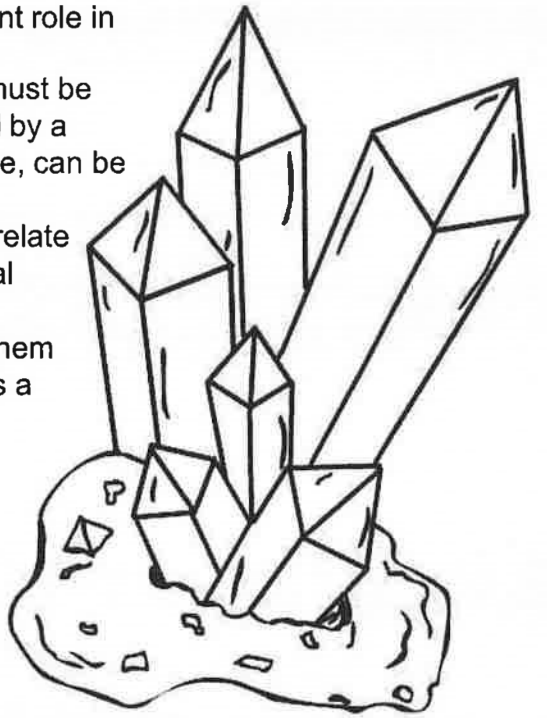
Minerals: *Introduction*: Name_____

Read the information below about Minerals. Then complete the "Fill-Ins" below.

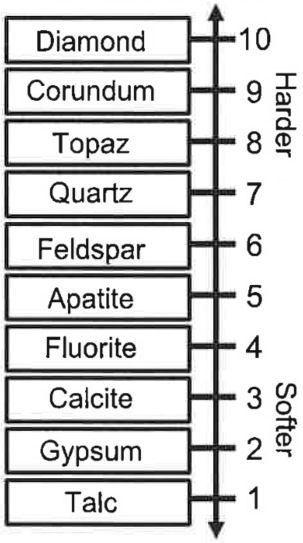
Minerals are naturally occurring materials that are usually solid and often crystalline in structure. There are over 5,000 known minerals with the majority of them being "*silicate*" minerals. Minerals are important resources to the world's economy and play an important role in industry, construction and manufacturing.



Scientifically, minerals must meet several conditions. A mineral must be naturally occurring, stable at room temperature, and represented by a chemical formula. The common mineral Quartz, or Silicon Dioxide, can be represented by the chemical formula SiO_2.

Minerals can be described by various physical properties which relate to their specific chemical composition. The most common mineral properties are; *color, crystal shape, hardness, luster, fracture* and *cleavage*. Geologists use these physical properties to help them identify minerals. One of these main properties, "hardness", uses a special scale called the "Mohs Hardness Scale" to measure a mineral's hardness when compared to other minerals.

Mohs Hardness Scale



The Mohs Hardness Scale measures the mineral's resistance to scratching. On the scale, Diamond is the hardest mineral with a ranking of 10, while Talc is the softest with a ranking of 1. The common mineral Quartz is fairly hard with a ranking of 7 on the scale.

One of the easiest properties to observe is a mineral's color. Although easy to see, color may be misleading because many minerals display similar colors or some minerals may occur in a variety of colors. Quartz, for example may appear clear, purple, pink, and even brown. Other minerals such as Fluorite may also appear in similar purple and pink colors as Quartz. Another way to look at a mineral's color is by using the "Streak" test. This test allows you to see a mineral's true color by making a "scratch" on a special tile leaving behind the mineral's powder. This powder shows the real mineral color. Overall, mineral identification can be challenging unless the observer takes into account a variety of physical properties.

Complete the "Fill-In" questions below by using information from the reading above

1 – There are over _____ known minerals.

2 – In order to be a Mineral, a substance must be _____ occurring.

3 – Silicon Dioxide is also known as _____ and has a chemical formula of SiO_2.

4 – The 6 common mineral characteristics are:

_____ _____ _____

_____ _____ _____

5 – A minerals hardness can be measured using the _____ Scale of Hardness.

6 – The hardest mineral is called _____, while the softest is called_____.

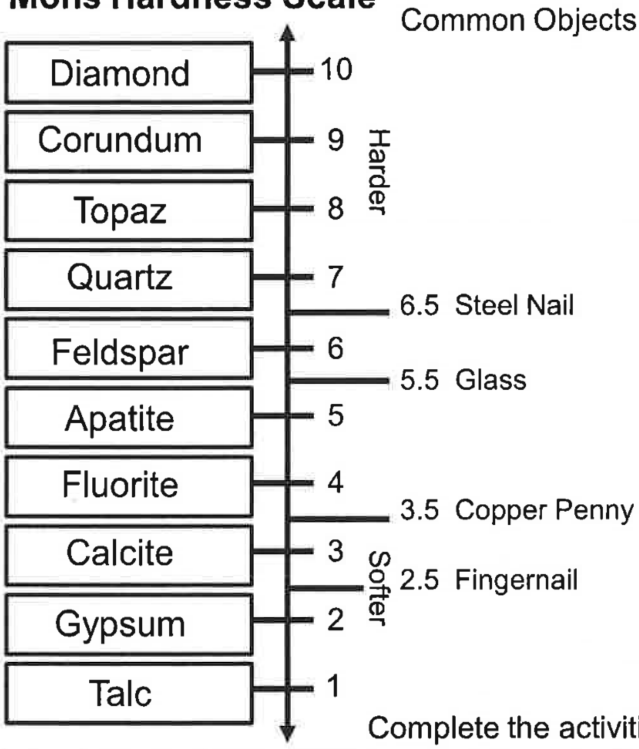
7 – Some minerals can have the same _____ or occur in a _____ of colors.

8 – A minerals true color can be found by using the _____ test.

Minerals: *Mohs Hardness Scale*: Name_____

Use the reading selection and Mohs Hardness Scale to complete the questions below.

Mohs Hardness Scale



The Mohs Hardness Scale is a standard to measure the hardness of minerals when compared to other minerals. In terms of hardness, it means the ability to *scratch* another material, or mineral. On the Mohs Scale to the left you can see the 10 standard minerals on the scale as well as several common objects with their approximate hardness. The hardest mineral, Diamond, has the ranking of 10, while Talc, the softest mineral, has a ranking of 1.

Other items on the scale can be used for comparison such as your fingernail, a copper penny, and glass. These common items can help identify a mineral's hardness by comparing them to one another.

Complete the activities below by using the Mohs Hardness Scale.

Fill in the blanks with the correct minerals.

1 – Which two minerals will scratch Topaz? _____ & _____

2 – List two common objects that will scratch Fluorite. _____ & _____

3 – Which two minerals can your fingernail scratch? _____ & _____

4 – Which mineral can be scratched by a penny, but not your fingernail? _____

5 – Which mineral is harder, Apatite or Feldspar? _____

Circle the correct choices below using the Mohs Hardness Scale.

6 – Which mineral can be scratched by a steel nail, but not glass?

Gypsum Quartz Feldspar Topaz

7 – Which mineral is harder than a steel nail?

Calcite Talc Apatite Corundum

8 – Which mineral is softer than glass, but harder than a copper penny?

Fluorite Gypsum Quartz Diamond

9 – Which mineral can scratch Quartz?

Apatite Gypsum Topaz Talc

10 – Which mineral can be scratched by glass?

Quartz Corundum Apatite Feldspar

THE ROCK CYCLE

FORMATION OF SEDIMENTS

weathering is the creation of smaller pieces of rock through physical or chemical means.

erosion is the moving of sediments from their original position.

deposition is the settling out of sediment.

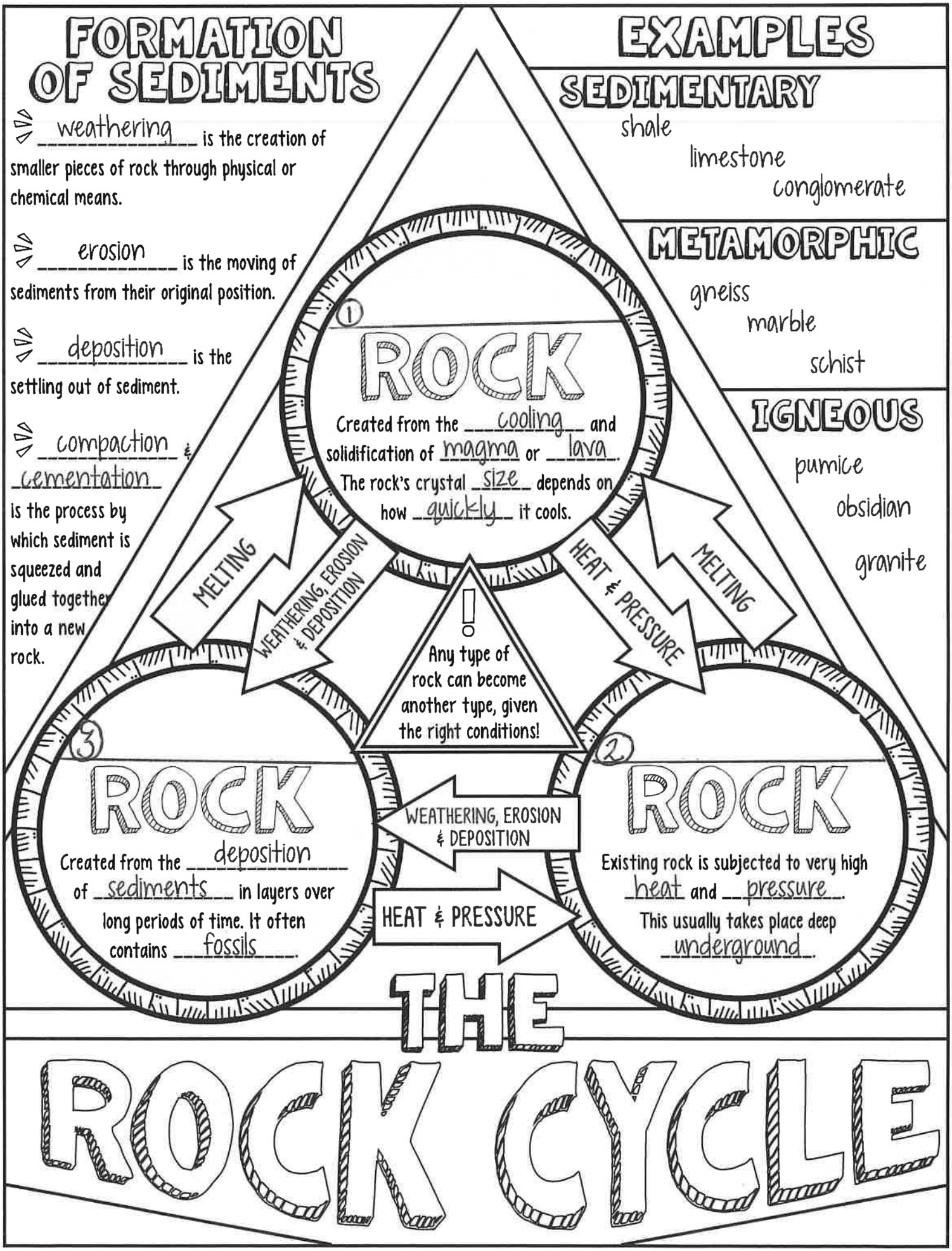
compaction & _cementation_ is the process by which sediment is squeezed and glued together into a new rock.

EXAMPLES

SEDIMENTARY
shale
limestone
conglomerate

METAMORPHIC
gneiss
marble
schist

IGNEOUS
pumice
obsidian
granite

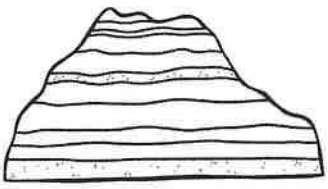


SHOW what you KNOW

THE ROCK CYCLE

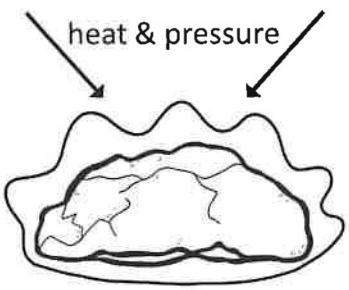
Name: Date:

1. Identify the type of rock associated with the picture.



A:

B:



C:

2. During which process does layer upon layer of sediment build up, exerting pressure on the layers below?

a. erosion
b. compaction
c. conglomerate
d. weathering

3. Which of the following is an igneous rock?

a. gneiss
b. shale
c. limestone
d. pumice

4. Metamorphic rock transforms to sediment by _____?

a. melting and cooling
b. cementation and compaction
c. weathering and erosion
d. heat and pressure

5. Heat and _____ can change sedimentary rock into metamorphic rock.

6. Igneous rocks form from the _____ of magma or lava.

7. _____ is the process which causes magma to form.

8. Why are some igneous rocks coarse and others are smooth?

9. Which type of rock often contains fossils and how do you think this occurs?