Text

Description automatically generatedName Geology 12 - 2023

TA

**LG #6: Sedimentary & Metamorphic Rocks**

**BIG IDEA**: Minerals, rocks, and earth materials form in response to conditions within and on the Earth’s surface and are the foundation of many resource-based industries.

**Fundamental Knowledge (I know):**

* Processes of sedimentary rock formation:
  + clastic sediments and chemical (precipitate or biochemical) sediments, and the rocks they become
  + relationships between depositional environments and particle size, shape, sorting, fossils, and organic structures
  + properties of common sedimentary rocks
  + sedimentary features including ones that affect porosity and permeability
* Processes of metamorphic rock formation:
  + relationships between the types and characteristics of metamorphic rocks and parent rock, temperature, pressure, and chemical conditions
  + properties of common metamorphic rocks
  + foliated and non-foliated rocks
  + contact versus regional metamorphism
  + metamorphic grade (e.g., with reference to coal)

**Curricular Competencies (I can)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Proficiency Scale Teacher and Student self assessment**  **(Circle one)** | **Example** | **Evidence**  **(How do you know?)** |
| Construct, analyze, and interpret graphs, models, and/or diagrams.  Analyze cause-and-effect relationships. | **Emerging (C-/C)**  **Initial Understanding** | Completed Activities #1 & #2 – Journal with fundamental knowledge and vocabulary (in your words).  Activity #3 is complete. |  |
| **Developing (C+/B) Partial/Near Complete Understanding** | Completed Activities #1 & #2 – Journal with fundamental knowledge and vocabulary (in your words with details).  Completed the suggested learning activities below (Activities #3 & #4) |  |
| **Proficient (B+/A)**  **Complete Understanding** | Completed Activities #1 & #2 – Journal with fundamental knowledge and vocabulary (in your words, with examples and diagrams, connecting to the main ideas).  Suggested activities (Activities #3 & #4) are thoroughly completed, provide details, use vocab that is related accurately and good resources. |  |
| **Extending (A+) Sophisticated Understanding** |  |  |

**Student Signature: Teacher Signature: Date:**

Resources can be found at www.THSSscience.com

User: THSS

Password: science

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**Suggested Learning Activities:**

**RESOURCES**

1. Text: **Physical Geology & the Environment**

2. Online Resources: Videos

Sedimentary Rocks - <https://www.youtube.com/watch?v=Etu9BWbuDlY>

Metamorphic Rocks - <https://www.youtube.com/watch?v=1oQ1J0w3x0o>

The Rock Cycle - <https://www.youtube.com/watch?v=Vp_S3BDiR-I>

**Activity #1: Journal**

1. Refer to your text Physical Geology & the Environment Ch. 9 Sediments and Sedimentary Rocks. Read pages 222 – 239.

*Alternatively, you can check out the online resources listed above and/or find your own to help research the definitions below.*

2. In your journal:

* describe the processes involved in creating a sedimentary rock including: sediments, transportation, and lithification.
* Describe how the 3 different types of sedimentary rock are formed: clastic, chemical, and organic. *Give examples of each rock type.*
* Describe the different types of sedimentary structures and explain what they tell us about the environment in which they were formed: *bedding, original horizontality, superposition, crossbedding, ripple marks, graded bedding, mud cracks and varves*.
* Why are fossils commonly found in sedimentary rock and not igneous rock?

**Activity #2 : Journal**

1. Refer to your text Physical Geology & the Environment Ch. 10 Metamorphism, Metamorphic Rocks, and Hydrothermal Rocks. Read pages 252 -275.

*Alternatively, you can check out the online resources listed above and/or find your own to help research the definitions below.*

2. In your journal:

* Describe how a metamorphic rock forms.
* Describe what foliation is.
* Describe the following rocks: *slate, phyllite, schist, gneiss, metaconglomerate, quartzite, marble.*
* Compare and contrast contact and regional metamorphism.
* Describe the process of hydrothermal activity including hydrothermal vents (black smokers) and hydrothermal veins.

**Activity #3: Types of Sedimentary Rocks - Vocabulary Word Scramble**

1. Complete the worksheet found on page 4.

Diagram

Description automatically generated**Activity #4: The Rock Cycle**

Like most Earth materials, rocks are created and destroyed in cycles. **The rock cycle** is a model that describes the formation, breakdown, and reformation of a rock as a result of sedimentary, igneous, and metamorphic processes. All rocks are made up of minerals.

1. Using at least three (3) different materials, create a model that shows the different processes found in the rock cycle.

2. At minimum, label the types of rocks present in the rock cycle and the different processes they experience.

**TYPES OF SEDIMENTARY ROCKS**

**Directions**: Unscramble each of the clue words. Copy the letters in the numbered cells to other cells with the same number.

Diagram

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