

Do the problems in order in your bluebook. Show your work.

1. State the definition of “ A and B are mutually exclusive events”. Be concise.
2. Your weekly sales commission varies. Twenty percent of the time it is \$400. Forty percent of the time it is \$30. And the rest of the time it is \$5. Find your expected commission.
3. You are dealt 3 cards. Find the probability of getting all cards of the same suit but not all picture cards (picture cards are jacks, queens and kings).
4. A coin is flipped four times. Let B be the event that you get heads more often than tails and A is the event that your first flip is heads. Find $P(A|B)$, indicating the sample space used.
5. In the Math Lotto, you pick 5 numbers from 1 thru 40. Getting all five numbers right wins the grand prize (free math classes for the rest of your life). Getting exactly four numbers right wins second prize (a bag of boring dirty old hundred dollar bills). Find the probability of winning second prize.
6. PeeCee computer company has three factories, one in Erehwon making 40% of their computers, a second in Podunk making 35% of their computers, and the third in Atlantis making the rest. 2.5% of the Erehwon computers are defective, 4.5% of the Podunk computers are defective and 3.25% of the Atlantis computers are defective. Find the probability that a randomly selected PeeCee computer is defective.
7. You roll a pair of dice and win \$3 for a nine or a ten, win \$100 for an eleven or a twelve, and lose \$1 otherwise. Find the expected value of the game to you as a player.
8. You flip a coin 4 times. Determine whether the events “the first two flips are heads” and “three of the flips are heads” are independent or dependent.
9. You are dealt 2 cards from a deck of cards. Find the probability that the second one is a heart. (Hint: the first card is either a heart or not a heart.)