



CHAPTER- 17

STARS AND THE SOLAR SYSTEM

SOLUTIONS:

Exercises

Choose the correct answer in Questions 1-3.

1. Which of the following is NOT a member of the solar system?
 - (a) An asteroid
 - (b) A satellite
 - (c) A constellation
 - (d) A comet

Ans:(c) A constellation

2. Which of the following is NOT a planet of the sun?
 - (a) Sirius
 - (b) Mercury
 - (c) Saturn
 - (d) Earth

Ans: (a)Sirius

3. Phases of the moon occurs because
 - (a) we can see only that part of the moon which reflects light towards us.
 - (b) our distance from the moon keeps changing.
 - (c) the shadow of the Earth covers only a part of the moon's surface.
 - (d) the thickness of the moon's atmosphere is not constant.

Ans: (a) we can see only the part of the moon which reflects light towards us.



4. Fill in the blanks.

- (a) The planet which is farthest from the Sun is _____.
- (b) The planet which appears reddish in colour is _____.
- (c) A group of stars that appear to form a pattern in the sky is known as a _____.
- (d) A celestial body that revolves around a planet is known as _____.
- (e) Shooting stars are actually not _____.
- (f) Asteroids are found between the orbits of _____ and _____.

- Ans:
- (a) Neptune
 - (b) Mars
 - (c) constellation
 - (d) satellite
 - (e) stars
 - (f) Mars, Jupiter

5. Mark the following statements as true (T) or false (F).

- (a) Pole star is a member of the solar system. ()
- (b) Mercury is the smallest planet in the solar system. ()
- (c) Uranus is the farthest planet in the solar system. ()
- (d) INSAT is an artificial satellite. ()
- (e) There are nine planets in the solar system. ()
- (f) Constellation Orion can be seen only with a telescope. ()

- Ans:
- (a) False
 - (b) True
 - (c) False
 - (d) True
 - (e) False
 - (f) False

6. Match items in column A with one or more items in column B.

- | A | B |
|-----------------------------|----------------|
| (i) Inner planets | (a) Saturn |
| (ii) Outer planets | (b) Pole Star |
| (iii) Constellation | (c) Great Bear |
| (iv) Satellite of the Earth | (d) Moon |
| | (e) Earth |
| | (f) Orion |
| | (g) Mars |

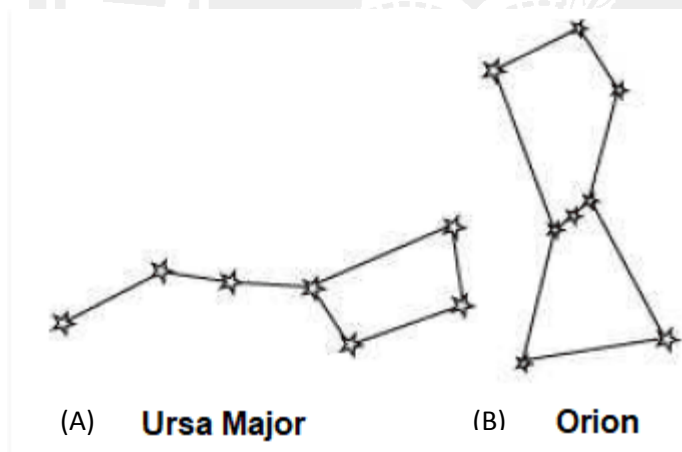
Ans:

- (i) Inner planets – (e) Earth, (g) Mars
- (ii) Outer planets – (a) Saturn
- (iii) Constellation – (c) Great Bear, (f) Orion
- (iv) Satellite of the Earth- (d) Moon

7. In which part of the sky can you find Venus if it is visible as an evening star?
 Ans: We can see Venus just after sunset in the western part of the sky if it is visible as an evening star.
8. Name the largest planet of the solar system.
 Ans: Jupiter is the largest planet of the solar system.
9. What is constellation? Name any two constellations.
 Ans: A group of stars forming a recognizable shape is called constellation.
 Two constellations are:- (i) Great Bear, and (ii) Orion

10. Draw sketches to show the relative positions of prominent stars in (a) Ursa Major and (b) Orion

Ans:



11. Name two objects other than planets which are members of the solar system.
 Ans: Two objects other than the planets that are members of the solar system are comets and asteroids.

12. Explain how you can locate the Pole Star with the help of Ursa Major.

Ans: We can locate the Pole Star with the help of Ursa Major by the following ways:-

- (i) First, we have to locate Ursa Major and look at the two stars at the end of Ursa Major.
- (ii) Then, imagine a straight line passing through these stars and extend the imaginary line towards the north direction.
- (iii) This line will lead to a star which is not too bright. This is the Pole star.

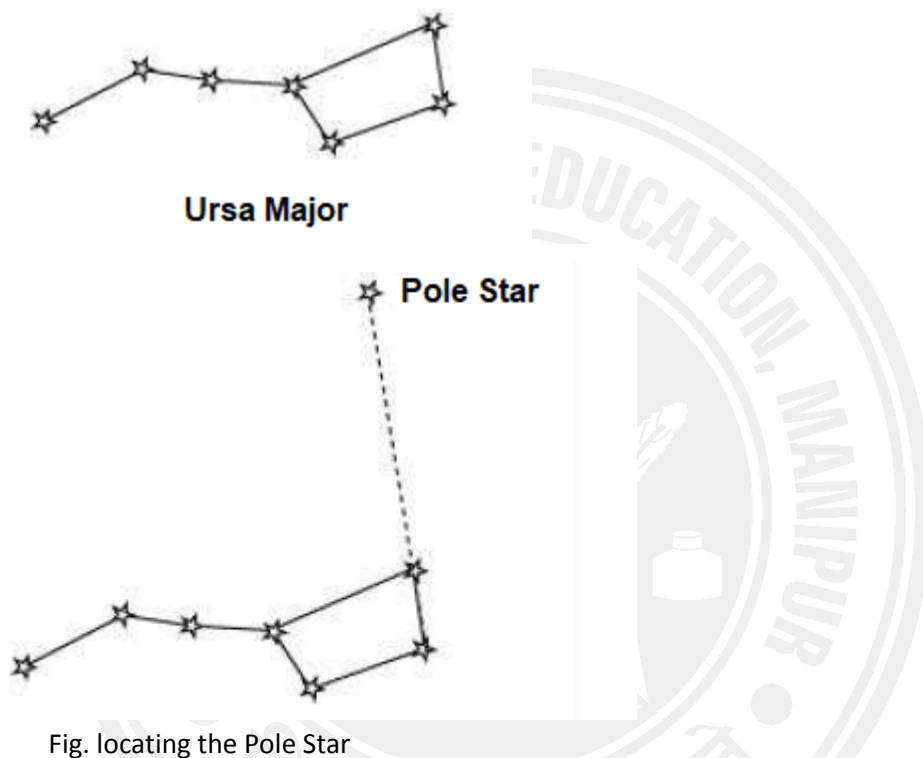


Fig. locating the Pole Star

13. Do all stars in the sky move? Explain.

Ans: All stars, except Pole Star, appear to move from east to west as the Earth rotates from west to east. But Pole Star is situated close to the direction of the Earth's axis. So, it does not appear to move.



DEPARTMENT OF EDUCATION
Government of Manipur

14. Why is the distance between stars expressed in light years? What do you understand by the statement that a star is eight light years away from the earth?

Ans: The stars are millions of Kilometres far away from the Earth. It is, therefore, inconvenient to express in kilometre. Its distance is measured in Light Year. One light year is the distance travelled by the light in one year.

The statement that a star is eight light years away from the Earth means it takes eight years for a light from a star to reach the Earth.

15. The radius of Jupiter is 11 times the radius of the Earth. Calculate the ratio of the volumes of Jupiter and the earth. How many Earths can Jupiter accommodate?

Ans: The radius of the Earth = R

Then, the radius of the Jupiter = $11R$

$$\text{Volume of the Earth} = \frac{4}{3}\pi R^3$$

$$\text{Volume of the Jupiter} = \frac{4}{3}\pi(11R)^3$$

$$\text{The ratio of the volumes of the Jupiter to the Earth} = \frac{\frac{4}{3}\pi(11R)^3}{\frac{4}{3}\pi R^3}$$

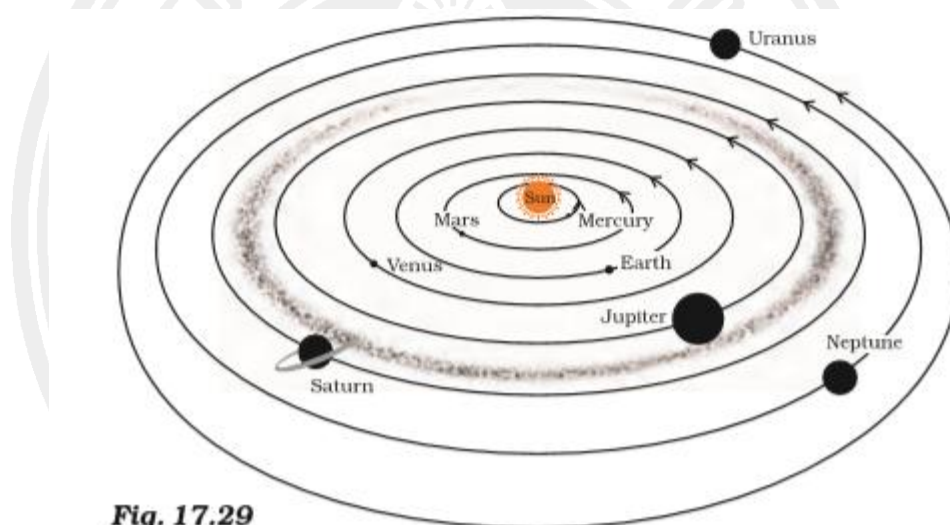
$$= 11^3/1$$

$$= 1331:1$$

Since, the ratio of the volumes is 1331:1, Jupiter can accommodate 1331 Earths.



16. Boojho made the following sketch (Fig. 17.29) of the solar system. Is the sketch correct? If not, correct it.



Ans: The sketch is incorrect. The positions of Venus and Mars and that of Uranus and Neptune are interchanged. The position of asteroids placed between the orbits of Jupiter and Saturn is also incorrect. The asteroids should be placed between the orbits of Mars and Jupiter. The correct sketch is given below.



DEPARTMENT OF
Government of Manipur

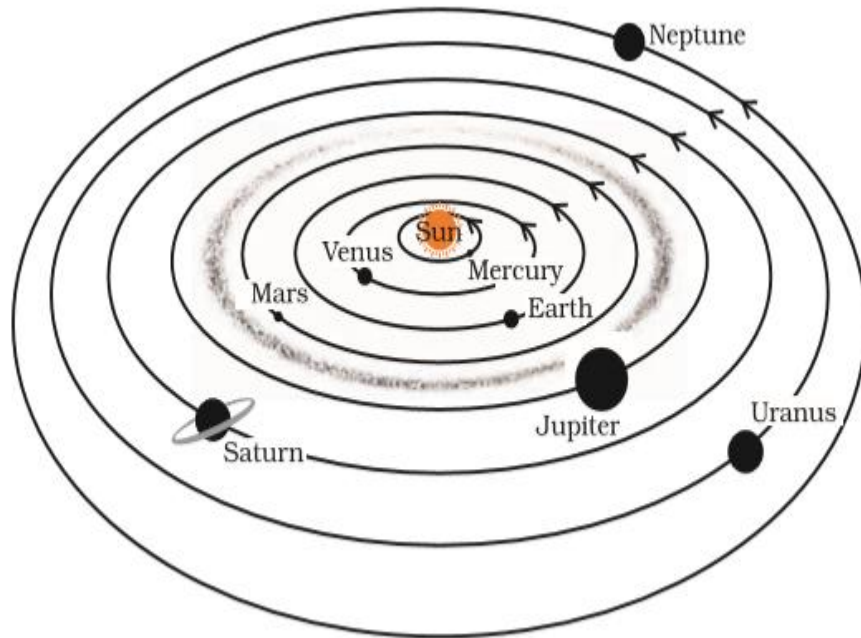


Fig. 17.17 : The solar system (not to scale)

Extra Questions and Answers

1. Name the brightest star?
Ans: The brightest star is Sirius.
2. Which planet is known as the red planet?
Ans: The planet Mars is known as the red planet.
3. Name the nearest star after the Sun.
Ans: Alpha Centauri.
4. Why are we not able to see the stars during the day?
Ans: We are not able to see the stars during the day because of the bright sunlight.
5. Why do we see only one side of the moon?
Ans: We see only one side of the moon because the moon completes one rotation on its axis as it completes one revolution around the Earth.
6. Why do stars appear like points?
Ans: Stars appear like a point because they are millions of kilometers far away from the Earth.
7. What keeps the celestial bodies revolving round the Sun?

Ans: The gravitational attraction between the Sun and the celestial bodies keeps them revolving round the Sun.

8. Can we hear any sound on the moon?

Ans: No, we cannot hear any sound on the moon because the moon has no atmosphere and sound cannot travel when there is no medium.

9. Differentiate between planets and stars.

Ans. The differences between the planets and the stars are as follows:-

Sl.No.	Planets	Stars
1.	Planets do not have light of their own.	Stars have their own light.
2.	Planets do not twinkle at night.	Stars twinkle at night.
3.	Planets keep changing their positions with respect to the stars.	Stars do not change their position with respect to each other as they are fixed at one point.

10. Explain in brief the phases of the moon.

Ans: The various shapes of the bright side of the moon as seen during a month are called phase of the moon. Its various phases are:-

- (i) The day on which the whole disc of the moon is visible is known as the full moon day.
- (ii) Thereafter, every night the size of the bright part of the moon appears to become thinner and thinner.
- (iii) On the fifteenth day the moon is not visible. This day is known as the new moon day.
- (iv) The next day, only a small portion of the moon appears in the sky. This is known as crescent moon.
- (v) Then again the moon grows larger every day. On the fifteenth day once again we get full view of the moon.



DEPARTMENT OF EDUCATION (S)
Government of Manipur

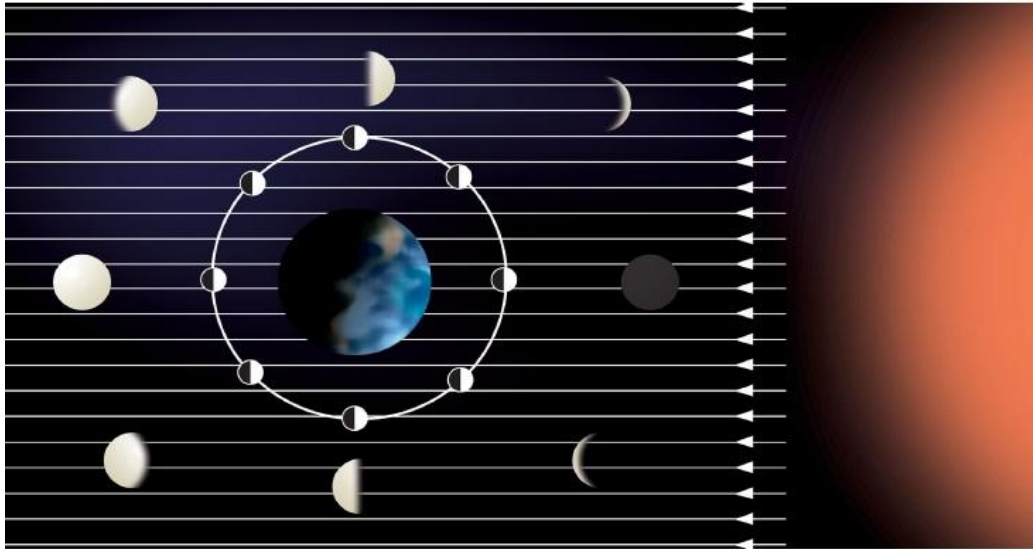


Fig. 17.5: Positions of the moon in its orbit and its corresponding phases

