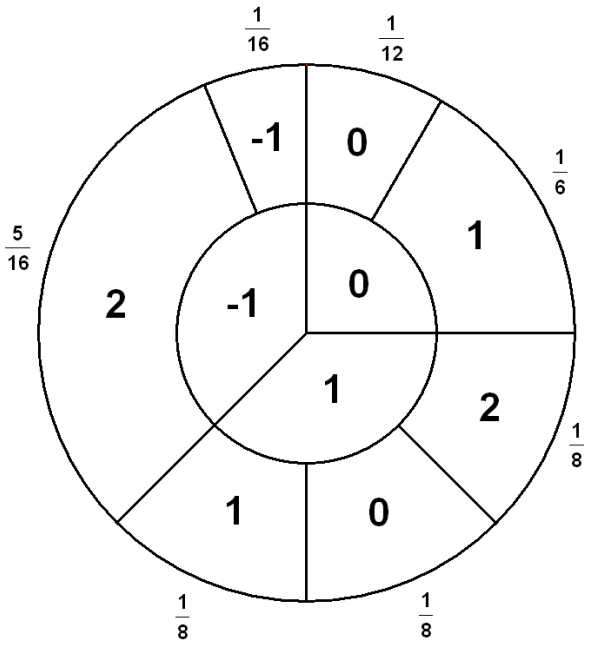
Amanda Ennis **Homework 8** **Due 10-31-2014**

1. Consider the following wheel:



Suppose that X is the average of 10 rolls of the inner wheel, Y is the average of 20 rolls of the outer wheel, and Z is the average of 20 rolls of the inner wheel. Find the following:

(a) $E(X)$

(b) $E(Y)$

(c) $E(Z)$

(d) Which is bigger $P(X > 0.5)$ or $P(Z > 0.5)$? Explain.

2. Suppose two dice are rolled successively. Let X be the sum of the two dice, Y be the difference (first roll minus the second), Z the number of odd rolls and W the number of prime rolls. Find:

(a) the ranges of four random variables

(b) $\mathrm{P}(X \geq 5)$

(c) $P(X \geq Z)$

(d) $\mathrm{P}(X = 2|Z = 0)$

(e) $\mathrm{P}(X = 12|W = 1)$

(f) $\mathrm{E}(Z)$

(g) $\mathrm{E}(Z + W)$

(h) Are Z and W independent? Prove or disprove.

3. Find the following places on campus and take a picture of yourself there and send it to me.

(a) The Counseling Center.

(b) The International Center.