Assignment Week 7

Philosophy 305

Due February 18, 2022, 5pm

Chapter 5 Questions

1. What is the probability of $\neg(\mathrm{A} \wedge \neg \mathrm{A})$?
2. Assume $\Pr(\mathrm{A} \wedge \mathrm{B}) = 1/3$ and $\Pr(\mathrm{A} \wedge \neg \mathrm{B}) = 1/5$. Say (in decimal form, to two decimal places), what is $\Pr((\mathrm{A} \wedge \mathrm{B}) \vee (\mathrm{A} \wedge \neg \mathrm{B}))$.
3. Assume $\Pr(\mathrm{A} \wedge \mathrm{B}) = 1/3$ and $\Pr(\mathrm{A} \wedge \neg \mathrm{B}) = 1/5$. Say (in decimal form, to two decimal places), what is $\Pr(\mathrm{A})$.
4. Assume $\Pr(\mathrm{A} \wedge \mathrm{B}) = 1/3$ and $\Pr(\mathrm{A} \wedge \neg \mathrm{B}) = 1/5$. Are $(\mathrm{A} \wedge \mathrm{B})$ and $(\mathrm{A} \wedge \neg \mathrm{B})$ independent?
5. Suppose A and B are independent, and A and C are mutually exclusive. Assume $\Pr(\mathrm{A}) = 1/3$, $\Pr(\mathrm{B}) = 1/6$ and $\Pr(\mathrm{C}) = 1/9$. What (to two decimal places) is $\Pr(\mathrm{A} \wedge \mathrm{C})$?
6. Suppose A and B are independent, and A and C are mutually exclusive. Assume $\Pr(\mathrm{A}) = 1/3$, $\Pr(\mathrm{B}) = 1/6$ and $\Pr(\mathrm{C}) = 1/9$. What (to two decimal places) is $\Pr((\mathrm{A} \wedge \mathrm{B}) \vee \mathrm{C})$?
7. Suppose A and B are independent, and A and C are mutually exclusive. Assume $\Pr(\mathrm{A}) = 1/3$, $\Pr(\mathrm{B}) = 1/6$ and $\Pr(\mathrm{C}) = 1/9$. What (to two decimal places) is $\Pr(\mathrm{A} \wedge \mathrm{B})$?
8. True or False: If $\Pr(\mathrm{A}) = \Pr(\mathrm{B})$ then A and B must be logically equivalent.
9. 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.
10. 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 valid.

Odds and Ends 6.3

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.

a. What is the probability a randomly selected tablet in the store is made by Ixian and has a factory defect?
b. What is the probability a randomly selected tablet in the store has a factory defect?
c. What is the probability a tablet from this store is made by Ixian, given that it has a factory defect?