

Jurupa Mountains Cultural Center
7621 Granite Hill Drive – Riverside, CA. 92509
Phone: (951) 685-5818 or Fax: (951) 685-1240
Email: info@jmcc.us or Web: www.jmcc.us



SCOUT GEOLOGY

Scout Name: _____

Troop Number: _____

Date: _____

GEOLOGY: BOOKLET: 2007

REQUIREMENT 1: Define Geology. Discuss how geologists learn about rock formations. In geology, explain why the study of the present is important to understanding the past.

DEFINITION:

A.) GEOLOGY:

B.) HOW DO GEOLOGISTS LEARN ABOUT ROCK FORMATIONS?

C.) EXPLAIN WHY THE STUDY OF THE PRESENT IS IMPORTANT TO UNDERSTANDING THE PAST.

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REQUIREMENT 2: Pick three resources that can be extracted or mined from Earth for commercial use. Discuss with your counselor how each product is discovered and processed.

1.) Sulphur:

2.) Halite:

3.) Calcite:

REQUIREMENT 3: Review a geological map of your area with your counselor and discuss the different rock types and estimated ages of rocks represented. Determine whether the rocks are horizontal, folded, or faulted, and explain how you arrived at your conclusion.

MAPS TO BE USED:

- 1.) U.S. Department of the Interior Geological Survey Map of Riverside, California: West Quadrangle.
- 2.) Geologic Map of California: Divisions of Mines and Geology.
- 3.) U.S. Department of the Interior Geological Survey Map of Cordilleran Fold and Thrust Belt: Accreted areas with Eugeosynclinal Sedimentary Magmatic-Arc (A,B, and C).

Discuss with your counselor the different rock types and estimated ages of the rocks represented:

Determine whether the rocks are horizontal, folded, or faulted, and explain how you arrived at your conclusion.

REQUIREMENT 5: Complete **ONE** of the Options Listed Below – A, B, C, or D:

- A. Surface and Sedimentary Process Option.
- B. Energy Resources Option.
- C. **Mineral Resources Option.**
- D. Earth History Option.

Requirement 5C: Mineral Resources Option:

1.) Define Rock. Discuss the three classes of rocks including their origin and characteristics.

DEFINITION:

ROCK:

The three classes of rock; including their origin and characteristics.

1.)

Class: _____

Origin: _____

Characteristics: _____

2.)

Class: _____

Origin: _____

Characteristics: _____

3.)

Class: _____

Origin: _____

Characteristics: _____

REQUIREMENT 5C: Mineral Resources Option:

2.) Define Mineral. Discuss the origin of minerals and their chemical composition and identification properties, including hardness, specific gravity, color, streak, cleavage, luster, and crystal form.

DEFINITION:

Mineral:

Identifying Minerals: Match-Up:

- 1.) Hardness: _____
- 2.) Specific Gravity: _____
- 3.) Color: _____
- 4.) Streak: _____
- 5.) Cleavage: _____
- 6.) Luster: _____
- 7.) Crystal Form: _____
- 8.) Fracture: _____
- 9.) Chemical Composition: _____

- (a) It breaks along uneven surfaces or in irregular directions when struck against a harder object.
- (b) The weight of a mineral compared with the weight of an equal volume of water.
- (c) A measure of the ease or difficulty with which it can be scratched.
- (d) The color of a mineral when it is powdered.
- (e) It breaks along smooth surfaces and in regular directions.
- (f) The appearance of a mineral in normal light.
- (g) The shapes of crystals that help us to identify minerals.
- (h) The quality of an object by which one can see its shade or tint.
- (i) Every mineral has a definite composition, which is given as its formula and also varies within fixed limits.

REQUIREMENT 5C: Mineral Resources Option:

3. Do **ONE** of the Following:

- a. Collect 10 different rocks or minerals. Record in a notebook where you obtained (found, bought, or traded) each one. Label each specimen, identify its class and origin, determine its chemical composition, and list its physical properties. Share your collection with your counselor.

- b. With your counselor's assistance, identify 15 different rocks and minerals. List the name of each specimen, tell whether it is a rock or mineral and give the name of its class (if it is a rock) or list its identifying physical properties (if it is a mineral).

- 1.)
Granite: _____
- 2.)
Rhyolite: _____
- 3.)
Shale: _____
- 4.)
Blue Calcite: _____
- 5.)
Pyrite: _____
- 6.)
Feldspar: _____
- 7.)
Pumice: _____
- 8.)
Sandstone: _____
- 9.)
Gold Ore: _____
- 10.)
Fluorite: _____
- 11.)
Rose Quartz: _____
- 12.)
Obsidian: _____
- 13.)
Silent: _____
- 14.)
Copper Ore: _____
- 15.)
Mica: _____

REQUIREMENT 5C: Mineral Resources Options:

3.) List three of the most common road building materials used in your area. Explain how each material is produced and how each is used in road building.

1.) Limestone: How is it produced and how is it used in road building?

2.) Oil Refinery Petroleum: How is it produced and how is it used in road building?

3.) Calcite: How is it produced and how is it used in road building?

REQUIREMENT 5C: Mineral Resources Option:

5. Do **ONE** of the following:

c.) With your counselor, choose two examples of rocks and two examples of minerals. Discuss the mining of these materials and describe how each is used by society.

1.

Granite:

2.

Blue Calcite Marble:

3.

Fluorite:

4.

Selenite:

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GEOLOGY CLASS

SCOUT

WEBELO

Scout Name: _____

Troop Number: _____

Date: _____

REQUIREMENT #1: Explain what Geology is.

DEFINITION:

GEOLOGY: _____

REQUIREMENT #2: ** ALTERNATIVE: Present a collection of 10 different rocks with specimens of Sedimentary, Igneous, and Metamorphic rocks properly marked, cataloged, and displayed.

****WE USE THE CALIFORNIA ROCK AND MINERAL SET TO MEET THE REQUIREMENTS.**

REQUIREMENT #3: Define rock. Discuss and define three classes of rocks. List the characteristics of each class, how they are formed and how they are named.

DEFINITION:

ROCK: _____

SEDIMENTARY

CHARACTERISTICS: _____

HOW WAS IT FORMED? _____

ORIGIN OF NAME: _____

IGNEOUS

CHARACTERISTICS: _____

HOW WAS IT FORMED: _____

ORIGIN OF NAME: _____

METAMORPHIC

CHARACTERISTICS: _____

HOW WAS IT FORMED? _____

ORIGIN OF NAME: _____

REQUIREMENT #4: Define mineral. Tell how to identify minerals. Tell how rocks and minerals differ. List 5 of the most common rock forming minerals. Tell how they are identified. Tell how hardness, specific gravity, color, streak, cleavage, luster, and crystal form are useful in identifying minerals.

DEFINITION:

MINERAL: _____

HOW CAN YOU IDENTIFY MINERALS? _____

HOW DO ROCKS AND MINERALS DIFFER? _____

LIST FIVE OF THE MOST COMMON ROCK FORMING MINERALS AND HOW TO IDENTIFY THEM:

1. _____

2. _____

3. _____

4. _____

5. _____

DEFINE AND EXPLAIN HOW THEY ARE USEFUL IN IDENTIFYING MINERALS:

HARDNESS: _____

SPECIFIC GRAVITY: _____

COLOR: _____

STREAK: _____

CLEAVAGE: _____

LUSTER: _____

CRYSTAL FORM: _____

REQUIREMENT #6: Draw a diagram of the Hydrological Cycle and discuss it and its effects with your councilor.

DEFINITION:

1. Transpiration: _____

2. Percolation: _____

3. Condensation: _____

4. Evaporation: _____

5. Precipitation: _____

REQUIREMENT #7 (A): Tell about the occurrence of volcanoes on land and in the ocean. Describe the difference between Igneous Intrusive Rocks and Igneous Extrusive Rocks.

Volcanoes on Land: _____

Volcanoes in the Ocean; _____

What is the difference between igneous intrusive and igneous extrusive rocks?

REQUIREMENT #8: Make a chart showing the Geological Eras and Periods and show in what geological time the rocks in your region were formed.

ERA: Paleozoic (500 Million years ago)

PERIODS:

Cambrian/Ordovician/Silurian/Devonian/Mississippian/Pennsylvanian/Permian

ERA: Mesozoic (210 Million years ago)

PERIODS:

Triassic/Jurassic/Cretaceous

ERA: Cenozoic (70 Million years ago)

PERIODS:

Paleocene/Eocene/Oligocene/Miocene/Pliocene/Pleistocene

REQUIREMENT #10: Discuss 2 environmental problems related to geology. Tell why faulting, landslides, waste disposal, pollution, water supply, and subsidence are important in land-use planning. Give an example of poor use of land in your area related to geological features or processes.

First Environmental Problem: _____

Second Environmental Problem: _____

WHY ARE THESE THINGS IMPORTANT IN LAND-USE PLANNING?

A. Faulting: _____

B. Landslides: _____

C. Waste Disposal: _____

D. Pollution: _____

E. Water Supply: _____

F. Subsidence: _____

Give an example of poor use of land in your area.

REQUIREMENT #12 (A): Read a pamphlet about careers in Geology.
Tell what you learned.

**** See attached Booklet****

REQUIREMENT 13: Discuss with your counselor what you have learned about careers in geology and how to prepare for them.

REQUIREMENT 5C: Mineral Resources Option:

3. Do **ONE** of the following:

- a. Collect 20 different rocks or minerals. Record in a notebook where you obtained (found, bought, or traded) each one. Label each specimen, identify its class and origin, determine its chemical composition, and list its physical properties. Share your collection with your counselor.

- b. With your counselor's assistance, identify 15 different rocks and minerals. List the name of each specimen, tell whether it is a rock or mineral and give the name of its class (if it is a rock) or list its identifying physical properties (if it is a mineral).

- 1).
Obsidian _____
- 2).
Granite _____
- 3).
Sandstone _____
- 4).
Serpentine _____
- 5).
Halite _____
- 6).
Fluorite _____
- 7).
Calcite _____
- 8).
Pyrite _____
- 9).
Rose Quartz _____
- 10).
Talc _____
- 11).
Gold _____
- 12).
Selenite _____
- 13).
Biotite _____
- 14).
Feldspar _____
- 15).
Sulphur _____
- 16).
Magnetite _____

