Quiz #1 : Week 1 - Practice Quiz

Question 1

1. Suppose you flip a coin twice and observe the result. Which set below describes the **sample space** of this experiment? I.e., which set describes every possible outcome? Define: H as heads and T as tails.

- ○ $\{H, T\}$
- ○ $\{(H, T), (T, H)\}$
- ○ $\{(H, H), (T, T)\}$
- ◉ $\{(H, T), (H, H), (T, H), (T, T)\}$

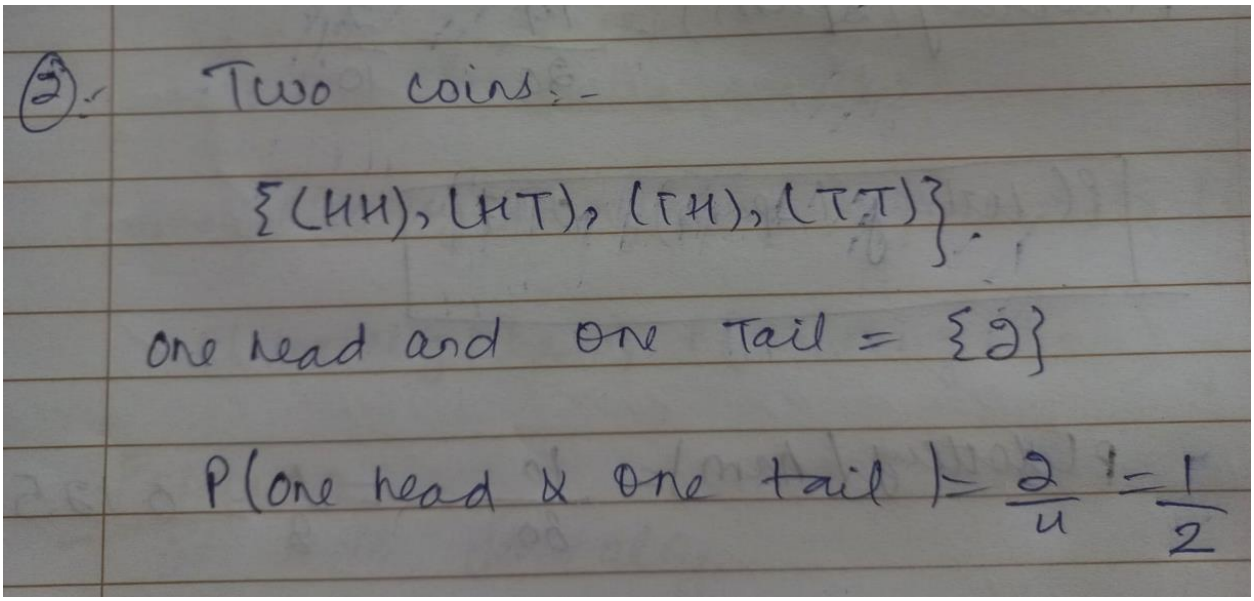
Answer:- d

Question 2

2. Let's keep the same experiment: flipping a coin twice. What is the probability of obtaining one head and one tail in this experiment (the order doesn't matter)?

- ◉ $\frac{1}{2}$
- ○ $\frac{3}{4}$
- ○ $\frac{1}{4}$

Answer:- a



Question 3

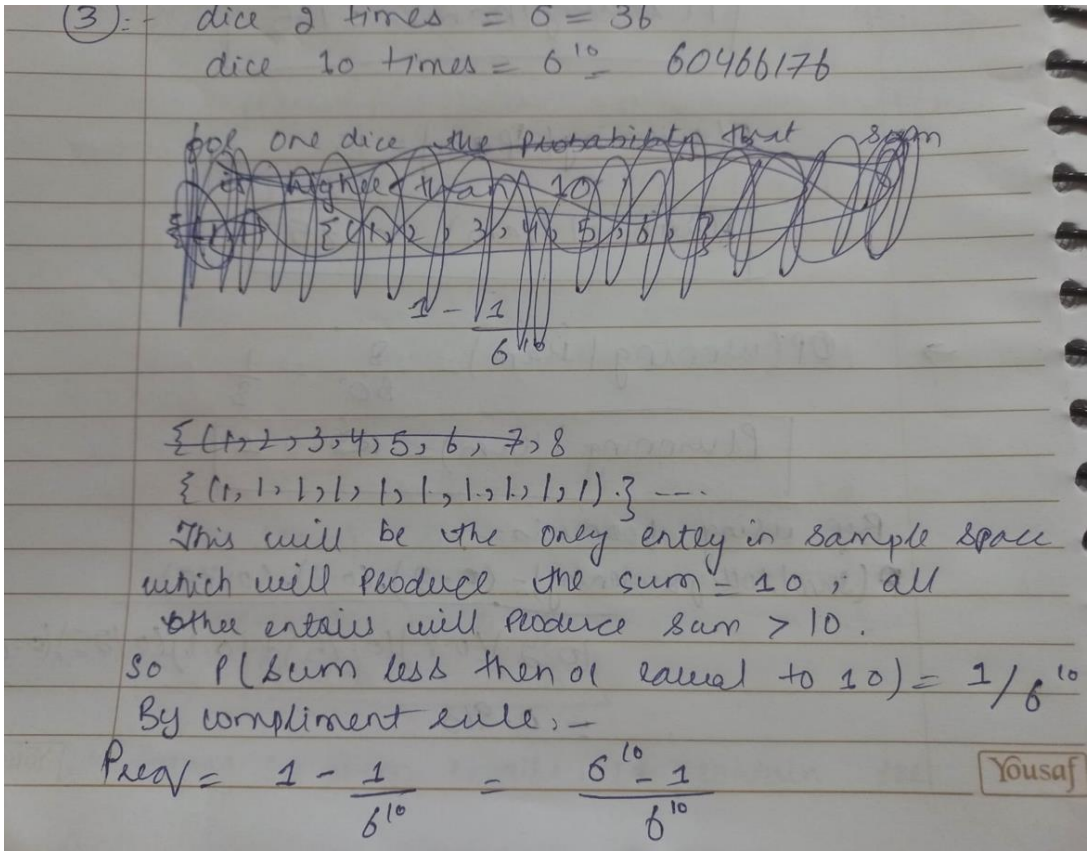
3. Consider the following experiment:

You throw a dice 10 times and sum the results. What is the probability of getting a number higher than 10?

Hint: Use the complement rule!

- ○ $\frac{5}{6}$
- ◉ $\frac{6^{10}-1}{6^{10}}$
- ○ $\frac{1}{6}$
- ○ $\frac{1}{6^{10}}$

Answer:- b

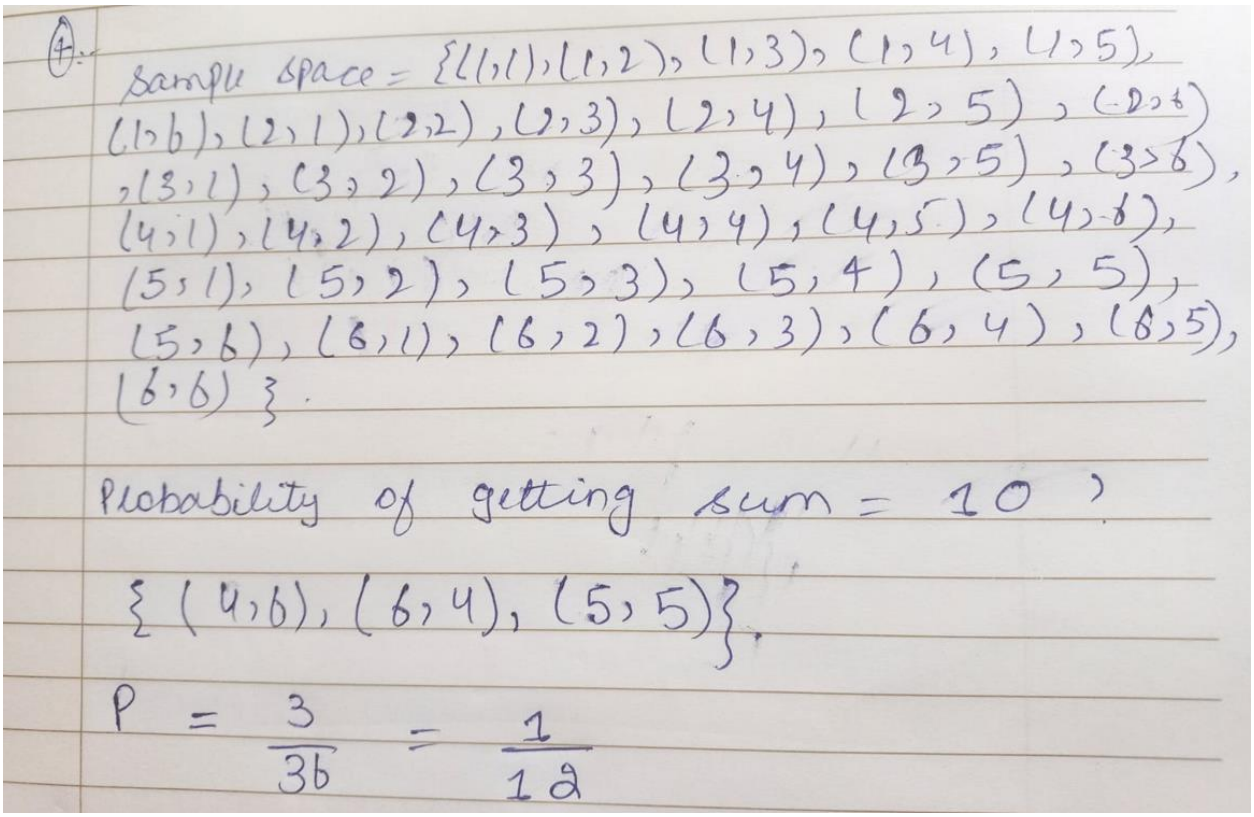


Question 4

4. If you throw a dice twice and sum the result, what is the probability of getting a 10?

- ○ $\frac{1}{36}$
- ◉ $\frac{1}{12}$
- ○ $\frac{1}{18}$
- ○ $\frac{1}{9}$

Answer:- b



Question 5

5. Consider the following problem:

In an experiment there are 100 ill persons. 50 of them have headache and 50 of them have fever.

The researchers want to find the probability of a random selected person in this experiment having headache **or** fever. One researcher provides the following argument:

"Since 50 out of 100 have headache, the probability of having headache is 1/2. The same reasoning can be applied to having fever. Therefore, the probability that a random selected person has either fever or headache is 1."

About their argument, choose the correct option.

- (●) It is incorrect, because it assumes that the events of having headache and fever are **disjoint.** This cannot be inferred by the experiment as it is stated.
- ( ) It is correct, because in this case it is an application of the sum of probabilities.
- ( ) It is incorrect, because instead of summing up the probabilities, the researcher should have multiplied it.
- ( ) It is correct, because the sum of persons with headache and with fever is exactly 100.

Correct

Correct! There is nothing in the experiment saying that the events are disjoint, so it may be the case where some persons have headache AND fever, and by just summing the values alltogether, you are summing these cases twice!

Answer:- a