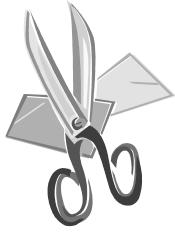


Rock, Paper,



Scissors



Rock, Paper, Scissors

Theoretical and Experimental Probability

Background Information

Rock, Paper, Scissors is a game of chance that can be used to make decisions such as “Who gets the last piece of pizza?” or “ Who has to take out the garbage?”. Some people have even created a sport out of Rock, Paper, Scissors (RPS) and hold tournaments complete with prize money. Others will play RPS just for the fun of it. However you have played it, RPS is known by just about everyone.

Theoretical Probability of Rock, Paper, Scissors

In the chart above list all of the possible combinations that can be chosen by persons A and B as well as the winner of each RPS game. Determine the theoretical probability of each person winning the game and of a tie. Round to the nearest percent. Is RPS a fair game? How do you know?

$$P(\text{A wins}) = \underline{\hspace{2cm}} (\underline{\hspace{2cm}} \%) \quad P(\text{B wins}) = \underline{\hspace{2cm}} (\underline{\hspace{2cm}} \%) \quad P(\text{tie}) = \underline{\hspace{2cm}} (\underline{\hspace{2cm}} \%)$$

Experimental Probability of Rock, Paper, Scissors

Individual Data (playing against partner)

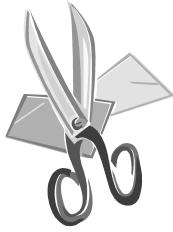
Wins _____ (_____%) Losses _____ (_____%) Ties _____ (_____%)

Classroom Data (record all games played)

Wins ____ (____%) Losses ____ (____%) Ties ____ (____%)

How did the theoretical probability of RPS compare to the experimental probability?





Rock, Paper, Scissors

Rock, Paper, Scissors for Three

Creating a Fair Game

Use the chart below to determine all the possible outcomes when a three-person version of Rock, Paper, Scissors (RPS) is played. Use R (rock), P (paper), and S (scissors) to complete the chart. Then, find the theoretical probability of each player winning. Round to the nearest percent. A tree diagram is a useful tool to help make an organized list of all the outcomes.

Player A wins if all three players display the same hand sign.

Player B wins if all three players display different hand signs.

Player C wins if two players display the same hand sign.

Possible Outcomes

Winner

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 7) _____
- 8) _____
- 9) _____
- 10) _____
- 11) _____
- 12) _____
- 13) _____
- 14) _____

Possible Outcomes

Winner

- 15) _____
- 16) _____
- 17) _____
- 18) _____
- 19) _____
- 20) _____
- 21) _____
- 22) _____
- 23) _____
- 24) _____
- 25) _____
- 26) _____
- 27) _____

$$P(A \text{ wins}) = \underline{\hspace{2cm}} (\underline{\hspace{2cm}} \%)$$

$$P(B \text{ wins}) = \underline{\hspace{2cm}} (\underline{\hspace{2cm}} \%)$$

$$P(C \text{ wins}) = \underline{\hspace{2cm}} (\underline{\hspace{2cm}} \%)$$

Is the game above fair? _____ Why? _____

Fill in the spaces below to make this a fair game.

Player A scores _____ point(s) if all three players display the same hand sign.

Player B scores _____ point(s) if all three players display different hand signs.

Player C scores _____ point(s) if two players display the same hand sign.

Play RPS twenty-seven times and keep track of your points. Discuss the results. Is the game fair?

Player A total points: _____

Player B total points: _____

Player C total points: _____





Rock, Paper, Scissors

Rock, Paper, Scissors Tourney

FIRST ROUND SECOND ROUND QUARTERFINALS SEMIFINALS FINALS CHAMPION

