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?

- ○ \begin {align}\frac{1}{500000}\end {align}
- ○ \begin {align}\frac{1}{2000000}\end {align}
- ◉ \begin{align}\frac{1}{4000000}\end{align}
- ○ \begin {align}\frac{1}{5000000}\end {align}

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.

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

1 ponto

- 0.043945
- 0.120932
- 0.168835
- 0.122885

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.

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

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?

- 99.1%
- $.80\%$
- 88.2%
- 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?

- 13.98%

- ○ 87.73%
- ◉ 1
- ○ 12.27%

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?

- ○ 92.42%
- ○ 7.92%
- ○ 8.57%
- ◉ 7.58%

☐ 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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