

Name: _____

Period: _____

In an election (between candidate A and candidate B), it was found that in NJ, 50% of the voters supported candidate A, in NY 60% of the voters supported candidate A, and in CT, 35% of the voters supported candidate A. Of the total population for the voters in this election, 35% live in NJ, 40% live in NY, and 25% live in CT. If a voter voted for candidate B, what is the probability they are from NJ?

Two die are rolled. If the sum of the two die is even, player A wins \$5 from player B. If the sum of the two die is 7, player A wins \$3 from player B. Otherwise, player A must pay player B \$8. What is the expected value for player B in this game?

An insurance company has determined that in a certain region the probability of lightning striking a house in a given year is about 0.0003, and the average cost of repairs of lightning damage is \$7500 per incident. The company charges \$25 per year for lightning insurance.

- a. What is the company's expected value for the net income from each lightning insurance policy?
- b. If the company has 450,000 lightning damage policies, what is the company's expected yearly income from lightning insurance? **

A box contains 10 red marbles and 15 blue marbles. Six marbles are drawn at random from the box. What is the probability that at least one marble is red?

While sitting in math class, Jeremy can smell the food from the cafeteria, but he can't quite decide what he smells. He determines there is a 40% chance he smells pizza and a 60% chance he smells French fries. He knows that if he is smelling French fries, there is still a 20% chance they are also preparing pizza, but also an 80% chance they are preparing cheesesteak. If Jeremy really wants pizza, what are the chances he will be satisfied?

A bag contains 20 tennis balls, of which four are defective. If two balls are selected at random from the bag, what is the probability that both are defective?

A sweepstakes offers a first prize of \$1,000,000, a second prize of \$100,000 and a third prize of \$10,000. Suppose that two million people enter the contest and three names are drawn randomly for the three prizes.

- a. Find the expected winnings for a person participating in this contest. **
- b. Is it worth paying a dollar to enter this sweepstakes?