Congratulations! You passed!

Grade received 80% To pass 80% or higher

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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. **1 / 1 point**

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

Correct
Correct! Since we need to count all possible outcomes for throwing two coins, the outcomes can be the first coin can output head or tails and the second coin as well.

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)? **1 / 1 point**

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

Correct
Correct! There are 4 possible outcomes, and two of them have heads and tails, so the probability is $\frac{2}{4} = \frac{1}{2}$!

3. Consider the following experiment: **1 / 1 point**

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!

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

Correct
Correct! Since the minimum value a single dice outputs is 1, the minimum value you get by summing up ten dice is 10, therefore, the probability of having a number greater than 10 is the complement of having a number equal to 10, which is $\frac{1}{6^{10}}$, therefore the result is $1 - \frac{1}{6^{10}} = \frac{6^{10} - 1}{6^{10}}$

4. If you throw a dice twice and sum the result, what is the probability of getting a 10? **0 / 1 point**

- ○ $\frac{1}{12}$
- ○ $\frac{1}{18}$

- ○ $\frac{1}{36}$
- ◉ $\frac{1}{9}$

Incorrect
Incorrect! How many ways two dice can sum 10?

5. Consider the following problem: **1 / 1 point**

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!