

# 1. WORKSHEET

## THE EARTH IN THE UNIVERSE

### THE UNIVERSE – GALAXIES – STARS

There are billions and billions of galaxies in the universe and they consist of billions and billions of stars. Astronomers distinguish three types of galaxies – spiral, elliptical and irregular.

### THE MILKY WAY

Our galaxy is spiral and it is shaped like a thin disc with long arms that spiral around the centre. It is called the Milky Way Galaxy. Its name comes from the white colour, it looks like a glowing band of lights that stretches across the sky. It would take 100,000 light years to travel from one end to the other. Our Solar System (The Sun and the planets) is not in the centre of the Milky Way Galaxy. It is situated in one of the arms, two-thirds of the distance between the galaxy's core and the edge.

### OTHER GALAXIES

Our galaxy belongs to a bigger group of about forty galaxies which is called The Local Group. The nearest neighbours are for example the Andromeda galaxy and the Dwarf Galaxy Sagittarius.

## 2. WORKSHEET

### THE SOLAR SYSTEM

The Solar System was formed 4,7 billions years ago. At the beginning it was a thin disk of dust and gases which spiralled around. Later gravity caused the formation of the Sun and planets. There are eight planets in the system. The order from the Sun : Mercury, Venus , Earth, Mars, Jupiter, Saturn, Uranus , Neptune. There used to be nine planets but the furthest from the Sun Pluto was decided to be too small to be a planet in 2006.

### THE PLANETS

The planets can be divided into two groups. The first – Mercury, Venus, Earth, Mars are called terrastrial planets because they are made mostly of rocks and hard substances The second- Jupiter, Saturn, Uranus, Neptune are called gas giants are made of ice and gases.

### THE EARTH

The Earth is the fifth largest planet. Our planet is named after the Ancient Greek goddess of mountains and streams. Earth and Mars are the only planets that are the right distance from the Sun so that it is not too hot or too cold to support life.

# 3. WORKSHEET

## MINERALOGY

mineralogy – minerals

petrology – rocks

mineralogy + petrology = geology

The definition of a mineral :

1st definition of a mineral :

1. **Inorganic**, which means that it is not made by a living organism.
2. **A solid**. There is one unusual exception. Native mercury is a mineral and is the only metal that is a liquid at normal temperatures.
3. Has a **regular crystal structure**. The crystal structures are described as crystal systems.
4. **Made by nature** which means minerals are not made, directly or indirectly, from human activity.
5. Has a **predictable chemical formula**

2nd definition of a mineral :

- a) Minerals must occur naturally. This means man-made substances such as steel aren't minerals.
- b) Inorganic substances are those substances that are not living and are not formed by living processes.
- c) Crystalline solids are those solids in which the atoms composing the solid have an orderly, repeated pattern.
- d) Minerals will have definite chemical compositions, but these compositions may vary within given limits.

### Task 1

Match the sentences from the first definition with the sentences from the second definition. Which one is missing in the second definition.

### Task 2

Write czech equivalents.

gypsum , quartz, graphite, sulfur, copper

### Task 3

Match the words :

pevný	exception
vzorec	metal
nerost	inorganic
výjimka	liquid
hornina	formula
tekutý	naturally
anorganický	vary
rtuť	mineral
kov	crystal structure
krystalová soustava	rock
ocel	mercury
předvídatelný	pattern
přírozeně	solid
vzor	predictable
lišit se	steel

### Task 4

Form adjectives :

predict

vary

nature

metal

## QUESTIONS :

1. What is a galaxy ? How would you describe it.
2. What is the nearest galaxy we can observe ?
3. When was our Solar System formed ?
4. Which elements are typical for planets : Mercury, Venus, Earth and Mars ?
5. Which elements are typical for planets : Jupiter, Saturn, Uranus, Neptun
6. How do we label three main levels of our planet ?
7. What is geology ?
8. What is a geoid ?
9. How long does it take the Earth to go around the Sun ?
10. What is the deepest well in the world and the Czech Republic ?
11. What is the origin of craters on the Moon?
12. How can be layers of the Earthh distinguished ?
13. What is another name for earthquake waves ?
14. What is the depth of the Earth's crust ?
15. What is the differnce between oceanic and continental crust ?

1. Which rocks mainly form the oceanic crust ?
2. Draw layers of continental crust.
3. Which depth reaches the Earth's mantle ?
4. Which group of minerals occur in the outer part of the mantle ?
5. What is lithosphere ?
6. Why tectonic plates move ?
7. What is the temperature of the core ?
8. How deep is the core solid ?
9. How was the mid-ocean ridge formed ?
10. Where are epicentres of earthquakes ?
11. Where is the continental crust thickest ?
12. How was the word geology formed ?
13. Write a name of one constellation.
14. What is the origin of moldavites ?
15. What are the moldavites used for ?