



# Tetris User Manual



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## Introduction

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### Tetristry



Tetristry is a Chemistry software with the purpose of introducing to early high school students the basics of chemical compound nomenclature. The game will help players develop a proficient ability to create and name compounds which will be fundamental for further studies in Chemistry. It will also provide a fun and interactive environment for students to learn by testing their knowledge in the basics of Chemistry.

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### Objective

In Tetristry, pieces representing a specific set of elements of the periodic table are dropped at random (refer to tutorial for list). The dropping pieces can be moved left and right using the respective arrow keys. Using the 'down' arrow key will drop the piece instantly to the bottom of the current column. The goal of the game is to clear as many pieces as possible in order to increase your score before the timer runs out (3 minutes for all difficulties). If the pieces exceed the game board height, you lose. Once the timer runs out, your score will be saved and you will automatically advance to the next level unless you chose to start with the 'hard' difficulty.

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### How To Play


In order to clear pieces, you must place the elements horizontally or vertically adjacent to an element it can form an ionic compound with. Once a possible compound can be formed, the elements will stop dropping until you have attempted to name it. However, the timer will continue to run unless the game is paused. If named properly, the two elements forming the compound will be removed from the board. Otherwise, the incorrectly named corresponding element pieces that form the compound will be replaced by permanent, barrier blocks.

You may input the compound name with or without spaces and it is not case sensitive. Due to the large number of compounds that can be formed with periodic elements, the game will be restricted to a subset of non-metals and metals, which will be listed in the tutorial. Also found in the tutorial will be a guide to forming compounds and how to name them with the IUPAC system.

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### Tutorial - Ionic Compound Nomenclature

The **periodic table** is composed of primarily metals and non-metals. In the periodic table below, **elements** colored dark blue (left side of table) are metals, while elements colored in light blue (right side of table) are non-metals. The light purple, dark purple and pink elements represent metalloids, lanthanides, and actinides, respectively. You will study these elements in the later years of Chemistry, but they will not be used to create any **compounds** in Tetristry.

|    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| H  |    |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    | He |
| Li | Be |   |    |    |    |    |    |    |    |    |    | B  | C  | N  | O  | F  | Ne |
| Na | Mg |   |    |    |    |    |    |    |    |    |    | Al | Si | P  | S  | Cl | Ar |
| K  | Ca | Sc  | Ti | V  | Cr | Mn | Fe | Co | Ni | Cu | Zn | Ga | Ge | As | Se | Br | Kr |
| Rb | Sr | Y   | Zr | Nb | Mo | Tc | Ru | Rh | Pd | Ag | Cd | In | Sn | Sb | Te | I  | Xe |
| Cs | Ba |  | Hf | Ta | W  | Re | Os | Ir | Pt | Au | Hg | Tl | Pb | Bi | Po | At | Rn |
| Fr | Ra |   | Rf | Db | Sg | Bh | Hs | Mt |    |    |    |    |    |    |    |    |    |
|    |    |   | La | Ce | Pr | Nd | Pm | Sm | Eu | Gd | Tb | Dy | Ho | Er | Tm | Yb | Lu |
|    |    |   | Ac | Th | Pa | U  | Np | Pu | Am | Cm | Bk | Cf | Es | Fm | Md | No | Lr |

In Tetristry, the game is focused upon forming and naming **ionic compounds**.

Ionic compounds are compounds formed from a metal and a non-metal. The metal is always the first part of an ionic compound name. Followed by the metal is the name of the non-metal, with the suffix of the non-metal changed to

“-ide”. For example, when Lithium and Oxygen form an ionic compound, Lithium is the metal and will be the first word of the name. The second element in the compound, Oxygen, will be changed to oxide because it is the non-metal. Thus, the compound formed by Lithium and Oxygen is Lithium Oxide. Likewise, Sodium and Sulfur forms Sodium Sulfide and Calcium and Iodine forms Calcium Iodide.

Below is a list of the metals and non-metals (with their **ion** names in brackets) you can use to form compounds in Tetristry.

**Metals:** Lithium, Sodium, Potassium, Copper, Barium, Calcium, Aluminum, Lead, Iron, Magnesium.

**Non-Metals:** Carbon (Carbide), Nitrogen (Nitride), Oxygen (Oxide), Fluorine (Fluoride), Phosphorus (Phosphide), Sulfur (Sulfide), Chlorine (Chloride), Selenium (Selenide), Bromine (Bromide), Iodine (Iodide).

## Scoring and Highscores

Your score, based on the number of compounds named and difficulty chosen will be automatically updated to the high scores. As the difficulties increase, so will the score you gain per correct compound named as well as the penalty lost per incorrect compound. You cannot have a negative score.

The raw score is calculated by:

$$(100 * \# \text{ of correct answers}) - (50 * \# \text{ of incorrect answers})$$

The raw score is then multiplied by a multiplier for difficulty to determine the final score.

The multipliers for each difficulty are:

**Easy: 0.8x**

**Medium: 1.0x**

**Hard: 1.2x**

**Note:** Your score is not saved if you decide to start a new game or end the game if your current game has not been completed.

To view the highscores, click the Highscores button from the main menu or access it through the Highscores menu item from the menu bar. From there, you can either choose to reset the current highscores, or print the highscore list as long as at least one highscore exists.

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## Getting Started

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### Starting a New Game

To start a game, click play, and proceed by selecting the difficulty you would like. You will be then be asked to enter your player name (max. 10 characters). There are three difficulties: easy, medium, and hard. As the levels increase in difficulty, aspects of the game will change accordingly (refer to level progression). If you have not lost the game before time limit runs out, you will automatically progress to the next difficulty. Good luck!

### Level Progression

The levels increase in difficulty through:

1. Increased drop speed
2. Larger time penalty per incorrect compound name
3. Greater score penalty per incorrect compound name

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## Extras

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### Potential Updates

- ❖ Adding a comprehensive list of interesting chemical compound facts; each corresponding to a correctly named compound by the player, which will be displayed on the screen to further educate them during their game play
- ❖ Change in level difficulty by either making randomized pre-set barriers or decreasing the game grid size to further increase the challenge of naming compounds
- ❖ A “hold” feature may be adding to allow the user to store the current dropping element and switch between it during gameplay (similar to Tetris)
- ❖ If time persists, more game modes can be implemented to further increase both education and entertainment value

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## Chemistry Definitions

**Periodic table** - a table of the chemical elements arranged in order of atomic number, usually in rows (period), so that elements with similar atomic structure and similar chemical properties appear in vertical columns (group).

**Element** - one of a class of substances that cannot be separated into simpler substances by chemical means.

**Compound** - a pure substance composed of two or more elements whose composition is constant.

**Ionic Compound** - a chemical compound consisting of a metal and a non-metal which are held together by ionic bonds in a lattice structure.

**Ion** - an atom or molecule with a net electric charge due to the loss or gain of one or more electrons.

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## About

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## System Requirements

### Minimum -

**OS:** Windows XP, Vista, Windows 7 or Windows 8 (with Java)

**Resolution:** 800x800

**Processor:** Any processor with 2 Cores

**Memory:** 1 GB RAM

**Graphics:** Intel HD Graphics 2000 and above

**Hard Drive:** 50MB HD space

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## RBCS Inc.



Tetristy is a program created by RBCS: Richard and Benson Chemistry Software.

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## Programmers

Tetristy was created by Richard Dang & Benson Guo.

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## Installation Instructions

Before installing Tetristy, it is recommended that you update to the latest version of Java. To begin, insert the game disc into a disc drive. Next, the installer should automatically launch. If not, launch the setup "TetristySetup.exe" located in the disc. Finally, follow the installer instructions to install the program. Note: The program will be installed into the root of the C Drive by default. DO NOT change the installation path to Program Files because the highscore file cannot be modified within Program Files. If you would like to uninstall, find the installation folder in the C Drive and run the uninstaller exe.