Text

Description automatically generatedName Geology 12 - 2023

TA

**LG #10: Weathering and Erosion Processes**

**BIG IDEA**: Weathering and erosion processes continually reshape landscapes through the

interaction of the geosphere with the hydrosphere and atmosphere

**Fundamental Knowledge (I know):**

* Weathering and erosion processes:
  + modifications of the Earth’s surface and production of characteristic features
  + mass movements (slide, soil creep)
  + controls of mass wasting: for example, drainage, installation of perforated pipe
  + chemical, physical, and biological weathering
  + weathering potential of minerals in Bowen’s reaction series (e.g., stability of quartz)

**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.  Demonstrate a sustained intellectual curiosity about a scientific topic  or problem of personal, local, or global interest.  Analyze cause-and-effect relationships. | **Emerging (C-/C)**  **Initial Understanding** | Completed Activity #1 – Journal with fundamental knowledge and vocabulary (in your words).  Activity #2 is complete. |  |
| **Developing (C+/B) Partial/Near Complete Understanding** | Completed Activity #1 – Journal with fundamental knowledge and vocabulary (in your words with details).  Completed the suggested learning activities below (Activities #2 & #3 – Choice A or B) |  |
| **Proficient (B+/A)**  **Complete Understanding** | Completed Activity #1 – Journal with fundamental knowledge and vocabulary (in your words, with examples and diagrams, connecting to the main ideas).  Suggested activities (Activities #2 & #3 – Choice A or B) 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

LG 10 Weathering and Erosion Processes

**Suggested Learning Activities:**

**RESOURCES**

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

2. Online Resources:

Weathering & erosion - <https://www.youtube.com/watch?v=qGw1yB10lX0>

Soil formation - <https://www.youtube.com/watch?v=x7pmsCL6Ytc>

Mass wasting / Mass movement - <https://www.youtube.com/watch?v=RCxvbosa4fU&t=13s>

<https://www.youtube.com/watch?v=Egq6wS5wAUA>

**Activity #1: Journal**

1. Refer to your text Physical Geology & the Environment Ch. 8 Weathering and Soil. Read pages 202-220; Ch. 13 Mass Wasting. Read pages 330-353.

*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 difference between weathering and erosion.
* Describe the difference between mechanical weathering and chemical weathering.
* Explain the different types of mechanical (physical) weathering.
* Describe the different ways that the climate can affect weathering?
* Describe the role of water in chemical weathering.
* Describe what “soil horizons” are. Briefly explain the differences between the A, B & C horizon layers.
* Describe what mass wasting is and how it is classified.
* Explain the relationship between shear force and shear strength with respect to mass wasting.
* List the different types of triggering mechanisms for mass wasting events.
* Describe the difference between debris slides and debris falls.

**Activity #2: Weathering & Erosion Worksheet**

1. Complete the questions on pages 3-5.

**Weathering & Erosion Worksheet**

Base your answers on the data table and graph below.

Samples of three different rock materials, A, B, and C were placed in three containers of water and shaken vigorously for 20 minutes. Every five minutes, the rocks were strained through a screen. The mass of the rock materials trapped by the screen were dried and their mass was measured. This is the data table:

Table

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The data for Rock Material A and Rock Material B is graphed below:

Chart, line chart

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Review the data and answer the following questions:

1. Graph the data for Rock Material C on the graph above. Use points and surround each point with a small circle. Connect the points:



6. Refer to the graph. Which sample (A, B, or C) lost the most mass in the first five minutes? Which sample lost the most mass in the last five minutes?

-most in the first five minutes: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-most in the last five minutes: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. What are the most likely reasons for the differences in the rate (speed) that mass was

lost in the three rock samples?

**Diagram

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Description automatically generated**Activity #3: Mass Wasting Inquiry**

CHOICE A: **Examples of weathering, erosion, or deposition in your neighborhood.**

Explore your local environment and find examples of weathering, erosion, or deposition. Aim to fill a one-page space in Word, or one PowerPoint slide, etc.

1. Identify and describe at minimum three (3) examples.

2. Include visual representations (could be a photo, picture, drawing, etc.) of your examples.

3. Describe what processes of weathering, erosion and/or deposition are occurring in each example.

4. If we lived in a different climate, would the same outcomes happen for each of your examples? Explain.

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Make your own news article on a mass wasting event (can be recent or historic). Your article should be between 250 - 400 words in length.

1. Consider including details to the following questions:

* How many people does / did it affect?
* Where did it happen?
* What type of mass wasting event was it?
* What was the cause(s) of the mass wasting event?
* Where any precautions in place at the time of the event? Where any added afterwards (or suggested)?

2. Include a picture / photo of the mass wasting event for your article.

3. Be sure to reference any resources used for your article.