Math 112 - Quiz 8

April 24, 2019

Name key

Score

Show all work to receive full credit. Supply explanations when necessary.

1. (3 points) Consider the experiment of rolling an 8-sided die.

   (a) What is a sample space for this experiment?

   $\{1, 2, 3, 4, 5, 6, 7, 8\}$

   (b) Give an example of an event (associated with this experiment). Describe it in words.

   THE EVENT OF ROLLING A MULTIPLE OF 4 $= \{4, 8\}$

   (c) Determine the theoretical probability of the event you described above.

   $P(\{4, 8\}) = \boxed{\frac{2}{8}}$

2. (3 points) A letter is selected at random from the word *sleeveless*.

   10 LETTERS

   (a) What is the sample space?

   $\{s, l, e, v\}$

   (b) What is the event of selecting a consonant?

   $P(\{s, l, v\}) = \boxed{\frac{6}{10}}$

   (c) What is the probability of selecting the letter s or e?

   $\frac{3+4}{10} = \boxed{\frac{7}{10}}$

Turn over.

3. (1 point) Suppose A is an event with $P(A) = 0.635$. Determine $P(A')$.

$$1 - 0.635 = 0.365$$

4. (1 point) Decide whether the probability is theoretical (classical) or experimental (empirical).

   (a) Isabella grabbed 14 Skittles candies from a jar, and 6 of them were red. Her probability of selecting a red candy is 6/14.

   EXPERIMENTAL

   (b) In flipping two coins, the probability of them both landing heads up is 25%.

   THEORETICAL

5. (2 points) Flip a coin 19 times and record only the total number of heads: 11.

   (a) Based on your recorded value, what is the probability of your coin landing tails up?

   $$1 - \frac{11}{19} = \frac{8}{19}$$

   (b) Is your probability theoretical (classical) or experimental (empirical)?

   EXPERIMENTAL

   (c) Would you be surprised if you got no heads in 19 flips? Explain.

   YES, VERY SURPRISED!

   SINCE THEORETICALLY HEADS & TAILS ARE EQUALLY LIKELY, I EXPECT ABOUT HALF THE FLIPS TO BE HEADS. NO HEADS SEEMS PRETTY RARE.