

BUILDING A MOON BASE

READING

6TH, 7TH, 8TH GRADE

Improve students'
literacy skills

Science
Applicability

Sub Plan



Reading Buyer Comment

“

Extremely satisfied - Great resource to work on student reading comprehension and it tied into the topic I was teaching. My students have been struggling with reading and I've been incorporating more reading into my lessons. Thank you for the resource.

”

SCROLL
to take a look inside!

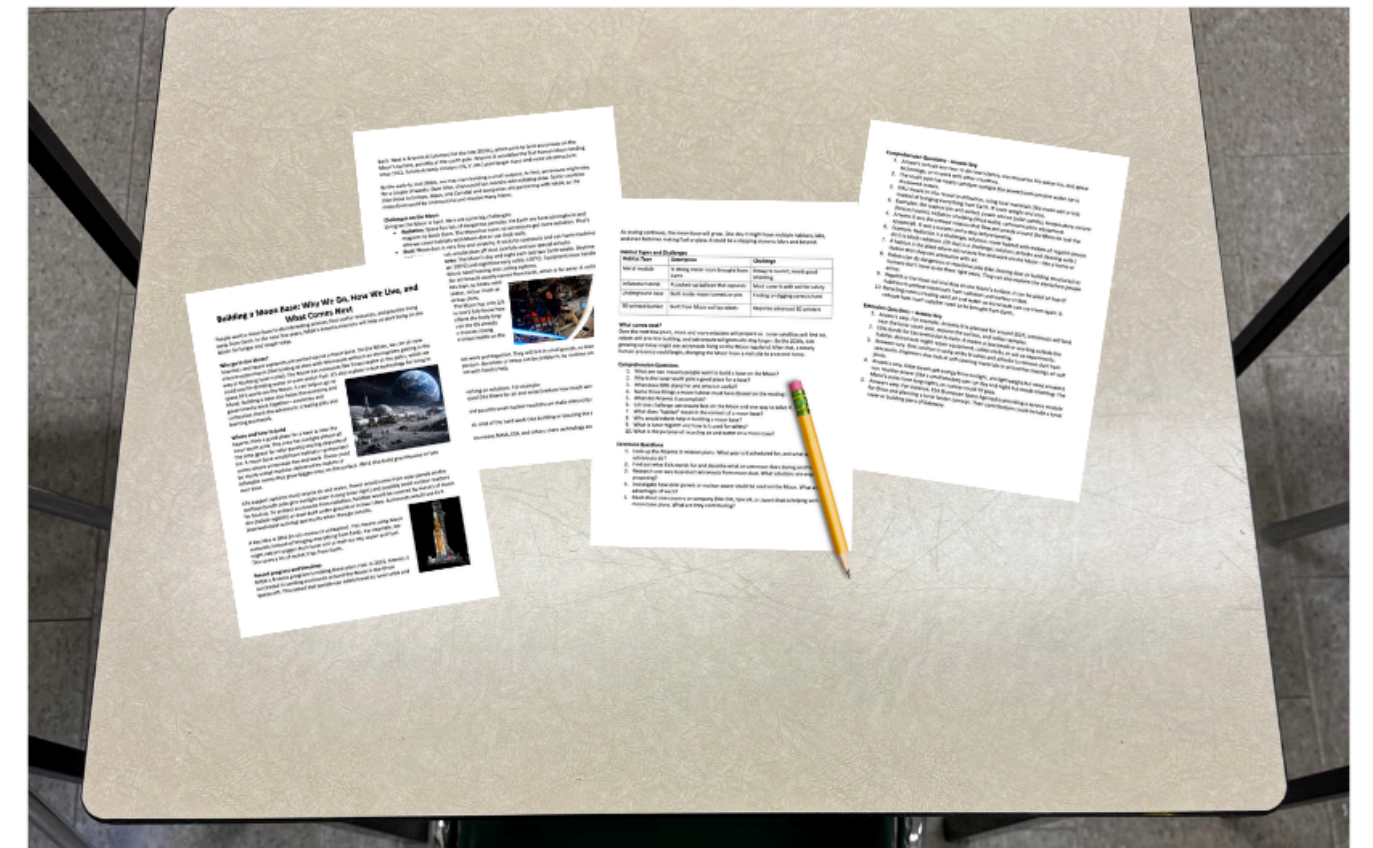


THE PROBLEMS YOU FACE

- Limited time to teach scientific literacy and strengthen students' reading and analysis skills.
- Need meaningful extension activities to engage fast-moving learners.
- Difficulty creating effective last-minute sub plans that still support student learning.

NO-PREP - PRINT/UPLOAD

- Questions and Answer Key
- **No Prep, Ready-to-Use:** Print or assign digitally with Google Docs, Microsoft Word, and PDF formats for flexible classroom use
- **Includes Varied Question Types:** Knowledge, thinking, connecting, application, and open-ended questions.



What Will Your Students Learn?

READING COMPREHENSION ARTICLE & QUESTIONS

Comprehension Questions

1. What are two reasons people want to build a base on the Moon?
2. Why is the lunar south pole a good place for a base?
3. What does ISRU stand for and why is it useful?
4. Name three things a moon habitat must have (based on the reading).
5. What did Artemis II accomplish?
6. List one benefit of living on the Moon and one way to solve it.
7. What does ISRU stand for?
8. Why would ISRU be useful?
9. What is the goal of the Artemis program?
10. What is the main purpose of the article?

Extension Questions

1. Look up the definition of ISRU and explain it in your own words.
2. Find out what the Artemis program is and write a short paragraph about it.
3. Research the challenges of living on the Moon and write a list of three.
4. Investigate the benefits of living on the Moon and write a list of three.

Building a Moon Base: Why We Go, How We Live, and What Comes Next

People want a moon base to do interesting science, find useful resources, and practice living away from Earth. In the next few years, NASA's Artemis missions will help us start living on the Moon for longer and longer stays.

Why go to the Moon?

Scientists and space explorers are excited about a moon base. On the Moon, we can do new science experiments (like looking at stars with telescopes without an atmosphere getting in the way or studying lunar rocks). The Moon has resources like frozen water at the poles, which we could use for drinking water or even rocket fuel. It's also a place to test technology for living in space (if it works on the Moon, it can help us go to Mars). Building a base also helps the economy and governments work together—countries and companies share the adventure, creating jobs and learning teamwork.



Where and how to build

Experts think a good place for a base is near the lunar south pole. This area has sunlight almost all the time (great for solar panels) and big deposits of ice. A moon base would have habitats—pressurized rooms where astronauts live and work. These could be sturdy metal modules delivered by rockets or inflatable rooms that grow bigger once on the surface. We'd also build greenhouses or labs over time.

Life support systems must recycle air and water. Power would come from solar panels on the rooftops (south pole gets sunlight even in long lunar night) and possibly small nuclear reactors for backup. To protect astronauts from radiation, habitats would be covered by meters of moon dirt (called regolith) or even built under ground or in lava tubes. Astronauts would use EVA (extravehicular activity) spacesuits when they go outside.

A key idea is ISRU (in-situ resource utilization). This means using Moon materials instead of bringing everything from Earth. For example, we might extract oxygen from lunar soil or melt ice into water and fuel. This saves a lot of rocket trips from Earth.

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Article with Comprehension Questions

6th, 7th, 8th Grade

Print & Digital

- Why We Want to Build a Moon Base
- Lunar Resources (Water Ice and Regolith)
- The Artemis Program and Future Missions
- Choosing a Base Location (Lunar South Pole)
- Habitat Design (Metal Modules, Inflatables, Underground Bases)
- Life Support Systems (Air and Water Recycling)
- Solar Power and Energy on the Moon
- Radiation Protection and Shielding
- Extreme Temperatures on the Moon
- Moon Dust and Its Challenges
- Low Gravity and Human Health
- ISRU (In-Situ Resource Utilization)
- Robotics and Space Exploration
- International Cooperation in Space
- Future Plans for Living on the Moon

PDF

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Your Reading

Building a Moon Base: Why We Go, How We Live, and What Comes Next

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Life support systems must recycle air and water. Power will come from solar panels on rooftops (south pole gets sunlight even in long lunar night for backup). To protect astronauts from radiation, habitats could be built under ground or in lava (extravehicular activity) spacesuits when they go outside.

A key idea is ISRU (in-situ resource utilization). This means using materials instead of bringing everything from Earth. For example, we might extract oxygen from lunar soil or melt ice into water. This saves a lot of rocket trips from Earth.

Recent progress and timelines

NASA's Artemis program is making these plans real. In 2021, it succeeded in sending astronauts around the Moon in the spacecraft. This tested that people can safely travel to and live on the Moon.

back. Next is Artemis III (planned for the late-2020s), which aims to land astronauts on the Moon's surface, possibly at the south pole. Artemis III would be the first human Moon landing since 1972. Future Artemis missions (IV, V, etc.) plan longer stays and more infrastructure.

By the early to mid-2030s, we may start building a small outpost. At first, astronauts might stay for a couple of weeks. Over time, stays could last months with rotating crew. Some countries (like those in Europe, Japan, and Canada) and companies are partnering with NASA, so the moon base could be international and involve many teams.

Challenges on the Moon

Living on the Moon is hard. Here are some big challenges:

- **Radiation:** Space has lots of dangerous particles. On Earth we have atmosphere and magnets to block them. The Moon has none, so astronauts get more radiation. That's why we cover habitats with Moon dirt or use thick walls.
- **Dust:** Moon dust is very fine and scratchy. It sticks to spacesuits and can harm machines and lungs. Astronauts would clean off dust carefully and use special airlocks.
- **Extreme temperatures:** The Moon's day and night each last two Earth weeks. Daytime can be very hot (over 100°C) and nighttime very cold (–150°C). Equipment must handle these swings, so habitats need heating and cooling systems.
- **Supply:** Everything for astronauts usually comes from Earth, which is far away. A rocket trip to the Moon takes days, so bases need to recycle supplies (water, air) as much as possible and have backup plans.
- **Gravity and health:** The Moon has only 1/6 of Earth's gravity. We don't fully know how living in low gravity affects the body long-term, but astronauts on the ISS already exercise a lot to keep muscles strong. Doctors will study astronaut health on the Moon.



Also, people on the Moon must work well together. They will live in small groups, so teamwork and keeping spirits up are important. Boredom or stress can be problems, so routines and fun (like exercise or communication with family) help.

Solutions and Future Plans

Engineers and scientists are working on solutions. For example:

- Recycling systems onboard (like filters for air and water) reduce how much we need to bring.
- Powerful solar panels and possibly small nuclear reactors can make electricity day and night.
- Robots and rovers can do a lot of the hard work (like building or scouting the area) to keep astronauts safe.
- International cooperation means NASA, ESA, and others share technology and costs.

As testing continues, the moon base will grow. One day it might have multiple habitats, labs, and even factories making fuel or glass. It could be a stepping stone to Mars and beyond.

Habitat Types and Challenges

Habitat Type	Description	Challenge
Metal module	A strong metal room brought from Earth	Heavy to launch; needs good shielding
Inflatable habitat	A packed-up balloon that expands	Must cover it with soil for safety
Underground base	Built inside moon tunnels or pits	Finding or digging caves is hard
3D-printed bunker	Built from Moon soil by robots	Requires advanced 3D printers

What comes next?

Over the next few years, more and more missions will prepare us. Lunar satellites will find ice, robots will practice building, and astronauts will gradually stay longer. By the 2030s, kids growing up today might see astronauts living on the Moon regularly! After that, a steady human presence could begin, changing the Moon from a visit site to a second home.

Comprehension Questions

1. What are two reasons people want to build a base on the Moon?
2. Why is the lunar south pole a good place for a base?
3. What does ISRU stand for and why is it useful?
4. Name three things a moon habitat must have (based on the reading).
5. What did Artemis II accomplish?
6. List one challenge astronauts face on the Moon and one way to solve it.
7. What does "habitat" mean in the context of a moon base?
8. Why would robots help in building a moon base?
9. What is lunar regolith and how is it used for safety?
10. What is the purpose of recycling air and water on a moon base?

Extension Questions

1. Look up the Artemis III mission plans. What year is it scheduled for, and what will the astronauts do?
2. Find out what EVA stands for and describe what an astronaut does during an EVA.
3. Research one way to protect astronauts from moon dust. What solutions are engineers proposing?
4. Investigate how solar panels or nuclear power could be used on the Moon. What are the advantages of each?
5. Read about one country or company (like ESA, SpaceX, or Japan) that is helping with moon base plans. What are they contributing?

Comprehension Questions - Answer Key

1. Answers include any two: to do new science, use resources like water ice, test space technology, or to work with other countries.
2. The south pole has nearly constant sunlight (for power) and contains water ice in shadowed craters.
3. ISRU means in-situ resource utilization, using local materials (like moon soil or ice) instead of bringing everything from Earth. It saves weight and cost.
4. Examples: life support (air and water), power source (solar panels), temperature control (heater/cooler), radiation shielding (thick walls), communication equipment.
5. Artemis II was the crewed mission that flew astronauts around the Moon to test the spacecraft. It was a success and a step before landing.
6. Example: Radiation is a challenge; solution: cover habitat with meters of regolith (moon dirt) to block radiation. (Or dust is a challenge; solution: airlocks and cleaning suits.)
7. A habitat is the place where astronauts live and work on the Moon—like a home or station that they can pressurize with air.
8. Robots can do dangerous or repetitive jobs (like clearing dust or building structures) so humans don't have to do them right away. They can also explore the site before people arrive.
9. Regolith is the loose soil and dust on the Moon's surface. It can be piled on top of habitats to protect them.
10. Recycling water and air reduces how much we need to bring.

Extension Questions

1. Answers vary. One way to protect astronauts from moon dust is to use airlocks and cleaning suits. En
2. EVA stands for extravehicular activity. Astronauts do it to go outside the spacecraft.
3. Answers vary. Some solutions engineers are proposing are using solar panels or nuclear power.
4. Answers vary. Solar panels can provide power, but they need to be maintained. Nuclear power can provide a steady source of energy, but it's more complex.
5. Answers vary. Some countries and companies helping with moon base plans are NASA, ESA, SpaceX, and Japan.

Answer Key Included Office, Google, & PDF Versions

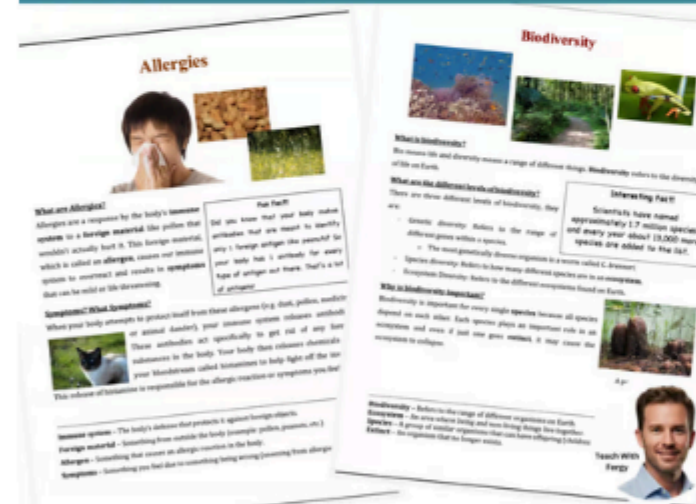


Comprehension and Extension Questions

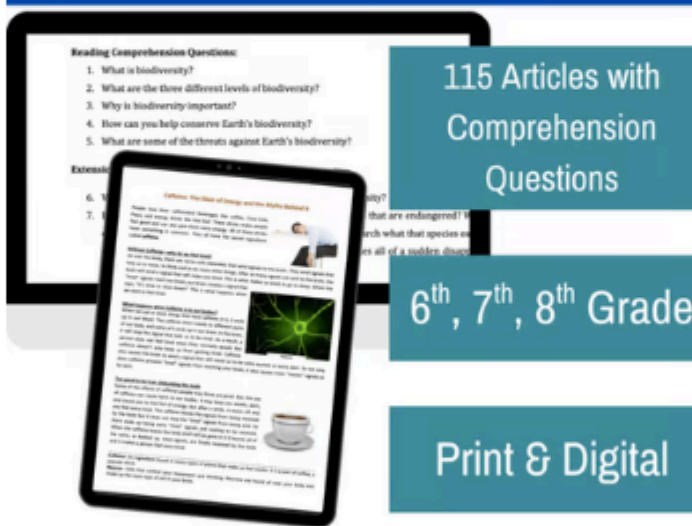
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★★★★★ Extremely satisfied - So many comprehensive readings for all science fields. PDF and DOCX versions included so they can be edited if needed. Each one includes short answer questions at the end, the first set are easy to find the answers to in the readings, the second set require a bit more critical thinking. Includes an answer key. Great to use to fill in time or for sub plans.

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