Name _____ Date _____

Phases of the Moon and Eclipses: What Earth's Shadow Does and Does Not Do

Directions: Many of these questions test a popular idea about the Moon, so think carefully about the positions of the Sun, Earth and Moon in each situation before you choose an answer.

1. On a clear night, a full Moon can shine brightly enough to cast faint shadows on the ground. What is the actual source of that moonlight?

A. Sunlight reflected from the Moon's rocky surface

B. Light that the Moon's rocks absorb during the day and release at night

C. Light given off by glowing lava flowing across the Moon's surface

D. Light the Moon produces itself, the way a star does

2. Over the course of about a month, the Moon appears to change shape, from a thin crescent to a full circle and back again. What causes these changing phases?

A. The Moon produces more light on some nights than on others.

B. As the Moon orbits Earth, we observe different portions of its sunlit half.

C. Clouds in Earth's atmosphere hide different parts of the Moon.

D. Earth's shadow covers different portions of the Moon.

3. Each term below names a phase of the Moon; match each one to how the Moon normally appears from Earth during that phase, when there is no eclipse.

Write the letter of the matching answer on each line.

1. _____ Waxing crescent
2. _____ Waning crescent
3. _____ Waxing gibbous
4. _____ Full Moon

Choices for question 3

A. Earth's shadow darkens the entire visible face

B. More than half of the visible face is lit, and the lit portion grows each night

C. The entire visible face is lit

D. Less than half of the visible face is lit, and the lit portion grows each night

E. Exactly half of the visible face is lit

F. Less than half of the visible face is lit, and the lit portion shrinks each night

4. Read this sentence: "The Moon reaches first quarter about a week after new Moon, when the face we see looks like a half circle." What does *quarter* refer to in this sentence?

A. One-quarter of the visible face is lit.

B. One-quarter of the Moon faces the Sun.

C. A quarter of the Moon is hidden by Earth's shadow.

D. The Moon is one-quarter of the way through its cycle of phases.

5. Observers on Earth always see the same side of the Moon. Which statement correctly explains why?

A. The Moon does not rotate at all as it travels around Earth.

B. The Moon rotates once every day, just as Earth does.

C. Earth's shadow permanently hides the Moon's other side.

D. The Moon rotates once on its axis in the same amount of time it takes to orbit Earth, so the same side keeps facing us.

6. During a lunar eclipse, part or all of the Moon grows noticeably dimmer for a few hours. At which phase can a lunar eclipse occur, and what is the reason?

A. Only at new Moon, because that is when the Moon is darkest

B. Only at first quarter, because half of the Moon is already dark

C. At any phase, because Earth's shadow always covers part of the Moon

D. Only at full Moon, because that is when Earth can come between the Sun and the Moon and cast its shadow on the Moon

7. During a solar eclipse, the Moon blocks part or all of the Sun for people in one region of the world. At which phase can a solar eclipse occur, and what is the reason?

A. At any phase, as long as it is daytime

B. Only at new Moon, because that is when the Moon can pass between the Sun and Earth

C. Only at full Moon, because the Moon is brightest then

D. Only at first quarter, because the Moon is then positioned halfway between the Sun and Earth

8. The Moon reaches the new Moon and full Moon positions every month, yet eclipses happen only a few times each year. Why don't eclipses occur every month?

A. The Sun is too distant for the Moon to block it in most months.

B. The Moon travels too quickly to line up with the Sun and Earth.

C. The Moon's orbit is tilted about 5 degrees compared with Earth's orbit, so in most months the Moon passes slightly above or below the line connecting the Sun and Earth.

D. Clouds hide most eclipses, so they are rarely observed.

9. Some people call the far side of the Moon, the side we never see from Earth, "the dark side." Which statement about the far side is accurate?

A. It never receives any sunlight.

B. It is made of darker rock that cannot reflect light.

C. It receives sunlight too, and at new Moon it is the half that is fully lit.

D. Earth's shadow keeps it in permanent darkness.