Metal vs. Non-Metal

Game Rules

You are a master at making ionic compounds and it is up to you to create the most exotic combinations between metals and non-metals. You will make these combinations from you and your opponents' hands to obtain the master collection.

**Educational Objective**

This game helps build intuition in making ionic compounds and writing chemical formulae using metals and non-metals. The names of the ions are on the card, which eventually helps with naming compounds as well.

**To Win**

Collect the most cards at the end of the game.

**The Deck:** 40 cards

|  |  |  |  |
| --- | --- | --- | --- |
| **Card** | **Number in Deck** | **Card** | **Number in Deck** |
| Na+ | 8 | Cl- | 8 |
| Ca2+ | 7 | O2- | 7 |
| Al3+ | 5 | N3- | 5 |

Card Anatomy

**Chemical symbol of the ion with the appropriate charge**

The element is the letter. The charge on the ion is indicated in the superscript.

|  |
| --- |
| N3-  Nitride Ion (Non-Metal) |

**Players:** Maximum 4

**Metal or non-metal**

A metal and a non-metal create an ionic compound.

**Charge of the ion**

This charge can be positive or negative depending on your element.

**Name of the ion**

You can use this without the "ion" word to write chemical names of ionic compounds.

**Set Up**

At the start of the game, each player is dealt 6 cards. The left over cards form the Ion Deck, placed aside.

**Game Play**

Each player takes turn playing one card from his or her hand to collect ions from their opponent. The steps are as follows:

**Steps:**

|  |  |
| --- | --- |
| **1)** Randomly decide who is the start player (flip a coin, roll a dice, etc). The players counterclockwise from the first player are the second, third, and fourth player respectively. |  |
| **2)** The first player chooses 1 card from his or her hand and plays this face up in front of him/her. Player 1 is called the **initiating player**. This card can be anything from the hand. |  |
| **3)** The first player immediately draws 1 card to replenish his/her hand of 6 cards. |  |
| **4)** The player counterclockwise to the first player, player 2, MUST play cards: i) that have the opposite charge of the 1st player's card ii) of the same ion (ex. you can't play a Cl- and an O2) iii) the number of cards played is/are equal to the charge number on the 1st player's card, unless the 2nd player is matching it with the same numeric charge. (Ex1. You can play 2 N3- or 1 O2-)  Player 2 is called the **responding player**.  If player 2 does not have the right cards to match player 1's card, please refer to Advanced Gameplay ruling #1. | **Example 1:**  1st player plays Ca2+.  2nd player can play  1) 2 Cl-,  *2) 1 O2-*  3) 2 N3-  **Example 2:**  1st player plays N3-.  2nd player can play  1) 3 Na+,  2) 3 O2-  *3) 1 Al3+* |
| **5)** Compare the total charge of player 1 and 2. If the total charges from both players are equal, the **initiating player** (player 1) collects all the cards in play.    If the **initiating player** (player 1) has a higher total charge than the **responding player** (player 2), the **initiating player** collects all the cards.  If the **responding player** (player 2) has a higher total charge than the **initiating player** (player 1), the **initiating player** has the option to add cards from his/her hand into play. This is called **calling for reinforcements**. The cards added must be of the same ion. If this was done successfully, the **initiating player** once again collects all the cards in play and replenishes his/her hand up to 6 cards.  If the **initiating player** is unable to **call for reinforcements**, the **responding player** collects all the cards in play.  Collected cards are placed beside the player face down. | **Example 1:**  1st player plays N3-.  2nd player plays 1 Al3+.  Player 1 collects the 2 cards.  **Example 2:**  1st player plays N3-.  2nd player has no other positive ions, so plays 1 Na+.  Player 1 collects the 2 cards.  **Example 3:**  1st player plays N3-.  2nd player plays 3 Ca2+.  Player 2 has made a **power play** and has more positive charges than player 1's negative charges.  If player 1 is able to play 1 more N3-, then player 1 collects all 5 cards. If player 1 is unable to play 1 more N3-, then player 2 collects the 3 cards.  2\*(-3) = -6 charge  3\*(+2) = +2 charge  Since the charges cancel, player 1 successfully claims this round. |
| **6)** Make sure every player has 6 cards in his/her hand. Now it is player 2's turn to play a card and be the **initiating player.** Repeat steps 2-5 for each succeeding player. |  |

**Advanced Gameplay Rules**

**1) What if I don't have the right cards to respond to the initiating player?**

- Play what you have, but you can't play a card with a higher charge than the **initiating player** that is not described by Step 4.

Example 1: If the **initiating player** played Ca2+ and you only had Cl- and N3-, you can't play N3‑. You can only play the Cl- and draw 1 card to replenish your hand of 6.

Example 2: If you (**responding player)** absolutely have no possible plays, your opponent randomly selects a card from your hand and adds this card and the card they played to his/her collection. You draw 1 card to replenish your hand of 6 cards.

Example 3: When the **initiating player** played Na+ and you only had N3- and O2-, this is described in Step 4. *When there are playable moves, do not use these rulings.* If the **initiating player** plays a card with *x* charge, you play *x* number of cards of one opposite charge unless this charge is the same numeric value as *x*. For example, if +1 was the charge played, you can play 1 card of Cl-, O2-, or N3-.

If your (**responding player**) total charge is greater than the **initiating player**, then refer to **Step 5** above.

If the **initiating player** played Ca2+ and you only had Cl- and N3-, you can't play N3‑. You must play the Cl-. If your (**responding player**) total charge is less than the **initiating player**, then draw a card first to replenish your hand of 6. If the card you draw was the same charge that you just played, you must play the card you draw and draw once more. This repeats until you draw a different charge or your opponent's charge is neutralized. In the above example, if the next card you drew was Cl-, then you must play the new Cl- that you drew.

**2) Near the end game and down to the last few cards**

If cards cannot be played from the hand, the **initiating player** randomly takes a card from the **responding player** and adds this card and the card they played to their collection. The **initiating player** draws as many cards from the deck until he/she has 6 cards in his/her hand. This is the same routine for the **responding player**, but they draw after the **initiating player** draws. If there are not enough cards to draw, the players stops drawing and continues the game until no more plays can be made.

Unused cards are NOT added to any collection and are left aside. They do not count towards any player's points.