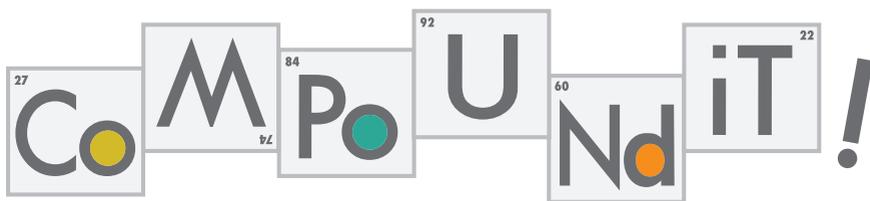


A Chemistry Brain Game To Confound Your Friends



INSTRUCTIONS



**BOUNCY
CASTLE
GAMES**



OVERVIEW

CompoundIt! is a word game in which the “letters” are chemical elements and the “words” are compounds. The rules of the game strive to balance entertainment and playability, scientific accuracy, and educational value. The target audience includes students, science enthusiasts, nerds, and word game fans interested in learning an entirely new “language”.

SETUP

To determine who plays first, each player should randomly draw one tile; the player who picks the element with the highest atomic number goes first. (Consult a periodic table if you don’t have these memorized!) Put this first tile back. Then, each player draws, face down, 52 tiles (2 player game), 35 tiles (3 player game), or 26 tiles (4 player game). If any tiles are left over, do not use them. From your supply of face-down tiles, draw 10 tiles and look at them; use these to make your moves. Play proceeds clockwise.

MAKING MOVES

- On your turn, play one or more tiles to create one or more new compounds.
- The first player forms a valid compound using their tiles (see “Rule Sets” below) and plays it such that one tile is on the “atom” space at the center of the board. (Do not use the other four “atom” spaces unless you are using the simplified rules for beginners—see below.)
- Compounds must be played up-down or left-right—no diagonal plays.
- After the first move, each new move must form at least one compound that includes at least one tile that is already on the board.
- When making a move, all new tiles must be consecutive, and must be arranged in the same horizontal or vertical line (in other words, no skipping spaces or turning corners).

- At the end of your turn, from your supply of face-down tiles, draw the same number of tiles that you played, so you are always holding 10 tiles.
- A move that results in the creation of an illegal compound in any direction is not allowed.
- When a move creates multiple compounds in different directions, each is scored separately, and their point values added together.
- Tiles in a compound may be played in any order (with some exceptions; see “Compounds Involving Polyatomic Ions” below). For example, HHO, HOH, and OHH are all valid ways to play “water”.
- You may pass on your turn instead of playing any tiles. If every player passes consecutively, the game ends immediately and the player with the highest score is the winner.
- At any time, any player may challenge the most recent move on the board. Challenges are resolved by consensus; if consensus fails, players should consult an agreed-upon resource (e.g. the CRC Handbook of Chemistry and Physics, ChemSpider, a knowledgeable friend, etc.) If the challenged compound is invalid, that player must take back the tiles they played and lose their turn. If it is valid, the player who called the challenge loses their next turn.

SCORING

- Each element tile has its point value printed in the upper left corner. Add the point values of each tile.
- If the tiles you played create multiple new compounds, score them and add up all the points.
- Bonus squares (Double/Triple Element and Double/Triple Compound): Bonus squares only count for points when a tile is played on them for the first time.

- “Compound” squares affect the score for every tile in the compound.
- “Element” squares affect only the tile played on that space.
- If a compound uses both kinds of bonus squares in a single move, “Element” bonuses are applied before “Compound” bonuses.

GAME END

When any player has either zero, one, or two tiles remaining in their supply, each player (including that player) is allowed one more turn. After this, the game ends, and the player with the high score wins.

RULES FOR COMPOUNDS

What determines whether a chemical formula is valid? The rules for compound formation are largely governed by the arrangement of electrons in atoms, a major focus of introductory chemistry courses.

DIATOMIC ELEMENTS

- Certain elements exist in nature as diatomic molecules; in this game, they are H₂, O₂, N₂, and Cl₂. Although not compounds, these are all valid moves (for example, HH or OO).

BINARY COMPOUNDS

- Only binary compounds (those consisting of two different elements) are allowed. The net oxidation number of all the tiles in the compound must be zero. For example, carbon is +4 and oxygen is -2, so COO (carbon dioxide) is allowed.

- Some elements have multiple oxidation numbers listed; for example, carbon may be played as either +4 or -4. A tile can be assigned different oxidation numbers going across and down.
- Compounds must represent the simplest possible ratio of the two elements. For example, HHO (H₂O) is allowed but HHHHOO (H₄O₂) is not. Special exceptions: carbon monoxide (CO) and hydrogen peroxide (H₂O₂) are allowed.

COMPOUNDS INVOLVING POLYATOMIC IONS

A list of common polyatomic ions and their charges is included with the game and shall be provided to each player for reference; these are the only ones that may be played.

Polyatomic ions may not be played by themselves; they must be part of a compound with a net oxidation number (charge) of zero.

The individual atoms in a polyatomic ion may be played in any order as long as they are contiguous. For example, magnesium nitrite may be played MgNOONOO or ONOMgOON, or ONONOOMg, or MgNOOOON, but not MgNNOOOO or MgNONOOO or NOONOMgO.

Compounds involving more than one type of polyatomic ion are not allowed, except for ammonium compounds.

ADVANCED PLAYERS ONLY

SIMPLE LEWIS STRUCTURES

- When using this rule set, any compound that has a valid simple Lewis structure is allowed. Lewis structures are a common high school chemistry topic; understanding them takes practice.
- The structure must satisfy the octet rule for all atoms except hydrogen. (The “expanded octet” as for sulfur is not allowed.)
- Atoms in a covalent compound with a valid Lewis structure do not necessarily need to match the oxidation number printed on their tiles. For example, NI_3 has a valid Lewis structure and may be played, even though iodine would have the oxidation number +1 (not -1 as printed).
- If a compound has more than two atoms, its structure must contain one central atom that is bonded to every other atom in the compound. For example, ammonia (NH_3) is allowed, but hydrazine (N_2H_4) is not.
- Unstable compounds are not allowed. For the purposes of this game, an “unstable” compound is one that does not have an entry in ChemSpider.com, or whose ChemSpider entry has no data for “Experimental Boiling Point”.

ORGANIC COMPOUNDS

- Organic compounds contain both carbon and hydrogen, and may also contain oxygen, nitrogen, sulfur, and/or halogens.
- The compound may be any size, but must have a valid Lewis structure or organic line drawing.

- Organometallic compounds are not allowed.
- Unstable compounds are not allowed. (See working definition of “unstable” above.)

COMPLEX LEWIS STRUCTURES

(expert players only)

Same as “Simple Lewis Structures” above, except that structures of any size are permitted (the “one central atom” rule no longer applies).

SIMPLIFIED RULES FOR BEGINNERS

Diatomic elements and binary compounds are allowed, but the polyatomic ions are not used.

In addition to building off existing compounds, players may also start new compounds on any of the red “atom” spaces on the board.

VIDEO INSTRUCTIONS

Visit our website at <http://bouncycastle.us> for a video guide to rules and scoring.

CoMMPoUNDiT!

ART + DESIGN
Melissa Lyman

CREATED BY
Andrew Lyman-Buttler