CLASS 8 SCIENCE EXTRA QUESTIONS

Extra Questions for Class 8 Science Chapter 11: Keeping Time with the Skies

Original extra practice questions for Class 8 Science Chapter 11 (Keeping Time with the Skies), going beyond the textbook exercise with fresh scenarios. Full explanations included.

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Q1 (Applied reasoning). Why do we always see only one side of the Moon from Earth?
Solution: The Moon is **tidally locked** to Earth — its rotation period (on its own axis) exactly matches its orbital period around Earth (both about 27.3 days). Because it rotates exactly once for every orbit, the same hemisphere always faces Earth, and we never see the “far side” from the ground.

Q2 (Pigeonhole reasoning, variation). Over 5 years, how many full Moons occur (approximately), and can you guarantee at least one calendar month has two full Moons?
Solution: A full Moon occurs roughly every 29.5 days, so in 5 years (≈1826 days), there are about 1826/29.5 ≈ **62 full Moons**. Over 5 years there are 60 calendar months. Since 62 > 60, by the pigeonhole principle, **yes, at least one month must contain two full Moons** (in fact, likely at least two such months).

Q3 (Assertion–Reason). Assertion (A): A solar year and 12 lunar months are the same length. Reason (R): Both the Sun’s apparent yearly path and the Moon’s monthly phase cycle are based on Earth’s rotation.
Solution: A solar year ≈ 365.25 days; 12 lunar months ≈ 12×29.5 = 354 days — these are **not equal** (differing by about 11 days), so **Assertion is false**. The Reason is also **false**: a solar year comes from Earth’s revolution around the Sun, while a lunar month comes from the Moon’s revolution around Earth — neither is based on Earth’s rotation (which instead defines a day).

Q4 (Moon phase reasoning). If you see a waning crescent Moon, roughly what time would you expect it to rise, and in which part of the sky would it be visible just before sunrise?
Solution: A waning crescent Moon rises a few hours before the Sun (in the very late night/early morning) and is visible low in the **eastern** sky just before sunrise, since it trails not far behind the Sun’s position in its monthly cycle at that point.

Q5 (Calendar drift, numeric). If a calendar drifts by 1 day every 3 years (instead of every 4, as with leap years), how many years would it take to drift by 90 days (about a season)?
Solution: Drift rate = 1 day per 3 years. Time for 90 days of drift = 90 × 3 = **270 years**.

Q6 (Spot the error). A student claims: “A lunar eclipse happens every New Moon, because that’s when the Moon is closest to Earth’s shadow.” What’s wrong with this statement?
Solution: Multiple errors: a lunar eclipse can only happen at **Full Moon** (when Earth is between the Sun and Moon), not New Moon; and it doesn’t happen every Full Moon either, only when the Sun, Earth and Moon are precisely aligned (the Moon’s orbit is slightly tilted, so exact alignment is relatively rare) — not related to “closeness” to Earth’s shadow.

Q7 (Satellite orbital period reasoning). A geostationary satellite must orbit Earth once every 24 hours to stay above the same point on the ground. Why is this necessary?
Solution: Earth itself rotates once every 24 hours (approximately). For a satellite to remain positioned above the same spot on the ground at all times (“geostationary”), its orbital period must exactly match Earth’s rotation period — otherwise it would appear to drift eastward or westward across the sky relative to that ground location over time.

Q8 (Multi-step, days and months). If a lunar month is 29.5 days, how many lunar months (rounded to the nearest whole number) fit into a 365-day solar year? What’s the leftover, in days?
Solution: 365 ÷ 29.5 ≈ 12.37, so **12 whole lunar months** fit, using 12×29.5 = 354 days. Leftover = 365−354 = **11 days** (this leftover is exactly why luni-solar calendars periodically need an extra/intercalary

month to catch up).

Q9 (Classification). Classify each as based mainly on Earth's rotation, the Moon's orbit, or Earth's orbit: (i) a 24-hour day (ii) a calendar month (iii) the four seasons (iv) a full Moon recurring.
Solution: (i) **Earth's rotation**. (ii) **Moon's orbit** (its phase cycle). (iii) **Earth's orbit** around the Sun (combined with its axial tilt). (iv) **Moon's orbit**.

Q10 (Applied, satellites). Explain why weather-monitoring satellites are useful for disaster management, using an example.
Solution: Weather satellites continuously observe cloud patterns, storm systems and ocean conditions from space, allowing forecasters to track and predict events like cyclones or heavy rainfall well before they reach land — giving authorities time to issue warnings and evacuate people in the storm's path, reducing loss of life and property.