1. **South Paws** A 2009 study to investigate the dominant paw in cats was described in *Animal Behavior* (Volume 78, Issue 2). The researchers used a random sample of 42 domestic cats. In this study, each cat was shown a treat (5 grams of tuna), and while the cat watched, the food was placed inside a jar. The opening of the jar was small enough that the cat could not stick its head inside to reach the treat. The researcher recorded the paw that was first used by the cat to retrieve the treat. This was repeated many times for each cat, and the paw they used the most often was deemed their dominant paw. Of the 42 cats studied, 20 were classified as “left-pawed.”  
   1. Identify the categorical variable in this situation.
   2. Describe (in words) the parameter of interest in this study.

* 1. What is the estimate of this parameter (i.e., what is the statistic that was calculated from the sample)?
  2. Construct a 98% confidence interval for the proportion of all domestic cats that are left-pawed.

* 1. Interpret the confidence interval you constructed.
  2. How could we improve the precision of our interval?

1. **Vitamin D** In July 2002 the *American Journal of Clinical Nutrition* reported that 42% of a random sample of 1546 African-American women studied had vitamin D deficiency. The data came from a national nutrition study conducted by the Centers for Disease Control and Prevention in Atlanta.  
   1. Identify the categorical variable in this situation.
   2. What is the parameter that the CDC is trying to estimate? Describe in words.
   3. Create a 95% confidence interval for the proportion of all African-American women with vitamin D deficiency.

* 1. Interpret the confidence interval you constructed.
  2. Does your interval support the following claim: “Half of African-American women had vitamin D deficiency”?

* 1. Without calculating a new confidence interval, would a 90% confidence interval be wider or narrower (i.e., would the margin of error be larger or smaller)?