Appendix:
Implementing Common Core Standards

Stacy Swanson

7.SP- Use random sampling to draw inferences about a population.
1. Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

2. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.

Standards 1 and 2 will be addressed through student research on individual players as well as team statistics (specifically, activity 2). Students will be asked to look at whether or not overall team data is representative of team performance. Students will also analyze single players to determine if that player's data is representative of the entire team. Students will draw inferences about teams through their research.

7.SP- Draw informal comparative inferences about two populations.
3. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.

4. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.

Standards 3 and 4 will be addressed when students use researched team data to begin analyzing team matchups (specifically, activity 3). Students will be asked to predict the game winner by drawing comparative inferences about opposing teams. We will utilize mean, median, and mode to determine variability between populations (teams).

7.SP- Investigate chance processes and develop, use, and evaluate probability models.

5. Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

6. Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.

7. Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.

8. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

Standards 5, 6, 7, and 8 will constitute the second part of the unit (specifically, activities 4 and 7). First, students will assign teams a probability of 0 to 1 based on the statistics they have gathered. These assignments will be used to predict game winners and students will create a bracket with their own predictions. Later, students will begin investigating compound probability models. Students will be asked to find the probabilities of certain teams playing each other as the tournament goes on. Other events will be used to examine compound probability as well. Once students understand that the probability of rolling a 3 on a die is $\frac{1}{6}$, and the probability of flipping a head on a coin is $\frac{1}{2}$, they can begin calculating the compound probability of both events occurring. Students will play out these events in class to compare theoretical probability to experimental probability.