**More Sample Probability Questions**

**(Taken from Past AHSME/AMC/AIME competitions)**

**1) (2003 AMC 10 B Q 21) A bag contains two red beads and two green beads. You reach into the bag and pull out a bead, replacing it with a red bead regardless of the color you pulled out. What is the probability that all beads in the bag are red after three such replacements?**

**2) (1997 AHSME Q 10) Two six-sided dice are fair in the sense that each face is equally likely to turn up. However, one of the dice has the 4 replaced by 3 and the other die has the 3 replaced by 4. When these dice are rolled, what is the probability that the sum is an odd number?**

**3) (1984 AHSME Q 19) A box contains 11 balls numbered 1, 2, 3, …, 11. If 6 balls are drawn simultaneously at random, what is the probability that the sum of the numbers on the balls is odd?**

**4) (1986 AHSME Q 22) Six distinct integers are picked at random from {1, 2, 3, …, 10}. What is the probability that, among those selected, the second smallest is 3?**

**5) (1990 AHSME Q 18) First a is chosen at random from the set {1, 2, 3, …, 100}, and then b is chosen at random from the same set. What is the probability that the units digit of 3a + 7b is 8?**

**6) (1992 AHSME Q 29) An "unfair" coin has a 2/3 probability of turning up heads. If this coin is tossed 50 times, what is the probability that the total number of heads is even?**

**7) (1993 AHSME Q 24) A box contains 3 shiny pennies and 4 dull pennies. One by one, pennies are drawn at random from the box and not replaced. What is the probability that it will take more than four draws to remove all of the shiny pennies?**

**8) (1995 AHSME Q 20) If a, b and c are three (not necessarily distinct) numbers chosen randomly and with replacement from the set {1, 2, 3, 4, 5}, what is the probability that ab + c is even?**

**9) (1988 AIME Q 5) What is the probability that a randomly chosen positive divisor of 1099 is an integer multiple of 1088?**

**10) (1989 AIME Q 5) When a certain biased coin is filled 5 times, the probability of getting heads exactly once is not equal to 0 and is the same as that of getting heads exactly twice. What is the probability that the coin comes up heads exactly three times out of five?**

**11) (1990 AIME Q 9) A fair coin is to be tossed ten times. What is the probability that heads never comes up on consecutive tosses?**