

In the World of Stars

EXERCISE [PAGE 136]

Exercise | Q 1.1 | Page 136

Write the proper word in the blank.

When seen from a great distance, the sky seems to be touching the ground along a circle. This circle is called the _____

1. meridian
2. horizon
3. twelve
4. nine
5. apparent
6. celestial
7. ecliptic

Solution: When seen from a great distance, the sky seems to be touching the ground along a circle. This circle is called the horizon.

Exercise | Q 1.2 | Page 136

Write the proper word in the blank.

The _____ is used while defining the zodiac signs.

1. meridian
2. horizon
3. twelve
4. nine
5. apparent
6. celestial
7. ecliptic

Solution: The ecliptic is used while defining the zodiac signs.

Exercise | Q 1.3 | Page 136

Write the proper word in the blank.

Classified according to seasons, one season will have _____ nakshatras.

1. meridian
2. horizon
3. twelve
4. **nine**
5. apparent
6. celestial
7. ecliptic

Solution: Classified according to seasons, one season will have nine nakshatras.

Exercise | Q 1.4 | Page 136

Write the proper word in the blank.

The rising of the sun in the east and its setting in the west is the _____ motion of the sun.

1. meridian
2. horizon
3. twelve
4. nine
5. **apparent**
6. celestial
7. ecliptic

Solution: The rising of the sun in the east and its setting in the west is the apparent motion of the sun.

Exercise | Q 2 | Page 136

A star rises at 8 pm tonight. At what time will it rise after a month? Why?

Solution: The star will rise at 6 pm after a month. This is because each star rises or sets 4 min earlier every day. Thus, in a month, the total advancement in the rising time of a star = $4 \times 30 = 120 \text{ min} = 2 \text{ h}$

So, if a star rises at 8 pm today, it will rise before 2 h i.e. at 6 pm after a month.

Exercise | Q 3 | Page 136

What is meant by 'The sun enters a nakshatra'? It is said that in the rainy season the sun enters the Mrug nakshatra. What does it mean?

Solution: A constellation or nakshatra is present behind the Sun, which gets hidden because of the bright sunlight. So, when we look up in the sky, we are actually seeing both the Sun and the constellation behind it. Thus, when the Earth changes position, it appears to an observer on Earth, as if the Sun has moved from its position and is entering a new constellation or nakshatra.

The Sun entering the Mrug Nakshatra in rainy season means that Mrug Nakshatra or Orion is behind the Sun.

Exercise | Q 4.1 | Page 136

Answer the following question.

What is a constellation?

Solution: A group of stars forming a definite shape is known as a constellation. Few examples of constellations are Orion, Big Dipper.

Exercise | Q 4.2 | Page 136

Answer the following question.

What points should be considered before a skywatch?

Solution: The points to be considered before doing skywatch are:

- The place chosen for skywatching should as far as possible from the city.
- The night chosen for skywatching should be a new moon night.
- Binoculars or telescopes should be used for skywatching.
- Pole Star should be chosen as a reference point for skywatching.
- Skywatching should begin with stars in the west.

Exercise | Q 4.3 | Page 136

Answer the following question.

Is it wrong to say that the planets, stars, and nakshatras affect human life? Why?

Solution: Yes, it would certainly be wrong to say that planets, stars, and nakshatras affect human life. This is because till now there is no credible evidence supporting astrology. Science, as we know, does not follow beliefs but has its basis on observations and evidence. Thus, it has rejected the thoughts and beliefs of many that the planets, stars, and nakshatras affect human life.

Exercise | Q 5 | Page 136

Answer the following question.

Write a paragraph on the birth and lifecycle of stars using figure 20.1.

Solution: The nebula is made up of gas and dust and is the birthplace of stars. Now, from this Nebula, various forms of stars are formed. Some are massive stars whose size is much greater than the size of Sun and some are smaller stars whose size is smaller than the size of Sun. Very large, massive stars burn their fuel much faster than smaller stars and may only last a few hundred thousand years. The smaller stars last for several billion years because they burn their fuel much more slowly. Other stages of a star during its life cycle is

Sun-like Stars: These are particularly similar to the sun in size but there is a lot of variation in terms of temperature. Examples are Alpha Centuria, Tau Ceti, etc.

Red Giants: These stars do not have a hot outer layer as that of the Sun with temperature ranging from 3000 °C to 4000 of but they have a very high luminance than the Sun. They are red in color and their diameter is 10 to 100 times that of the sun.

SuperNova: They are larger and even brighter as compared to the red giant stars and even the Sun. They are also considered as the primary source of heavy elements in the universe.

Binary or Twin Stars: A pair of two stars in which one revolves around the other or they both revolve around a common center is known as binary or twin stars.

Variable Stars: These stars have a variable shape and brightness i.e it keeps on changing whenever they expand or contract. Their brightness decreases when they expand and increases when they contract. Example Polaris or Pole Star.