

Assignment 5

Show all your work

Name: _____
Number: _____
Signature: _____
Score: ____/13

Problem 1: Answer each question to two decimal place accuracy when appropriate. Write out steps for each.

- a. If there is a 1 in 200 chance that Janette will pick the numbers correctly in President's Barbecue lottery, what is the probability she will NOT pick the numbers correctly?

0.9950

$$1 - \frac{1}{200} = \frac{199}{200} \approx 0.9950 = 99.50\%$$

- b. The residents of Smithston and the surrounding areas are divided over the proposed construction of a dog park in town, as shown in the table. A reporter randomly selects a person to interview from a group of residents. If the person selected lives in the surrounding areas, what is the probability that the person supports the dog park?

| | Support dog park | Oppose dog park |
|---------------------------|------------------|-----------------|
| Live in town | 7252 | 6316 |
| Live in surrounding areas | 518 | 461 |

0.5291

$$\frac{518}{518+461} = \frac{518}{979} \approx 0.5291 = 52.91\%$$

- c. When you flip three coins, what is the probability of getting at least one heads?

7/8

The chance of zero heads is $(\frac{1}{2})^3 = \frac{1}{8}$, so the chance of at least one heads is $1 - \frac{1}{8} = \frac{7}{8}$.

- d. When you draw a single card from a deck of 52 cards, what is the probability of getting a red queen?

1/26

$$\frac{2}{52} = \frac{1}{26}$$

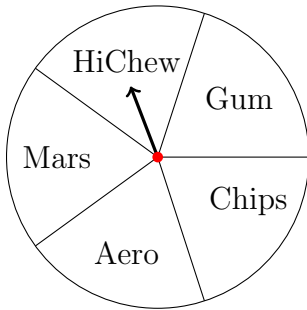
- e. Assume that A and B are events. If $P(A \cap B) = 0.20$, $P(A) = 0.40$, and $P(B) = 0.65$, find $P(A \cup B)$.

0.85

$$P(A \cup B) = P(A) + P(B) - P(A \cap B) = 0.40 + 0.65 - 0.20 = 0.85.$$

Score: ____/5

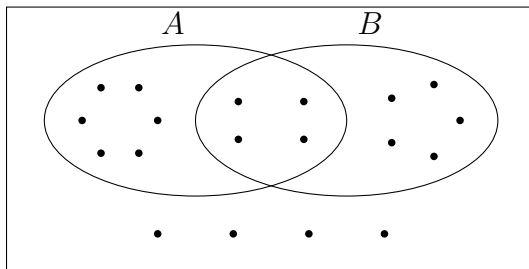
Problem 2: Dad constructed a spinner with five equal sectors the morning after Halloween for Hamlet and Samlet. Assume that the pointer never lies on a border line, answer the following questions.



- a. Find the probability for the event of getting no Chips after two spins.
- b. $\left(\frac{4}{5}\right)^2 = \frac{16}{25} = 0.64 = 64\%$ Find the probability for the event of getting at least one HiChew after three spins.

The chance of zero HiChew is $\left(\frac{4}{5}\right)^3 = \frac{64}{125}$, so the chance of at least one HiChew is $\frac{61}{125}$. Score: /4

Problem 3: Dad drew a big rectangle representing a sample space containing two events, A and B . Assume that the outcomes (as dots) were all equally likely, answer the following questions.



a. $P(B)$

$$\frac{9}{19} \approx 47.4\%$$

b. $P(A \cap B)$

$$\frac{4}{19} \approx 21.1\%$$

c. $P(B | A)$

$$\frac{4}{10} = 40.0\%$$

d. Are A and B disjoint?

$A \cap B \neq \emptyset$, so A and B are not disjoint.

Score: /4