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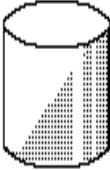
- 1) The mineral mica breaks evenly along flat sheets mainly because of its
  - A) density
  - B) chemical composition
  - C) atomic arrangement
  - D) hardness
- 2) According to the *Earth Science Reference Tables*, which element is most abundant in the Earth's crust?
  - A) silicon
  - B) oxygen
  - C) nitrogen
  - D) hydrogen
- 3) Two mineral samples have different physical properties, but each contains silicate tetrahedrons as its basic structural unit. Which statement about the two mineral samples must be true?
  - A) They are the same mineral.
  - B) They contain silicon and oxygen.
  - C) They are similar in appearance.
  - D) They have the same density.
- 4) Which element combines with silicon to form the tetrahedral unit of structure of the silicate minerals?
  - A) nitrogen
  - B) potassium
  - C) hydrogen
  - D) oxygen
- 5) According to the *Earth Science Reference Tables*, what is the approximate percentage by volume of oxygen in the crust of the Earth?
  - A) 30%
  - B) 70%
  - C) 20%
  - D) 90%
- 6) Which property is most useful in mineral identification?
  - A) size
  - B) color
  - C) texture
  - D) hardness
- 7) According to the *Earth Science Reference Tables*, what are the four most abundant elements, by volume, in the Earth's crust?
  - A) hydrogen, oxygen, nitrogen, and potassium
  - B) aluminum, calcium, hydrogen, and iron
  - C) aluminum, iron, silicon, and magnesium
  - D) oxygen, potassium, sodium, and calcium
- 8) Certain minerals usually break along flat surfaces, while other minerals break unevenly. This characteristic is due to the
  - A) luster of the mineral
  - B) age of the mineral
  - C) force with which the mineral is broken
  - D) internal arrangement of the mineral's atoms

- 9) The data table below shows the composition of six common rock-forming minerals.


MINERAL	COMPOSITION
Mica	$KAl_3Si_3O_{10}$
Olivine	$(FeMg)_2SiO_4$
Potassium feldspar	$KAlSi_3O_8$
Plagioclase	$NaAlSi_3O_8$
Pyroxene	$CaMgSi_2O_6$
Quartz	$SiO_2$

The data table provides evidence that


- A) all elements are found in all minerals
  - B) a few elements are found in many minerals
  - C) the same elements are found in all minerals
  - D) all elements are found in only a few minerals
- 10) Which element comprises most of the Earth's crust *both* by weight and by volume?
    - A) oxygen
    - B) nitrogen
    - C) silicon
    - D) hydrogen
  - 11) Which object is the best model of the shape of a silicon-oxygen structural unit?
 



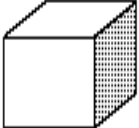
A)



C)

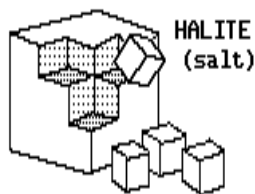


B)



D)
  - 12) The physical properties of a mineral are largely due to its
    - A) internal arrangement of atoms
    - B) volume
    - C) organic composition
    - D) melting point

- 13) What causes the characteristic crystal shape and cleavage (Breaking along flat surfaces) of the mineral halite as shown in the diagram below?



- A) the shape of the other minerals located where the halite formed  
 B) the amount of erosion the halite has undergone  
 C) the internal arrangement of the atoms in halite  
 D) metamorphism of the halite

Questions 14 through 17 refer to the following:

The table of minerals below shows the physical properties of nine minerals.

MINERAL	COLOR	LUSTER	STREAK	HARDNESS	DENSITY (g/mL)	CHEMICAL COMPOSITION
biotite mica	black	glassy	white	soft	2.8	$K(Mg, Fe)_3(AlSi_3O_{10})(OH)_2$
diamond	varies	glassy	colorless	hard	3.5	C
galena	gray	metallic	grey-black	soft	7.5	PbS
graphite	black	dull	black	soft	2.3	C
kaolinite	white	earthy	white	soft	2.6	$Al_4(Si_4O_{10})(OH)_8$
magnetite	black	metallic	black	hard	5.2	$Fe_3O_4$
olivine	green	glassy	white	hard	3.4	$(Fe, Mg)_2SiO_4$
pyrite	brass yellow	metallic	greenish-black	hard	5.0	$FeS_2$
quartz	varies	glassy	colorless	hard	2.7	$SiO_2$

**Definitions:**

- LUSTER:** the way a mineral's surface reflects light  
**STREAK:** color of a powdered form of the mineral  
**HARDNESS:** resistance of a mineral to being scratched (soft-easily scratched; hard-not easily scratched)

**Chemical Symbols**

Al - Aluminum	Pb - Lead
C - Carbon	Si - Silicon
Fe - Iron	K - Potassium
H - Hydrogen	S - Sulfur
Mg - Magnesium	O - Oxygen

- 14) Why do diamond and graphite have different physical properties, even though they are *both* composed entirely of the element carbon?
- A) The minerals have different arrangement of carbon atoms.  
 B) Only diamond contains radioactive carbon.  
 C) The minerals have undergone different amounts of weathering.  
 D) Only graphite consists of organic material.
- 15) Which mineral contains iron, has a metallic luster, is hard, and has the same color and streak?
- A) biotite mica  
 B) kaolinite  
 C) galena  
 D) magnetite
- 16) Which mineral has a different color in its powdered form than its original form?
- A) pyrite  
 B) kaomite  
 C) graphite  
 D) magnetite

