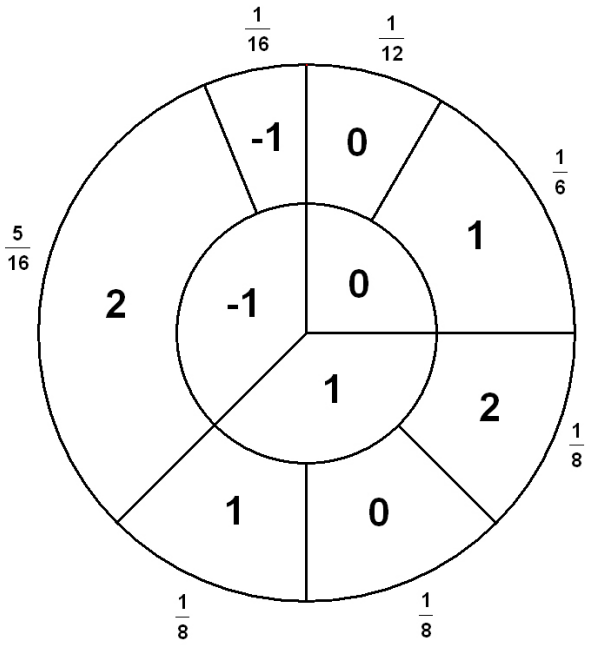
Charli Worth **Homework 8** **Due 11-01-2013**

1. Suppose $d = \gcd(30912, 15136)$.
   (a) Find d
   (b) Find k, l such that $d = 30912 \cdot k + 15136 \cdot l$.

2. For each of the following find $a^{-1} \pmod{m}$ or explain why no such inverse exists. That is, find c such that $ac \equiv 1 \pmod{m}$.
   (a) $a = 15011, m = 63794$
   (b) $a = 517, m = 25894$.

3. Find $\phi(504900)$

4. 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.

5. 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.