

1. A jewelry store that serves just one customer at a time is concerned about the safety of its isolated customers.

1 / 1 puntos

The store does some research and learns that:

- 10% of the times that a jewelry store is robbed, a customer is in the store.
- A jewelry store has a customer on average 20% of each 24-hour day.
- The probability that a jewelry store is being robbed (anywhere in the world) is 1 in 2 million.

What is the probability that a robbery will occur while a customer is in the store?

- ☐ $\frac{1}{500000}$
- ☐ $\frac{1}{2000000}$
- ☒ $\frac{1}{4000000}$
- ☐ $\frac{1}{5000000}$

2. If I flip a fair coin, with heads and tails, ten times in a row, what is the probability that I will get exactly six heads?

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- ☐ 0.021
- ☐ 0.187
- ☒ 0.2051
- ☐ 0.305

3. If a coin is bent so that it has a 40% probability of coming up heads, what is the probability of getting *exactly* 6 heads in 10 throws?

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- ☐ 0.0974
- ☐ 0.1045
- ☒ 0.1115
- ☐ 0.1219

4. A bent coin has 40% probability of coming up heads on each independent toss. If I toss the coin ten times, what is the probability that I get at least 8 heads?

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- ☐ 0.0132
- ☐ 0.0213
- ☐ 0.0312
- ☒ 0.0123

5. Suppose I have a bent coin with a 60% probability of coming up heads. I throw the coin ten times and it comes up heads 8 times.

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What is the value of the “likelihood” term in Bayes’ Theorem -- the conditional probability of the data given the parameter.

- ☐ 0.043945
- ☐ 0.122885
- ☒ 0.120932
- ☐ 0.168835

6. We have the following information about a new medical test for diagnosing cancer.

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Before any data are observed, we know that 5% of the population to be tested actually have Cancer.

Of those tested who do have cancer, 90% of them get an accurate test result of "Positive" for cancer. The other 10% get a false test result of "Negative" for Cancer.

Of the people who do not have cancer, 90% of them get an accurate test result of "Negative" for cancer. The other 10% get a false test result of "Positive" for cancer.

What is the conditional probability that I have Cancer, if I get a "Positive" test result for Cancer?

**Formulas in the feedback section are very long, and do not fit within the standard viewing window. Therefore, the font is a bit smaller and the word "positive test" has been abbreviated as PT.

- ☐ 67.9%
- ☐ 4.5%
- ☐ 9.5%
- ☒ 32.1% probability that I have cancer

7. We have the following information about a new medical test for diagnosing cancer.

1 / 1 puntos

Before any data are observed, we know that 8% of the population to be tested actually have Cancer.

Of those tested who do have cancer, 90% of them get an accurate test result of "Positive" for cancer.

The other 10% get a false test result of "Negative" for Cancer.

Of the people who do not have cancer, 95% of them get an accurate test result of "Negative" for cancer.

The other 5% get a false test result of "Positive" for cancer.

What is the conditional probability that I have cancer, if I get a "Negative" test result for Cancer?

- ☒ 0.9%
- ☐ .80%
- ☐ 99.1%
- ☐ 88.2%

8. An urn contains 50 marbles – 40 blue and 10 white. After 50 draws, exactly 40 blue and 10 white are observed.

1 / 1 puntos

You are not told whether the draw was done “with replacement” or “without replacement.”

What is the probability that the draw was done with replacement?

- ☐ 13.98%
- ☒ 12.27%
- ☐ 87.73%
- ☐ 1

9. According to Department of Customs Enforcement Research: 99% of people crossing into the United States are not smugglers.

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The majority of all Smugglers at the border (65%) appear nervous and sweaty.

Only 8% of innocent people at the border appear nervous and sweaty.

If someone at the border appears nervous and sweaty, what is the probability that they are a Smuggler?

- ☐ 7.92%
- ☒ 7.58%
- ☐ 92.42%
- ☐ 8.57%

