



Knights of Pi Math Tournament – Dec. 12, 2009
Probability & Potpourri 5th/6th

1	Link flips a fair coin twice. What is the probability he gets tails both times? <i>Express your answer as a percentage.</i>
2	Evaluate: $5 + 6 + 7 + \dots + 45 + 46 + 47$.
3	There are 2 red marbles and 2 blue marbles in a bag. Samus draws all 4 marbles, one at a time. What is the probability she drew a blue marble on her third draw? <i>Express your answer as a reduced fraction.</i>
4	Mario has 4 identical mushrooms. In how many ways can he arrange them into 3 distinct baskets if not all mushrooms must be placed in a basket?
5	My favorite number is a positive integer (whole number). When it is multiplied by 6, the sum of the digits of this product is equal to my number. What is my favorite number?
6	Snake, Zelda, Meta Knight, Fox, Donkey Kong, and Captain Falcon are in an arena. In how many distinct ways can two of them be chosen to battle?
7	The probability of event A occurring is $\frac{1}{4}$. The probability of event B depends on the probability of event A. If event A occurs, the probability of event B occurring is $\frac{1}{2}$. If event A does not occur, the probability of event B occurring is $\frac{3}{4}$. What is the probability that either A or B occurs?
8	Pikachu rolls two dice and computes the sum of the numbers on their top faces. Any odd sum will result in Pikachu rerolling the two dice. What is the probability Pikachu ends up with a final sum of 10?
9	What is the tens digit of 2009^{12} ?
10	$a_1, a_2, a_3, a_4, a_5 \dots$ is an infinite sequence of numbers. Given that $a_1 = 1$, what is the product of a_4 and a_5 if a_n has the following definition: $a_n = 2(a_{n-1} - 1)(n + 1)(n)$