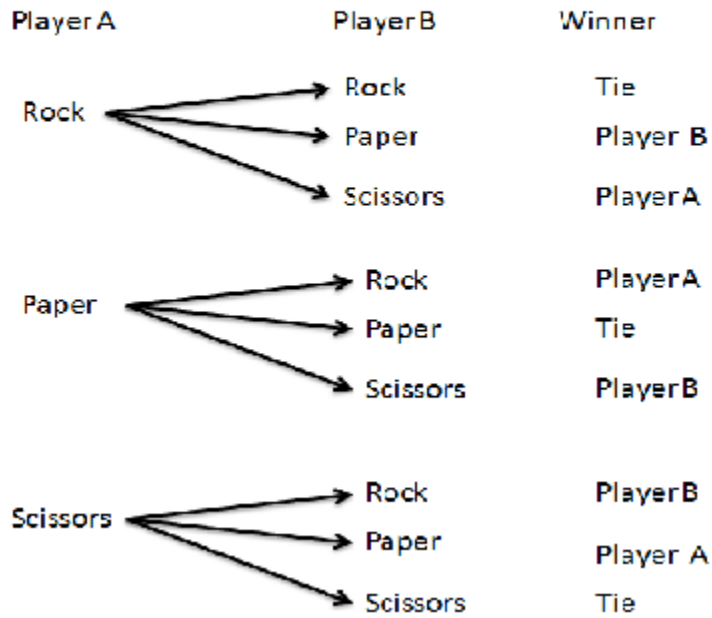


Rock-Paper-Scissors Lesson plan

- Introduce the Exercise
- Explain the rules of the regular Rock-Paper-Scissors game
(http://en.wikipedia.org/wiki/Rock_paper_scissors)
- Work together with students to construct a tree diagram enumerating all the possible outcomes of a two-player Rock-Paper-Scissors game. Explain how this relates to the concept of sample spaces. (1.1)
- Talk about the probabilities of the different outcomes. Introduce the concept of fair game. Explain why Rock-Paper-Scissors is a fair game. (1.2)
- Divide students into pairs
- Each pair plays the game 30 times and records the result of each game.
- Ask students to compute the experimental probability and compare their findings with the probabilities you provided
- Add the results of all the pairs and compute the experimental probability for the whole group, then compare it to the original probabilities.
- Have students modify the game to reduce the probability of tying by adding two new hand signs. Explain how using a tree diagram can be helpful. (1.3)
- Compute the new probabilities of each outcome (1.4)
- Have pairs of students play the new version of the game 30 times and record their results.
- Compare the results with the probabilities they found.
- Add the results of all the pairs and compare that to the computed probabilities.
- Ask students if they accomplished their goal

1.1

Tree Diagram



1.2

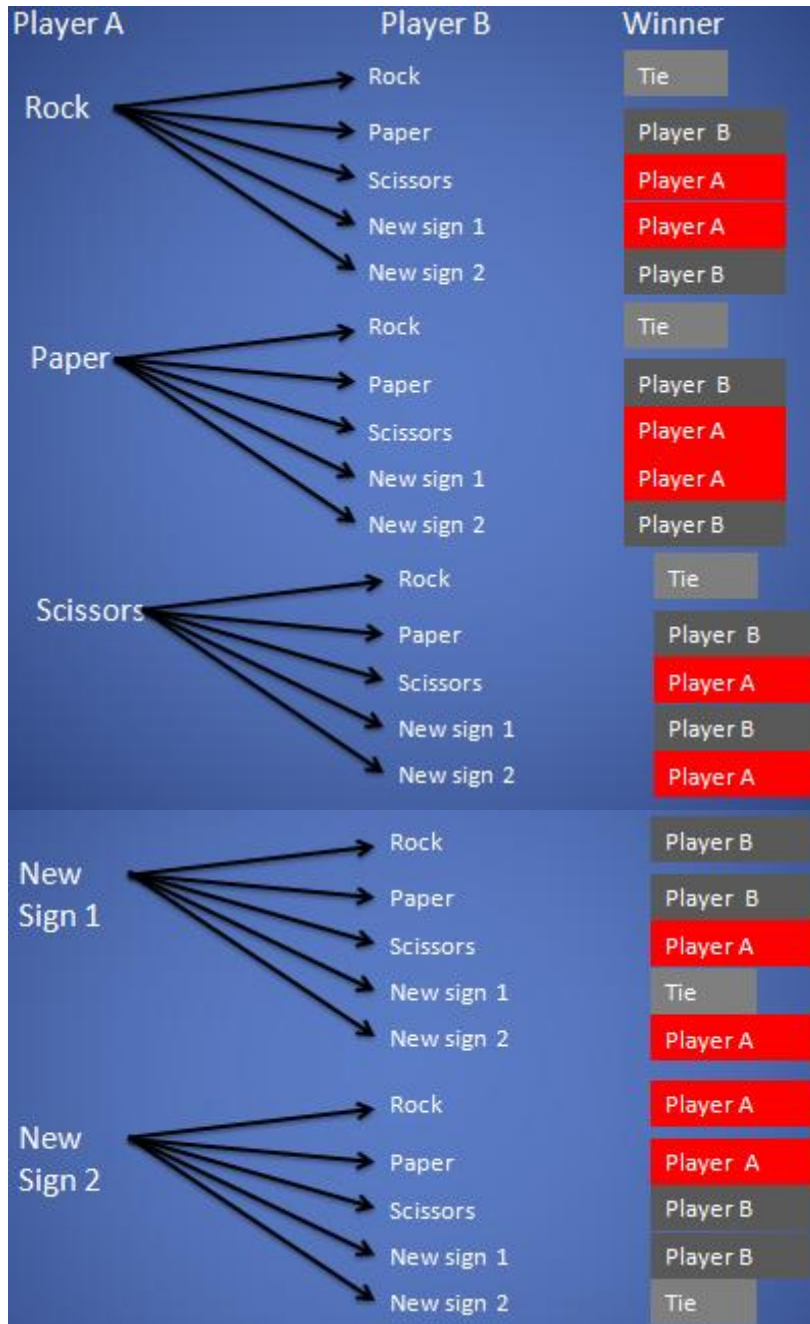
3/9 or 1/3 probability of a Tie

3/9 or 1/3 probability Player A winning

3/9 or 1/3 probability Player B winning

There is equal probability of player A winning and the same is true for player B. Hence, we have a fair game

1.3



1.4

5/25 or 1/5 probability of a Tie

10/25 or 2/5 probability of player A winning

10/25 or 2/5 probability of player B winning

There is still equal probability of player A and B winning. However, the probability of tying was reduced.