CBSE NCERT Solutions for Class 8 Science Chapter 17

Back of Chapter Questions

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

Solution: (C)

The stars forming a group that has a recognisable shape is called a constellation. It is not part of the solar system.

2. Which of the following is NOT a planet of the sun?

(a) Sirius

(b) Mercury

(c) Saturn

(d) Earth

Solution: (A)

Sirius is a star and not the planet of the sun.

3. Phases of the moon occur 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 moon's surface.

(d) the thickness of the moon's atmosphere is not constant.

Solution: (A)

We see the moon because the sunlight falling on it gets reflected towards us. Therefore, we only see that part of the moon, from which the light of the Sun is reflected 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 _____.

Solution:

(a) Neptune

In 2006, the International Astronomical Union (IAU) adopted a new definition of a planet. Pluto does not fit this definition. It is no longer a planet of the solar system. Hence the farthest planet from the Sun is Neptune.

(b) Mars

Mars appears slightly reddish and, therefore, it is also called the red planet.

(c) constellation

The stars forming a group that has a recognisable shape is called a constellation.

(d) satellite/moon

Any celestial body revolving around another celestial body is called its satellite.

(e) stars

Shooting stars are actually not stars. They are called meteors. A meteor is usually a small object that occasionally enters the earth's atmosphere.

(f) Mars and Jupiter

Asteroids are found between the orbits of Mars and 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 of 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. ( )

Solution:

(a) False

The Sun and the celestial bodies which revolve around it form the solar system. Pole star is not a member of the solar system.

(b) True

Yes, Mercury is the smallest planet of the solar system.

(c) False

The farthest planet from the Sun is Neptune.

(d) True

INSAT (Indian National Satellite System) is an artificial satellite made by India.

(e) False

There are eight planets in the solar system.

(f) False

Orion is a well-known constellation that can be seen during winter in the late evenings.

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

Solution:

(i)	Inner planets	(g) Mars (e)	Earth
(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?

Solution:

When Venus is visible as an evening star it appears in the western sky just after sunset.

8. Name the largest planet of the solar system.

Solution:

Jupiter (Brihaspati) is the largest planet in our solar system.

9. What is a constellation? Name any two constellations.

Solution:

The stars forming a group that has a recognisable shape is called a constellation. The two main 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

Solution:

(a) Ursa Major (Saptarshi)

There are seven prominent stars in this constellation. It appears like a big ladle or a question mark. There are three stars in the handle of the ladle and four in its bowl.

Ursa Major

(b) Orion

Orion is also called the Hunter. The three middle stars represent the belt of the hunter. The four bright stars appear to be arranged in the form of a quadrilateral.

Orion

11. Name two objects other than planets which are members of the solar system.

Solution:

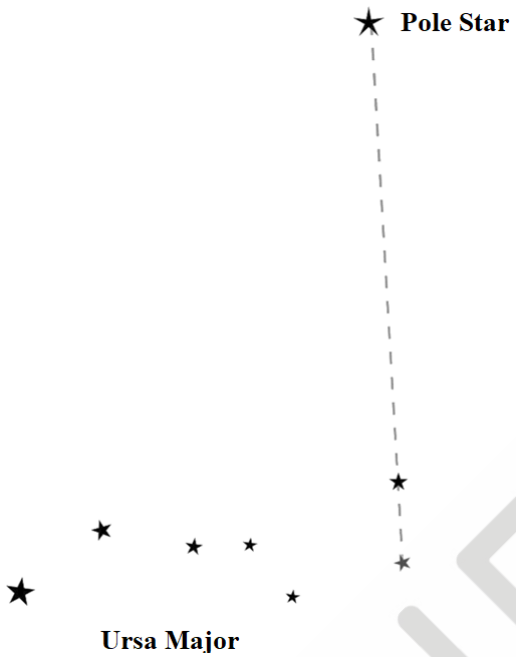
Apart from planets, other two members of the solar system are asteroids and meteors.

(Additional: Comets are also part of the solar system.)

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

Solution:

Pole star can be located by imagining a straight line through the last two stars as shown in the figure. Extend this imaginary line towards the north direction. (About five times the distance between the two stars). This line will lead to a star which is not too bright. This is the Pole Star.



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

Solution:

No, the earth rotates from west to east about its axis. So, all the stars in the sky appear to move from east to west except the pole star. The pole star does not appear to move in the sky because it is located above the axis of rotation of the earth in the north direction.

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?

Solution:

The distance between stars is very large (in billions of billions of kilometre). To read and understand these large distances conveniently we use another unit of distance light year.

A light year is a distance travelled by light in one year. We know that the speed of light is about 300,000 km per second. So, one light year equals to 9.46×10^{12} km. So, if a star is eight light years away from the earth this means its distance from earth is $8 \times (9.46 \times 10^{12})$ km or 7.57×10^{13} km.

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?

Solution:

Let the radius of the earth is R

The radius of Jupiter will be 11 R

Now,

The volume of Earth $= \frac{4}{3}\pi R^3$

The volume of Jupiter $= \frac{4}{3}\pi(11R)^3$

The ratio of the volume of Jupiter and the Earth $= \frac{\frac{4}{3}\pi(11R)^3}{\frac{4}{3}\pi R^3} = 11^3 = 1331$

Hence Jupiter can accommodate 1331 Earth.

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

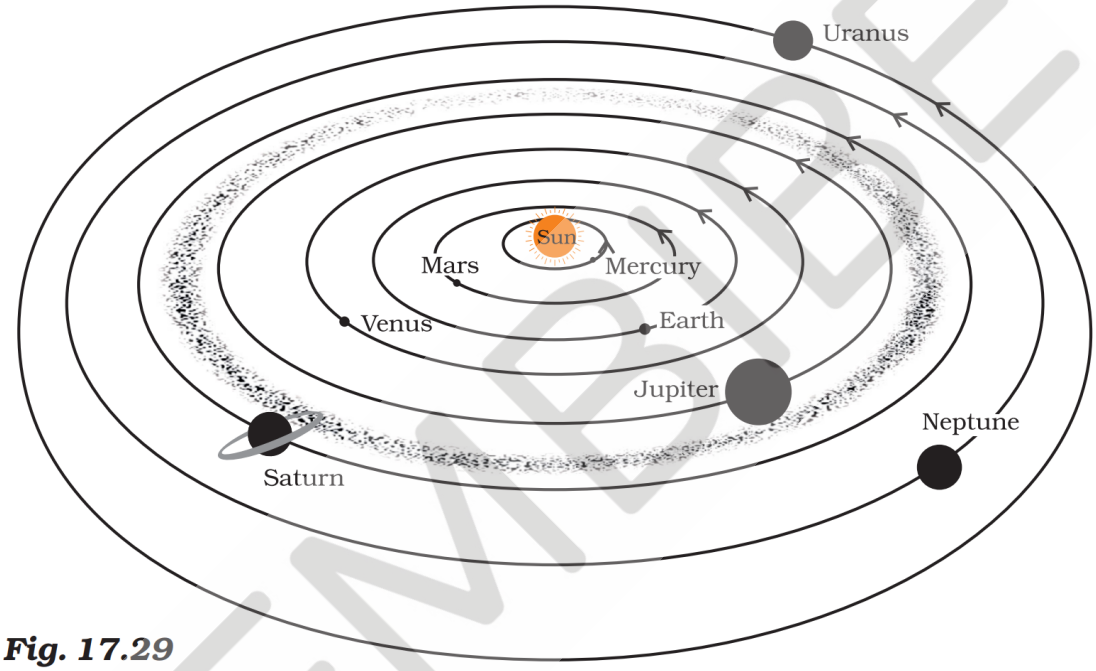
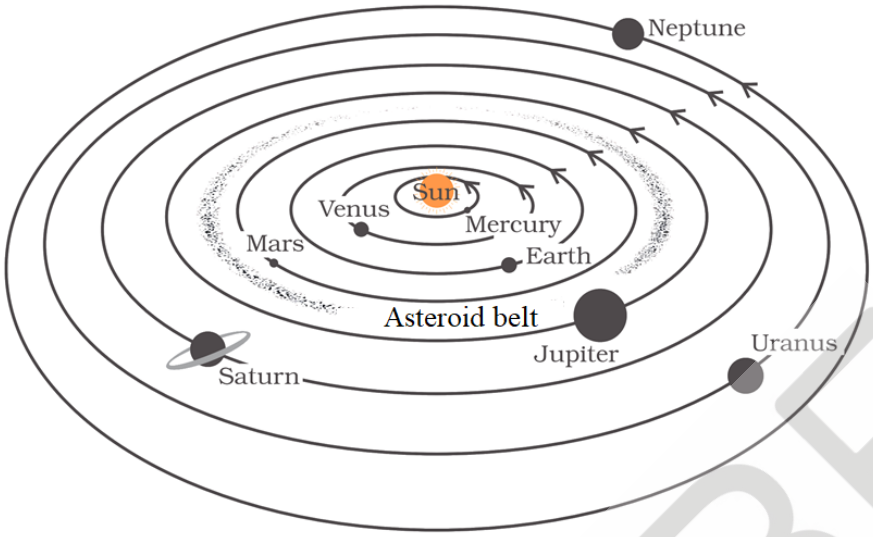


Fig. 17.29

Solution:

No, this sketch is not correct. Boojho has interchanged the place of Venus and Mars; Neptune and Uranus with each other. He has also shown the asteroid belt between Jupiter and Saturn, which is not correct. The asteroid belt is located in the gap between Mars and Jupiter.

The correct sketch of the solar system is as shown below.


Neptune
Sun
Venus
Mercury
Mars
Earth
Asteroid belt
Jupiter
Uranus
Saturn