

✓ Congratulations! You passed!

Grade received 100% To pass 80% or higher

Go to next item

1. You flip a fair coin two times. What is the probability of getting one head and one tail in any order?

1 / 1 point

- ☐  $\frac{3}{4}$
- ☒  $\frac{1}{2}$
- ☐  $\frac{1}{4}$

✓ Correct

There are 4 possible outcomes (HH, HT, TH, or TT) when flipping a coin two times and there are two ways of getting one head and one tail, so the probability is  $\frac{2}{4} = \frac{1}{2}$ !

2. You throw two dice and sum the result, what is the probability the sum is equal to 10?

1 / 1 point

- ☒  $\frac{1}{12}$
- ☐  $\frac{1}{36}$
- ☐  $\frac{1}{18}$
- ☐  $\frac{1}{6}$

✓ Correct

There are 36 possible outcomes when throwing two dice, but only 3 possible outcomes result in a sum of 10: (4,6), (5,5), and (6,4). Thus, the probability is  $\frac{3}{36} = \frac{1}{12}$ .

3. You throw a six-sided dice 10 times. What is the probability that the **sum of results** from each toss is **greater than 10**?

1 / 1 point

Hint: Use the complement rule!

- ☐  $\frac{1}{6}$
- ☐  $\frac{1}{6^{10}}$
- ☒  $\frac{6^{10} - 1}{6^{10}}$
- ☐  $\frac{5}{6}$

✓ Correct

Let E represent the event of getting a sum greater than 10, therefore the complement (not E) would be getting a sum of 10 or less. If all ten dice rolled gets an output of 1, then  $P(\text{sum less than 10}) == P(\text{not } E) = \frac{1}{6^{10}}$ .

In order to find  $P(E)$  you can use the complement rule  $P(E) = 1 - P(\text{not } E) = 1 - \frac{1}{6^{10}} = \frac{6^{10} - 1}{6^{10}}$

4. In an experiment, there are 100 patients. After taking medicine, 50 people experienced a headache and 50 people experienced a fever. The doctors want to find the probability that a patient may experience a headache **or** fever.

1 / 1 point

Which of the following statements is true?

- ☒ Not enough information is given to calculate  $P(\text{fever or headache})$ .
- ☐  $P(\text{fever or headache}) = P(\text{fever}) + P(\text{headache}) = 1$ .
- ☐  $P(\text{fever or headache}) = P(\text{fever}) * P(\text{headache}) = 0.25$ .

✓ Correct

Since the problem description never mentions that the events are disjoint, it may be the case where some persons have a headache AND fever. Therefore, the events a patient experiences a headache or a fever are **joint events**. To calculate  $P(\text{fever or headache})$ , you need to know  $P(\text{fever AND headache})$ .

5. A software company conducted a test on their new platform by exposing their users to two versions of the same product.

1 / 1 point

Number of users that were given version A: 4000

Number of user that were given version B: 5000

Number of users that experienced a bug: 3000

Number of users with version B that experienced a bug: 1500

What is the probability that a user tested Version B, **given** they experienced a bug during testing?

Hint:  $P(X|Y) = \frac{P(X \cap Y)}{P(Y)}$

- ☐ 40%
- ☐ 20%.
- ☒ 50%
- ☐ 10%

✓ Correct

Great Job! For simplicity, let's assume that  $P(B)$  represents the probability of a user given Version B and  $E$  represents the event of getting a bug. That means that

$$P(B|E) = \frac{P(B \cap E)}{P(E)} = \frac{1500}{3000} = 0.50 \text{ or } 50.$$