

JAG01 Unit 9 Minerals

Task 1 Elements

- a) Of all the known elements, only eight of them compose 98 percent of the rocks in the earth's crust. Give the names for the symbols. Which of the following is the odd one out?

Fe *Mg* *O* *Si* *Hg* *K* *Ca* *Na* *Al*

- b) Give full name of these elements:

<i>I</i>	<i>Cl</i>	<i>Xe</i>
<i>Cu</i>	<i>W</i>	<i>Pb</i>
<i>N</i>	<i>P</i>	<i>Ne</i>
<i>F</i>	<i>U</i>	<i>He</i>

- c) Can you guess the name of one of the most common butterflies in the USA?



- d) Complete each idiom with one of the elements:

- 1 The university's lab is the standard for climate research, setting benchmarks for others to follow.
- 2 By the end of the race, my legs felt as heavy as, but I pushed through to the finish line.
- 3 Though the project was delayed, every cloud has a lining—we now have more time to refine our work.
- 4 His wit was, impossible to predict and always leaving everyone amazed.
- 5 It was only through her will that she managed to complete her degree while working two jobs.
- 6 The new intern's presentation was a copy of the one her manager gave last week.
- 7 She thought fame would bring her happiness, but it was fool's—her life felt emptier than ever.

Video: <http://www.periodicvideos.com/>

Task 2 Minerals: The Building Blocks of Rocks

Fill each gap with one word.

Nearly every rock on the earth is built of (1) You are probably familiar with gemstone minerals found in jewellery, but the less (2) minerals are what make up most rocks.

Every mineral is a combination of (3); the atoms are organised into geometric structures called crystals. In many rocks the mineral crystals are too small for us to see without a (4) glass or microscope but they are still there.

To be considered a mineral, an earth material must meet these requirements:

It is (5) – not liquid or gas – at the temperature of Earth's surface.

It is (6), meaning not built of the carbon-based organic compounds that make up living tissue in plants and animals.

It has an orderly (7) When atoms combine to form minerals, they do so in an organised way that forms a geometric pattern called a crystal.

It is naturally (8) True minerals are formed in nature and are built through natural processes of chemical bonding.

It has a specific chemical (9) , i.e. a combination of elements that creates its particular crystal structure.

(Adapted from Spooner, A.M. Geology for Dummies. John Wiley and Sons. 2020.

<https://opengeology.org/historicalgeology/tools-of-historical-geology/earth-materials-mineral-identification/>

<https://owlcation.com/stem/Top-10-Interesting-and-Fun-Facts-About-Rocks-and-Minerals>

Task 3 Comparing and contrasting

A) Study the information below. Have you learnt anything new?



Zircon is

- a zirconium silicate mineral with a chemical composition of $ZrSiO_4$
- common throughout the world as a minor constituent of many types of rocks
- rated between 6.5 and 7.5 on the Mohs Scale
- a popular gemstone occurring in many colours

Interesting facts: The word 'zircon' is actually derived from the Persian word 'zargun' which means 'gold-hued'. Zircon flashes colours of light called fire. Its sparkle is diamond-like, so for centuries, there was a lot of confusion between the two gems.



Topaz is

- a rare silicate mineral with a chemical composition of $\text{Al}_2\text{SiO}_4(\text{F},\text{OH})_2$
- one of the most popular coloured stones
- number 8 on the Mohs Scale
- a gemstone of many colours

Interesting fact: The most affordable and frequently purchased are blue topaz and mystic topaz that have received their colours from treatment.

B) Compare and contrast the two minerals described above using some of these structures:

X is similar to Y in that...

Compared to X, Y...

Like X, Y...

Unlike X, Y...

Just as X, Y also...

One difference between X and Y is...

Task 4 Video

https://www.ted.com/talks/graham_baird_how_do_crystals_work

Watch and then answer these questions:

Crystals grow into geometric shapes...

Most crystals can form multiple geometric shapes...

Diamonds tend to grow into octahedrons...

Diamonds in jewellery are cut into specific shapes...

Glass isn't crystalline...

Many crystals like granite don't grow into geometric shapes...

Turquoise...

Watch again, then use some of the following expressions in sentences:

galena

DNA

grid

Task 5 Grammar: Complete the gaps with *few, a few, little, a little*

1. There was time so the atoms didn't arrange themselves into an ordered structure.
2. Why don't you drop acid on the rock?
3. I have interesting minerals in my collection.
4. labs in the country can match ours.