

RM2 JRQ
Mr. Chase

Name _____
Date: _____

1. Base your answer on the information, table, and photographs (see image) and on your knowledge of Earth science.

"Herkimer Diamonds"

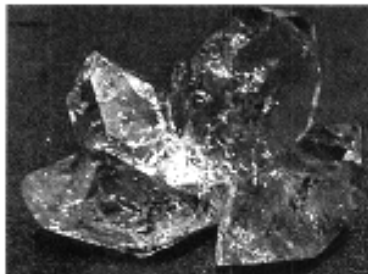
Gem-quality "Herkimer Diamonds" are hexagonal-shaped quartz crystals found in some of the surface bedrock of Herkimer, New York. Herkimer is located at approximately 43° north latitude and 75° west longitude. The oldest of these gemstones are believed to be approximately 500 million years old. These quartz crystals are magnificent works of nature that have a natural diamondlike geometric shape formed when the quartz crystallized. Natural "Herkimer Diamonds" were not cut or shaped by humans. Due to their appearance, "Herkimer Diamonds" are commonly used in jewelry. These quartz crystals are not true diamonds.

State one use for "Herkimer Diamonds" (quartz), other than their use in jewelry. [1]

Mineral Characteristics of "Herkimer Diamonds" (Quartz) and True Diamonds

Mineral	Color	Chemical Composition	Luster	Hardness	Dominant Form of Breakage
"Herkimer Diamond" (quartz)	Colorless or variable	SiO ₂	Glassy	7	Fracture
True diamond	Colorless or variable	C	Glassy	10	Cleavage

Photographs of "Herkimer Diamonds" (Quartz)



2. Which mineral is white or colorless, has a hardness of 2.5, and splits with cubic cleavage?

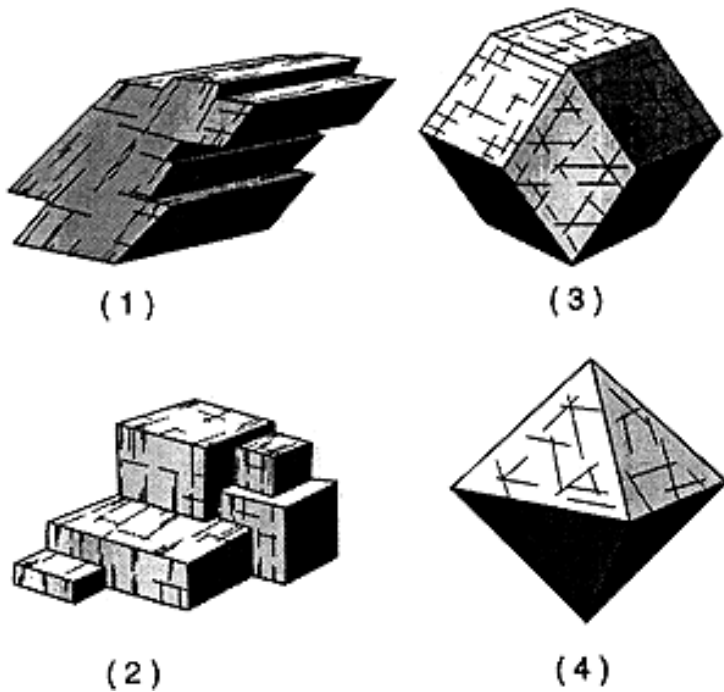
1. calcite

3. pyrite

2. halite

4. mica

3. Halite has three cleavage directions at 90° to each other. Which model best represents the shape of a broken sample of halite?



4. Base your answer on Moh's mineral hardness scale and on the accompanying chart showing the approximate hardness of some common objects.

Which statement is best supported by this scale?

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

1. A fingernail will scratch calcite, but not quartz. 3. A piece of glass can be scratched by quartz, but not by calcite.
2. A fingernail will scratch quartz, but not calcite. 4. A piece of glass can be scratched by calcite, but not by quartz.

5. Base your answer on the "Properties of Common Minerals" chart in the Earth Science Reference Tables.

Which mineral leaves a green-black powder when rubbed against an unglazed porcelain plate?

1. galena
2. graphite
3. hematite
4. pyrite

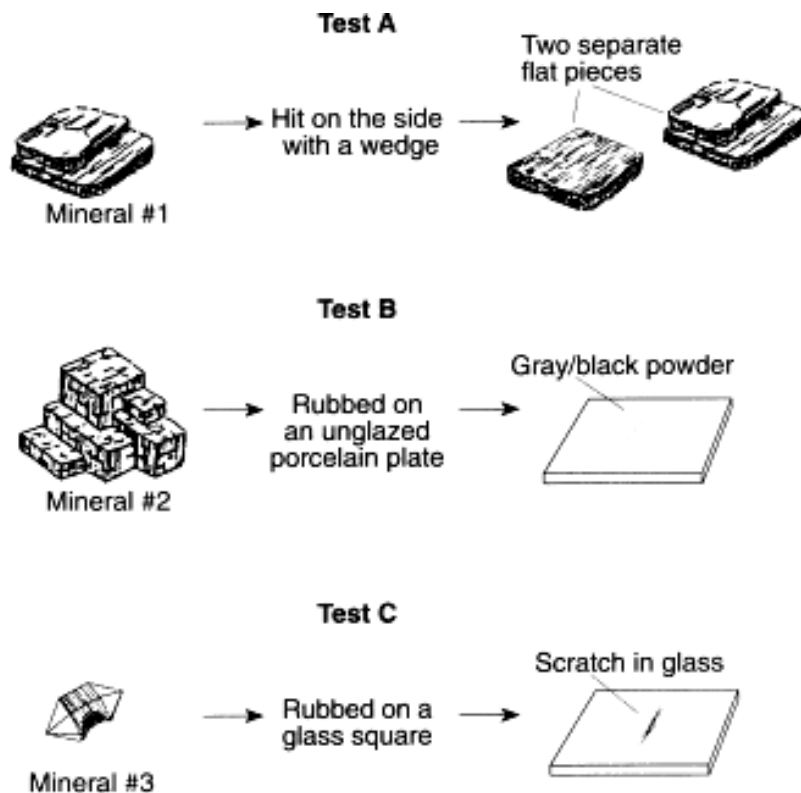
6. Base your answer on the "Properties of Common Minerals" chart in the *Earth Science Reference Tables*.

Which mineral scratches dolomite and is scratched by olivine?

1. galena
2. quartz
3. potassium feldspar
4. muscovite mica

7. Base your answer on the diagram (see image), which shows three minerals with three different physical tests, A, B, and C, being performed on them.

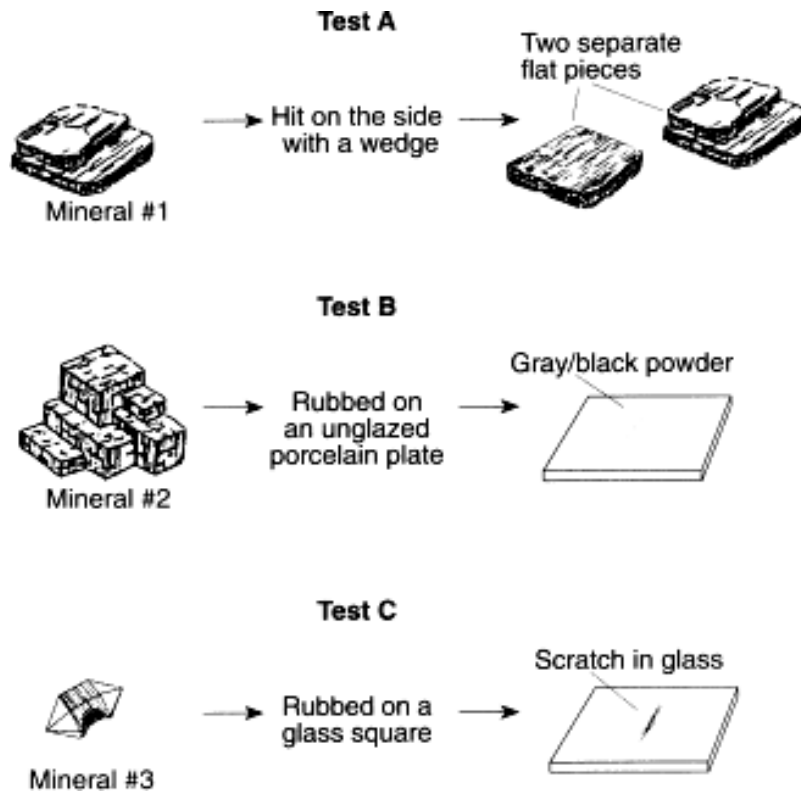
Which sequence correctly matches each test, A, B, and C, with the mineral property tested?



1. A--cleavage; B--streak; C--hardness
2. A--cleavage; B--hardness; C--streak
3. A--streak; B--cleavage; C--hardness
4. A--streak; B--hardness; C--cleavage

8. Base your answer on the diagram (see image), which shows three minerals with three different physical tests, A, B, and C, being performed on them.

The results of all three physical tests shown are most useful for determining the

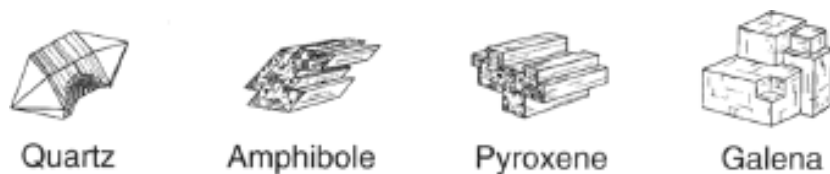


1. rate of weathering of the minerals
2. identity of the minerals

3. environment where the minerals formed
4. geologic period when the minerals formed

9. The diagram below shows four mineral samples, each having approximately the same mass.

If all four samples are placed together in a closed, dry container and shaken vigorously for 10 minutes, which mineral sample would experience the most abrasion?



1. quartz
2. amphibole

3. pyroxene
4. galena

10. Which two minerals have cleavage planes at right angles?

1. biotite mica and muscovite mica
3. quartz and calcite

2. sulfur and amphibole

4. halite and pyroxene

11. Which mineral is an ore of iron and has a characteristic reddish brown streak?

1. magnetite

3. hematite

2. pyrite

4. olivine