

Objective	Atommate™ Cards	Level
All matter is made of about 100 different types of atoms. An element is composed of one type of atom.	Names, symbols and atomic mass of the element are shown on the card. "Chemical Smash" Game.	Beginner
Elements have different physical properties – such as melting and boiling points.	Melting and boiling points are shown on the cards. May be used to play the "Chemical Smash" Game.	Beginner
At room temperature elements may be a solid, liquid or gas.	Descriptive icon on each card.	Beginner
Elements may be used to make materials that people need (including our bodies!).	Descriptive text on each card.	Beginner
Elements are characterized as metal, non-metal, or metalloid based on how they conduct electricity.	Descriptive icon on each card.	Beginner
The elements may be organized in groups based on their physical and chemical properties. This results in the "Periodic Table".	Groups, the names of groups, and periods are shown on each card. "Organizer" Game.	Intermediate
The Noble Gases are generally unreactive and have a complete outer shell, (which is 8 electrons).	The noble gases are identified on the relevant card.	Intermediate
Six elements exist in nature as diatomic (two atom) molecules.	These are shown on the relevant cards: N ₂ , O ₂ , F ₂ , Cl ₂ , Br ₂ , I ₂ .	Intermediate
Bonds are formed when the outermost electrons in an element are gained, lost, or shared.	The outermost electrons, called the valence electrons, are shown as an icon on each card.	Intermediate
"Octet Rule": Atoms will gain, lose, or share electrons in order to obtain the same number of electrons as the closest Noble Gas in the Periodic Table.	Noble Gas cards are identified. "Super 8" Game.	Intermediate

The chemical properties of the elements differ; some are more reactive than others.	Electronegativity is shown on each card. "Electron Power" Game.	Advanced
Valence electrons in a compound may be "assigned" to specific atoms. Thus, each atom has a charge, which is called an "oxidation state".	Oxidation states are shown on each card. "Perfect Zero" and "Lucky 100" Games.	Advanced
Many elements may have more than one oxidation state. They will change oxidation state depending upon the other atoms in the compound.	Oxidation states are shown on each card. "Advanced Perfect Zero" Game.	Advanced
Reactions occur when bonds in a compound are broken and different bonds are made, thus forming a new compound.	The cards may be manipulated to show simple reactions, such as $2 \text{H}_2 + \text{O}_2 \rightarrow 2 \text{H}_2\text{O}$ $\text{CH}_4 + 2 \text{O}_2 \rightarrow \text{CO}_2 + 2 \text{H}_2\text{O}$ Students can follow the movement of the valence electrons during the reaction.	Advanced
Electron Configuration	Shown on each card.	Advanced