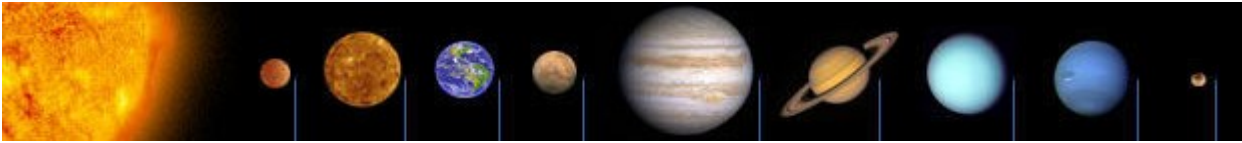


5 THE EARTH SYSTEM

1. What system is shown in the picture? Write names of all the planets.



M....

V...

E...

M...

J...

S...

U...

N...

P...

2. Grammar – word order in questions. Put the parts under A) and B) in the right order

A: questions

1. *the size of Pluto / which / be compared to / celestial body / can ?*
2. *colder and darker / makes / in comparison with / Pluto / the other planets / what ?*
3. *differ from / in which two ways / the other planets / does / Pluto ?*

B: questions

1. *Earth / in comparison with / what / the other planets / makes / unique ?*
2. *Mars and Earth / astronomers / do / believe / is similar about the surface of / what ?*
3. *gas giant planets / what / differ in / do / and terrestrial planets ?*

3. Work in pairs A, B. Read the texts for student A and student B on p.3. Ask and answer the questions above.

4. Exam practice. Ask questions about the underlined parts of sentences. They are the answers to your questions.

Example: Terrestrial, or Earth-like, planets have solid, rocky surfaces.
Which/ What planets have solid, rocky surfaces?

1. Astronomers believe that Mars had rivers and oceans just like Earth.
2. Astronomers believe that Mars had rivers and oceans just like Earth.
3. The rings are made of tiny pieces of rock, dust, or ice.
4. The fact that it is further from the Sun makes Pluto colder and darker than the other planets.
5. In 2006 the International Astronomical Union decided on a new definition of the planet.
6. In 2006 the International Astronomical Union decided on a new definition of the planet.

5. Which expressions/prefixes are used for these meanings? Add an example of a word.

star	– astro (astronomy)	life	–
sun	– sol (solar system)	ball	– sphere (asthenosphere)
water	–	land	– terra (Mediterranean sea)
rock, stone	–	ground	–
gas, vapour	–	coldness	–

6. The Earth System: Put the words from the box back in the gaps.

kingdoms components species phyla subcomponents element subdivided belong contains

The Earth system has two primary 1 _____: the geosphere and the biosphere. The geosphere has four 2 _____: lithosphere (solid Earth), atmosphere (gaseous envelope), hydrosphere (liquid water), and cryosphere (frozen water). Each of these subcomponents can be further 3 _____ into elements. For example, the oceans are an 4 _____ of the hydrosphere. The biosphere (living organisms) 5 _____ about 100 6 _____ organized into five 7 _____ of life forms. Human beings 8 _____ to the kingdom Animalia and are but one 9 _____ of the estimated 20 million to 100 million species in the biosphere.

7. Check the pronunciation of the words listed below (from the introductory part of *Earth's Systems*

Interact 0.10 – 1.30) <https://www.youtube.com/watch?v=BnpF0ndXk-8>

<i>major</i>	<i>metallic core</i>
<i>geosphere</i>	<i>molten rock</i>
<i>hydrosphere</i>	<i>mixture</i>
<i>atmosphere</i>	<i>water vapour</i>
<i>biosphere</i>	<i>groundwater</i>

Watch another part describing interactions. Write one word in each gap. 3.00- 5.37.

1. It is the interaction between Earth's systems that have shaped Earth's history; they will also _____ Earth's future.
2. It is ecosystems that supply food, fuel, oxygen and nutrients needed to _____ life.
3. Earth's systems are dynamic – they continually react to changing _____.
4. Parts of Earth's system seem stable, some change over very long periods of time, while other parts can change very quickly and have a _____ on living things.
5. Changes in part of one system can _____ new changes to that system or to other systems often in surprising and complex ways.
6. Feedbacks can _____ or decrease the original changes and be unpredictable or irreversible.
7. Earth's climate is an example of how complex interactions among systems can _____ relatively sudden and significant changes.
8. Geoscientists have records of interactions among tectonic _____, solar inputs, ocean _____, volcanic activity, vegetation, _____, and human activities.
9. Human activities can cause rapid changes to global and regional temperature _____ and precipitation.

8. Which spheres do you think the following phrases refer to?

A salt water from oceans

B is very diverse

C create air for us to breathe

D top layer of the mantle

E freshwater from glaciers

F eat, breathe, and grow

G droplets, ice particles, etc.

H smaller pieces called plates

Use the phrases to complete the descriptions below.

The lithosphere includes Earth's crust and the 1 _____. The crust is a thin layer of rock that covers the whole planet. Its thickness ranges from about 5 to 80 kilometres. The mantle is the section of Earth directly under the crust. The lithosphere is not one solid piece of rock. Instead, it is broken into many 2 _____.

The hydrosphere is all the water on Earth, including oceans, lakes, rivers, glaciers, rain, and snow. Water covers more than 70 % of Earth. Approximately 97% of Earth's water is 3 _____, and 3% is 4 _____, lakes, rivers, and groundwater.

The atmosphere is the blanket of air, dust, water 5 _____ that completely covers the lithosphere and hydrosphere. Mostly it is made up of gases, primarily of nitrogen and oxygen. Gases in the atmosphere 6 _____, and they protect Earth from the sun's ultraviolet radiation. The atmosphere is also where weather conditions, such as clouds and storms, form.

The biosphere is made up of all the living things on Earth. It includes humans, animals, and plants. Life on Earth 7 _____, but all living things share certain features. They all 8 _____.

Task 3: A) text to read

Terrestrial, or Earth-like, planets have solid, rocky surfaces. Mercury, Venus, Earth, and Mars are terrestrial planets. Earth is the only planet that has large amounts of liquid water, and it is the only planet that has life. Astronomers believe that Mars had rivers and oceans just like Earth. However, this was a long time ago and now all the water is either frozen or underground.

Gas giant planets are much larger than terrestrial planets. All gas giant planets are made of gases, not solid rock. These planets have rings around them. The rings are made of tiny pieces of rock, dust, or ice. Jupiter, Saturn, Uranus, and Neptune are gas giant planets. Jupiter is the largest planet. It is about a thousand times bigger than Earth.

Task 3: B) text to read

In 1930 a young man with no formal training surprised the world. Using a telescope he had made himself, 24-year-old Clyde Tombaugh discovered a new planet in our solar system: Pluto. Pluto is very small, smaller than Earth's moon. The fact that it is also further from the Sun makes it colder and darker than the other planets. In 2006 the International Astronomical Union decided on a new definition of the planet. First, it has to make a circular orbit around the Sun. Second, it has to be big enough and strong enough to move away objects from its path. Pluto differs from the other planets in both these ways. Pluto's orbit is more irregular, it is not a circle and it even crosses Neptune's orbit. In addition, Pluto is not strong enough to move objects out of its way as it orbits the Sun. For these reasons, the IAU has reclassified Pluto from a planet to a plutoid.

Sources

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