees at a certain car manufacturer is $33,000.

c) The average late fee for 360 credit card holders was found to be $56.75.

4. For the studies described, identify the population, sample, population parameters, and sample statistics:

a) In a USA Today Internet poll, readers responded voluntarily to the question "Do you consume at least one caffeinated beverage every day?"

b) Astronomers typically determine the distance to galaxy (a galaxy is a huge collection of billions of stars) by measuring the distances to just a few stars within it and taking the mean (average) of these distance measurements.

5) **The length of a certain fish species is normally distributed with a mean of 15 cm. If a fish in this species is 18.8 cm with a z-score of 1.9, what is the standard deviation?**

Use for questions 39-42: The shoe sizes of the 36 students in Samantha's PE class are normally distributed with a mean of 8.5 and a standard deviation of 1.5.

39. What percent of the students have a shoe size between 7 and 11?	**40.** What is the probability that a student will have a maximum shoe size of 9.5?
41. Approximately how many students wear at least a size 6?	**42.** Approximately how many students wear a shoe size between 8 and 10?

Answers:

2. a) population: all American households

sample: collection of 1353 American households surveyed

b) population: all elementary school children

sample: collection of 2625 elementary school children surveyed

c) population: all people entering the mall within the assigned 3 hour period

sample: every 6th person entering the mall within the 3 hour period

3. a) statistic – part of 300,000 graduates are surveyed

b) parameter – all assembly-line employees were included in the study

c) statistic – 360 credit cards were examined (not all)

4. a) population: all readers of USA Today;

sample: volunteers that responded to the survey;

population parameter: percent who have at least one caffeinated drink among all readers of USA Today;

sample statistic: percent who have at least one caffeinated drink among those who responded to the survey

b) population: all starts in the galaxy;

sample: the few stars selected for measurements;

population parameter: mean (average) of distances between all stars and Earth;

sample statistics: mean of distances between the stars in the sample and Earth