Three games

We will cover three games that divide stuff up. Each game has an easy to memorize winning strategy for **every** player. These games let us always win our fair share, even if the other players are irrational, assuming you can get them to play by the rules.

You cut and I choose

Players: 2

Materials: Divisible loot, fair coin

Winning criterion: A player wins if he feels he got at least half the loot

Step 1: Flip coin to see who goes first

Step 2: First player divides the loot into two pieces

Step 3: Second player takes one piece and leaves

Step 4: First player takes other piece and leaves

Last diminisher

Players: 3 or more (say n)

Materials: Divisible loot, fair dice

Winning criterion: A player wins if he feels he got at least one nth of the loot (so a third for 3 players, a quarter for 4 players, etc.).

Step 1: Roll dice to determine the playing order

Step 2: The first player divides the loot into two pieces: the "claim" and the "rest"

Step 3: The next player declares the claim to be one of (1) too big, (2) too small, or (3) just right

Step 3a: If it is too big, the player moves some loot from the "claim" to the "rest"

Step 4: Repeat step 3 until all players have gone

Step 5: The last player to have chosen option (1) or (3) takes the "claim" and leaves

Step 6: Start the game over with the remaining players and the remaining loot

Step 6a: If there are 2 players, one can just do "You cut, I choose", which is how this game would effectively work with 2 players

Sealed bids

Players: 2 or more (say n)

Materials: Indivisible loot items, security envelopes, paper, pens, an escrow account, and a capital market

Winning criterion: A player wins if he feels he got at least one nth of the loot, including any cash payments

Step 1: All players secretly write down their name and a dollar amount for each loot item on a piece of paper, and put it in the security envelope.

Step 2: All envelopes are opened together.

Step 3: For each item, the player who wrote the highest dollar amount for that item deposits their dollar amount in the escrow account.

Step 4: For each item, the item goes to the player who wrote the highest dollar amount for that item.

Step 5: For each item, each player takes one nth of the dollar amount they wrote down from the escrow account.

Step 6: The remaining money in the escrow account is divided evenly amongst all the players

Take-home quiz:

Suppose the envelopes are opened to reveal:

	Boat	House	Stick
Alex	\$50k	\$200k	\$10k
Bart	\$20k	\$120k	\$20k
Carl	\$10k	300k	50k
Drew	\$10k	\$100k	\$200k

After step 3, how much money is in the escrow account? Make sure to explain how to get the number quickly from the table.

After step 4, who gets what item? Make sure to explain how to get the name quickly from the table.

After step 5, how much money does each person get? Make sure to explain how to get the numbers quickly from the table.

After step 5, how much money is left in the escrow account?