**Unit 4: Review for Quiz 1 (Ch. 14 & 15)**

1. A new clothing store advertises that during its Grand Opening every customer that enters the store can throw a bouncy rubber cube onto a table that has squares labeled with discount amounts. The table is divided into ten regions. Five regions award a 10% discount, two regions award a 20% discount, two regions award a 30% discount, and the remaining region awards a 50% discount.
2. What is the probability that a customer gets more than a 20% discount?
3. What is the probability that a customer gets less than a 20% discount?
4. What is the probability that the first two customers both get a 50% discount?
5. What is the probability that none of the first three customers gets more than a 30% discount?
6. What is the probability that the first customer to win a 30% discount is the sixth customer that enters the store?
7. What is the probability that there is at least one customer to win a 50% discount among the first five customers that enter the store?
8. As you enter the store you watch four people in front of you all win 50% discounts. The store manager tells you how lucky you are to be throwing the cube while it is on a hot streak, but a friend with you says you’re unlucky because the streak can’t continue. Comment on their statements.
9. According to the American Pet Products Manufacturers Association (APPMA) 2003-2004 National Pet Owners Survey, 39% of U.S. households own at least one dog and 34% of U.S. households own at least one cat. Assume 60% of U.S. households own a cat or a dog.
10. Draw the Venn Diagram
11. What is the probability that a randomly selected U.S. household owns neither a cat nor a dog?
12. What is the probability that a randomly selected U.S. household owns both a cat and a dog?
13. What is the probability that a randomly selected U.S. household owns a cat if the household has a dog?
14. Is having a dog or a cat mutually exclusive? Explain.
15. Is having a dog or a cat independent?
16. If P(A) = 0.65 and P(B) = 0.23 and P(A∩B) = 0.15, find the following:
    1. P(A U B) =
    2. P(B|A) =
    3. Are A and B disjoint events? Why or why not?
    4. Are A and B independent? Why or why not?
17. If P(D) = 0.37, P(C) = 0.41 and D and C are disjoint, what is the probability of D or C?
18. If P(K)= 0.71, P(R)= 0.23 and K and R are independent, what is the probability of K and R?
19. If P(F) = 0.33 and P(H) = 0.28 and P(H|F) = 0.13, find the following:
    1. P(F and H) =
    2. P(F or H) =
20. If *P*(*A*) = 0.25, *P*(*A*∪*B*)=0.78, and *P*(*A*∩*B*) = 0.12, find *P*(*B*).
21. On a certain day, there is a 37% chance for rain. The probability of John remembering to bring an umbrella to work **and** it raining is 15%. What is the probability that John remembers to bring an umbrella **given that** it rains?
22. In a History class, 50% of the students are males. The probability of a student being a male and a junior is 20%. What is the probability that a student selected at random is a junior given that the student is a male?
23. A survey of an introductory statistics class in Autumn 2003 asked students whether or not they ate breakfast the morning of the survey. Results are as follows:

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Breakfast** |  |
|  |  | **Yes** | **No** |
| **Sex** | **Male** | 66 | 66 |
| **Female** | 125 | 74 |

1. What is the probability that a randomly selected student is female?
2. What is the probability that a randomly selected student ate breakfast?
3. What is the probability that a randomly selected student is a female that ate breakfast?
4. What is the probability that a randomly selected female ate breakfast?
5. What is the probability that a student who ate breakfast is female?
6. Does it appear that whether or not a student ate breakfast is independent of the student’s sex? Explain.
7. A manufacturing firm orders computer chips from three different companies: 10% from Company A; 20% from Company B; and 70% from Company C. Some of the computer chips that are ordered are defective: 4% of chips from Company A are defective; 2% of chips from Company B are defective; and 0.5% of chips from Company C are defective. A worker at the manufacturing firm discovers that a randomly selected computer chip is defective. What is the probability that the computer chip came from Company B?