

SNOOPY™

IN SPACE

THE SEARCH FOR LIFE

Dear Educator,

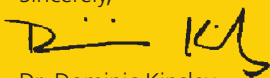
If you ask your students to imagine gazing up at the stars in the night sky, how do you think they would answer these questions: Is there life on other planets? If so, what does it look like?

In season 2 of *Snoopy in Space*, streaming now on Apple TV+, Snoopy and the Peanuts Gang set out to answer that very question. Along the way, they learn about the thrilling work NASA astrobiologists are doing to search for life in our solar system and beyond.

In this free program, developed by Peanuts Worldwide and the curriculum specialists at Young Minds Inspired, your students will travel with Snoopy, Woodstock, and the Peanuts Gang to learn that it will take teamwork, imagination, and perseverance to find the first life form in space. Inspired by Snoopy's adventurous spirit and the dedication behind NASA's ongoing commitment to space exploration, each easy-to-implement, standards-based activity includes extensions the whole family can enjoy.

Please share this program with other K-2 teachers at your school. And let us know your opinion of the program by visiting ymiclassroom.com/feedback-peanuts-space. We look forward to your comments and suggestions.

Sincerely,



Dr. Dominic Kinsley
Editor in Chief
Young Minds Inspired

Target Audience

Students in grades K-2 and their families

Program Objectives

- Explore NASA's efforts to search for life within and beyond our solar system
- Raise awareness of the role of scientific inquiry in advancing future knowledge
- Engage student interest in space and scientific concepts that support critical thinking
- Support STEM and language arts skills

How to Use This Program

Download, copy, and distribute the three reproducible student activity sheets. Students will need pencils, crayons, or markers to complete the activities. Have students share their completed sheets with their families so that they can do the activities at the bottom of each sheet together. Visit ymiclassroom.com/peanuts-space for standards alignment.

Activity 1

Life As We Know It

In this activity, students will learn about astrobiology, or the search for life beyond Earth. They will learn that scientists base their search on finding the same four components needed for life on Earth.

Ask students to brainstorm things on Earth that are alive and non-human (animals, plants, or microscopic organisms such as germs). Guide them if needed by asking questions about living things found in forests, ponds, etc. Then, ask students to think about life beyond Earth. Do they think there is life on other planets? In season 2 of *Snoopy in Space*, Lucy imagines life on another

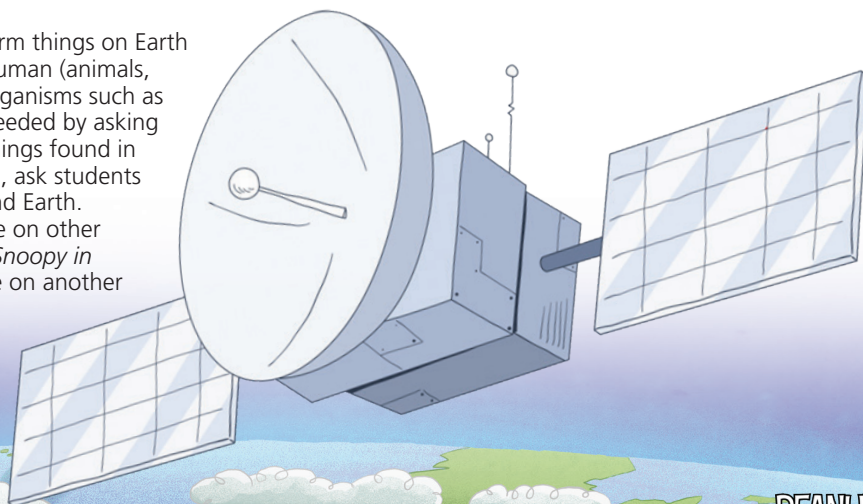
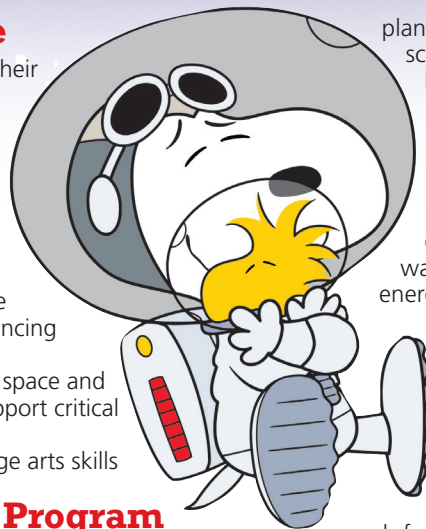
planet looking like a big green blob. But science tells us that when life is found beyond Earth, it probably won't look like what you might find in a science fiction movie.

Using plants as an example, ask students what a plant needs to grow. Explain that they need soil, water, sun/light, and time. Plants get energy from the Sun or light.

Explain that living things need four things to develop and grow — water, organics (molecules that contain carbon), energy, and time. Special scientists at NASA called *astrobiologists* look for one of these things in particular as they search for life in our solar system — water.

Distribute the activity sheet and read the paragraph together. Then, review the directions. Once done, have students share their answers. **Answers:** Part 1: water, carbon, energy, time. Part 2: water, ice

Extension: Water on Earth is teeming with life. Have students look at pond or puddle water under a microscope or a hand-held magnifying lens to see the "invisible" life in that water. As an alternative, share images from <http://www.microscopy-uk.org.uk/ponddip/index.html> with your class to learn about tiny life forms found in water on Earth. Could they imagine that NASA scientists might find something similar on Mars or Europa? Encourage them to speculate what they think might be found.



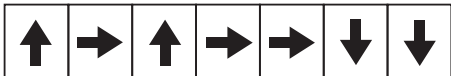
Activity 2 Life in Our Solar System

In this activity, students will learn that the search for life on other planets is well underway on Mars, where rovers can take samples from the planet's surface and store them to be brought back to Earth.

Ask students to think about where scientists are looking for life beyond Earth...and how. What tools might they need? If they guess Mars, they are correct. In fact, NASA is already looking there. They haven't sent people to Mars (or Snoopy, even though he visits Mars in *Snoopy in Space*), but NASA has sent robots called rovers. The most recent rover, Perseverance, is the first rover designed to look for microbial life on Mars — that means it can find very tiny living things. Show students pictures of the rover found at <https://mars.nasa.gov/mars2020/>. Next tell them to think about what they learned in Activity 1. Ask: *What one item could Perseverance be looking for that living things or life need?* (**Answer:** water)

Controlling robots on Mars from distant Earth is a challenge. Show students the "Mars in a Minute: How Do Rovers Drive on Mars?" video about how programming a rover works: <https://www.jpl.nasa.gov/videos/mars-in-a-minute-how-do-rovers-drive-on-mars>.

Now challenge students to program their own Mars rover. Distribute the activity sheet and review the instructions. Do Part 1 as a class, or have students work with partners. In Part 2, students draw pictures of what they think the rover finds on Mars. Have students share their postcards from Mars. **Answers:** Part 1:



Extension: Have students imagine how the world might react if NASA does find life on Mars. What do students think people would expect to find? Water, plants, animals, or maybe a "blobby green alien" as Lucy imagines it might be? Take a class poll. Students can poll their families too.

Activity 3 Life In Deep Space

In this activity, students will learn that the search for life extends to exoplanets — planets that orbit a star beyond our solar system — and that interstellar "visitors" might even carry information about life in other solar systems.

Explain that NASA astrobiologists aren't just looking for life in our solar system — they are looking beyond it. But how? One way is to look for exoplanets, planets that orbit other stars. In our solar system, the planets orbit the Sun, but there are millions of other suns, or stars, in our universe, each with possible planets orbiting them. And some of those planets might even support life, just as Earth does.

Since the stars are so far away, it's not easy to find planets that orbit them. How do students think that NASA does it? Prompt students to brainstorm what they think scientists might look for when exploring exoplanets and how they learn about them. Then, explain that astrobiologists look for planets that are similar in size to Earth and about the same distance from their star, or sun, to sustain life the way our sun does for us. They use tools like the James Webb telescope to see if certain stars show a "blip" when a planet passes in front of them.

Have a student volunteer shine a small but powerful flashlight on the ground. Turn off or dim the lights, and have another student pass a marble quickly between the light from the flashlight and the ground. See how the marble casts a moving shadow that creates a "blip" in the light? That's similar to how scientists recognize that a planet is orbiting that star.

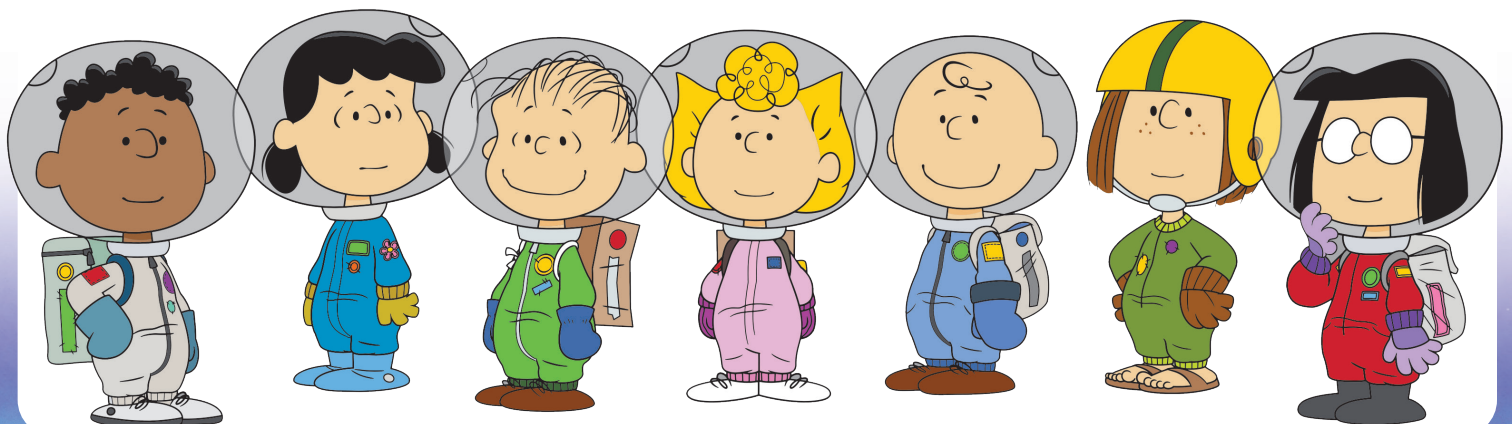
Explain that scientists can also learn about life on exoplanets outside the solar system from objects that visit our solar system from afar — like the asteroid that Charlie Brown discovers in *Snoopy in Space*.

Distribute the activity sheet and review the instructions. Have students share their answers to Part 2. Answers will vary.

Extension: Have your students design and decorate their own exoplanets on paper or use materials such as fabric, craft sticks, etc. **Tip:** Ask parents to donate scrap materials in advance. They can name their planets and determine if they might have water on them!

Resources

- What life as we know it on Earth needs: The Air We Breathe (a printable picture book): https://www.nasa.gov/pdf/62452main_The_Air_We_Breathe.pdf
- Why do we care about water on Mars? <https://spaceplace.nasa.gov/water-on-mars/en/>
- Astrobiology classroom lessons from NASA: <https://astrobiology.nasa.gov/classroom-materials/>
- Why Is Carbon Important? | NASA Climate Kids: <https://climatekids.nasa.gov/carbon/>
- James Webb Space Telescope STEM Toolkit: <https://www.nasa.gov/stem/nextgenstem/webb-toolkit.html>
- The Mars Rovers from NASA's Space Place: <https://spaceplace.nasa.gov/mars-rovers/en/>
- All about exoplanets: <https://spaceplace.nasa.gov/all-about-exoplanets/en/>
- Searching for other planets like ours: <https://spaceplace.nasa.gov/exoplanet-snap/en/>
- How many solar systems are in our galaxy? <https://spaceplace.nasa.gov/other-solar-systems/en/>
- Peanuts: [peanuts.com](https://www.peanuts.com)
- YMI program site: ymiclassroom.com/peanuts-space



Life As We Know It

Astrobiologists are special scientists who look for life beyond Earth. This includes other planets and moons in our solar system, or even in deep space. What do they look for? They look for the things that life forms on Earth need to survive. This includes water, carbon, energy, and the time needed to grow.

Part 1: Look at the pictures below. They show the four things that life forms on Earth need to survive. Draw a line from each word in the word bank to the picture it shows. The match for carbon is already shown.



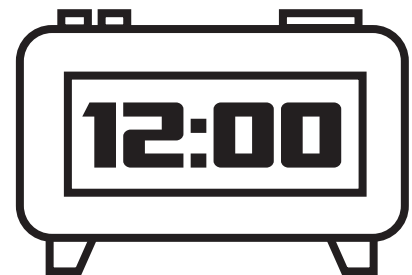
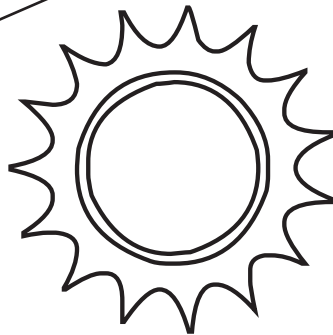
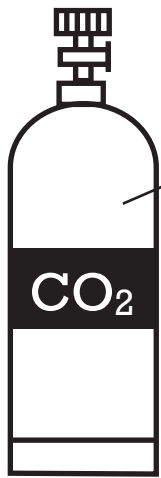
Word Bank

water

carbon

energy

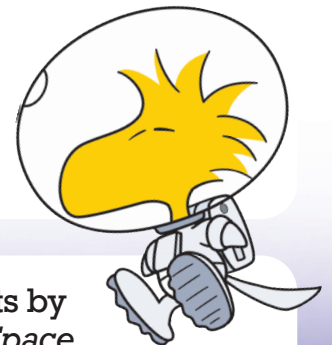
time



Part 2: Astrobiologists at NASA have found one of these items on other planets. In *Snoopy in Space*, Snoopy shows us. He travels to Mars, and then Europa — one of Jupiter's moons. Unscramble the letters below to learn what Snoopy found!

Snoopy found liquid TERWA

and frozen CIE on Mars and Europa.




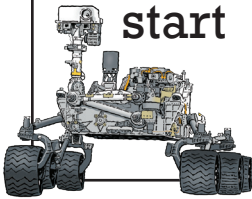

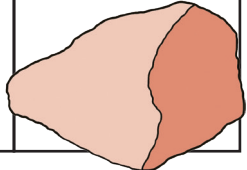
FAMILIES! Learn more about NASA's thrilling search for life on other planets by joining Snoopy and the Peanuts Gang's adventures in season 2 of *Snoopy in Space*, now streaming on Apple TV+.

Life in Our Solar System

The first Mars rover, Sojourner, landed on the planet in 1997. Since then, four more rovers have successfully landed on Mars. These robots have wheels so that they can move around, take pictures, and explore the planet. Perseverance, the most recent rover, even has a special arm to collect samples of soil and rocks on Mars. The rover will store them until the samples can be returned to Earth.

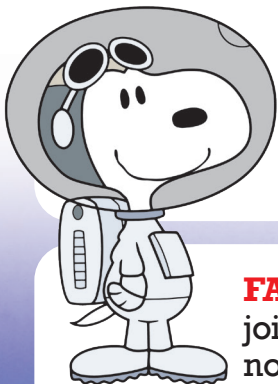
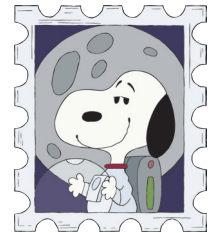
Part 1: Now it's your turn to program a Mars rover. Look at the picture.

- **Your mission:** Get the rover to the big rock. You must go around the small rocks. You cannot go through the squares with small rocks.
- **How to get there:** Move the rover through the empty squares. You can move up, left, right, and down.
- **Show your path:** Draw up, over, and down arrows in the empty boxes to show the path your rover will take to get to the big rock.

			
 start			end 

Part 2: Draw a picture of what you think the rover will see when it takes a picture of the big rock.

“Hello From Mars!”

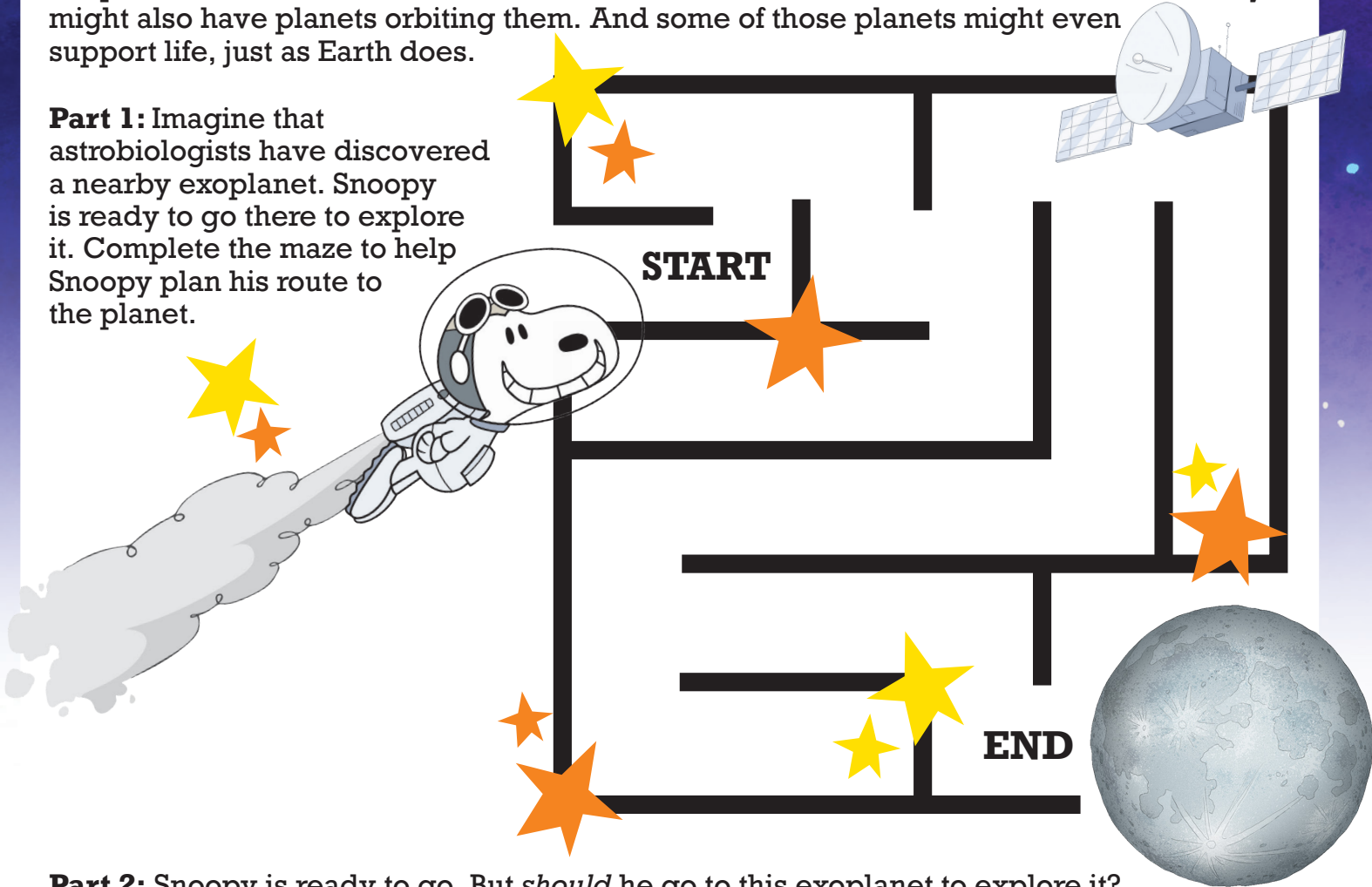


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Life in Deep Space

Astrobiologists are searching for life in our solar system and beyond it. Beyond our solar system there are *exoplanets*. These are planets that orbit other stars. In our solar system, the planets orbit the Sun. There are millions of other suns, or stars, in the universe. They might also have planets orbiting them. And some of those planets might even support life, just as Earth does.

Part 1: Imagine that astrobiologists have discovered a nearby exoplanet. Snoopy is ready to go there to explore it. Complete the maze to help Snoopy plan his route to the planet.



Part 2: Snoopy is ready to go. But *should* he go to this exoplanet to explore it? Read the information below. Then help Snoopy decide.

The planet is covered with gasses that are not healthy for humans or beagles. It does not have very much land. It is also very cold! If Snoopy tries to go to the planet, it will take him 274 million years to get there if he travels as fast as a jet flies.

Should Snoopy try to visit this planet? Yes _____ No _____ Why or why not? _____

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