

— 💧 Water in the Solar System 💧 —



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Play a game of cards to learn about
water in the Solar System.

Water in the Solar System

For the Educator

Key Concepts:

- What are the planets in our solar system?
- Where in the solar system is there water that could support life?

Age Range:

- Level 1: 6 years old and up
- Level 2: 9 years old and up

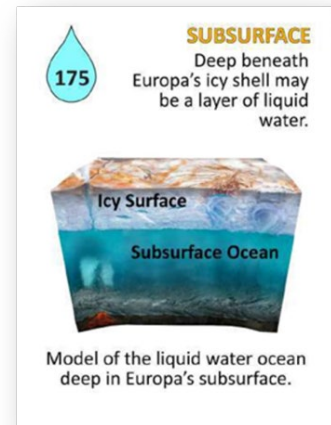
Materials Needed:

- *Water in the Solar System Cards*
 - <https://planets-stem.org/water-cards-2-sided-pages-1/>
 - <https://planets-stem.org/water-cards-2-sided-pages-2/>
 - <https://planets-stem.org/water-cards-2-sided-pages-3/>
 - <https://planets-stem.org/water-cards-2-sided-pages-4/>
- *Solar System Mnemonic sheet*
- *Conversation Starters sheet*

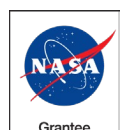
Optional:

- *Get to Know the Cards sheet*
- *Water in the Solar System table sign*
- *Water Worlds in the Solar System poster*

- Visit <https://planets-stem.org/water-in-extreme-environments/> and download a larger version of this resource



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Water in the Solar System



Conversation starters:

Start with General Questions or with whichever items interest the learners as they walk up.

General Open-Ended Questions

- Where is there water on Earth?
- What kind of things live in or need water?
- What kind of water on other planetary bodies is most likely to have living things?
- How does the amount of water in these reservoirs help us think about where there might be life on other planets?

Poster-Focused Questions

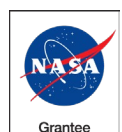
- What do you notice? Do you see any patterns?
- Why do you think this pattern occurs?
 - Hint: Look at the distance from the sun and reservoirs.
- Where is the least/most water in the Solar System?
 - Hint: Look at the water radius numbers and/or sizes of blue dots.
- Bonus question: Which have the higher percentages of water?
 - Hint: compare world radius to water radius.

Card-Focused Questions

- How many objects can you count along the side of the card?
- Would you like to name the planets with me?
 - Hint: See mnemonic printout or share your own.
- If you could live (or visit) anywhere in the Solar System, where would you choose and why?
- *Choose two cards:* Which planet (or moon) do you think would be hotter? Have more water? Why do you think that is true?



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Water in the Solar System



Cards - Planetary Line Up

Goal:

To place all the cards in Solar System order

HINT: For a shorter game, use only the planet cards (remove moons and asteroids).

To Set Up:

- Display *Solar System Mnemonic* sheet
- Shuffle *Water in the Solar System* cards
- Place cards planet-side down on table

To Play:

- Flip cards over one at a time to reveal the planet, moon, or planetary body
- Place in Solar System order from left to right

Mercury	Venus	Earth & Moon	Mars & moon	Asteroids	Jupiter & moon	Saturn & moon	Uranus & moon	Neptune & moon	Pluto & moon
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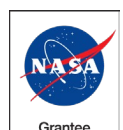
- When you run out of cards, you've won!

Reset

- Gather all cards together, planet side up
- Bonus - shuffle for the next person



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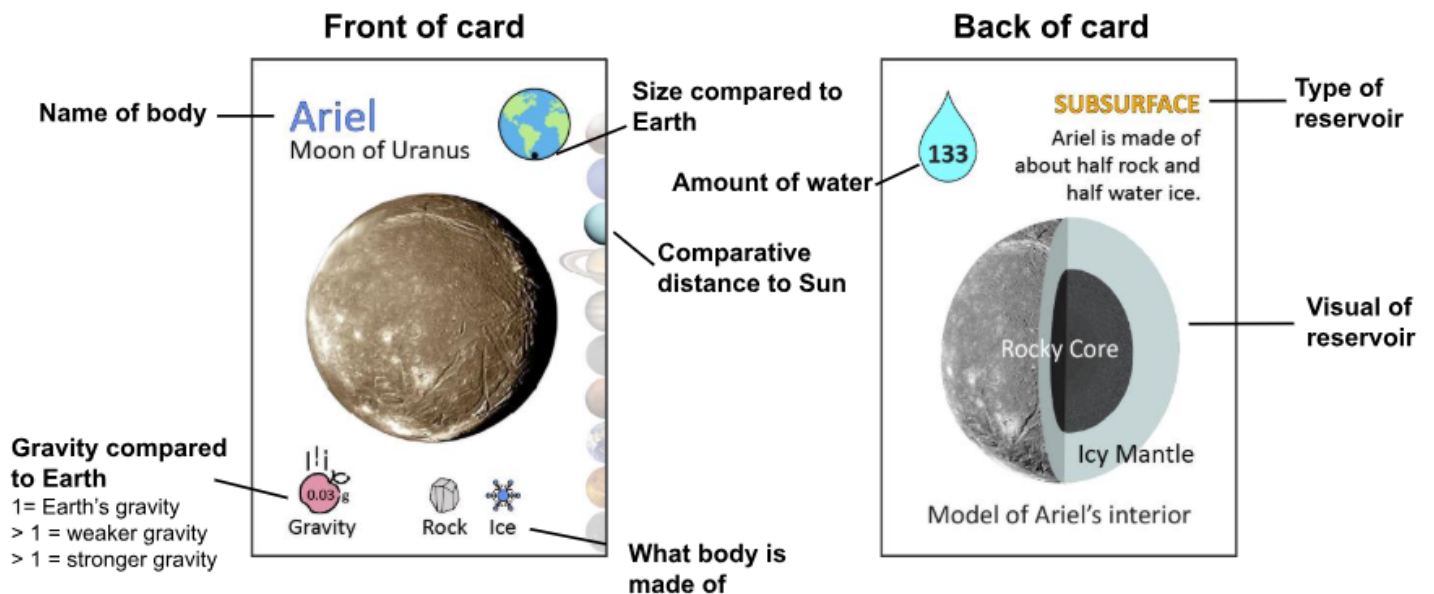
Water in the Solar System

Get to Know the Cards

These games are about where to find water in the solar system besides Earth.

First, get to know the cards!

(HINT: some objects have multiple cards so look closely!)



Solar System Mnemonic



My



Mercury

Very



Venus

Epic



Earth

Mother



Mars

(asteroids) 

Just



Jupiter

Served



Saturn

Us



Uranus

Nachos



Neptune

Planet image credit to <https://spaceplace.nasa.gov/>

Pluto (dwarf planet)

Water Worlds in the Solar System

Imagine taking all the water and ice away from a planetary body and putting it into a single sphere. Each measurement is the spherical radius of the world and all of its water (including ice). Size scale = 1:20,000,000



JUPITER
world radius: 69,911 km
water radius: 143 km

IO
world radius: 1,822 km
water radius: 0 km

CALLISTO
world radius: 2,410 km
water radius: 1,684 km

EUROPA
world radius: 1,561 km
water radius: 877 km

MARS
world radius: 3,390 km
water radius: 106 km

CERES
world radius: 473 km
water radius: 365 km

VESTA
world radius: 263 km
water radius: 0 km

MERCURY
world radius: 2,440 km
water radius: 6.4 km

TRITON
world radius: 1,353 km
water radius: 1298 km

NEPTUNE
world radius: 24,622 km
water radius: 905 km

PLUTO
world radius: 1,188 km
water radius: 1,004 km

CHARON
world radius: 606 km
water radius: 545 km

DIONE
world radius: 561 km
water radius: 463 km

TITAN
world radius: 2,576 km
water radius: 1,826 km

VENUS
world radius: 6,052 km
water radius: 52 km

MIMAS
world radius: 198 km
water radius: 185 km

RHEA
world radius: 764 km
water radius: 577 km

SATURN'S RINGS
water radius: 198 km

SATURN
world radius: 58,232 km
water radius: 127 km

GANYMEDE
world radius: 2,634 km
water radius: 2,281 km

MOON
world radius: 1,737 km
water radius: 0.54 km

MIRANDA
world radius: 236 km
water radius: 216 km

UMBRIEL
world radius: 585 km
water radius: 548 km

ARIEL
world radius: 579 km
water radius: 519 km

OBERON
world radius: 761 km
water radius: 687 km

TITANIA
world radius: 788 km
water radius: 700 km

ENCELADUS
world radius: 252 km
water radius: 197 km

TETHYS
world radius: 533 km
water radius: 526 km

IAPETUS
world radius: 736 km
water radius: 678 km

URANUS
world radius: 25,362 km
water radius: 932 km