

Minerals: 5.2 Composition and Structure of Minerals

What is a mineral?

- A mineral has the following characteristics:

- _____.
- _____.
- _____.
- _____.
- _____.
- _____.

Minerals

- There are about _____ known minerals
 - Examples) _____, _____, _____ (salt), _____
- _____ elements make up _____% of the crust's total mass.
- Most minerals are _____.

Name	Symbol	%
Oxygen		
Silicon		
Aluminum		
Iron		
Calcium		
Sodium		
Potassium		
Magnesium		
Other	-	

Minerals Through the Magma Process

- Many minerals form out of _____.
- In _____, _____ or _____ can move freely.
- As magma cools the atoms, molecules and ions _____ and _____ that create _____.
- Many different minerals can form from the same _____.
- The types of minerals that form depend on:
 - _____.
 - _____.

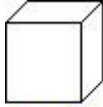
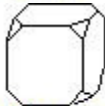
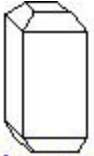
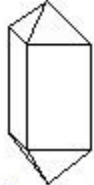
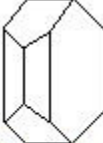
Minerals Through the Pressure Process

- When a rock is subjected to _____ and _____, the minerals begin to _____.
- The _____ and _____ becomes great enough to change the mineral in a _____ state.
- The free atoms, ions, and molecules _____ forming new minerals.

Structure of Minerals

- Minerals form _____.
 - _____.
 - _____.
 - _____.
- Although there are thousands of different minerals, there are only _____ basic different shapes of crystals.

Six Crystal Systems

<p>Cubic systems</p>	 <p>Cube</p>  <p>Cube and Octahedron</p>	<p>halite</p>
<p>Tetragonal systems</p>	 <p>Tetragonal: Prism with pyramidal and base</p>  <p>Tetragonal: Prism with pyramidal termination</p>	<p>rutile, idocrase, zircon</p>
<p>Hexagonal systems</p>	<p>6-sided prism terminating in a single face</p>	<p>graphite, emerald</p>
<p>Orthorhombic systems</p>	<p>-</p>	<p>peridot, topaz</p>
<p>Monoclinic systems</p>	 <p>Monoclinic</p>	<p>Gypsum, mica</p>
<p>Triclinic systems</p>	<p>-</p>	<p>Kyanite, turquoise</p>

Silicates

- _____ and _____ are the _____ most abundant _____ in the Earth's crust.
- Most minerals (_____) contain these two elements and are called _____.
- A _____ may contain one or more _____.
- The basic building block of a silicate is the _____.
 - Consists of _____ around a _____.
 - Named for its _____.

Silica Tetrahedron