

SPACE

In this unit, students will learn about different objects in space and what it might be like to spend time in space. Then they'll create a model of the closest space objects to us: our solar system.

Essential Questions

- What are some features of each planet in our solar system? How do they differ?
- What does the moon look like? What causes it to look that way?
- What might it be like to live in space?
- What is a star? What is a constellation?



Lesson 1: Around the Sun page 2

SUMMARY

Students will learn about the eight planets in our solar system and compare their features to Earth's.

KEY TERMS

orbit, rover, solar system



Lesson 2: To the Moon page 4

SUMMARY

Students will learn about the moon, and will then participate in an activity to learn about the moon's craters.

KEY TERMS

crater, lunar, phase



Lesson 3: Out in Space page 6

SUMMARY

Students will learn about the International Space Station and what astronauts do there.

KEY TERMS

diagram, laboratory, research, spacewalk



Lesson 4: Stargazing page 8

SUMMARY

Students will learn about stars and will create their own story about a constellation.

KEY TERMS

constellation, telescope



AROUND THE SUN

CONTENT STANDARDS

Science (NGSS):
Earth's Place in the Universe

COMMON CORE STANDARDS (CCSS)

RI.1, RI.7, SL.1, SL.5, W.7, W.8

MATERIALS & RESOURCES

Class set of *Around the Sun*;
class set of “Earth Versus Mars”
worksheet, on p. 3 of this guide;
chart paper; Internet access

BEFORE READING

Start the lesson by writing the word *space* on the top of a piece of chart paper. Have students imagine that this paper is space. Invite them up to draw something in space that they know of (stars, planets, the sun, etc.). Have them tell the class what they drew. You can label the drawing for them. Then tell them that this unit will be all about space. Challenge their knowledge of space with the Kahoot! quiz at [ti.me/spaceKahoot](https://www.time.com/time/kids/aroundthesun/kahoot/). After the quiz, pass out copies of *Around the Sun* and read the cover text aloud. Ask students to raise a hand if they drew something on the chart paper that appears in our solar system.

DISCUSSION QUESTIONS

- Why have scientists sent rovers to Mars? (pp. 2–3)
- What are Saturn’s rings made of? (pp. 2–3)
- Why do you think other people cannot live on other planets in our solar system? (pp. 2–3)
- What causes the seasons on Earth? (p. 4)

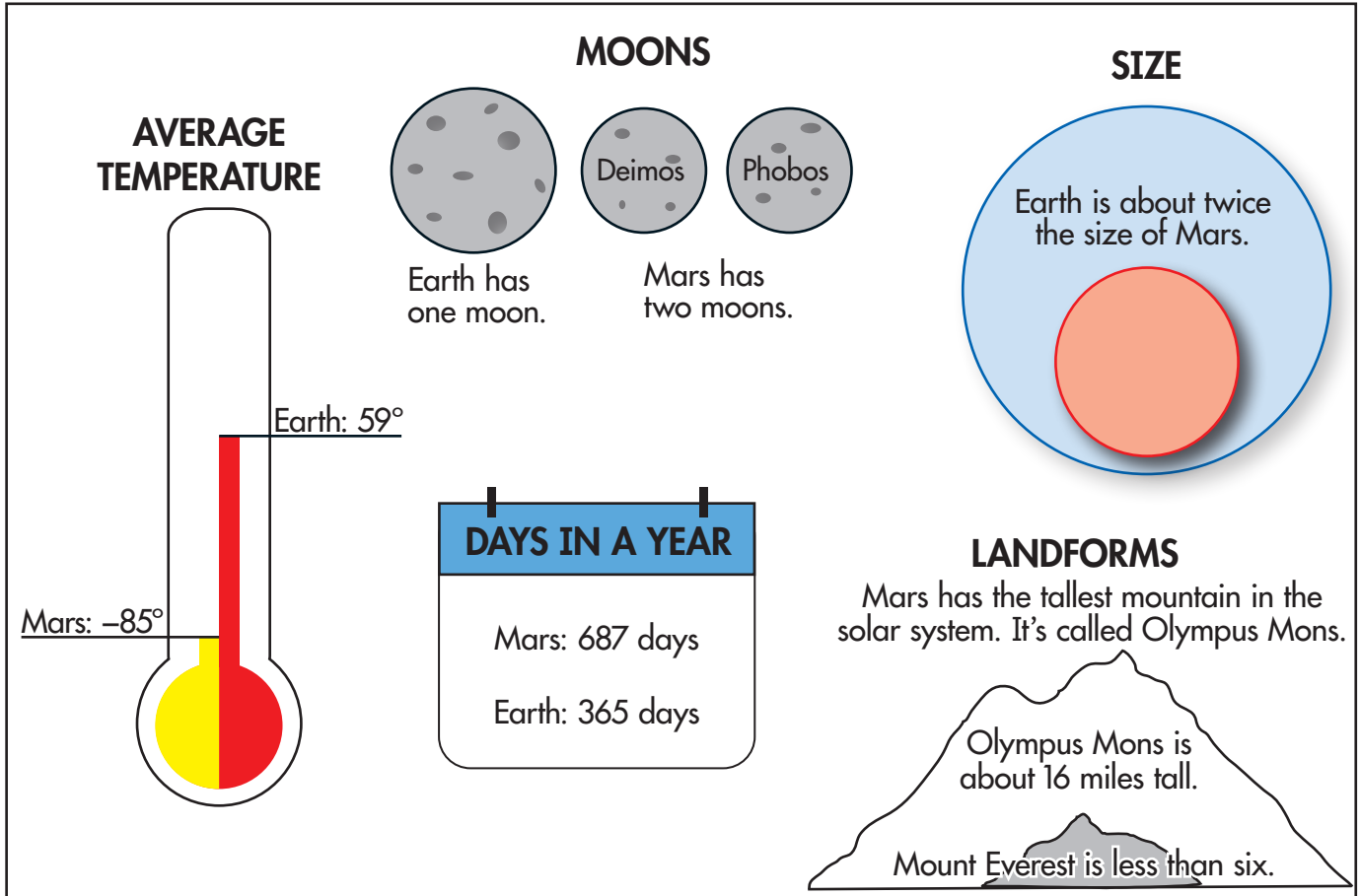
CLOSING ACTIVITIES

After reading, allow students to add to the space chart, if anything was missing. Then pass out copies of “Earth Versus Mars,” on page 3 of this guide, and tell students they’ll be learning a little more about features of both planets. Talk through the infographic together. Then read each question aloud and allow students time to answer.

Group students into six groups and assign each group a planet in our solar system. Have them do some research to learn more about the planet. Have them identify the average temperature, the number of moons, the length of a year, and its size compared with Earth. They may also note its landforms, such as mountains, volcanoes, lakes, or craters. Keep these note sheets: Students will return to them at the end of the unit.

Earth Versus Mars

Read *Around the Sun* (May 2025). Mars is one of Earth's neighbors. Use the information below to compare the planets.



1. Which planet has more moons? _____
2. Fill in the blank: One Mars year is _____ than one Earth year.
3. How much taller is Olympus Mons than Mount Everest? _____
Show your work:
4. Which planet has a warmer average temperature? _____



TO THE MOON

CONTENT STANDARDS

Science (NGSS):
Earth's Place in the Universe

COMMON CORE STANDARDS (CCSS)

RI.1, RI.7, SL.1, SL.6, W.8

MATERIALS & RESOURCES

Class set of *To the Moon*; class set of "Rocky Surface" worksheet, on p. 5 of this guide, paper plates, coffee grounds, flour, stones; Internet access, Oreos (optional)

BEFORE READING

Ask students to take out a piece of paper. Tell them to draw a picture of the moon. Then invite volunteers to share their artwork with the class. Are the drawings similar? Compare and contrast a few. Did anyone draw a moon on the space chart paper from the previous lesson? What did that one look like? Explain that today's lesson is all about the moon. Invite students to share what they know about it. Then show them the cover of *To the Moon* and read the cover text aloud. What does it mean that the moon is "Earth's closest neighbor"?

DISCUSSION QUESTIONS

- How long does it take for the moon to travel around the Earth? (p. 2)
- What happens as the moon orbits the Earth? (p. 2)
- Who were the first two people on the moon? Use page 4 to find out when that happened. (pp. 3–4)
- Would you like to go to the moon? Why or why not? (p. 4)

CLOSING ACTIVITIES

To better understand the moon's phases, you can use the activity from NASA's Space Place site at ti.me/oreo-moon. It uses Oreo cookies to represent the phases of the moon. Then you can have students observe the moon each night and draw it in a journal. Each morning, share and discuss their drawings, and create a class calendar over the following month to note each phase as it happens.

For the next activity, you'll need paper plates, coffee grounds, flour, and small stones or marbles. Place students in small groups and give each group a paper plate. Students can record their observations on "Rocky Surface," on page 5 of this guide. Have volunteers read out each step in the instructions while you provide groups with what they need. When you get to steps 3 and 4, give each student time to drop the stone a couple times. Then move on to step 5. Bring students together to discuss what they've learned.

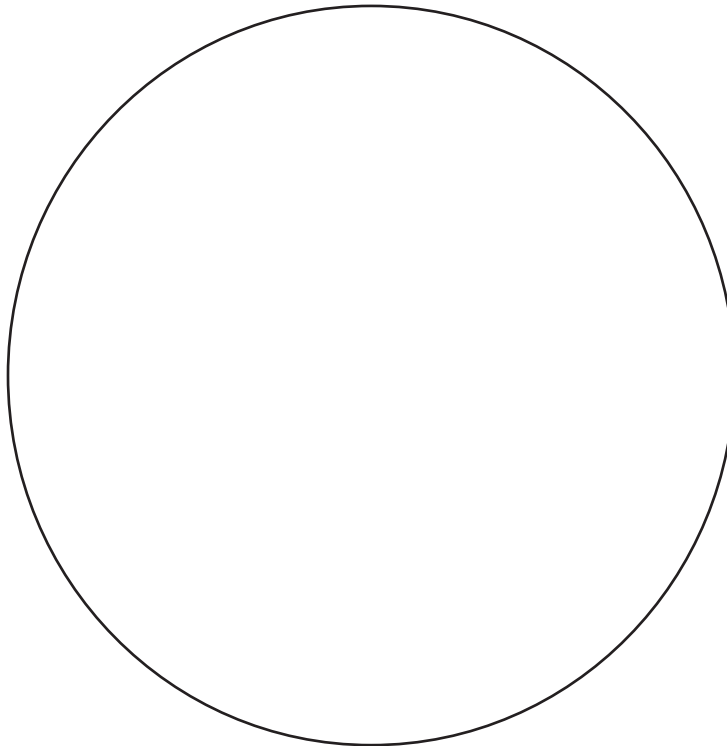
Rocky Surface

Read *To the Moon* (May 2025). Follow the directions below. The plate will model the moon's surface. Learn about three landforms on the moon.

Activity Directions

1. Spread a layer of coffee grounds on a paper plate. Sand will work too.
2. Cover that layer with a layer of flour. It should be a thin layer. Spread it as evenly as you can.
3. Drop a stone or a marble on the plate. See what happens.
4. Drop the object from different heights. Is there a difference?
5. Draw what you see in the circle below.

The light spots on the moon are like **mountains**. Objects hit the moon and push these areas up.



The dark spots on the moon are called **maria**. That word means “seas.” They are seas of cooled lava.

Craters are holes. They were made by objects that hit the moon.



OUT IN SPACE

CONTENT STANDARDS

Science (NGSS):
Earth's Place in the Universe

COMMON CORE STANDARDS (CCSS)

RI.1, RI.2, RI.3, RI.7, SL.1, W.8

MATERIALS & RESOURCES

Class set of *Out in Space*; class set of "Suited Up for Space" worksheet, on p. 7 of this guide; Internet access

BEFORE READING

Begin with a class poll. Ask students to raise a hand if they'd like to travel to space. Call on volunteers to share why or why not. Tell students that astronauts who spend time in space might live aboard the International Space Station (ISS). Ask students what it might be like there. You can use prompting questions such as "Where do you think astronauts sleep? How do they move around on the spacecraft?" Then you can show them a video tour of the ISS at ti.me/ISStour. (Note: starting at 4:36, there is discussion of how astronauts use the bathroom, so be prepared for some giggles about going "number 2.")

DISCUSSION QUESTIONS

- Why do you think astronauts need special suits for spacewalks? (p. 2)
- How do astronauts exercise in space? Why is it important? (p. 3)
- What traits do you think are important for astronauts to have? Explain. (pp. 2–4)
- What is the ISS? What is it like? (p. 4)

CLOSING ACTIVITIES

Have students take a closer look at the cover image and the first image on page 2 of the magazine. Ask them to describe the spacesuit. What features do they think it has? Why is each feature important? Pass out copies of "Suited Up for Space," on page 7 of this guide. Explain that it's a diagram, like the one on page 4 of the magazine. Explain, if necessary, that a diagram points out the parts of something. Draw attention to the bold word in each box on the worksheet. Are these the components of the suit that students noticed? Have them predict what each component is for before reading the diagram's description. Then have them answer the questions on the worksheet independently.

Invite students to turn the worksheet from the previous lesson ("Rocky Surface") into a diagram by drawing lines from each of the three features described to spots in their drawing that can represent them.

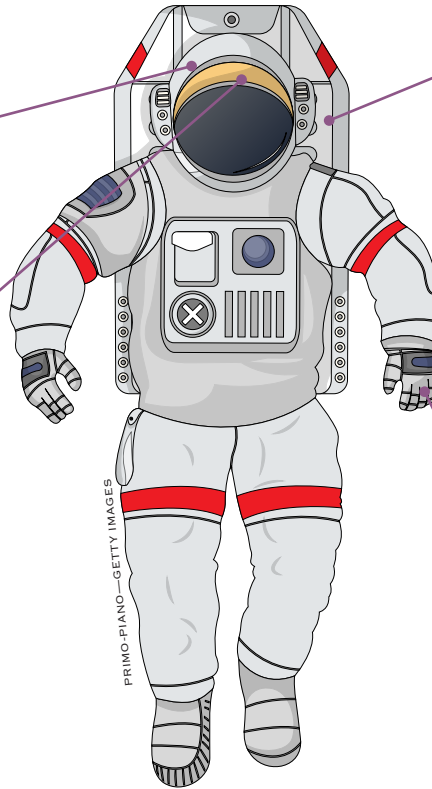
Suited Up for Space

Read *Out in Space* (May 2025). Then learn about the suit that astronauts wear on spacewalks.

There is almost no oxygen in space. The **helmet** gives astronauts oxygen to breathe.

The suit has a special **backpack**. It holds tanks of oxygen. It has a fan to keep the suit cool.

The helmet has a gold **visor**. It acts like sunglasses. It protects the astronaut's eyes.



An astronaut's hands get very cold in space. These **gloves** heat up. They keep the fingers warm. And they allow them to bend easily.

1. Where is a fan located? _____
2. Why are an astronaut's gloves important? _____

3. Fill in the blank:
Without a helmet, astronauts could not _____.



STARGAZING

CONTENT STANDARDS

Science (NGSS):
Earth's Place in the Universe

COMMON CORE STANDARDS (CCSS)

RI.1, RI.2, RI.3, SL.1, W.3

MATERIALS & RESOURCES

Class set of *Stargazing*; class set of "Starry Stories" worksheet, on p. 9 of this guide; Internet access; paper towel rolls, construction paper, tape, toothpicks, scissors, flashlight

BEFORE READING

Start the lesson by asking students to answer to the following statement by giving a thumbs-up or thumbs-down: We see stars only at night. Call on volunteers to explain their answer. Then tell the students they can see a star outside nearly every day: the sun. Remind them that the sun is at the center of our solar system, and that all the stars we can see are within our galaxy, the Milky Way. But there are trillions of stars in the universe. They are forming and growing every day. Pass out copies of *Stargazing*, and read with the class to learn more about stars.

DISCUSSION QUESTIONS

- What star is nearest to Earth? (p. 2)
- How far are stars from Earth? How are we able to see them? (p. 2)
- What is a nebula? (p. 3)
- How are scientists using the James Webb telescope to learn about space? (p. 4)

CLOSING ACTIVITIES

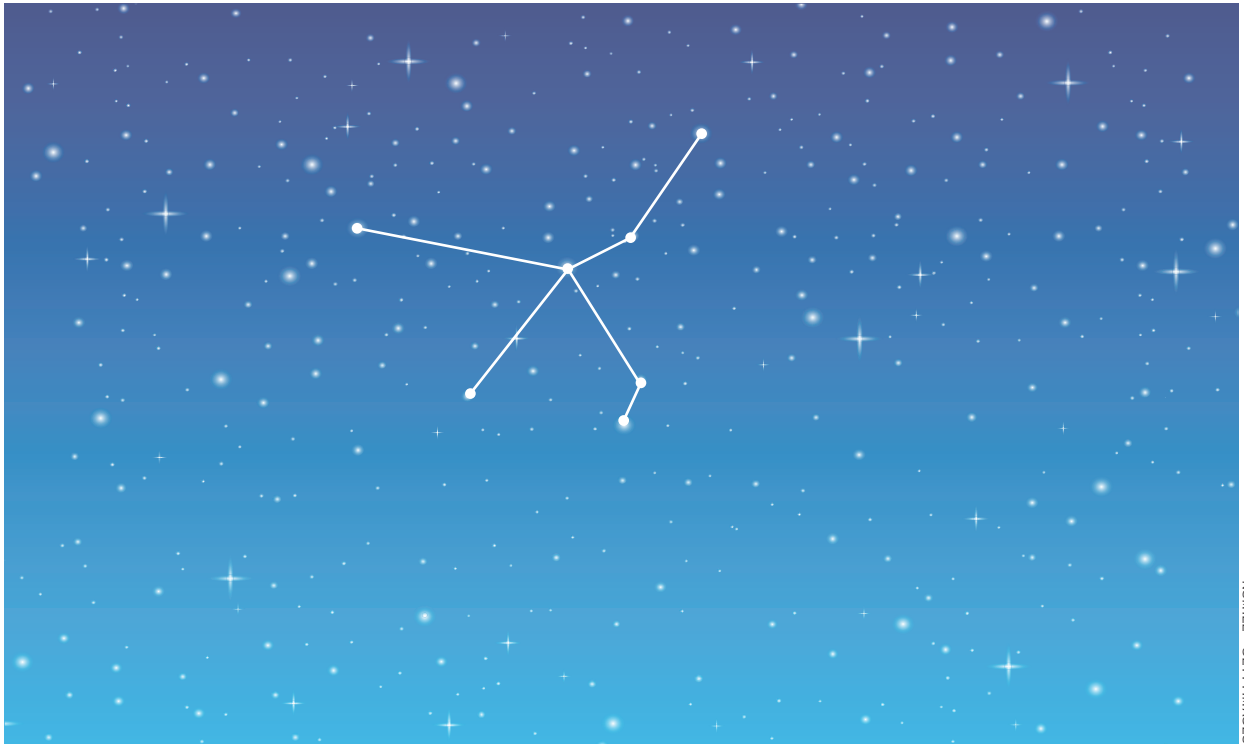
Return to the box about constellations in the magazine. Can students name one besides the Big Dipper? Pull up some images of constellations, and explain that people have imagined them as images (e.g., Ursa Major as a bear). Pass out copies of "Starry Stories," on page 9 of this guide. Have students imagine the constellation as something. Have them name their constellation and tell a story about it.

After students have written about their constellation, invite them to make a constellation viewer. They'll need a paper towel roll, a toothpick, dark-colored construction paper, scissors, and tape. Start by having them trace a circle onto paper, using the paper towel roll as a guide. On that circle, have them draw their constellation, and poke holes in the paper for each star in the constellation, using the toothpick. Then have them tape the circle to the roll. Shine a flashlight through the paper towel roll to project their constellation on the wall. Invite each student to project the constellation while telling its story.

Name _____ Date _____

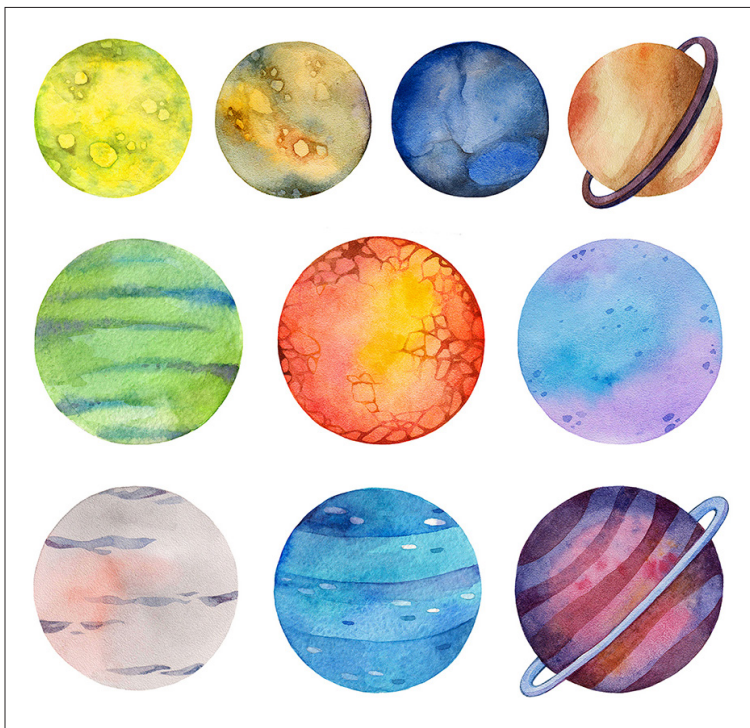
Starry Stories

Read *Stargazing* (May 2025). Every constellation has a name and a story. Look at the imagined constellation below. Draw the shape you think it suggests. Then give it a name and a story.



This constellation is called _____.

Ceiling Solar System



ROMENSKAIA EK—ISTOCK/GETTY IMAGES PLUS

LESSON OVERVIEW

Groups will research a planet in the solar system and make a paper plate version of it to create a class solar system model.

MATERIALS

- Uncoated paper plates
- Shaving cream
- Acrylic paint in various colors
- Pie tins
- Piece of cardboard with a straight edge
- Toothpicks
- Index cards
- String
- Research from previous lessons
- Access to Internet or research materials

Prep Work

1. Gather necessary materials, listed above.
2. Prepare a demonstration station, using the Earth as an example.
3. You might check out library books on each planet, or coordinate a research day with your school librarian.

Lesson Flow

1. Remind students that they've been learning all about space. Return to the chart paper from the first lesson. Ask: Which of the things that the class drew can be found in our solar system?
2. Tell students that they'll be working as a class to create a model of our solar system that includes facts about each planet. Get students in to the groups they were in for their original planet research in the *Around the Sun* lesson. Pass out the notes they took about their assigned planet.
3. Tell students that first, they'll be working together to create a model of their planet, using a paper plate. They'll color it using shaving cream and paint. Call them up for a demonstration.
4. For the demonstration, layer shaving cream evenly in the bottom of a pie tin. Tell students that you are modeling Earth, so you'll be squirting some blue and green paint on top of the shaving cream. Swirl the paint into the shaving cream to create a marble effect. Then press the back of the plate into the shaving cream. Let it sit for a moment to absorb some of the paint.
5. Pull the plate up and scrape the extra shaving cream away with some cardboard. Show students the results.
6. Send groups back to their places with a pie tin filled with shaving cream, a paper plate, and a toothpick. Have them work with their group to figure out what color paint they'll use.
7. Have a student from each group come up to request their paint color(s). Allow the groups to independently create their planets, as you monitor and scrape away excess shaving cream.
8. Put plates to the side to dry and pass out index cards to each group. They'll use these to write down facts about their planet, such as its size, year-length, and average temperature. They can use their research from previous lessons to help.
9. When groups are finished with their research, have them tape their index cards to the string. This string will hang from their planet models.
10. Cut a circle out of each plate to represent the given planet. Work as a class to decide how big the circle should be, in comparison to the others. Once circles are cut out, attach the string with the facts. Hang each planet from the ceiling to model the solar system.



September Bundle: Weather

- Explore different kinds of weather and how meteorologists help us prepare for them.

October Bundle: Senses

- Use your senses to experience the world around you.

November/December Bundle: Community Service

- Get to know kids who are making a positive difference in their community.

January Bundle: Animals

- Learn about traits that help animals in different habitats survive.

February/March Bundle: Plants

- Take a look at how plants grow and spread.

April Bundle: Around the World

- Travel the world and learn about cool destinations.

May Bundle: Oceans

- Dive below the surface and discover fascinating sea life.



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TIME *for* KIDS

EDITION K-1 TEACHER'S GUIDE

ATTENTION, POSTMASTER AND SCHOOL SECRETARY:



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