PRESENTER SCRIPT · GRADE 6 · MS-ESS1-1-MS-ESS1-3

Gravity & the Earth-Sun-Moon System: teacher script

Use with the Lesson presenter (room page -> Lesson presenter). Slides show only student cues; this script has what to say. Students need the printed lesson worksheet and a pencil.

Presenter keys: Right/left arrows change slides. N shows short notes. T pauses the timer. P picks a student. F is fullscreen.

Response routine: Students write each answer on their worksheet, then show it with fingers (1 = A, 2 = B, 3 = C, 4 = D). Scan the room before revealing.

SLIDE 1: TODAY'S TARGET — 1 min

Say	Today's learning target is: "I can use a model of the Earth-Sun-Moon system to explain phases, eclipses, tides, and seasons, and explain how gravity keeps objects in orbit." Read it with me.
Say	Here is how you will know you have it: the success criteria. You will prove it on the exit ticket at the end of class.
Point to	The agenda and the key vocabulary. Tell students they need their notebook, guided notes page, and pencil.

SLIDE 2: WARM-UP — 0:00–0:08

Say	Turn to Part 2 of your lesson worksheet. Answer the three questions in complete sentences. You have 5 minutes of silent work. Go.
Do	Start the 8:00 timer. Circulate. At 5 minutes say: "Turn to your partner and compare answers for 2 minutes."
Look for	1) Gravity. 2) About 29.5 days (about a month). 3) Tides are caused mostly by the Moon's gravity pulling on Earth's oceans.
Say	Call on 2-3 students for questions 1 and 2, then reveal. Say: "We will come back to question 3 at the end of class."

SLIDE 3: HOOK — 1 min

Say	Read the question on the screen: "On April 8, 2024, the sky over Indiana went dark at midday. What lined up?" Circle your prediction in Part 3 of your worksheet and write why. Then vote.
Background	Remind students that on April 8, 2024, a total solar eclipse passed over Indiana. "What had to line up in space for that to happen?"

Do	Tap +1 for each vote. Do not give the answer. Say: "By the end of the lesson, you will be able to check your prediction."

SLIDE 4: LEARN 1: GRAVITY AND ORBITS — 3 min

Say	Gravity pulls objects toward each other. An orbit happens when an object moves forward fast while gravity pulls it inward, so it keeps "falling around" the bigger object.
Worksheet	Say: "Part 5: fill in the blanks (A), do the task (B), write what your partner said (C), and answer the check (D)." Blank answers: GRAVITY pulls objects toward each other. An ORBIT is forward motion plus gravity pulling inward. (tap "Show the missing words" after students try.)
Explore	Run the simulation: Newton's cannon: find the speed that makes an orbit. Before each change, ask students to predict in their notes. Students do: Write what happens to the cannonball at slow, medium, and fast speeds.
Turn and talk	Say: "If gravity suddenly turned off, what would the Moon do? Why?" Start the 1:00 timer. Then pick a pair to share.
Check	Read the question aloud. Students write, then show fingers. Scan, then reveal. Answer: (A) Earth's gravity and the Moon's forward motion. Gravity pulls it in while its motion carries it forward.
If < 80% correct	Go back to the Explore box and model a second example out loud, then re-ask the check with a partner discussion first. See "Misconceptions to watch for" at the end of this script.

SLIDE 5: LEARN 2: MOON PHASES — 3 min

Say	The Moon is always half lit. As it orbits, we see more (waxing) or less (waning) of the lit half: new -> crescent -> quarter -> gibbous -> full and back.
Worksheet	Say: "Part 6: fill in the blanks (A), do the task (B), write what your partner said (C), and answer the check (D)." Blank answers: When we see more of the lit half each night, the Moon is WAXING. When we see less, it is WANING. (tap "Show the missing words" after students try.)
Explore	Run the simulation: Move the Moon and watch the phase from Earth. Before each change, ask students to predict in their notes. Students do: Draw 4 Moon shapes: new, first quarter, full, third quarter.
Turn and talk	Say: "Why is the Moon always half lit, even at a new moon?" Start the 1:00 timer. Then pick a pair to share.
Check	Read the question aloud. Students write, then show fingers. Scan, then reveal. Answer: (D) Waning gibbous. After full, the lit part shrinks: waning gibbous.
If < 80% correct	Go back to the Explore box and model a second example out loud, then re-ask the check with a partner discussion first. See "Misconceptions to watch for" at the end of this script.

SLIDE 6: LEARN 3: ECLIPSES — 3 min

Say	Solar eclipse: Sun-Moon-Earth line up and the Moon's shadow falls on Earth (only at new moon). Lunar eclipse: Sun-Earth-Moon line up and Earth's shadow falls on the Moon (only at full moon).
Worksheet	Say: "Part 7: fill in the blanks (A), do the task (B), write what your partner said (C), and answer the check (D)." Blank answers: A SOLAR eclipse happens at new moon. A LUNAR eclipse happens at full moon. (tap "Show the missing words" after students try.)
Explore	Run the simulation: Line up Sun, Earth, and Moon. Before each change, ask students to predict in their notes. Students do: Sketch the line-up for a solar eclipse and a lunar eclipse.
Turn and talk	Say: "Why don't we have a solar eclipse every single month at the new moon?" Start the 1:00 timer. Then pick a pair to share.
Check	Read the question aloud. Students write, then show fingers. Scan, then reveal. Answer: (A) Earth's. Earth is between the Sun and the Moon.
If < 80% correct	Go back to the Explore box and model a second example out loud, then re-ask the check with a partner discussion first. See "Misconceptions to watch for" at the end of this script.

SLIDE 7: LEARN 4: TIDES — 3 min

Say	The Moon's gravity pulls Earth's oceans into two bulges: one facing the Moon and one on the far side. As Earth rotates through them, most coasts get two high tides and two low tides a day.
Worksheet	Say: "Part 8: fill in the blanks (A), do the task (B), write what your partner said (C), and answer the check (D)." Blank answers: The Moon's GRAVITY makes two ocean bulges, so most coasts get TWO high tides each day. (tap "Show the missing words" after students try.)
Explore	Students do: Draw Earth, the Moon, and the two ocean bulges.
Turn and talk	Say: "The Sun also pulls on the oceans. Why does the Moon have a bigger effect on tides?" Start the 1:00 timer. Then pick a pair to share.
Check	Read the question aloud. Students write, then show fingers. Scan, then reveal. Answer: (A) Two. Earth rotates through both bulges each day.
If < 80% correct	Go back to the Explore box and model a second example out loud, then re-ask the check with a partner discussion first. See "Misconceptions to watch for" at the end of this script.

SLIDE 8: WORKED EXAMPLE (I DO) — 2 min

Say	Watch how I solve this. Write the final answer in Part 9 of your worksheet.
Think aloud	Make a Sun-Earth-Moon line with three volunteers. Move the "Moon" between Sun and Earth: "This is a new moon. If the line is perfect, the Moon's shadow hits Earth: solar eclipse." Then move the Moon behind Earth for a lunar eclipse.

Reveal	Imagine the Sun, Earth, and the Moon in a row. | Step 1: Moon between the Sun and Earth: that is a new moon. | Step 2: If the line is perfect, the Moon's shadow falls on Earth: solar eclipse. | Step 3: Earth between the Sun and the Moon: that is a full moon. | Step 4: If the line is perfect, Earth's shadow falls on the Moon: lunar eclipse.

SLIDE 9: WE DO — 2 min

Say	Now we solve one together in Part 10. Read the problem with me.
Do	Before revealing each step, ask: "What should we do next?" Take one answer, then tap "Show next step."
Steps	The order after first quarter is waxing gibbous, then full. | It takes about one week to go from one main phase to the next. | In one week: full moon. | In two weeks: third quarter (the other half is lit).
Answer	Full moon, then third quarter

SLIDE 10: YOU DO — 2 min

Say	Now on your own: Part 11. Solve it with no talking. You have 2 minutes.
Answer	(B) Sun - Moon - Earth. The Moon blocks the Sun from Earth, so it is in the middle.
Then	Students who got it: launch the room. Students who missed it: 3-minute reteach at your table, then start the room at the Explorer level.

SLIDE 11: WORK TIME: ECLIPSE CHASERS: APRIL 8, 2024 — 0:20–0:48

Say	Open Eclipse Chasers: April 8, 2024 on your device. Type your name, choose the level I assigned, and begin. Whisper voice with your partner only.
Do	Start the 28:00 timer and leave this slide up. Circulate with the answer key.
Checkpoints	At 10 minutes: stage 2 done. At 20 minutes: stage 4 done; give a 5-minute warning for the final lock and turn-in.
Turn-in	Students tap "Copy my work" and paste it into the Canvas assignment (Text Entry).

SLIDE 12: DEBRIEF — 0:48–0:52

Ask	Explain why the April 2024 eclipse could only happen during a new moon. | What would happen to the Moon if Earth's gravity suddenly disappeared? | Which model from today would you use to teach a 4th grader about phases?
Say	Back to warm-up question 3 and our hook vote: were our predictions right? What evidence changed your mind?

Answer	Tides are caused mostly by the Moon's gravity pulling on Earth's oceans.

SLIDE 13: EXIT TICKET 0:52–1:00

Say	Clear your desk except a pencil. Work silently and on your own. For every answer, write "I know because..." and use evidence.
Do	Hand out the exit ticket. Start the 8:00 timer. Collect and sort with page 3 (Mastered / Approaching / Beginning).

MISCONCEPTIONS TO WATCH FOR

• "There is no gravity in space." Gravity reaches across space; astronauts float because they are falling around Earth.

• "Moon phases are caused by Earth's shadow." Only lunar eclipses involve Earth's shadow.

• "Summer happens when Earth is closest to the Sun." Earth is closest in January. Tilt causes seasons.