

Science

(Chapter – 17) (Stars and the Solar System)
(Class – VIII)

Exercises

Question 1:

Choose the correct answer in Question:

Which of the following is NOT a member of the solar system?

- (a) An asteroid
- (b) A satellite
- (c) A constellation
- (d) A comet

Answer 1:

- (c) A constellation

Question 2:

Choose the correct answer in Question:

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

- (a) Sirius
- (b) Mercury
- (c) Saturn
- (d) Earth

Answer 2:

- (a) Sirius

Question 3:

Choose the correct answer in Question:

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.

Answer 3:

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

Question 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 _____.

Answer 4:

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

Question 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. ()

Answer 5:

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

Question 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 |

Answer 6:

- | A | B |
|-----------------------------|---------------------------|
| (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 |

Question 7:

In which part of the sky can you find Venus if it is visible as an evening star?

Answer 7:

Venus become visible after sunset that is why it is called evening star. It appears in the *western horizon*.

Question 8:

Name the largest planet of the solar system.

Answer 8:

Jupiter is the largest planet in the solar system.

It is so large that about 1300 earths can be placed inside this giant planet. However, the mass of Jupiter is about 318 times that of our Earth.

Question 9:

What is a constellation? Name any two constellations.

Answer 9:

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

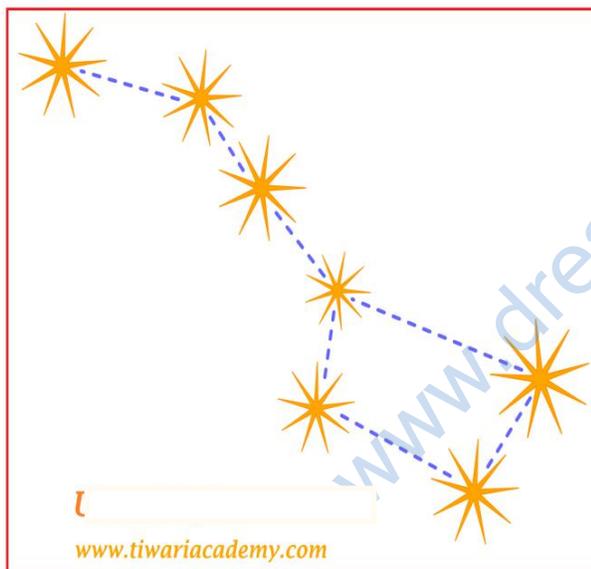
Examples: Great Bear, Orion, Cassiopeia and Leo Major.

Question 10:

Draw sketches to show the relative positions of prominent stars in

(a) Ursa Major and (b) Orion

Answer 10:



Question 11:

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

Answer 11:

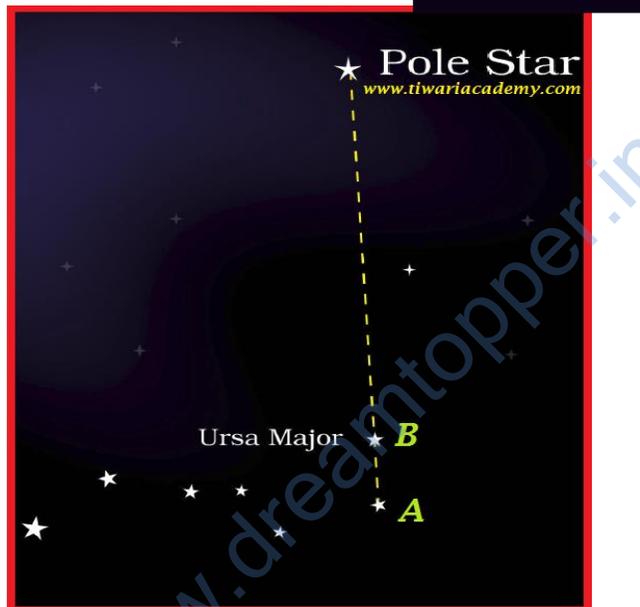
Comets, Asteroids and Meteors.

Question 12:

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

Answer 12:

Look at the two stars (Marked A and B in the figure) at the end of Ursa Major. Imagine a straight line passing through these stars. Extend this imaginary line (From A to B) 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*.



Question 13:

Do all the stars in the sky move? Explain.

Answer 13:

All the stars move in the sky from east to west. Earth rotates about its axis and the pole star, which is situated in the direction of the earth's axis. It does not appear to move.



Question 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?

Answer 14:

Stars are at a distance of millions of kilometres from the earth. Thus, these large distances are expressed in light years. One light year is the distance travelled by light in one year. One light year is equal to 9.46×10^{12} km.

If a star is eight light years away from the Earth. It means that the time taken by light to travel in eight years. So, the distance between the star and the Earth is given by $8 \times (9.46 \times 10^{12})\text{km} = 7.6 \times 10^{13}$ km.

Question 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?

Answer 15:

Let the radius of the Earth be R , so the radius of Jupiter be $11R$.

$$\frac{\text{Volume of Jupiter}}{\text{Volume of Earth}} = \frac{\frac{4}{3}\pi(11R)^3}{\frac{4}{3}\pi R^3} = \frac{1331}{1} = 1331:1$$

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

Question 16:

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

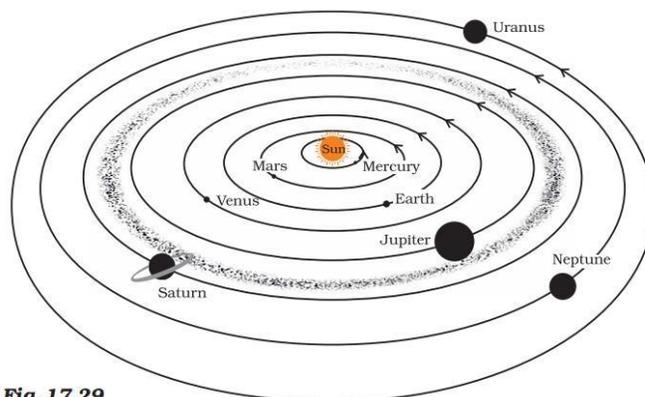


Fig. 17.29

Answer 16:

Positions of Mars & Venus and Uranus & Neptune should be interchanged. The correct positions of the planets are as follows:

