CHAPTER
12

Earth, Moon and the Sun

CLASS 7TH

NCERT SOLUTIONS - SCIENCE

P1 P2

1. In Figure, how many hours of sunlight do the North Pole and the South Pole receive during one rotation of the Earth?

ANSWER

- The North Pole is in darkness → 0 hours of sunlight (winter in Northern Hemisphere).
- The South Pole is in summer → 24 hours of sunlight during one rotation.
- This happens due to the tilt of Earth's axis.

2. Fill in the blanks:

(i) Stars rise in the _____ and set in the _____.

ANSWER

Stars rise in the East and set in the West.

(ii) Day and night are caused by the Earth's _____.

ANSWER

Day and night are caused by Earth's rotation.

(iii) When the Moon fully covers the Sun from our view, it is called a _____ solar eclipse.

ANSWER

It is called a total solar eclipse.

3. **State whether the following are True or False:**

(i) Lunar eclipse occurs when the Sun comes between the Earth and the Moon.

ANSWER

False – A lunar eclipse happens when the Earth comes between the Sun and the Moon.

(ii) Sunrise happens earlier in Gujarat than in Jharkhand.

ANSWER

True – Because of Earth's rotation and Gujarat's position.

(iii) In Chennai, the longest day occurs on the summer solstice.

ANSWER

True – Longest day in the Northern Hemisphere is around June 21.

(iv) We should watch the solar eclipse directly with our naked eye.

ANSWER

False – It can damage eyes without protection.

(v) Seasons occur due to the tilt of Earth's axis of rotation and its spherical shape.

ANSWER

True – These cause varying sunlight angles throughout the year.

(vi) The Earth's revolution around the Sun causes day and night.

ANSWER

False – Day and night are caused by Earth's rotation on its axis.

4. **Padmashree saw the Orion constellation nearly overhead at 8 pm yesterday. When will she see Orion overhead today?**

ANSWER

- She will see Orion about 4 minutes earlier each day.
- So if yesterday at 8:00 pm, then today at 7:56 pm.

5. **Nandhini saw a group of stars rising at midnight on 21 June. When will she see the same group of stars rising at midnight next year?**

ANSWER

- Stars rise ~4 minutes earlier daily.

- Over a year, this shifts by ~24 hours.
- So she will see the same stars rising at midnight on 20 June next year.

6. Abhay noticed that when it was daytime in India, his uncle in the USA was generally sleeping as it was night-time there. What is the reason behind this difference?

ANSWER

- The Earth's rotation creates different time zones.
- India is ahead of the USA in time.
- So when it is daytime in India, it is night-time in the USA.

7. Four friends used the following ways to see the solar eclipse. Who among them was being careless?

(i) Ravikiran used a solar eclipse goggle.

(ii) Jyothi used a mirror to project the Sun's image.

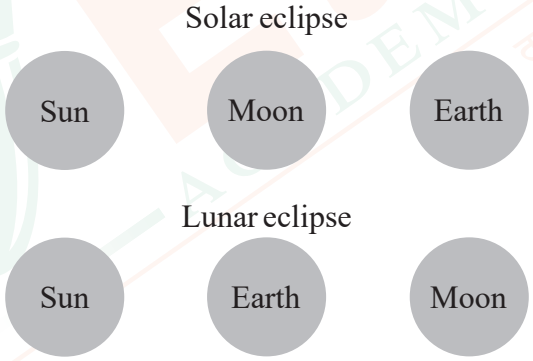
(iii) Adithya saw the Sun directly with his eyes.

(iv) Aruna attended a programme arranged by a planetarium.

ANSWER

Adithya was being careless because looking at the Sun directly with naked eyes can damage eyesight permanently.

8. Fill in the circles in Fig. 12.18 appropriately with one of the following: Sun, Moon, Earth.



ANSWER

Solar Eclipse: Sun → Moon → Earth Lunar Eclipse: Sun → Earth → Moon

Solar: Moon blocks Sun's light from reaching Earth Lunar: Earth blocks Sun's light from reaching Moon

9. The Moon is much smaller than the Sun, yet it can block the Sun completely from our view during a total solar eclipse. Why is it possible?

ANSWER

It is possible because the Moon is much closer to the Earth than the Sun. Due to this, the Moon and the Sun appear to be of almost the same size in the sky. Hence, the Moon can completely cover the Sun's disc during a total solar eclipse.

10. **The Indian cricket team matches in Australia are often held in December. Should they pack winter or summer clothes for their trip?**

ANSWER

They should pack summer clothes because when it is winter in India (Northern Hemisphere), it is summer in Australia (Southern Hemisphere).

11. **Why do you think lunar eclipses can be seen from a large part of the Earth when they happen, but total solar eclipse can be seen by only a small part of the Earth?**

ANSWER

A lunar eclipse occurs when Earth's shadow falls on the Moon. Since Earth is very large compared to the Moon, its shadow can be seen from almost the entire night side of the Earth. In contrast, a solar eclipse happens when the Moon's shadow falls on the Earth. The Moon's shadow is very small compared to Earth, so only a small region of Earth can experience a total solar eclipse.

12. **If the Earth's axis were not tilted with respect to the axis of revolution, explain what would be the effect on seasons?**

ANSWER

If Earth's axis were not tilted, there would be no seasons. All places on Earth would have almost the same climate throughout the year. Days and nights would be nearly equal everywhere, and there would be no variation like summer, winter, spring, or autumn.