

Ores to Minerals

Lesson 6

Ores and Minerals Instruction

STUDENT WORKSHEET

Cloze Notes

Name: _____

Date: _____ Class: _____

Guiding Question 1: Why are minerals unevenly distributed in Earth's crust?

Minerals _____ in systems in Earth's crust.

Some minerals are _____ and some are marine. Terrestrial minerals are land-based, while marine minerals are extracted from the _____.

Minerals are _____ distributed. Mapping mineral systems can help locate areas where certain types of minerals can be found.

Minerals are unevenly distributed because their formation is directly tied to specific geological processes, like:

- _____ motion
- Volcanic _____
- _____

Earth's crust is divided into _____ that are able to move around. Plates can also go under one another, pushing minerals down. _____ can well up through cracks in plates or between plates, pulling minerals up. So, tectonic plates move minerals all around and through Earth's crust.

Magma, the molten rock that erupts into _____, contains dissolved minerals. At or near the surface, it _____, creating new mineral-rich rock formations.

_____ moves minerals by the process of erosion, where weathered rock fragments, called sediments, are _____, often by water, and then _____ in a new location. This moves the minerals along with the sediment.

Guiding Question 2: What are the properties of minerals that make them important?

List the mineral properties and give a brief summary of what is important about each:

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Guiding Question 3: Why is it important to assess what minerals are available and what minerals are critical?

Some minerals are comprised of elements that are _____ which makes them rare. Some minerals are hard to find because they require very _____ to form.

Garnets, for example, only form from extreme pressure and temperature deep in Earth's crust.

Studying _____ is crucial. It allows us to find out where different minerals are located, which is vital for responsible _____ operations, _____ planning, industrial development, _____, and _____ agreements.

Critical minerals are designated as such because they are _____ due to high demand, difficulties with extraction and refinement, scarcity, and world politics. One example is _____ used for batteries, which is sourced mainly from Chile and Argentina.

As with many minerals, the refinement of lithium is a complex and environmentally sensitive process. Strict _____ are necessary to ensure it won't contaminate groundwater or soil. Difficulties and regulations include: (add list below)

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Critical minerals are essential to our _____, _____, and _____. Critical minerals are necessary for the production of key products.

The United States needs to ensure access to supplies of these materials because they are so important to our lives. The USGS studies the _____ critical minerals, their supply, and mining _____.

Gallium (shown right), for example, is currently on the 2025 critical minerals list from the USGS in part because its export to the U.S. was banned by China and also because gallium occurs in _____ in ores of other metals, making it hard to obtain in a pure state.

You can learn more about the USGS list of critical minerals at: www.usgs.gov/science/science-explorer/minerals/critical-minerals

And check out the Mineral Commodity Summaries 2025 at: <https://pubs.usgs.gov/periodicals/mcs2025/mcs2025.pdf>