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EDST 210

## One-Dimensional Conquest

Welcome to *One-Dimensional Conquest*! Have an intellectual math-based duel on the number line and outwit your opponent!

**Quick Description:** *One-Dimensional Conquest* is a two player math-based tabletop competitive game where players battle for ultimate domination and territory control using just a standard deck of cards and their knowledge of fractions.

**Players:** 2

**Duration:** 15 - 20 minutes

**Audience:** 10+ years of age suggested

### Minimal materials needed:

1. A standard deck of cards (52 playing cards)
2. A writing utensil (pencil, chalk, apple pencil, etc) | Ideally two colors
3. A surface to write on (paper, blackboard, ipad, etc)
4. An eraser (eraser, chalkboard eraser, ipad erasing tool, etc)

**Core Dynamics:** Outwit - Try to beat your opponent!

*Game Goal:* Acquire **more territory** than your opponents by forming fraction intervals on the number line.

### Setup:

1. Draw a number line on the piece of paper, and mark the left end with 0 and the right end with 1. The line represents the one dimensional world between 0 and 1.
2. If your deck has jokers, discard them.
3. Draw 10 cards from the deck and place them in the middle of the table with their faces of numbers up. These are **public number cards** that both players can use.
4. Each player draws 5 cards from the deck to keep in their hand. These are **private number cards** that only the player can see.
5. Now let's play the game!

### *Mechanics and Rules:*

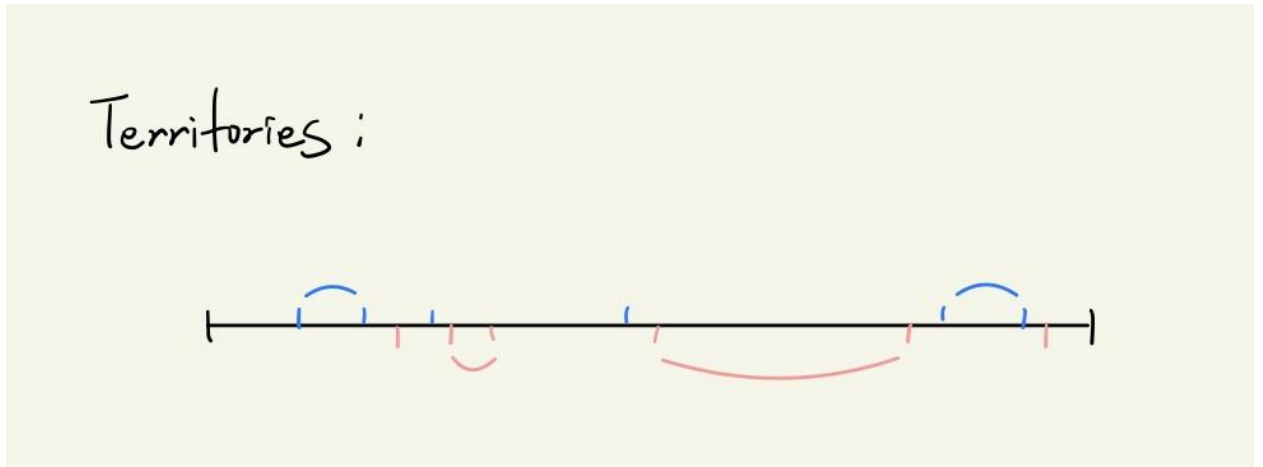
1. Players will use public number cards and private number cards together to form a **fraction**. For each fraction, players need to choose **at least one public number card and at least one private number card**.
2. Each turn, players can **use up to 4 cards** in total; they can use addition and subtraction to calculate two desired numbers as the denominator and numerator of the fraction. The bigger number will automatically be the denominator, while the smaller one will be the numerator.
3. The number cards (including A as 1) represent numbers. The face cards (J, Q, K) can be either number cards *or* operation cards:
  - a. When they are used as number cards, J, Q, K represent 11, 12, 13 respectively.
  - b. When they are used as operation cards: Players may use the card to eliminate a territory marker of their opponents. (*See Eliminating Territory Markers*).
4. Players will mark the approximate position of the fraction they formed on the number line. Remember to draw the marks in a way that players can tell which marks belong to which player (players could utilize the two sides of the number line, or use different colors).

Draw on the numbers line:



5. Players claim territories by marking the number line with a pair of fractions (territory markers) with no opponent's marks in between. The value of the territories can be

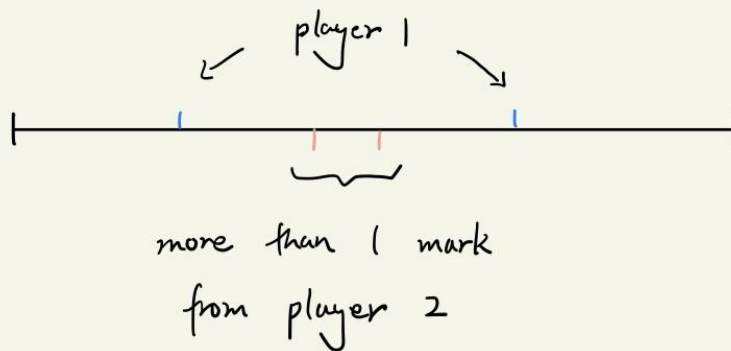
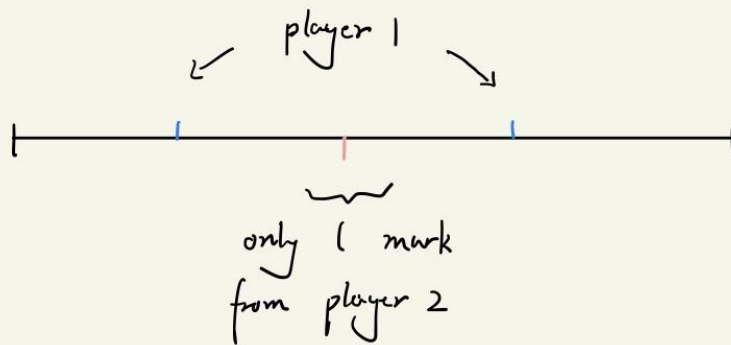
calculated by the formula: (bigger fraction) - (smaller fraction).



6. The game will be played until a player ends the round with 0 personal cards left.
7. When no interval is formed by a pair of adjacent fractions, the two ends of the number line will each form an interval with its nearest mark. If the whole board has only alternating marks (as in no one has any territories at all) 0 and 1 become territory markers for the player with a territory marker nearest to 0 and 1.
8. The player who claims territories that sum up to the larger numerical value wins!

*Eliminating Territory Markers:*

## Eliminating Markers :



### Calculating score:

The final score of the players is the sum of the numeric values of all their territories.

### How to Play a Round:

0. Players will **rock, paper, scissors** to determine who goes first in the first round. The player who goes first will be player 1.
1. Player 1 plays either a **fraction claim** or **operation card**
2. **Draw** or **erase** a territory marker on the number line.
3. Repeat steps 1-2 for player 2
4. Refill private cards back to **5**, with the player who went first refiling their hand first
5. Refill public cards back to **10**.

6. In the following rounds, player 1 of each round will be determined by whoever played the **least amount of cards** the previous round. If players **used the same amount of cards**, then whoever played second the previous round will play first this time.
7. Repeat 1 to 6 until the end condition.
8. Players calculate the numerical value of their territories. Whoever has the highest total wins!

### **Learning Objective:**

The learning goal for this game is to help players form concepts of specific fractions and get familiar with fraction operations. The game provides players with lived experience to handle fractions, which are uncommon in real life. The target audience for this game are students learning the concept of fractions or students who want to practice. The game is also suitable to be played by other math lovers or people who want to familiarize themselves with fractions. The ability to use spatial reasoning and heuristics to gauge fraction locations as well as being cognizant as your territory shrinks and expands is intrinsically tied to the game mechanics. Through calculated moves, this game also hones your logical thinking and problem solving skill set.