

Section 1

Minerals

Minerals

- A mineral is a- _____

- In order for a substance to be called a mineral, it must have _____ of the characteristics described in this definition.

Inorganic

- A mineral must be inorganic, or _____

Solid

- A mineral is always a _____. Like all solids, a mineral has _____.

Chemical Composition

- A mineral has a definite _____.
- A mineral may be made of a single pure substance, or _____, such as gold, copper or sulfur.
- Most minerals are made of _____ chemically combined to form a compound.

Crystal Structure

- A mineral's atoms are arranged in a definite pattern repeated over and over again.
- Atoms not confined, the repeating pattern of a mineral's atoms forms a solid called _____
- A crystal has flat sides that meet in sharp edges and corners.
- All minerals have a characteristic _____.
- There are 2500 different kinds of minerals.

Formation and Composition of Minerals

- Many minerals come from _____, the molten rock beneath the Earth's surface.

- When magma cools, mineral _____ are formed.
- How and where magma cools determine the _____ .
 - When magma cools **slowly** beneath the _____, _____ crystals form.
 - When magma cools **rapidly** beneath the Earth's surface, _____

Crystal Formation

- Crystals may also form from compounds _____ in a liquid such as water.
- When the liquid _____, or changes to a gas, it leaves behind the minerals as crystals.
 - Halite, or _____, forms in this way.

Most Abundant Elements

- The eight most abundant elements in the Earth's crust are _____
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- There are about _____ common minerals formed from the eight most abundant elements.
- Of these 100, fewer than _____ are widely distributed and make up almost all the rocks in the Earth's crust.

Chemical Classification	Mineral	Elements
	Feldspar, Pyroxene, Olivine, Mica, Quartz	
	Calcite, Dolomite	
	Hematite	
	Gypsum	
	Halite	

Section 2

Mineral Identification

Identifying Minerals

- Minerals have certain _____ that can be used to identify them, such as _____, and other special properties.

Color

- The color of a mineral is an easily observed physical property.
- Color can be used to identify only those few minerals that **always** have their own characteristic color, such as _____.
- Many minerals come _____ of colors. Some are colorless. Colors can also change.

Luster

- The luster of a mineral describes the way a _____ light from its surface.
- Certain minerals have a _____, such as silver, copper and gold
- Minerals that do not reflect light have a _____, and are described by terms like _____.

Hardness

- The ability of a mineral to resist being _____ is known as its hardness.
- Hardness is one of the most useful properties _____.
- Friedrich Mohs, a German mineralogist, worked out a scale of hardness for minerals ranging from _____.
- The number one is assigned to the _____ mineral, talc.
- 10 is assigned to the hardest mineral, _____.

Streak

- The _____ scraped off a mineral when it is rubbed against a hard, rough surface is called its streak.
- The streak may be different from the _____.

- Streak can be observed by rubbing the mineral sample across a piece of unglazed porcelain, which is called the _____.
- A streak plate has a hardness slightly _____.

Density/Specific Gravity

Density/Specific Gravity is the amount of matter in a _____.

The density of a mineral _____.

Crystal Shape

- Minerals have a characteristic crystal shape that results from the way the _____ come together as the mineral is forming.
- There are six basic shapes of crystal structures: cubic, hexagonal, orthorhombic, monoclinic, tetragonal and triclinic.

Cleavage and Fracture

- The terms cleavage and fracture are used to _____.
- _____ is the tendency of a mineral to split along smooth, definite surfaces.
- Some minerals, like halite, break into _____.
- Micas cleave along one surface, making _____.
- Most minerals do not break along smooth lines.

Special Properties

- Some minerals can be identified by special properties.
- _____ is naturally magnetic.
- _____ glows under ultraviolet light.
- _____ tastes salty.
- _____ smells like rotten eggs.
- _____ fizzes when hydrochloric acid is added to it.
- _____ is radioactive.

Section 3

Uses of Minerals

Gemstones

- Gemstones are highly prized minerals because _____.
- Most are special varieties of a _____.
 - _____ is a gem form of quartz.

Important Gems

- The _____ found in south America in 1905 is the largest uncut diamond ever discovered.
- The largest cut from it is the _____. It weighs 106 grams (530.2 carats)

Hope Diamond

- The _____ became famous because the entire family as well as a later owner suffered misfortune.
- The mass is 9 grams (45.52 carats).

Useful Gems

- Some gems are useful.
- _____ are so hard they can scratch almost any material.
 - They are used as _____.
- _____ are used to produce _____.
- _____ are used in _____ because the quartz will vibrate steadily when exposed to an electric field.

Ores

- A mineral is an ore if it contains _____.
- Iron can be mined from _____.
- Aluminum comes from the ore _____.

Smelting

- During smelting, a substance is _____ from many unwanted materials that remain.

Mineral Veins

- Under certain conditions, metallic elements _____.
- These fluids travel through openings or weak areas in rock and form _____.
- The mineral deposits left behind are called _____.
- _____, is formed this way.

Titanium

- Titanium is a _____ that comes from mineral.
- Two sources are _____.
- Titanium is used in _____.