Earth & Space Science - Tectonic Plates

Unit 4 Packet

Name _____ Period _____ Score ____/ 43

Canvas Assignments in italics and underlined

- Day 1: *The Ocean Floor & Plate Boundaries*
- Day 2: Mantle Convection & Continental Drift & *Tracking the Hawaiian Islands* ____ /6
- Day 3: Geologic Hazards 1 & *Geologic Hazard Website* ____ /15
- Day 4: Geologic Hazards 2 & *Geologic Hazard Website* ____ /6
- Day 5: Weathering & Erosion ____ /16
- Day 6: *Geography Project*
- Day 7: Review (separate paper. **THE REVIEW WILL BE THE NOTES YOU CAN USE ON THE TEST**)
- Day 8: *Test*

Day 2: Mantle Convection & Continental Drift (___ / 6 pts)

Kickstart Question

NOTES (___ / 6 pts)

Slides: https://science.dbuckley.dev/slides/earth-systems/04/mantle-convection

What is convection? **(1 pt)**

Draw a picture of mantle convection. How does it affect the lithosphere (crust)? **(1 pt)**

Draw and label the 5 mechanical layers of the Earth and describe the state of the rock (e.g. rigid, liquid, etc.). **(4 pts)**

Day 3: Geologic Hazards 1 (___ / 15 pts)

Kickstart Question

See https://geology.utah.gov/hazards/

Since 1850, at least _____ deaths and an undetermined financial cost have been attributed to geologic hazards in Utah.

For the remaining questions, click on the boxes with the caution symbols /!



Earthquakes (3 pts)

Utah has experienced _____ earthquakes greater than magnitude (M) 5.5 since pioneer settlement in 1847.

What are two causes of earthquakes in Utah?

1.

2.

Landslides (3 pts)

What regions are susceptible to landslides?

What are ways to reduce the risk of landslides?

Flooding Hazards (3 pts)

What are four ways listed that cause flooding?

Problem Soils and Rock Hazards (3 pts)

Define three ways that problem soils and rock hazards can cause damage.

Volcanoes (3 pts)

Fill out the table about volcanoes.

Volcano Type	**Volcano Shape**	**Volcano Size**	**Volcano Materials**	**Eruption Type**	**Utah Example**
Cinder Cone					
Shield Volcano					
Stratovolcano					

Day 4: Geologic Hazards 2 (___ / 6 pts)

Kickstart Question

From the online textbook *Earth and Space for Utah SEEd Standards (2023), pg 119-120.*

This image is of a landslide in Riverdale, Utah in 2018. Over several months the landslide crept closer to the houses pictured here, eventually claiming the playset and a corner of the garage of the house in the background. Several houses along this street were eventually vacated and later torn down due to the danger of the landslide.



Image by Ben Erickson from UGS;
https://geology.utah.gov/map-pub/survey-notes/the-curious-spring-creek-road-landslide/; public domain

Observations and Wonderings

What is the problem in this situation? **(1 pt)**

What are possible criteria (positive outcomes) to this situation? **(1 pt)**

What are constraints (limitations) with this situation? **(1 pt)**

1. What could be causing this landslide in Riverdale? **(1 pt)**

2. How are the people who lived in these houses affected? **(1 pt)**

3. Can landslides like this one be predicted? Why or why not? **(1 pt)**

Day 5: Weathering & Erosion (___ / 16 pts)

Kickstart Question

NOTES (___ / 7 pts)

Slides: https://science.dbuckley.dev/slides/earth-systems/04/weathering-erosion

Define Weathering **(1 pt)**

Define Erosion **(1 pt)**

Define Deposition **(1 pt)**

What is a constructive force? **(1 pt)**

What is a destructive force? **(1 pt)**

Draw a picture of a constructive event and a destructive event. Describe each picture. **(2 pts)**

From the online textbook *Earth and Space for Utah SEEd Standards (2023), pg 104.*



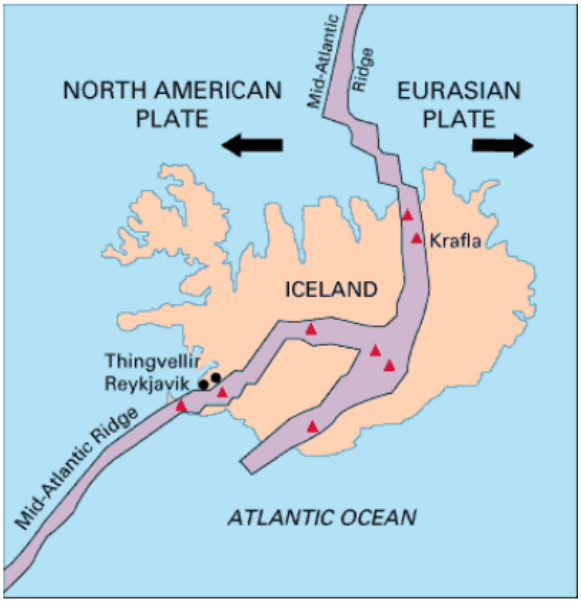


Image by Diego Delso, delso.photo License CC-BY-SA
https://commons.wikimedia.org/wiki/File:Ca%C3%B1%C3%B3n_Silfra,_Parque_Nacional_de_%C3%9Eingvellir,_Su%C3%B0urland,_Islandia,_2014-08-16,_DD_055.JPG
Diagram by USGS https://pubs.usgs.gov/gip/dynamic/understanding.html

Silfra Canyon, a popular diving location, is located on the island of Iceland within Thingvellir National Park which covers part of the area where the Mid-Atlantic ridge runs through the island.

QUESTIONS (___ / 4 pts)

1. How is mantle convection influencing the volcanoes on Iceland? **(1 pt)**

2. How is mantle convection influencing the movement of the North American and Eurasian Plates at Iceland? **(1 pt)**

3. Silfra Canyon isn't the only area on Iceland that is widening because of the Mid-Atlantic Ridge plate boundary. Why do the deconstructive forces of weathering and erosion prevent us from seeing the bottom of the Mid-Atlantic Ridge on land? **(1 pt)**

4. Draw and label a diagram showing the scale at which mantle convection is happening in the mantle compared to the surface features forming on Iceland (i.e. Silfra Canyon, volcanoes). **(1 pt)**

SCAVENGER HUNT (___ / 5 pts)

Slow changes to Earth's Surface. Check the boxes if you find the phenomenon outside. **(3 pts)**

- 1. Deposition of sediments in a new place.
- 2. Cracked rock.
- 3. A pile of sediments.
- 4. A small channel from runoff.
- 5. A sedimentary rock that allows sediments to be easily scraped off of it.
- 6. Evidence of weathering.
- 7. Exposed tree roots above the ground.
- 8. A sidewalk crack.
- 9. Mud.
- 10. A drainage pipe.
- 11. A sloped hill.
- 12. Evidence of ice wedging.

Draw a picture of any of the above features. **(2 pts)**