

Problem 2.4

Santo and Tevy are playing a coin-tossing game. To play the game, they take turns tossing 3 coins. If all 3 coins match, Santo wins. Otherwise, Tevy wins. Both players have won the game several times, but Tevy seems to be winning more often. Santo thinks the game is unfair.

Part A

1. How many possible outcomes are there when you toss 3 coins? Show all your work.

Are the outcomes equally likely?

2. What is the theoretical probability that the 3 coins will match?

3. What is the theoretical probability that exactly 2 coins will match?

4. Is this a fair game? Explain your reasoning.

How Likely Is It?

Part B

If you tossed 3 coins 24 times, how many times would you expect 2 coins to match?

Part C

Santo said, "It is *possible* to toss 3 matching coins." Tevy replied, "Yes, but is it *probable*?" What do you think each boy meant?

Santo-

Tevy-