Sky and Shore

Trace how positions in space cause changes you can see.

6.1.b "Construct an evidence-based explanation of how the relative positions of the sun, moon, and Earth result in observable phenomena, including lunar cycles, eclipses, and tidal cycles."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline one position clue about moon phases, one about eclipses, and one about tides. Circle an observation linked to each clue, then write the same number beside each clue and its observation.

What Maya Notices at the Beach

1. At the beach, Maya spots a thin crescent moon above the water. The moon does not make its own light. Sunlight always lights half of it, but as the moon travels around Earth, we see different amounts of that bright half. When the moon lies roughly between Earth and the sun, its bright side faces away from us, so we see a new moon. When Earth lies roughly between the sun and moon, we see a full moon. Between those positions, part of the bright half appears as a crescent or quarter moon.

2. One night, Maya sees Earth's shadow cross the full moon. In a lunar eclipse, Earth lies between the sun and moon, and the three bodies line up closely enough for Earth's shadow to fall on the moon. In a solar eclipse, the moon lies between Earth and the sun. Its shadow reaches part of Earth, where people see the sun blocked. Eclipses do not happen at every full or new moon. The moon's path around Earth is tilted, so its shadow, or Earth's shadow, usually misses the other body.

3. At the beach, water gives Maya another clue about positions in space. The moon's gravity helps form two broad areas of high water, one facing the moon and one on Earth's opposite side. As Earth turns, many coasts move through these areas, causing two high tides and two low tides in about a day. The sun's gravity also affects tides. At new or full moon, the three bodies lie roughly in line. Their pulls combine to create a larger difference between high and low tides, though local coastlines affect the exact timing.

2 ANSWER WITH EVIDENCE

Use the passage

1. The sun lights half the moon at both new moon and full moon. Explain how the moon's position changes what Maya sees.

2. Maya sees Earth's shadow cross the moon. Explain the positions that cause this event and why it does not happen at every full moon.

3. The moon's shadow reaches part of Earth. Which body is between the other two, and what do people in the shadow see?

4. Why is the difference between high and low tides often larger near a full moon? Use positions and gravity in your answer.

3 YOUR TURN

Your own words

A friend says, “A full moon means there must be a lunar eclipse, and every beach must have high tide at sunset.” Write one paragraph correcting both claims. Use positions in space and evidence from the passage.

ANSWER KEY

Sky and Shore

GRADE 6 · 6.1.b

PART 1 · READ AND MARK

Underline one position clue about moon phases, one about eclipses, and one about tides. Circle an observation linked to each clue, then write the same number beside each clue and its observation. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	The sun lights half the moon at both new moon and full moon. Explain how the moon's position changes what Maya sees.	**At new moon, the moon is roughly between Earth and the sun, so its bright side faces away from Maya. At full moon, Earth is roughly between the sun and moon, so Maya sees the bright side.**
2	Maya sees Earth's shadow cross the moon. Explain the positions that cause this event and why it does not happen at every full moon.	**Earth is between the sun and moon. Earth's shadow reaches the moon only when they line up closely enough; the moon's tilted path usually keeps it out of the shadow.**
3	The moon's shadow reaches part of Earth. Which body is between the other two, and what do people in the shadow see?	**The moon is between Earth and the sun. People in the shadow see the sun blocked in a solar eclipse.**
4	Why is the difference between high and low tides often larger near a full moon? Use positions and gravity in your answer.	**Near a full moon, Earth is roughly between the sun and moon. The three bodies are roughly in line, so the sun's and moon's gravitational effects combine to make a larger difference between high and low tides.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

A full moon happens when Earth is roughly between the sun and moon, but a lunar eclipse needs a closer lineup. The moon's tilted path usually keeps it out of Earth's shadow. At a full moon, the sun and moon's pulls combine to make a larger difference between high and low tides. High tide is not always at sunset because Earth turns through the high-water areas, and local coastlines affect the exact timing.

Accept explanations that connect each observation to relative positions, even if students use different wording. For the paragraph, look for both the tilted moon path and a reason high tide is not fixed to sunset.