

Stat 1040 Recitation packet 6

- I buy 24 eggs from a local store. Unknown to me, 6 of the 24 eggs contain salmonella. If I choose 4 eggs at random from the 24 to make a quiche:
 - What is the chance that none of the 4 eggs contains salmonella?
 - What is the chance that at least one of the 4 eggs contains salmonella?
 - What is the chance that all of the 4 eggs contain salmonella?
 - What is the chance the second egg I choose contains salmonella?
- Refer to question 1. Suppose that 25% of all the farms eggs really do contain salmonella. Are we more likely to get more than 30% eggs with salmonella in a sample of 100 or 1000? Explain.
- A child opens a bag of M&M's and gets 24 candies: 7 red, 3 orange, 5 yellow, 1 brown, 1 green, 2 blue and 5 purple. The child chooses 2 M&M's, at random (without replacement), and gives these 2 M&M's to his sister.
 - What is the chance that his sister gets two purple M&M's?
 - What is the chance that his sister gets no purple M&M's?
 - What is the chance that his sister gets at least one purple M&M?
 - What is the chance that his sister gets two M&M's that are both purple or two that are both orange?
- Research shows that there is about a 50% chance that a baby is a girl. Assume that the genders of children in the same family are independent. In a family of four children:
 - What is the chance that all the children are girls?
 - What is the chance that not all the children are girls?
 - What is the chance that at least one of the children is a boy?
 - What is the chance that none of the children are girls?
 - What is the chance that all the children are boys?
 - What is the chance of getting 2 boys followed by 2 girls?
 - What is the chance of getting all the same gender?
- Two girls and a boy play a game in which they each roll a die.
 - What is the chance they all get "6"s?
 - What is the chance that they do not all get "6"s?
 - What is the chance none of them get a "6"?
 - What is the chance that at least one of them gets a "6"?
 - What is the chance that the two girls both get the same number of spots (both "1"s, both "2"s, etc)?

6. There are two boxes of tickets - one box has tickets with the numbers 1, 2, 2 written on them. (Yes, there are two tickets with a "2" on). The other box has tickets marked 1,2,3,4. One ticket is drawn at random from each box.
- (a) Find the chance that the number from box A is the same as the number from box B.
 - (b) Find the chance that the number from box A is greater than the number from box B.
7. An elementary school in Logan employs 15 teachers; 11 are women and 4 are men. Two teachers are selected at random to meet the governor and attend a reception in SLC. Answer each part separately.
- (a) What is the probability that both are women?
 - (b) What is the probability that at least one is a woman?
 - (c) What is the probability that both are the same gender?
8. I have 20 light bulbs a large box. Unknown to me, 4 of these 20 bulbs are broken. I select 6 bulbs at random from these 20 bulbs to put in a chandelier. *Answer each of the following questions separately.*
- (a) What is the chance that the first bulb works?
 - (b) What is the chance that the second bulb works?
 - (c) What is the chance that all 6 of the bulbs work?
9. A pet store has 16 fish in a tank: 7 males and 9 females. I buy 2 of the fish, selected at random.
- (a) What is the chance that both of my fish are males?
 - (b) What is the chance that both of my fish are females?
 - (c) What is the chance that one of my fish is male and the other is female?
 - (d) What is the chance that neither of my fish are male?
 - (e) What is the chance that at least one of my fish is male?