**ROCKS AND MINERALS LESSON PLANS**

***Lesson One – Thinking About Rocks***

**GRADE LEVEL EXPECTATION**: Science 4 Strand 5 Processes and Interactions of the Earth’s Systems (Geosphere, Atmosphere, and Hydrosphere). A. The Earth’s crust is composed of various materials, including soil, minerals, and rocks, with characteristic properties. A. Identify and describe the components of soil (e.g. plant roots and debris, bacteria, fungi, worms, types of rock) and its properties (e.g. odor, color, resistance to erosion, texture, fertility, relative grain size, absorption rate) b. Compare the physical properties (i.e. size, shape, color, texture, layering, presence of fossils) of rocks (mixtures of different Earth materials, each with observable physical properties.

**Depth of Knowledge**: a.1; b.2

**Objective**: Students will set up science notebooks in which they will record their observations, ideas, and questions.

Students share their ideas about rocks and discuss what they would like to learn about them.

Students observe three rocks and record their descriptions of them.

Students connect their descriptions of rocks with properties of rocks.

**Learning Method**: Small group

**Materials:** Science notebooks, Record Sheet 1-A Rocks – Record of My Observations, 1 hand lens, 1 set of rocks 1, 2, 3, and 1 cardboard tray

**Learning Activities**:

Discuss with students

1. What do you know about rocks?
2. Where have you found rocks?
3. How are rocks used?

Record on charts “What We Know about Rocks” and “What We Want to Know about Rocks”

Observe rocks 1, 2, and 3 and complete Record Sheet 1-A

Discuss findings as a class.

**Assessment**: Science Notebook

***Lesson Two – Observing Rocks: How Are They the Same and Different?***

**GRADE LEVEL EXPECTATION**: Science 4 Strand 5 Processes and Interactions of the Earth’s Systems (Geosphere, Atmosphere, and Hydrosphere). A. The Earth’s crust is composed of various materials, including soil, minerals, and rocks, with characteristic properties. A. Identify and describe the components of soil (e.g. plant roots and debris, bacteria, fungi, worms, types of rock) and its properties (e.g. odor, color, resistance to erosion, texture, fertility, relative grain size, absorption rate) b. Compare the physical properties (i.e. size, shape, color, texture, layering, presence of fossils) of rocks (mixtures of different Earth materials, each with observable physical properties.

**Depth of Knowledge**: a.1; b.2

**Objective**: Students observe and describe the properties of 12 rocks.

Students sort rocks according to similarities and differences they observe.

Students describe and discuss the properties that were the basis of each sort.

Students sort rocks according to properties suggested by their classmates.

**Learning Method**: Small group

**Materials:** Science notebook, 1 hand lens, 1 set of 12 rocks per group (1-12), 1 cardboard tray

**Learning Activities**: Students will review Record Sheet 1-A and think of one property of each of the rocks they studied in lesson one.

Students explore the twelve rocks using all senses except taste.

Students sort rocks according to similarities and differences they observe.

Students share their observations.

**Assessment**: Students think about one property that was shared during class discussion. They write several sentences about that property in their science notebooks. Use the following questions to focus:

1. What property did you choose?
2. Did you describe a property to the class? If so, what words did you use?
3. After you sorted your rocks by that property, how many groups did you have?

***Lesson Three – Learning More About Rocks***

**GRADE LEVEL EXPECTATION**: Science 4 Strand 5 Processes and Interactions of the Earth’s Systems (Geosphere, Atmosphere, and Hydrosphere). A. The Earth’s crust is composed of various materials, including soil, minerals, and rocks, with characteristic properties. A. Identify and describe the components of soil (e.g. plant roots and debris, bacteria, fungi, worms, types of rock) and its properties (e.g. odor, color, resistance to erosion, texture, fertility, relative grain size, absorption rate) b. Compare the physical properties (i.e. size, shape, color, texture, layering, presence of fossils) of rocks (mixtures of different Earth materials, each with observable physical properties.

**Depth of Knowledge**: a.1; b.2

**Objective**: Students use a Venn diagram to identify and discuss similarities and differences among rocks.

Students read about and discuss how rocks are formed.

Students identify observable properties that are related to how rocks are formed.

Students use properties related to how rocks are formed to sort rocks by classes, sedimentary, igneous, or metamorphic.

**Learning Method**: Small group

**Materials:** Science notebook, hands lens, one set of rocks, labeled 1-12, cardboard tray

**Learning Activities**: Students review lesson 2.

Students observe the 12 different rocks and discuss how they are alike and different.

Students read “Rocks – Here, There, Everywhere” pages 11-12

Review with the class “What we Would Like to Know about Rocks”. Place a check beside questions that have been answered and add new questions.

**Assessment**: Science Notebook

***Lesson Four – Discovering Minerals***

**GRADE LEVEL EXPECTATION**: Science 4 Strand 5 Processes and Interactions of the Earth’s Systems (Geosphere, Atmosphere, and Hydrosphere). A. The Earth’s crust is composed of various materials, including soil, minerals, and rocks, with characteristic properties. A. Identify and describe the components of soil (e.g. plant roots and debris, bacteria, fungi, worms, types of rock) and its properties (e.g. odor, color, resistance to erosion, texture, fertility, relative grain size, absorption rate) b. Compare the physical properties (i.e. size, shape, color, texture, layering, presence of fossils) of rocks (mixtures of different Earth materials, each with observable physical properties.

**Depth of Knowledge**: a.1; b.2

**Objective**: Students review and summarize the properties of the rocks they have observed.

Students compare rocks and minerals and discuss the similarities and differences between them.

Students observe and describe three minerals.

Students record and discuss their observations of three minerals.

**Learning Method**: Small group

**Materials:** Science notebook, Record Sheet 4-A, Record Sheet 1-A, 1 hand lens, 1 set of 12 rocks, 1 set of 3 minerals, A-C, post-it notes

**Learning Activities**:

Prepare a Venn Diagram with Rocks and Minerals.

Review record sheet 1-A.

Record properties shared by rocks on post it notes. Place inside the Venn Diagram “Rocks”

Observe 3 minerals with rocks. Complete Record Sheet 4-A – Minerals – Record of My Observations

Use questions to focus observations:

Which rocks have tiny pieces in them?

What do you think they are?

Do any of the minerals look like these pieces?

Which rocks look like they might have little pieces of mineral A in them? Mineral B? Mineral C?

**Assessment**: Review Record Sheet 4-A

***Lesson 5 – Sharing What We Know about Minerals***

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**Depth of Knowledge**: a.1; b.2

**Objective**: Students share their ideas and questions about minerals.

Students observe and describe 12 minerals.

Students compare and discuss their observations of the 12 minerals.

Students compare and describe similarities between samples of the same mineral.

**Learning Method**: small group

**Materials:**

Science notebook, Record Sheet 4-A, 1 hand lens, 1 set of minerals, A-L

**Learning Activities**:

Create What We Know About Minerals and What We Want to Know About Minerals charts.

Describe, compare and sort the mineral samples.

Compare minerals samples with another group to discuss similarities and differences between the two mineral samples.

Students will write final thoughts in their science notebooks.

**Assessment**: Science notebook

***Lesson 6 – Observing Minerals: How Are They the Same and Different?***

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**Depth of Knowledge**: a.1; b.2

**Objective**:

Students observe, describe, and draw each mineral in their set.

Students observe, describe and record the texture and smell of each mineral.

Students discuss the different terms they used to describe the same property.

Students set up their mineral profile sheets.

**Learning Method**: Small group

**Materials:** Science notebook, 1 hand lens, 12 mineral profile sheets, 1 set of 12 minerals, 1 dropper, 1 cup water

**Learning Activities**:

Students review observations from Lesson 5.

Students explore the 12 minerals by using their senses of sight, tough, and smell**.** Point out that putting a few drops of water make it easier to detect a smell and observe color.

Students feel in mineral profile sheets in three boxes – mineral, feel, and smell.

Students review class lists “What We Know about Minerals” and “What We Want to Know about Minerals”.

Students read page 22 about sulfur.

**Assessment**:

Mineral profile sheets in science notebook

***Lesson***

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**Depth of Knowledge**: a.1; b.2

**Objective**:

**Learning Method**:

**Materials:**

**Learning Activities**:

**Assessment**: