Kerry Ojakian's MTH 23.5 Class
Class Assignment #10

Suppose you roll one 6-sided dice.

1. What is the probability the roll is odd?

2. What is the probability the roll is odd **and** larger than 2?

3. What is the probability the roll is odd **or** larger than 2?

Calculate the following where A, B, C are events.

4. Suppose $P(A) = 30\%$, $P(B) = 15\%$, and $P(A \text{ and } B) = 5\%$. Find $P(A \text{ or } B)$.

5. Suppose $P(A) = 0.2$, $P(B) = 0.4$, and $P(A \text{ and } B) = 0.1$. Find $P(A \text{ or } B)$.

6. Suppose $P(A) = 0.2$, $P(B) = 0.4$. Also A and B are disjoint events. Find $P(A \text{ or } B)$. Find $P(A \text{ and } B)$.

7. Suppose $P(A) = 50\%$, $P(B) = 75\%$. Why is it not possible that A and B are mutually exclusive?

Suppose you roll two 6-sided dice.

8. What is the probability that their sum is 4?

9. What is the probability that their sum is 11?

10. What is the probability that their sum is 4 or 11?

11. What is the probability that their sum is 10 or larger?

12. What is the probability that their sum is less than 2?

Suppose you roll two 6-sided dice. One is red and the other is blue.

13. What is the probability that the red one is 4 and the blue one is 1?

14. What is the probability that they are both 5?

15. What is the probability that the red one is even and the blue one is odd?

16. What is the probability that they are both even?

17. What is the probability that they are the same?

More questions ...

18. If events A and B are mutually exclusive, can you determine $P(A \text{ or } B)$? can you determine $P(A \text{ and } B)$? If so, what is each?

19. If two events A and B are independant and $P(A) = 40\%$, then can you determine $P(A|B)$? If so, what is it?

20. Suppose $P(X \text{ and } Y) = 1/3$ and $P(Y) = 1/2$ and $P(X) = 3/4$.
    What is $P(X|Y)$? What is $P(Y|X)$?

21. Suppose X and Y are independent events and $P(X) = 1/4$ and $P(Y) = 2/3$. What is $P(X \text{ and } Y)$?

22. Suppose you flip a fair coin 4 times. What is the probability of all heads?

23. Suppose you flip a fair coin 4 times. What is the probability of alternating heads/tails? (be careful ...)

24. Suppose E and F are mutually exclusive events (both have non-zero proability). Determine $P(E|F)$. Why does your answer make sense? Are E and F independent?