



RULEBOOK

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SLAP COUNT

Background

Inorganic chemistry is considered an upper division chemistry course. Within this course, students are tasked to learn transition metal chemistry. Transition metals are elements found in the middle of the periodic table (commonly referred to as the “*d*-block”). Students are taught to recognize the metal, the metal’s oxidation state and the metal’s *d*-electron count. These are key components towards more advance theories in inorganic chemistry. The combination of the type of metal and the metal’s oxidation state will determine the *d*-electron count, which is how many electrons are in the *d*-orbitals. For example, an Iron (Fe) metal ion has an oxidation state of plus two (+2), its *d*-electron count would be d^6 , which means there are six electrons in the *d*-orbitals.

Object of the Game

The object of Slap Count is to quickly recognize the *d*-electron count of transition metal ions. Players take turns flipping their Slap Count cards and placing them in the center pile. When the chosen *d*-electron count appears, the first player to slap the center pile receives those cards. To win the game, a player must acquire all of the Slap Count cards.

Components

6 *d*-Block Periodic Table Cards

3	4	5	6	7	8	9	10	11	12
Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn
Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd
	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg

Transition metals on the same column will have the same color background. This will help players identify a metal's *d*-electron count in its neutral state.



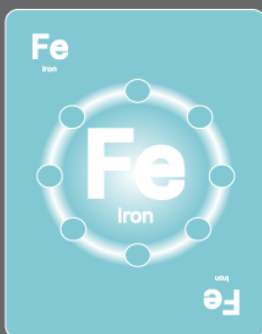
Metal Ion
58 Cards



Oxidation State
50 Cards



***d*-Electron Count**
10 Cards



Each Metal Ion card will display the number of electrons (circles around metal) in its neutral state. Players can count the circles if they do not want to look at the *d*-Block Card. Example on the left shows eight circles for an Fe(0), which is d^8 . *The game of Slap Count is played on the premise that these metal ions are coordinated to ligands.

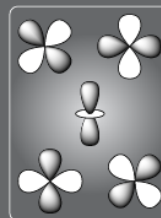
Set-up

1. Gather all players into a circle.
2. Give each player a “*d*-Block Card.”
3. Place Metal Ion cards and Oxidation State cards into one pile and *d*-Electron Count cards into a separate pile.
4. Shuffle each pile and place them with the back of the card facing up.
5. Distribute cards from the Metal Ion and Oxidation State pile evenly. Players do not get to look at their cards.

Back of Card
Slap Count



Back of Card
d-Electron Count



Once the cards have been distributed, the oldest player then randomly chooses two *d*-Electron Count cards out of the *d*-Electron Count pile and place them face up on the table in clear view of all players. They will stay there the remainder of the game.

Example...



The two *d*-Electron Count cards chosen will be the objective for players to recognize during the game play.

The game can now begin!

Game Play

Each player takes a turn flipping their Slap Count card over while placing them in the center. As cards are piled on top of one another, players are looking to slap the pile when the chosen *d*-electron counts arise. (In these examples, it is d^3 or d^6).



Slap when the Metal Ion and an Oxidation State card are directly touching that combine to have the chosen *d*-electron count. Example on the left shows a V(+2) which is d^3 .



The top Oxidation State card takes precedence over the ones below when touching a Metal Ion card. Example on the left shows a Re(+1) which is d^6 .

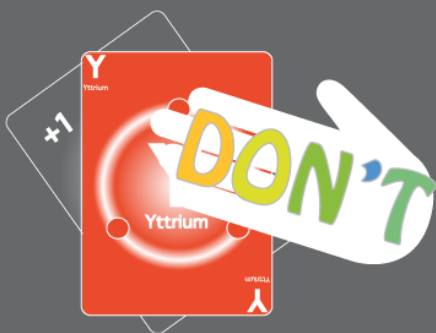


When two Metal Ion cards are touching, the top Metal Ion card is in its neutral state. This rule also holds when starting a new round with a Metal Ion card. Example on the left shows a Y(0) which is d^3 .

The player who slaps the center pile first will take all the Slap Count cards from the the center pile and place them directly below their deck. Continue flipping cards clockwise until all cards are in the possession of one player or when all but one player runs out of cards in their possession.

Penalty

When a player slaps on the wrong *d*-electron count, they must take the top two cards from their pile and place them at the bottom of the center pile with the front of the card facing up. (In these examples, d^3 or d^6 is the objective).



Do not slap when the Metal Ion and an Oxidation State card that are directly touching does not combine to have the targeted *d*-electron count. Example on the left shows a Y(+1) which is d^2 .



Oxidation State cards cannot be combined. Only the Oxidation State card that is directly touching the Metal Ion card counts towards the *d*-electron count. Example on the left shows a V(+1) which is d^4 .



Combining Oxidation State cards do not count as *d*-electrons. A Metal Ion card must be present.

When a player runs out of Slap Count cards, they can still slap to get back into the game. However, if a player with no cards slaps on the wrong *d*-electron count, they must wait until the round is over to slap again.

New Round

When a round is won, the player directly left of the winner of that round must start by flipping the first slap count card. If the player directly left of the winner does not have any slap count cards then the starting move goes to the next player on the left.

Tie breaker

When two or more players evenly slap the center pile at the same time, divide the pile evenly to those players.

Winner!

The winner is determined when one player has all the cards in their possession or when all but one player runs out of cards in their possession.

Credits

Game Creator: Zachary Thammavongsy (M.S.)

Game Editors: Brian Lydon (M.S.) & Kim Le (M.S.)

Original Idea Contributed from Wyeth Gibson & Bianca Ceballos

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