1. If you randomly guess on this question, you have a .25 probability of being correct. Which probabilistic paradigm from Lesson 1 does this argument best demonstrate? **1 ponto**

- (●) Classical
- ( ) Frequentist
- ( ) Bayesian
- ( ) None of the above

2. On a multiple choice test, you do not know the answer to a question with three alternatives. One of the options, however, contains a keyword which the professor used disproportionately often during lecture. Rather than randomly guessing, you select the option containing the keyword, supposing you have a better than 1/3 chance of being correct. **1 ponto**

Which probabilistic paradigm from Lesson 1 does this argument best demonstrate?

- ( ) Classical
- ( ) Frequentist
- (●) Bayesian

3. On average, one in three students at your school participates in extracurricular activities. You conclude that the probability that a randomly selected student from your school participates is 1/3. **1 ponto**

Which probabilistic paradigm from Lesson 1 does this argument best demonstrate?

- ( ) Classical
- (●) Frequentist
- ( ) Bayesian

4. **For Questions 4-6, consider the following scenario:** **1 ponto**

Your friend offers a bet that she can beat you in a game of chess. If you win, she owes you $5, but if she wins, you owe her $3.

- Suppose she is 100% confident that she will beat you. What is her expected return for this game? (Report your answer without the $ symbol.)

Digite sua resposta aqui 3

YOU WIN = -$5 / SHE WIN = +$3

- Esperança é a média dela de ganhos/perda

$E(x) = (-5) \cdot (0\%) + 3 \cdot (1) = 3$

5. Chess: **1 ponto**

- Suppose she is only 50% confident that she will beat you (her personal probability of winning is $p = 0.5$). What is her expected return now? (Report your answer without the $ symbol.)

Digite sua resposta aqui → 1

$E(X) = -5.(0,5) + 3.(0,5) = -1$

6. Chess: **1 ponto**

- Now assuming your friend will only agree to fair bets (expected return of $0), find her personal probability that she will win. Report your answer as a simplified fraction.

Hint: Use the expected return of her proposed bet.

A pré-visualização aparecerá aqui...

Insira a expressão matemática aqui → 3/8

$E(X) = 0$

$-5.p + 3(1-p) = 0$

$-5p + 3 - 3p = 0$

$8p = 3$ → $p = 3/8$

7. **For Questions 7-8, consider the following "Dutch book" scenario:** **1 ponto**

Suppose your friend offers a pair of bets:

(i) if it rains or is overcast tomorrow, you pay him $4, otherwise he pays you $6;

(ii) if it is sunny you pay him $5, otherwise he pays you $5.

- Suppose rain, overcast, and sunny are the only events in consideration. If you make both bets simultaneously, this is called a "Dutch book," as you are guaranteed to win money. How much do you win regardless of the outcome? (Report your answer without the $ symbol.)

Digite sua resposta aqui → 1

(i) $x_1 = -4$, $x_2 = 6$ (ii) = $x_1 = -5$, $x_2 = 5$

RAIN

OVERCAST

SUNNY

$(2/3)(-4) + (1/3).6 + 1/3.(-5) + (2/3).5$

$-8/3 + 2 - 5/3 + 10/3 = +2/3 + 2 - 5/3$

$= 2 - 3/3 = 1$