

Problem of the Month, November 2007

Please turn all solutions into Dr. Dunn's office, JB 322. You may slide your solutions under his door as well. Most elegant solution wins a \$10 gift certificate to the bookstore! Solutions will be accepted anytime during the month of November. Good luck!

Suppose 2 players play a game with a pair of fair 12-sided dice containing the numbers 1–12. Someone rolls the dice and makes a fraction out of the numbers rolled: if a and b are rolled, with $a \leq b$, then one makes the fraction $\frac{a}{b}$. Player R gets one point if the decimal expansion of $\frac{a}{b}$ is repeating, and Player T gets one point if the decimal expansion of $\frac{a}{b}$ is terminating. If the first person to 5 points wins, what is the probability of Player R winning, and what is the probability of Player T winning?