Phases and Eclipses

Understanding Main Ideas
Use the diagram below to answer Question 1 in the spaces provided.

1. What phase of the moon would someone on Earth see when the moon is at Positions A through F?

A: ______________________
B: ______________________
C: ______________________
D: ______________________
E: ______________________
F: ______________________

Building Vocabulary
Fill in the blank to complete each statement.

2. An_________________________ occurs when the moon’s shadow hits Earth or Earth’s shadow hits the moon.

3. A person standing in the moon’s ________________________ would see a partial solar eclipse.

4. A person standing in the moon’s ________________________ would see a total solar eclipse.

5. The________________________ of the moon you see depends on how much of the sunlit side of the moon faces Earth.

6. An_________________________ eclipse occurs at a full moon when Earth is directly between the moon and the sun.

7. An_________________________ occurs when the moon passes between Earth and the sun.
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Lunar Calendars

It is easy to see the changes in the appearance of the moon, so early peoples frequently based their calendars on the cycles of the moon. The word “month” comes from the same root as the word “moon.” The Western calendar has been adjusted to become a solar calendar. Since the moon takes about 29.5 days to complete a cycle of lunar phases, 12 lunar months is about 11 days short of a solar year. However, many people still organize their lives by lunar calendars. Two of the world’s most widespread religions, Judaism and Islam, keep lunar calendars.

Most Muslims recognize a 12-lunar-month Islamic religious calendar for their private lives, even if they keep a different civil calendar. Originally, each lunar month began when the new moon was first sighted in the evening sky at sunset. Recently, however, many Muslims worldwide began recognizing official timekeepers in Cairo, Egypt, who announce the beginning of each month.

No attempt is made to keep the Islamic religious calendar synchronized with a solar calendar. So the holy month of Ramadan, a time of prayer and fasting among all Muslims, continually moves through the seasons, occurring about 11 days earlier each solar year. One year, Ramadan might be in the winter, and 16 solar years later, it would be in the summer.

The Jewish calendar has 12 or 13 lunar months. The standard year is 12 months, but an extra (or intercalary) month is inserted seven times during a 19-year cycle to keep the religious calendar closely aligned with the solar year. Thus, Jewish religious holidays always occur in the same season, although the exact dates vary. For example, the Jewish holiday Passover is always in spring.

1. How many days are in a lunar “year” of 12 lunar months? How many days are in a solar year?
2. Not counting leap years, how many days are in 19 solar years? How many days are in 19 lunar calendar years with an extra month added in seven times? How closely does the Jewish calendar coincide with the solar calendar every 19 years?
3. Why might it be important for farmers and hunters to keep their calendar aligned with the seasons?