



BYJU'STM
The Learning App

Our Universe



Class-4



QUESTIONS



Planet Hunt

Planet Xeno has run out of resources as their sun is dying. Their space-ship is sailing in the depths of space. The scientists of planet Xeno are trying to find refuge in the neighbouring solar systems of other stars. They have shortlisted a star system of **Kepler 198** which has the following planets from closest to the farthest to their parent star.

Kepler 198a



Kepler 198a is a small rocky planet with no visible atmosphere because of its closeness to the star and due to its small size. The planet has no liquid water due to its high average temperature. It is very close to the parent star and therefore it should be very hot on the surface, the temperature being around **220 °C**.

Kepler 198b



Kepler 198b is the second closest planet to **Kepler 198**. It has thick clouds of carbon dioxide and other gases covering it. The surface is not visible from outer space but it looks like it is a dry place with no water, as per the data that scientists have collected earlier. The average temperature on the surface of the planet is **150 °C**. The planet is as big as planet Earth.





Planet Hunt

Kepler 198c



Kepler 198c is 3 times bigger than the planet Earth in size. But it is approximately the same distance from its star, as Earth is from our Sun. **90%** of this planet is covered with what looks like **liquid water**. The planet has an **atmosphere** and has clouds indicating a healthy **water cycle**. The average temperature on the surface of this planet is **25 °C**.

Based on what you know about the Earth and referring to the information above, answer the questions given below:

1. What are the three important conditions for a planet to be habitable?

a. _____

b. _____

c. _____

2. Which of the three planets are most suitable for life and why?





Help Us Navigate

People of planet Xeno are having a hard time travelling through our Solar System. The names of our planets are hidden in the grid given below along with other objects present in our Solar System. Can you help the residents of Xeno identify these?

S	O	H	S	E	F	O	Y	E	C	A	Y	G	T
G	G	V	P	I	V	E	N	U	S	R	E	Q	C
S	F	V	O	C	O	M	E	T	A	W	E	E	D
A	E	R	F	G	H	V	P	I	O	P	J	A	D
T	H	U	Y	Y	M	D	T	S	S	D	F	R	S
U	J	H	G	H	J	F	U	A	S	R	A	T	F
R	J	M	O	O	N	V	N	A	S	F	S	H	Y
N	N	B	F	A	Q	W	E	D	M	D	R	S	I
C	X	V	E	J	U	P	I	T	E	R	T	D	P
V	B	D	W	S	E	S	Y	H	R	S	Y	S	H
X	S	T	A	R	E	F	G	K	C	A	P	U	F
A	A	S	Q	C	E	D	Y	L	U	Q	O	N	S
Z	E	X	E	D	S	D	E	P	R	W	I	T	E
U	R	U	R	A	N	U	S	O	Y	R	G	G	G





Help Us Navigate

Answer:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

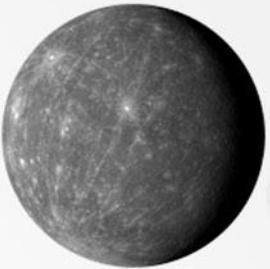


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Match the Planets

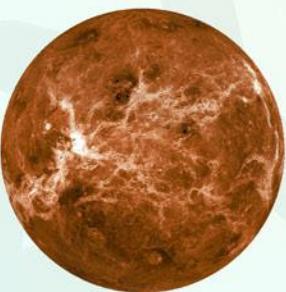
In the table given below identify the planet based on the picture and the facts mentioned in column A and match them with the names mentioned in column B.

PLANET INFORMATION (A)	PLANET NAMES (B)
 <p>It is the closest planet to the Sun and due to its proximity it is not easily seen except during twilight.</p>	JUPITER
 <p>A day on this planet takes longer than a year, because it takes 243 Earth days to rotate once on its axis. Its orbit around the Sun takes 225 Earth days as compared to the Earth's 365.</p>	MARS





Match the Planets

PLANET INFORMATION (A)	PLANET NAMES (B)
 <p>It is the eighth planet from the Sun making it the most distant in the Solar System. This gas giant planet may have formed much closer to the Sun in early Solar System history before migrating to its present position.</p>	URANUS
 <p>One of the only planets that has been known to have water in the form of ice. Almost the same mass and chemistry as that of planet Earth, humans might one day decide to settle on this planet!</p>	VENUS





Match the Planets

PLANET INFORMATION (A)	PLANET NAMES (B)
 <p>The only planet in our Solar System not to be named after a Greek or Roman deity and is the only known planet to support life.</p>	NEPTUNE
 <p>It is the largest planet in the entire solar system and is two and a half times more massive than all the other planets in the Solar System combined.</p>	SATURN



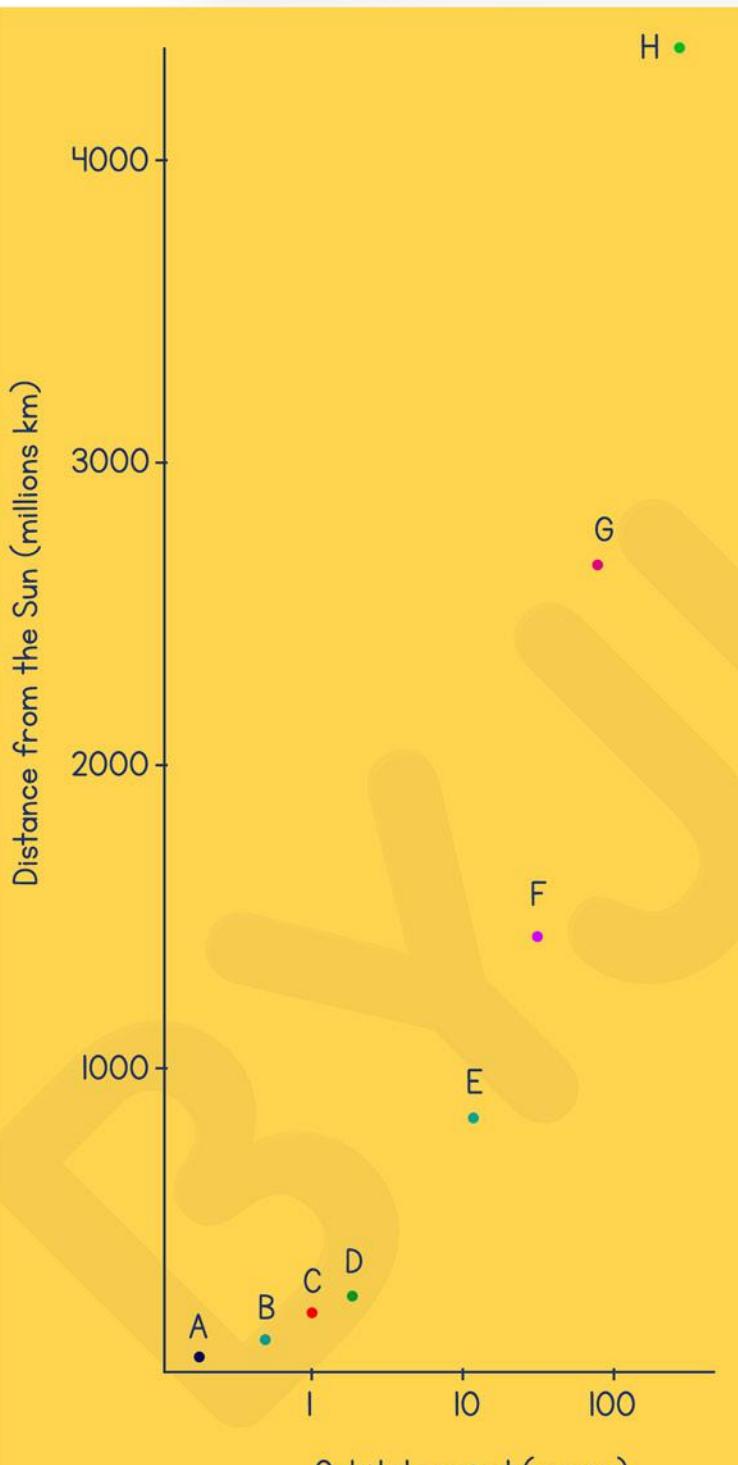


Match the Planets

PLANET INFORMATION (A)	PLANET NAMES (B)
 <p>The rings of this planet are made mostly of chunks of ice and small amounts of carbonaceous dust. The rings stretch out more than 120,700 km from the planet, but are amazingly thin: only about 20 meters thick.</p>	EARTH
 <p>It became the first planet discovered with the use of a telescope. The planet is tipped over on its side with an axial tilt of 98 degrees. It is often described as "rolling around the Sun on its side."</p>	MERCURY



Scrambled Orbits



The graph shows the relationship between orbital period of planets and their average distance from the Sun. To help you out, the names of the planets are specified in the table below, but they are scrambled. Study the graph and unscramble the names below and write it down in the space next to it.

A	REYRCUM	
B	USVNE	
C	THERA	
D	RSMA	
E	TEPIRUJ	
F	NUTSAR	
G	NURUSA	
H	TENEUNTP	



The Solar System

(Choose the correct option)

Fun Fact #1

The Solar System formed around 4.6 billion years ago.

Q.1 Which star is at the centre of our Solar System?

- A. Jupiter
- B. Proxima Centauri
- C. Alpha Centauri
- D. Sun

Fun Fact #2

The inner planets (also known as terrestrial planets) are smaller and made mostly of rocks and metals.

Q.2 Which is the densest planet in the entire Solar System?

- A. Earth
- B. Mars
- C. Jupiter
- D. Pluto





The Solar System

(Choose the correct option)

Fun Fact #3

For thousands of years humans were unaware of the Solar System and believed the Earth was at the centre of the Universe.

Q.3 Which is the hottest planet in the Solar System?

- A. Mercury
- B. Venus
- C. Earth
- D. Jupiter

Fun Fact #4

Venus rotates in the opposite direction as compared to other planets.

Q.4 How long does it take for the moon to complete one revolution around the Earth?

- A. 1 month
- B. 14 days
- C. 27 days
- D. 7 days





The Solar System

(Choose the correct option)

Fun Fact #5

99.86% of the Solar System's mass is found in the Sun and the majority of the remaining 0.14% is contained within its eight planets.

Q.5 How many natural satellites does the Earth have?

- A. 0
- B. 1
- C. 2
- D. 3

Fun Fact #6

The nucleus of a comet is made up of ice and can range from a few meters to a few kilometers across.

Q.6 Which planet has approximately the same landmass as that of the Earth?

- A. Venus
- B. Jupiter
- C. Mars
- D. Pluto





The Solar System

(Choose the correct option)

Fun Fact #7

Despite being the closest planet to the Sun, Mercury is not the hottest. Venus due to its runaway greenhouse effect holds the position for the hottest planet in the Solar System.

Q.7 Which is the largest of all the gas giants?

- A. Uranus
- B. Neptune
- C. Saturn
- D. Jupiter

Fun Fact #8

Mars has the largest dust storms in the solar system.

Q.8 Now that Pluto is no longer included in the list, how many planets are there in the Solar System?

- A. Ten
- B. Nine
- C. Eight
- D. Seven





The Solar System

(Choose the correct option)

Fun Fact #9

One year on pluto is over 248 Earth years.

Q.9 The _____ is formed by a collection of small rocky bodies between Mars and Jupiter.

- A. Asteroid belt
- B. Kuiper belt
- C. Oort Cloud
- D. Comets

Fun Fact #10

The surface temperature of the Sun is around 6000° C.

Q.10 Which gas giant has the largest collection of rings?

- A. Neptune
- B. Uranus
- C. Jupiter
- D. Saturn



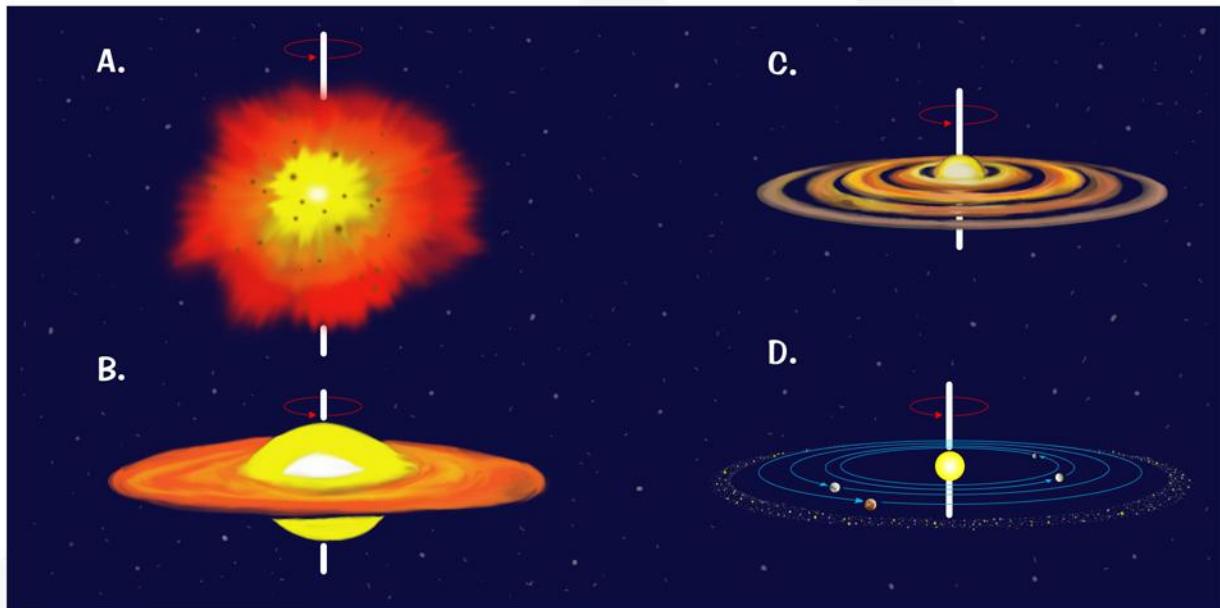


Story of a Gas Cloud

Read the following passage:

Time: 3 mins

About **4.6 billion** years ago our Solar System was just a cloud of gases and dust particles. All of a sudden, a random disturbance came along and caused some of the particles to clump up and form a ball. This ball grew bigger and hotter until the Sun was finally formed. Similarly more of these particles clumped up to form the **planets, satellites, meteorites, asteroids** and **comets**.



Heavier planets like the gas giants formed very close to the Sun but then moved out due to their heavy **mass** and settled in the orbits we see today. The **Sun** is the source of **energy** and **light** for the entire Solar System. The planets closest to the sun are **rocky** whereas those farther away are **gas giants**.



Story of a Gas Cloud

Now answer the following questions

Q1. When was the Solar System formed?

Answer: _____

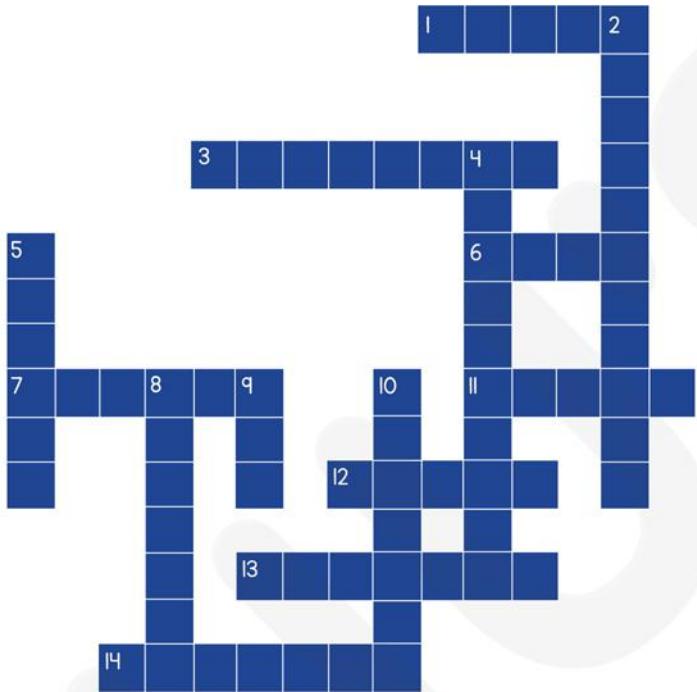
Q2. Sun is the source of _____ and _____ for the entire Solar System.

Q3. After the formation of the Sun, the leftover particles clumped to form which celestial bodies?

Answer: _____

Q4. The planets closest to the sun are _____ in nature whereas those farther away are _____.

Know Your Solar System



ACROSS:

- I. Brightest planet in the night sky.
3. Our solar system is part of this galaxy.
6. Nicknamed "the red planet"
7. Third largest planet in our solar system.
- II. Now called a dwarf planet.
12. Covers 70 percent of the Earth's surface.
13. Largest planet in our solar system.
14. Planet closest to the sun.

DOWN:

2. The collection of eight planets and their moons in orbit around the sun.
4. Layer of gas that surrounds a planet
5. Planet with enormous rings.
8. Planet farthest from the Sun.
9. Closest star to Earth.
10. Force that keeps a planet in its orbit.





Duke the Spaceman

Duke the Spaceman here is on his mission to travel to all the gas giants in our Solar System. Currently he is orbiting the planet Neptune which is the farthest from the Sun. On his journey he had sent reports of what he found on the planets to the ground crew. But, due to the distance most of the messages have become corrupted and are unreadable. Fill in the missing data in the report and help the ground crew know more about these gas giants!



Day 0



Duke leaves planet earth on his mission to study the gas giants.

Day 732



Duke the spaceman makes his closest approach to Jupiter.

Jupiter's Report:
Planet Number: 5

Type: Gas Giant

Interesting feature: The great _____ spot.

Speed of rotation: Very high

Number of moons: 69

There is a storm raging on the surface of Jupiter for over _____ years.

Day 900

Duke the spaceman makes his closest approach to the planet Saturn.

Saturn's Report:

Planet Number: _____

Type: _____

Interesting feature:

Massive _____ structure that surrounds the planet.

Speed of rotation: High

Number of moons: 53

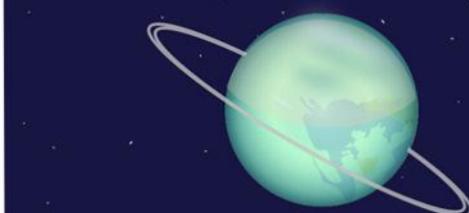
Saturn's most interesting feature is made of _____ and _____





Duke the Spaceman

Day 1242



Duke the Spaceman makes his first encounter with the planet Uranus.

Uranus Report:

Planet Number: _____

Type: Ice giant

Interesting feature:

Tilted axis of _____

Speed of rotation: High

Number of moons: 27

Uranus spins on its side, it literally rolls around the sun.

Day 1604

Duke finally reaches Neptune the farthest giant.



Fun Fact:

As Uranus and Neptune are mostly made of gas and ice, they are called both gas giants and ice giants.

Neptune's Report:

Planet Number: _____

Type: _____

Interesting feature:

Uranus has a storm raging on its surface just like Jupiter's. This spot is known as The Great _____ Spot.

Speed of rotation:

Moderate

Number of moons: 14

Neptune is the coldest planet



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ANSWERS

Planet Hunt

1.
 - a. Liquid water
 - b. Favourable temperature.
 - c. An atmosphere.
2. **Kepler 198c** qualifies as a suitable planet as its average temperature is **25 °C**, which is favourable for **liquid water** to exist. **Clouds** indicate that there is an atmosphere and an active water cycle just like on **Earth**.





Help Us Navigate

S	O	H	S	E	F	O	Y	E	C	A	Y	G	T
G	G	V	P	I	V	E	N	U	S	R	E	Q	C
S	F	V	O	C	O	M	E	T	A	W	E	E	D
A	E	R	F	G	H	V	P	I	O	P	J	A	D
T	H	U	Y	Y	M	D	T	S	S	D	F	R	S
U	J	H	G	H	J	F	U	A	S	R	A	T	F
R	J	M	O	O	N	V	N	A	S	F	S	H	Y
N	N	B	F	A	Q	W	E	D	M	D	R	S	I
C	X	V	E	J	U	P	I	T	E	R	T	D	P
V	B	D	W	S	E	S	Y	H	R	S	Y	S	H
X	S	T	A	R	E	F	G	K	C	A	P	U	F
A	A	S	Q	C	E	D	Y	L	U	Q	O	N	S
Z	E	X	E	D	S	D	E	P	R	W	I	T	E
U	R	U	R	A	N	U	S	O	Y	R	G	G	G





Match the Planets

1. Mercury



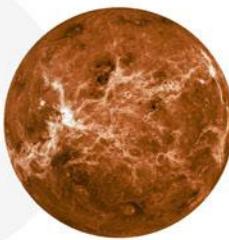
2. Venus



3. Neptune



4. Mars



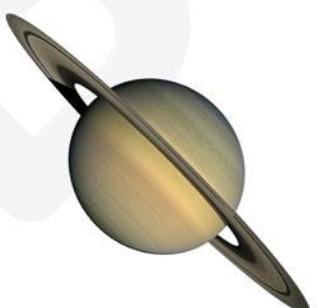
5. Earth



6. Jupiter



7. Saturn



8. Uranus



Scrambled Orbits

- A. Mercury
- B. Venus
- C. Earth
- D. Mars
- E. Jupiter
- F. Saturn
- G. Uranus
- H. Neptune





The Solar System

- Q.1. Sun
- Q.2. Earth
- Q.3. Venus
- Q.4. 27 days
- Q.5. 1
- Q.6. Mars
- Q.7. Jupiter
- Q.8. Eight
- Q.9. Asteroid belt
- Q.10. Saturn



Story of a Gas Cloud

Q1. About **4.6** billion years ago.

Q2. Sun is the source of **light** and **energy** for the entire Solar System.

Q3. **Planets, satellites, meteorites, asteroids and comets.**

Q4. The planets closest to the sun are **rocky** in nature whereas those farther away are **gas giants.**

Know Your Solar System





Duke the Spaceman

Jupiter's Report:

Planet number: 5

Type: Gas Giant

Interesting feature: The Great **Red** spot.

Speed of rotation: Very High

Number of moons: 69

*The great red spot is a storm raging on the surface of Jupiter for over **200** years.*

Saturn's Report:

Planet number: 6

Type: **Gas Giant**

Interesting feature: Massive **Ring** Structure.

Speed of rotation: High

Number of moons: 53

*Saturn has massive rings which are made of **Ice** and **Rock**.*

Uranus Report:

Planet number: 7

Type: Ice Giant

Interesting feature: Tilted Axis of **Rotation**.

Speed of rotation: High

Number of moons: 27

Uranus spins on its side, it literally rolls around the sun.

Neptune's Report:

Planet number: 8

Type: **Ice Giant**

Interesting feature: Uranus has a storm raging on its surface just like Jupiter's.

This spot is known as The Great **Dark** Spot.

Speed of rotation: Moderate

Number of moons: 14

Neptune is the coldest of all the gas giants.

