1. Although more than 2,000 minerals have been identified, 90% of Earth's lithosphere is composed of the 12 minerals listed below.

Rock-Forming Minerals	
feldspar	augite
quartz	garnet
mica	magnetite
calcite	olivine
hornblende	pyrite
kaolinite	talc

The best explanation for this fact is that most rocks

(1) are monomineralic
(2) are composed only of recrystallized minerals
(3) have a number of minerals in common
(4) have a 10% nonmineral composition

2. Which common mineral fizzes when dilute hydrochloric acid (HCl) is placed on it?

(1) calcite (3) quartz
(2) feldspar (4) talc

3. A mineral's crystal shape and cleavage are a direct result of the mineral's

(1) hardness
(2) abundance in nature
(3) arrangement of atoms
(4) exposure to the hydrosphere and atmosphere

4. Minerals are identified on the basis of

(1) the method by which they were formed
(2) the type of rock in which they are found
(3) the size of their crystals
(4) their physical and chemical properties

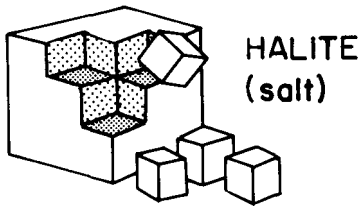
5. The mineral mica breaks evenly along flat sheets mainly because of its

(1) atomic arrangement (3) hardness
(2) chemical composition (4) density

6. Scratching a mineral against a glass plate is a method used for determining the mineral's

(1) color (3) luster
(2) hardness (4) cleavage

7. What causes the characteristic crystal shape and cleavage (breaking along flat surfaces) of the mineral halite as shown in the diagram below?

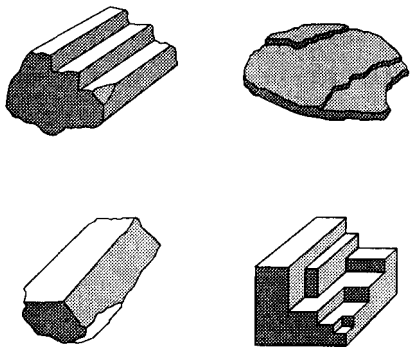


(1) metamorphism of the halite
(2) the internal arrangement of the atoms in halite
(3) the amount of erosion the halite has undergone
(4) the shape of other minerals located where the halite formed

8. One of the most abundant minerals in beach sand is quartz. Which property of quartz could account for its abundance?

(1) hardness (3) color
(2) texture (4) luster

9. The diagrams below represent fractured samples of four minerals.



Which mineral property is best illustrated by the samples?

(1) hardness (3) cleavage
(2) streak (4) density

10. The table below indicates the presence of various minerals in different rock samples.

Rock Sample	Mineral Composition								
	Quartz	Potassium feldspar	Plagioclase feldspar	Biotite	Hornblende	Pyroxene	Olivine	Calcite	Others
Granite	✔	✔	✔	✔	✔				
Rhyolite	✔	✔	✔	✔	✔				
Pumice	✔	✔	✔	✔	✔				
Conglomerate	✔	✔	✔	✔	✔	✔	✔	✔	✔
Slate				✔					✔
Marble								✔	
Limestone								✔	
Basalt			✔		✔	✔	✔		
Gabbro			✔	✔	✔	✔			

Key
✔ = Mineral is present

Which statement is an accurate conclusion based on the information provided in the table?

(1) Most rocks are monomineralic.
(2) All rocks are polymineralic.
(3) Many rocks have a number of minerals in common.
(4) Only igneous rocks contain quartz.

11. The data table below gives information on mineral hardness.

MINERAL HARDNESS

Moh's Hardness Scale		Approximate Hardness of Common Objects
Talc	1	
Gypsum	2	Fingernail (2.5)
Calcite	3	Copper penny (3.5)
Fluorite	4	Iron nail (4.5)
Apatite	5	Glass (5.5)
Feldspar	6	Steel file (6.5)
Quartz	7	Streak plate (7.0)
Topaz	8	
Corundum	9	
Diamond	10	

Moh's scale would be most useful for

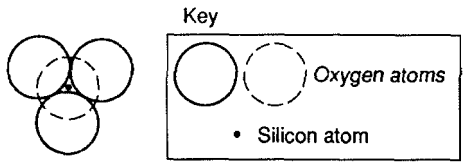
(1) identifying a mineral sample
(2) finding the mass of a mineral sample
(3) finding the density of a mineral sample
(4) counting the number of cleavage surfaces of a mineral sample

12. Base your answer to the following question on the *Earth Science Reference Tables.*

Which mineral shows no cleavage, has a hardness of 6.5, and a composition of SiO_2?

(1) Graphite
(2) Garnet
(3) Halite
(4) Quartz

13. The diagram below represents a basic atomic structure that forms when oxygen and silicon unite.



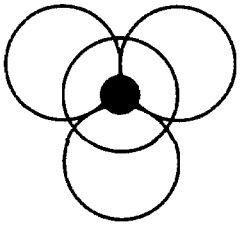
This structure is called a

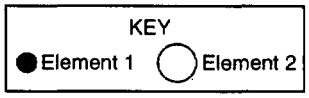
(1) tetrahedron
(2) cube
(3) sphere
(4) cylinder

14. The elements contained in four minerals are given in the table below. The basic structural unit of one of the minerals is also shown. The atom of element 1 is surrounded by four atoms of element 2.

Mineral	Element 1	Element 2
Fluorite	calcium	fluorine
Halite	sodium	chlorine
Quartz	silicon	oxygen
Galena	lead	sulfur

Basic Structural Unit





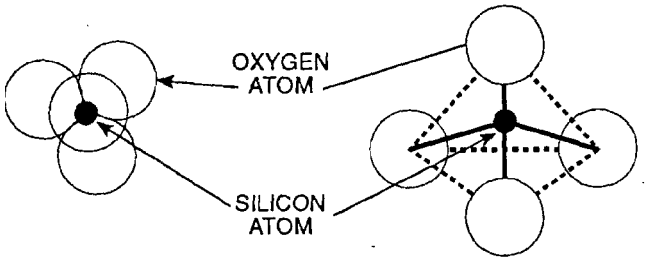
In which mineral are the atoms arranged as shown in the basic structural unit?

(1) fluorite
(2) halite
(3) quartz
(4) galena

15. Two minerals made of pure carbon are diamond and graphite. Which statement best explains why diamond is so much more resistant to scratching than graphite?

(1) The atoms are lighter in graphite than in diamond.
(2) The atoms are heavier in graphite than in diamond.
(3) The atoms are bonded together more strongly in diamond than in graphite.
(4) The atoms are smaller in graphite than in diamond.

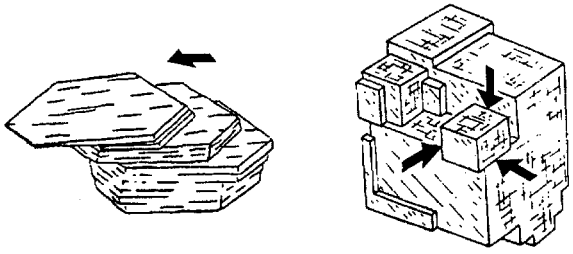
16. The diagram below represents top and side views of a model of the silicate tetrahedron.



This tetrahedron is found in large amounts in the Earth's

(1) hydrosphere
(2) troposphere
(3) lithosphere
(4) stratosphere

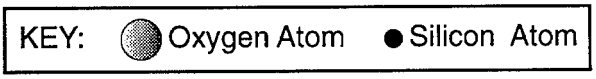
17. The diagrams below illustrate a specific property of certain minerals.



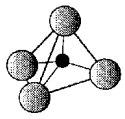
This property is most closely related to the

(1) arrangement of atoms in the mineral
(2) impurities found in the mineral
(3) softness of the mineral
(4) density of the mineral

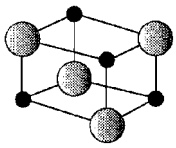
18. Which model best represents the silicon-oxygen tetrahedron?



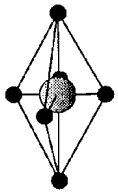
(1)



(3)



(2)



(4)