

Practice quiz on Bayes Theorem and the Binomial Theorem

NÚMERO TOTAL DE PONTOS 9

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

1 ponto

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?

1 ponto

- ☐ 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?

1 ponto

- ☐ 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?

1 ponto

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

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.

1 ponto

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

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

- 6.

1 ponto

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

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.**

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

7.

1 ponto

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

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?

- ☐ .80%
- ☐ 88.2%
- ☐ 99.1%
- ☒ 0.9%

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

1 ponto

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?

- ☐ 12.27%

☒ 1☐ 87.73%☐ 13.98%

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

1 ponto

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?

☐ 7.58%☐ 92.42%☐ 8.57%☒ 7.92%

- ☐ Eu compreendo que enviar um trabalho que não seja meu pode resultar em fracasso permanente deste curso ou desativação de minha conta do Coursera.

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