



LER 2891

Ages
7+

Grades
2+

Solar System

LINKOLOGY™

CARD GAME

*A fun game of
thinking & linking!*



Contents

- 45 Picture cards
- 45 Word cards
 - 8 New Link cards
 - 2 Super Link cards

Setup

- Shuffle the two decks together to mix word and picture cards.
- Deal out five cards to each player.
- All players place their cards face up in front of them.
- Place the remainder of the deck face down in the middle within reach of all players.
- Turn one card up and place it next to the middle pile.

Object of the Game

Be the first player to use all your cards.

How to Play the Game

- Play begins with the first player to the dealer's left.
- On your turn, try to find a card that shares an attribute with the top card on the discard pile. Place your card atop the pile.

Examples:

Place the picture card of *Earth* atop the word card *rocky planet*, or vice versa.

Place the word card *larger than the Sun* atop the picture card of *The Milky Way*, or vice versa.

- You can only match a word card from your pile on top of a picture card.

- You can only match a picture card from your pile on top of a word card.
- If you make a match, it is now the next player's turn (play advances clockwise).
- If you cannot make a match, draw one new card from the deck*. If that new card makes a match, you may place it on the pile.
- If you still cannot make a match, put the card in your pile. It is now the next player's turn.
- You may only play one card on one pile for any given turn except if playing a *Super Link* card.
- Be the first player to use all of your cards and win the game!

*If the draw deck runs out of cards, leave the last linked card facing up on all the discard piles and shuffle the other cards to reestablish a draw deck.

Special Cards

New Link

Play this card at any time to create an additional discard pile.

You may place any card (word or picture) from your hand atop the *New Link* card to start an additional discard pile.

Play continues on any of the discard piles. However, players may only play on one pile at a time for any given turn.

Super Link

Play this card at any time to create an additional discard pile.

You may place any card (word or picture) from your hand atop the *Super Link* card to start an additional discard pile.

You may then also play as many cards from your pile as possible on any of the discard piles. You may keep playing cards until you are either out (and win the game) or can no longer make a match.

Play continues on any of the discard piles. However, players may only play on one pile at a time for any given turn.

Challenging a Match

Any player may challenge a match before the next player makes a play. Use the *Answer Key* as a guide.

If a challenge reveals an incorrect match, return the incorrectly played card to the player's pile. Play advances to the next player.

Answers May Vary

Matches were assigned using the general characteristics pictured on the cards. There are often exceptions and new discoveries that may change the interpretation of data. Players should use disagreements as an opportunity to research and learn more about the solar system and to work together to arrive at a fair conclusion.

Good to Know!

Asteroid—Large space rocks covered with craters. Most asteroids orbit the Sun in the asteroid "belt" located between Mars and Jupiter. Asteroids can be as small as a 200 m wide to as big as 600 km wide.

Comet—A mixture of dust and ice that failed to form a planet. Comets are often compared to "dirty snowballs." Comets orbit the Sun and become visible when the Sun's heat changes the comet's ice into gas. The cores of comets can be as small as 3 km wide and as big as 80 km wide. The tails of gas and dust coming off comets can stretch for millions of kilometers in the solar wind.

Constellation—One of 88 groups, or regions, of stars that form a pattern, or picture, in the sky.

Dwarf Planet—Objects orbiting the Sun that are big and heavy enough to resemble a planet, but not quite big enough to have their own clear orbit around the sun. Example: Pluto

Galaxy—A grouping of billions of stars held together by gravity. Overall shapes of galaxies include spiral, elliptical, and irregular.

Gas Planet—Planets made of mostly gas and lacking a clearly defined surface. The gas planets are sometimes called the Jovian, or giant, planets. The gas planets in our solar system include Jupiter, Saturn, Neptune, and Uranus.

Inner Planet—The first four planets orbiting the Sun before the asteroid belt. The inner planets include Mercury, Venus, Earth, and Mars.

Moon—A natural satellite orbiting a planet.

Orbit—The path followed by planets and other space objects as they revolve around objects that have a larger gravity, like the Sun.

Outer Planet—Any of the planets that orbit the Sun outside the asteroid belt. Outer planets include Jupiter, Saturn, Uranus, Neptune, and Pluto (dwarf planet).

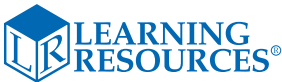
Rocky Planet—Any of the planets that has a solid surface. Rocky planets are also called terrestrial planets. The rocky planets include Mercury, Venus, Earth, and Mars.

Star—Giant burning balls of hydrogen and helium gas that give off both light and heat. Red and orange stars are cooler than hotter white or blue colored (coloured) stars. The Sun, although large to everyone on Earth, is considered to be an average star in size (about 1,392,000 km or 864,000 miles across). Many dwarf stars are smaller than the Sun. Larger stars can be 100, 300, and even 1,000 times larger than the Sun. Polaris (the North Star) is about 46 times bigger than the Sun. Sirius (the brightest star in the northern hemisphere) is actually two stars (Sirius A and B)

that are close together. Sirius A is about 1.7 times the diameter of the Sun. Sirius B is much smaller, with a diameter that is about 10% less than Earth's.

	Average Distance from the Sun	Approximate Diameter	Approximate Volume (Compared to Earth)	Number of Known Moons (as of 2009)	Planet Type	Rings
The Sun	n/a	1,392,000 km (864,000 miles)	About 1,300,000 times greater than Earth's	n/a	n/a	n/a
Inner Planets						
Mercury	5.79 million km (35 million miles)	4,879 km (3,032 miles)	About 6% of Earth's	0	Rocky/Terrestrial	No
Venus	108 million km (67 million miles)	12,104 km (7,521 miles)	About 86% of Earth's	0	Rocky/Terrestrial	No
Earth	149 million km (93 million miles)	12,756 km (7,926 miles)	1.08 x 10 ¹² km ³ (261 billion cubic miles)	1	Rocky/Terrestrial	No
Mars	227 million km (141 million miles)	6,792 km (4,222 miles)	About 15% of Earth's	2	Rocky/Terrestrial	No
Outer Planets						
Jupiter	778 million km (483 million miles)	142,984 km (88,846 miles)	About 1,316 times greater than Earth's	63	Mostly Gas	Yes
Saturn	1.4 trillion km (886 million miles)	120,536 km (72,367 miles)	About 752 times greater than Earth's	60	Mostly Gas	Yes
Uranus	2.8 trillion km (1.78 trillion miles)	57,118 km (31,518 miles)	About 67 times greater than Earth's	27	Mostly Gas	Yes
Neptune	4.5 trillion km (2.79 trillion miles)	49,528 km (30,601 miles)	About 54 times greater than Earth's	13	Mostly Gas	Yes
Pluto (Dwarf Planet)	5.9 trillion km (3.67 trillion miles)	2,390 km (1,491 miles)	Less than 1% of Earth's	3	Mostly Gas & Ice	No

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