

HOMEWORK 4

NAME: _____

ELEMENTARY STATISTICS & INFERENCE (STAT:1020; BOGNAR)

Homework must be completed on this form. Write your answers in the provided space only. Submit the pages IN ORDER on Gradescope. You may use an iPad.

1. Textbook 13.35

(a)

(b)

2. Textbook 13.36

(a)

(b)

3. Textbook 13.37

(a)

(b)

(c)

4. Textbook 13.39

(a)

(b)

(c)

5. Suppose that 20% of UI students smoke (S), while 30% drink alcohol (A). In addition, 15% smoke *and* drink alcohol.

(a) Given that a student drinks alcohol (A), determine the probability that he/she smokes (S), i.e. find $P(S|A)$.

(b) Are alcohol use and smoking independent? Why?

6. It is known that 72% of adults suffer from vision problems. It is also known that 65% of adults suffer from vision problems *and* wear corrective lenses (i.e. eye glasses, contacts). Given that a randomly selected adult suffers from vision problems, find the probability that he/she wears corrective lenses.

7. Suppose a die is rolled one time. Let

A = roll a 1 B = roll an even

(a) Are A and B mutually exclusive? Why?

(b) Are A and B independent? Why?

8. Suppose a box contains 12 silver coins (S) and 3 gold coins (G).

(a) If you randomly select 2 coins *without* replacement, determine the probability that the first coin is silver (S_1) *and* the second coin is gold (G_2).

(b) Use the complement rule to find the probability that 1 or fewer gold coins are selected.

(c) If you randomly select 2 coins *without* replacement, determine the probability that you obtain exactly 1 gold coin (G).

9. Suppose events A and B are mutually exclusive where $P(A) = 0.5$ and $P(B) = 0.2$. What is $P(A|B)$?

10. Let A and B be two events. Suppose $P(A) = 0.5$, $P(B) = 0.8$, and $P(A \cup B) = 0.9$. What is $P(B|A)$?