



Game theory is the mathematical study of decisions and games. Play the below games and try to answer the following questions.

Take Away

- **Setup:** Roll three six-sided dice. Add up their values, then place that many coins on the table.
- **Gameplay:** Players alternate taking one, two, or three coins from the table.
- **Object:** The winner is the player who takes the last coin from the table.

Questions

- Which kinds of dice rolls are better for the first player?
- Which kinds of dice rolls are better for the second player?
- Which player wins most often in this game?

Nim

- **Setup:** Roll three six-sided dice. For each die, place that many pennies, nickels, and dimes on the table.
- **Gameplay:** Players alternate one or more coins of the same type from the table.
- **Object:** The winner is the player who takes the last coin from the table.

Questions

- Which kinds of dice rolls are better for the first player?
- Which kinds of dice rolls are better for the second player?