

An Educational Card Game

ChemKarta is card-based education game designed to reinforce basic chemistry understanding and build higher-level thinking. The game is as simple as matching an answer to the appropriate question, however in the process players also build higher-level associations between simple concepts.

**The Cards** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ChemKarta contain 5 types of cards. Only 3 of these are required to play a basic game. The others can be added or removed as the players see fit.

**Solution Cards –** Solutions contain answers you can used to solve Problem cards. Each Solution contains more than one answer. Solutions also have explanations and Keywords that describe the card. Solution cards have blue borders.

**Problem Cards –** Problems have questions on them you solve using Solutions. Each Problem is worth the printed number of points. Some Problems have Honors questions. These are additional questions you can answer to gain more points! Problem cards have red borders.

**Bonus Cards** **–** Bonus cards have advanced questions, along with their answers. They can be collected when a Problem is solved if your Solution has an answer on it. Pay attention so you don’t skip one and lose out of points. Bonus cards have orange borders

**Technique Cards** – Technique cards can be added to the Solution deck to give players chances to affect the game. They can help you or hurt your opponents. You may omit these cards if you wish. Technique cards have green borders and blue backs.

**Victory Cards** – Victory cards have conditions on them that must be met in order to win them game. These cards make it harder to win and can be used to make a game last longer. You may omit these cards if you wish. Victory cards have purple borders.

**Basic Game**

**Setting the Game Up**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Take out the Solution cards and shuffle them, this is the Solutions deck. Each player is dealt 6 cards from the Solution deck face-up. All players look at their cards and decide if they want to keep them. Each player is allowed to send their cards back and get 6 new cards if they wish, but only once.

Lay the Bonus Cards out in the middle of the table face-up so all players can see them.

Take out the Problem cards and shuffle them. This is the Problem deck. Keep it separate from the Solution deck.

**Playing the Game\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

At the beginning of the player’s turn, flip over the top card of the Problem deck. This is the question the player must solve. If the player has an answer, the player announces the name of the Solution card they are playing and indicates which answer on the card they are using. If the answer is correct, the player takes the Solution from their hand, sets it on top of the Problem, and scores that many points.

Some Problems have honors questions. You may only attempt to answer to Honors question if you have gotten the regular question right. If you answer the Honors question right, you score the Honors points instead of the regular points. If you get it wrong, you just score the regular points.

*Ex. It’s Sue’s turn. The Problem for her turn is a Carbon pi Bond. Sue chooses the Solution Methyl Ethyl Ketone and points to the Carbon pi Bond. The Honors question asks to indicate the dipole direction. She correctly indicates it is orientated towards the oxygen atom. She places her Solution on top of the Problem and scores 15 points.*

*Ex. It’s Matt’s turn and his Problem is a Nitrogen sp atom. He picks the card Acetonitrile and identifies the spnitrogen. The Honors question asks to indicate the bond polarity. He chooses towards the carbon, which is incorrect. He scores the normal 15 points instead of the Honors 20.*

If a Solution also matches a Bonus, the player may collect the bonus along with scoring points as normal. The bonus is placed under the Problem with the points showing. Pay attention to which cards match the available Bonus card because you’ll only have one chance to grab them.

If the player does not have an answer, or their answer is incorrect, then they lose their card and cannot try to answer again. Then any other player may attempt to solve the Problem. If more than one player wants to answer, the active player chooses which one answers. Always look at your cards for answers even when it’s not your turn because you may have an opportunity to gain points during another player’s turn. Repeat until the Problem is solved or no player wants to answer.

*Ex. Frank has an Amide as his Problem. He plays Raspberry Ketone and incorrectly chooses a ketone. He discards his card and asks if any other players want to answer. Both Sally and Bob want to answer. Frank chooses Sally to answer. Sally chooses the card Stepronin, identifies the Amide, and then also collects the Bonus Thiofuran for a total of 25 points.*

At the end of a player’s turn, that player may discard any number of cards they do not want. The player then draws back up to 6 cards. Remember, you only draw at the end of your turn, so if you’re using your cards to solve other player’s Problems, you won’t have many in your hand when it becomes your turn.

First player that reaches 100 points wins, even if you score during another player’s turn.

**Special Problems**

There are also special problems, which can earn you a lot of points. In this module the Special Problems are:

Intermolecular Interactions – Name all the intermolecular interactions on any 1 Solution card. You get 10 points for each correct answer. If you cannot name any interactions, or get them all wrong, the card goes out to the group as usual.

Resonance – Choose any 1 Solution card and describe the resonance structures. You get 10 points for each correct answer. If you cannot find a card that undergoes resonance, or get them all wrong, the card goes out to the group as usual.

Acid/Base Reaction – Choose any 2 Solution cards with pKa’s and identify which would be favored in an equilibrium. If you get it correct, you must place both cards on top of the solution. If you get it wrong, you lose both cards and the card goes out to the group as usual.

Quantum Number – Choose any 1 Solution card and identify an element that would have an electron with the quantum number described. For the Honors give that atom’s electron configuration. If you are incorrect, the card goes out to the group as usual.

**Advanced Game**

**Technique cards**

Technique cards have green borders on the front and blue borders on the back. They are shuffled into the Solution deck at the beginning of the game. Technique cards are dealt out at random to players along with Solution cards.

Technique cards can only be played at certain times (printed on the card). They can help the player by searching for Solutions or hurt opponents by preventing them from solving Problems. Use them carefully to help you get ahead.

**Victory cards**

If you are playing with Victory cards, deal each player a face-down Victory card at the beginning of the game. You do not win at 100 points. Instead, at the beginning of a player’s turn, if they have 100 points or more flip over the Victory card and follow the instructions. You may only flip over a Victory card on you turn, even if you score 100 points or more on another player’s turn. First player to fulfill their Victory card wins.