

Math 105: Finite Mathematics

Homework 6 : Due March 13th, 2008

March 5, 2008

Remember, show your work for full credit on all problems.

1 Odds

1.1

What are the odds of randomly selecting a dime from a dish containing 11 pennies, 6 nickels, 5 dimes and 3 quarters?

1.2

What are the odds of randomly selecting a consonant from the word “Louisiana”?

2 Expected Value

2.1

The trip odometer in your car goes up to 99 miles before resetting, and you haven't looked at it in a very long time. A friend offers to pay you \$8 if the sum of your odometer digits is a multiple of 4, otherwise you pay him \$4.

2.1.1

What are the monetary odds offered in this bet?

2.1.2

What are the true odds of this bet?

2.1.3

What is the expected value of this bet?

2.2

Two coins are flipped. You win \$2 if either 2 heads or 2 tails turn up; you lose \$3 if a head and a tail turn up. What is the expected value of this game?

2.3

The Student Satisfaction Survey is currently being conducted among Centenary students. Four students who complete the survey will win \$100. If there are currently 900 students at Centenary, and 50% of students complete the survey, what is the expected value of completing the survey?

2.4

A 5-card hand is dealt from a standard 52-card deck. If the hand contains at least one king, you win \$10; otherwise you lose \$1. What is the expected value of this game?

2.5

Your campus organization decides to raise money by holding a raffle. You sell five hundred tickets for \$1 each. Tickets are drawn at random and prizes are awarded as follows: 1 prize of \$50, 3 prizes of \$10, 5 prizes of \$2, and 20 prizes of \$1. What is the expected value of a ticket?

3 Standard Deviation

3.1

You run a pet store which currently has 12 fish tanks. The number of fish in each tank is given by the following list.

4, 7, 6, 7, 12, 17, 3, 5, 14, 19, 22, 9

3.1.1

What is the expected number of fish in each tank?

3.1.2

What is the standard deviation?

3.2

When you walk into a casino, two games are available. In the first game, you have a 25% chance of winning \$5, a 60% chance of winning \$2, and a 15% chance of losing \$3. In the second game, you have a 33% chance of winning \$8, a 33% chance of winning \$3, and a 34% chance of losing \$5.

3.2.1

Which game has a higher expected value?

3.2.2

Which game has a lower standard deviation?