BASIC PROBABILITY QUESTIONS

1. Basic Probability - Coin Toss

Q: A coin is tossed once. What is the probability of getting a head?

A: 1/2 = 0.5

2. Basic Probability - Dice Roll

Q: A die is rolled once. What is the probability of getting a number greater than 4?

A: Favorable outcomes = {5, 6} => P = 2/6 = 1/3 ≈ 0.333

3. Conditional Probability - Coin Toss

Q: A coin is tossed twice. What is the probability of getting heads on the first toss given that the second toss is a tail?

A: P(First H | Second T) = 1/2 = 0.5

4. Conditional Probability - Card Draw

Q: A card is drawn from a standard deck. Given that the card is red, what is the probability that it is a heart?

A: P(Heart | Red) = 13/26 = 0.5

5. Conditional Probability - Dice Roll

Q: A die is rolled. Given that the number is even, what is the probability it is a 2?

A: P(2 | Even) = 1/3 ≈ 0.333

6. Bayes' Theorem - Coin Bag Example

Q: One bag with a fair coin, one with a double-headed coin. A head is observed. Probability it came from double-headed coin?

A: P(Bag2 | Head) = 2/3 ≈ 0.667

7. Bayes' Theorem - Medical Test

Q: Disease rate = 0.001, test accuracy = 99%. Test is positive. What's P(Disease | Positive)?

A: P = 0.00099 / (0.00099 + 0.00999) ≈ 0.09 or 9%

8. Bayes' Theorem - Weather Prediction

Q: P(Rain) = 0.7, P(Correct forecast | Rain) = 0.9

A: Directly given: P(Correct | Rain) = 0.9 or 90%

9. Bayes' Theorem - Student Test Result

Q: 70% prepare. P(Pass | Prepared) = 0.9, P(Pass | Unprepared) = 0.3. Student passed.

A: P(Prepared | Passed) = 0.875 or 87.5%

10. Conditional Probability from Joint Probability

Q: 60% boys (70% like math), 40% girls (50% like math). Given likes math, P(student is boy)?

A: P(Boy | Likes Math) = 0.42 / 0.62 ≈ 0.677 or 67.7%