

CHAPTER 12

BEYOND EARTH

NCERT EXERCISE AND SOLUTIONS - SCIENCE



P1



P2

Q. 1. Match the column:

Column I	Column II
(i) Satellite of Earth	(a) Orion
(ii) Red planet	(b) Venus
(iii) Constellation	(c) Mars
(iv) Planet which is commonly called an evening star	(d) Moon

ANSWER:-

Column I	Column II
(i) Satellite of Earth	(d) Moon
(ii) Red planet	(c) Mars
(iii) Constellation	(a) Orion
(iv) Planet which is commonly called an evening star	(b) Venus

Q. 2. (i) Solve the following riddle.

**My first alphabet is in MAN but not in CAN
My second alphabet is in ACE and also in FAN
My third alphabet is in RAT and not in CAT
My fourth alphabet is in SUN but not in FUN
I am a planet that moves around the Sun.**

(ii) Make two similar riddles by yourself.

ANSWER:-

(i) (i) Solving the Riddle

Let's analyze each clue step by step:

- 1. First letter:** "In MAN but not in CAN" → **M**
- 2. Second letter:** "In ACE and also in FAN" → **A**
- 3. Third letter:** "In RAT but not in CAT" → **R**
- 4. Fourth letter:** "In SUN but not in FUN" → **S**

The word formed is **MARS**, which is a planet that moves around the Sun.



- (ii) Two similar riddles

Riddle 1:

My first letter is in EAR but not in TEAR.
My second letter is in MOON but not in NOON.
My third letter is in STAR and also in MARS.
My fourth letter is in SKY but not in FLY.
I shine brightly at night.

Riddle 2:

My first letter is in BALL but not in CALL.
My second letter is in EARTH and also in HEAR.
My third letter is in MOON but not in NOON.
My fourth letter is in PLANET but not in NET.
I am the natural satellite of the Earth.

Q. 3. Which of the following is not a member of our Solar System?

- (i) Sirius
- (iii) Asteroids
- (ii) Comets
- (iv) Pluto

ANSWER:-

- (i) Sirius

Q. 4. Which of the following is not a planet of the Sun?

- (i) Jupiter
- (iii) Neptune
- (ii) Pluto
- (iv) Saturn

ANSWER:-

- (ii) Pluto

Q. 5. Which is the brighter star, the Pole Star or Sirius?

Answer: Sirius is the brighter star.

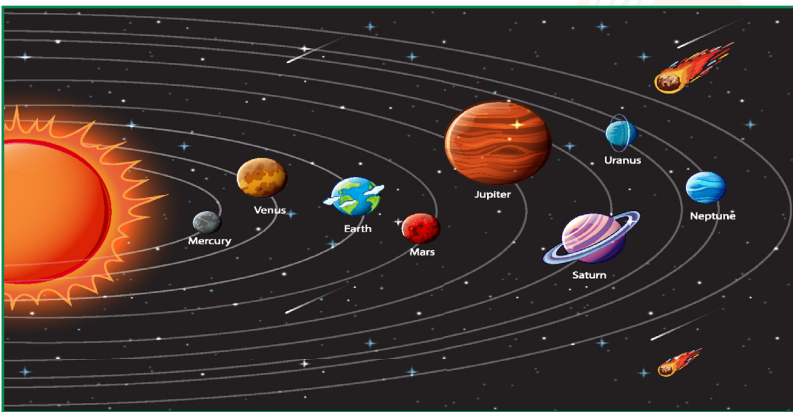


Q. 6. An artist's representation of the Solar System is given in Figure. Is the order of the planets correct? If not, write the correct order in the boxes in the figure.



ANSWER:-

The order of the planets should be: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.



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Q. 7. A portion of night sky with stars is shown in Figure. Look carefully and identify the groups of stars that form the patterns - the Big Dipper and the Little Dipper. Draw lines to connect the stars for these patterns and label them. Also, identify and label the Pole Star. You may refer to Figure 12.4 for help.



ANSWER:-

The Big Dipper is a part of the Ursa Major constellation, while the Little Dipper belongs to Ursa Minor. The Pole Star (Polaris) is located at the end of the handle of the Little Dipper and serves as a fixed point in the night sky, helping with navigation.

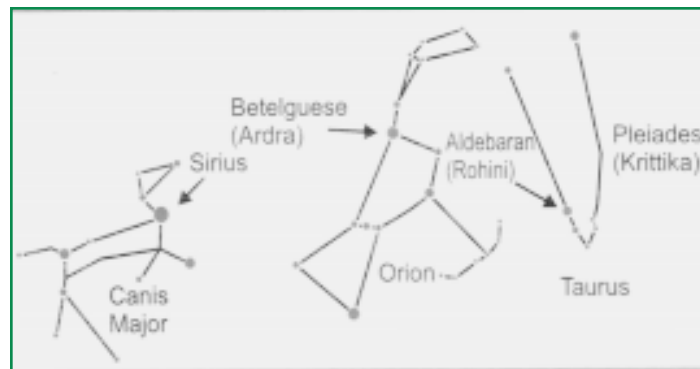
Big Dipper (Ursa Major):

1. Alkaid
2. Mizar



3. Alioth
4. Megrez
5. Phecda
6. Dubhe
7. Merak

These stars form the **Big Dipper** pattern, with **Dubhe** and **Merak** forming the “pointer stars” that help locate the **Pole Star**.



Little Dipper (Ursa Minor):

1. **Polaris (Pole Star)** – Located at the end of the handle, it’s the guiding star for navigation.
2. Kochab
3. Pherkad
4. Gamma
5. Delta
6. Epsilon
7. Zeta

The **Pole Star (Polaris)** is part of the **Little Dipper**, and it’s the brightest star in that constellation.

Q. 8. A portion of the night sky is shown in Figure 12.14. Draw lines to connect the stars for Orion and label the star Sirius. You may refer to Figure 12.3.

ANSWER:-

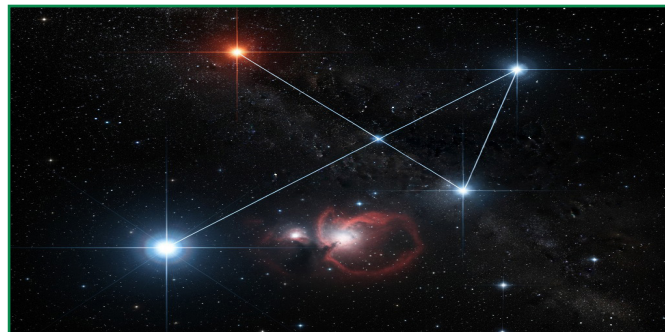
The Orion constellation is one of the most recognizable star patterns in the night sky. It consists of several bright stars, including Betelgeuse, Rigel, and the three stars forming Orion’s Belt: Alnitak, Alnilam, and Mintaka.

Key Stars in Orion:

- **Betelgeuse** – A red supergiant marking Orion’s left shoulder.
- **Bellatrix** – Orion’s right shoulder.
- **Alnitak, Alnilam, Mintaka** – Form **Orion’s Belt** (aligned in a straight line).
- **Saiph** – Orion’s right knee.
- **Rigel** – A bright blue star at Orion’s left knee.

Sirius (The Brightest Star)

- **Sirius**, the brightest star in the night sky, is located near **Orion** in the **Canis Major** constellation. It can be found by following Orion’s Belt downward.
- By connecting these stars with lines and labelling them, one can easily identify **Orion** and locate **Sirius**, aiding in understanding star patterns and navigation.



Orion Constellation and Sirius



Q. 9. You can see stars fading away at dawn and appearing at dusk. During the day we do not see the stars. Explain why.

ANSWER:-

Stars disappear at dawn and reappear at dusk due to the **Sun's brightness**. During the day, **sunlight outshines** the faint light of stars, making them invisible. As the **Sun sets** and the sky darkens, the stars become visible again.

Q. 10. During a clear night, try to observe the Big Dipper 3-4 times at an interval of 2 to 3 hours. Also try to locate the Pole Star each time. Does the Big Dipper appear to move? Draw a rough sketch to illustrate this, mentioning the time in each case.

ANSWER:-

The **Big Dipper** appears to move around the **Pole Star** due to **Earth's rotation**. A sketch would show it in different positions at different times, illustrating its **apparent circular motion** around **Polaris**.

Q. 11. Think about the night sky and write a poem or a story on it.

ANSWER:-

Whispers of the Night Sky
 The stars awaken, soft and bright,
 Scattered jewels in the velvet night.
 The moonlight dances on the sea,
 A silver path calling to me.
 The Big Dipper spins, the Pole Star stays,
 Guiding lost souls through cosmic haze.
 Orion stands with his belt aglow,
 A timeless tale from long ago.
 The night hums secrets, deep and wise,
 A quiet wonder in endless skies.
 As dawn arrives, the stars fade away,
 Promising to return at the end of the day.

The Starry Secret

- Riya loved gazing at the night sky from her rooftop. Every night, she traced the constellations with her fingers, imagining them as stories written in the stars. But one evening, something unusual happened.
- A small twinkling star near **Orion's Belt** blinked—once, twice, three times. It wasn't just shining; it was **trying to tell her something**. Curious, she grabbed her notebook and began noting down the pattern. It felt like a **code**.



- The next night, the star blinked again, forming the same pattern. Riya compared her notes and realized—it spelled the word “**LOOK.**”
- Heart racing, she adjusted her telescope and pointed it towards the mysterious star. And there, hidden in the vast darkness, was a **faint, glowing comet**, making its way across the sky.
- She had discovered something special, a secret only the **night sky** had whispered to her. And as the comet streaked across the heavens, Riya smiled, knowing that the stars had chosen her to witness their magic.



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