

2009 Probability Hustle

1. Given the following data set, what is the product of the mean, median, and mode?

{2, 8, 5, 10, 21, 20, 8, 15, 8, 3}

2. If two fair dice are rolled, what is the probability that the sum is greater than seven?

3. How many different arrangements of the letters from the word TENNESSEE are possible?

4. Find the Interquartile Range of the data set given by the first twelve numbers in the Fibonacci sequence.

5. What is the quotient of the mean and the range of the following data set?

{2, 3, 3, 4, 5, 6, 8, 9, 10, 12}

6. If two fair dice are rolled, what is the probability that two different prime numbers appear?

7. What is the probability of drawing a red face card or a king from a standard deck of 52 playing cards?

8. A committee of 2 Democrats and 2 Republicans must be chosen from a group of 10 Democrats and 8 Republicans to advise President Obama. How many different ways can this committee of 4 politicians be formed?

9. In a local pond stocked with catfish, the average weight of a fish is 13.8 pounds. If the variance of the weights is 2.25 square pounds, what weight (in pounds) corresponds to a weight 2 standard deviations above the mean?

10. A coin is flipped 6 times. What is the probability that there are at least 4 heads?

11.	Male	Female	Total
Pizza-lover	50	30	80
Pasta-lover	40	60	100
Total	90	90	180

Find $P(\text{pizza-lover} \mid \text{female})$

Leave the answer in simplest fraction form.

12. The UTK Ultimate Frisbee team has a $\frac{3}{5}$ probability of winning. What is the probability of UTK winning exactly 2 out of 4 games?

13. Jennifer is correct 85% of the time. If she is on a game show where she is asked 60 questions, what is the expected number of questions that she will get correct?

14. In a class of 30 students, 18 people like M&M's, 15 like Skittles, and 10 like both candies. What is the probability that a student selected at random does not like either candy?

15. Hayden received grades of 76, 83, 91, 72, and 82 on his first five Algebra 2 tests. What grade must he make on the sixth test, which is cumulative and counts twice, if he wants to earn an average of 84 in the class?
16. A lottery cost \$3 to play. The probability of winning a \$14 payout is $\frac{2}{7}$. What is the expected value of the lottery?
17. What percent of data lies between 1 standard deviation below the mean and 3 standard deviations above the mean?
18. What is the z-score of a sample of 289 people with $\bar{x} = 14.55$, $\mu = 14$, and standard deviation 4.25?
19. A probability distribution is bounded by the lines $y = 0$, $x = 7$, and $y = \frac{x}{7}$. What is $P(x \leq 4.5)$?
20. In a large simple random sample of 1600 students, the proportion of students who dislike living in Tennessee is found to be 0.25. What is the standard deviation of this sample?
21. A sample of statistics students are known to have an average IQ of 120 with standard deviation 15. If each IQ is multiplied by 2, has 30 points taken off, and is then divided by 3, what is the sum of the new mean and standard deviation?
22. What is the probability that I get 5 heads when I flip 8 fair coins?
23. The probability that the Tennessee Titans win any game is 5 out of 8. If the Titans record is 10-3 currently, what is the probability that they will end up 12-4?
24. If the least-squares regression line for a set of data is $y = 4x - 3$, and the mean of the y-values is 9, what is the mean of the x-values?
25. What is the expected value of the mean of a sample of 2009 random correlation coefficients?