Assignment Week 7

Philosophy 305

Due March 5, 2021

Chapter 5 Questions

1. What is the probability of $A \wedge (B \wedge \neg A)$?

2. What is the probability of $\neg (A \wedge \neg A)$?

3. True or False: If propositions are independent, they must be mutually exclusive.

4. True or False: Independent propositions usually aren't mutually exclusive.

5. True or False: If propositions are mutually exclusive, then they must be independent.

6. True or False: Mutually exclusive propositions usually aren't independent.

7. Assume $\Pr (A \wedge B) = 1/3$ and $\Pr (A \wedge \neg B) = 1/5$. Say (in decimal form, to two decimal places), what is $\Pr ((A \wedge B) \vee (A \wedge \neg B))$.

8. Assume $\Pr (A \wedge B) = 1/3$ and $\Pr (A \wedge \neg B) = 1/5$. Say (in decimal form, to two decimal places), what is $\Pr (A)$.

9. Assume $\Pr (A \wedge B) = 1/3$ and $\Pr (A \wedge \neg B) = 1/5$. Are $(A \wedge B)$ and $(A \wedge \neg B)$ independent?

10. Suppose A and B are independent, and A and C are mutually exclusive. Assume $\Pr(A) = 1/3, \Pr(B) = 1/6$ and $\Pr(C) = 1/9$. What (to two decimal places) is $\Pr(A \wedge C)$?

11. Suppose A and B are independent, and A and C are mutually exclusive. Assume $\Pr(A) = 1/3, \Pr(B) = 1/6$ and $\Pr(C) = 1/9$. What (to two decimal places) is $\Pr((A \wedge B) \vee C)$?

12. Suppose A and B are independent, and A and C are mutually exclusive. Assume $\Pr(A) = 1/3, \Pr(B) = 1/6$ and $\Pr(C) = 1/9$. What (to two decimal places) is $\Pr(A \wedge B)$?

13. True or False: If $\Pr(A) = \Pr(B)$ then A and B must be logically equivalent.

14. Consider this argument. *If a coin is fair, then the probability of getting at least one heads in a sequence of four tosses is quite high: above 90%. Therefore, if a fair coin has landed tails three times in a row, the next toss will probably land heads.* True or False: The premise of the argument is true.

15. Consider this argument. *If a coin is fair, then the probability of getting at least one heads in a sequence of four tosses is quite high: above 90%. Therefore, if a fair coin has landed tails three times in a row, the next toss will probably land heads.* True or False: The argument is sound.

16. Consider this argument. *If a coin is fair, then the probability of getting at least one heads in a sequence of four tosses is quite high: above 90%. Therefore, if a fair coin has landed tails three times in a row, the next toss will probably land heads.* True or False: The argument is sound.

Chapter Six Questions

17. Five percent of tablets made by the company Ixian have factory defects. Ten percent of the tablets made by their competitor company Guild do. A computer store buys 40% of its tablets from Ixian, and 60% from Guild. What is the probability a randomly selected tablet in the store is made by Ixian and has a factory defect?

18. Five percent of tablets made by the company Ixian have factory defects. Ten percent of the tablets made by their competitor company Guild do. A computer store buys 40% of its tablets from Ixian, and 60% from Guild. What is the probability a randomly selected tablet in the store has a factory defect?

19. Five percent of tablets made by the company Ixian have factory defects. Ten percent of the tablets made by their competitor company Guild do. A computer store buys 40% of its tablets from Ixian, and 60% from Guild. What is the probability a randomly selected tablet in the store is made by Ixian, given that it has a factory defect?