

Grading Checklist

Learning Assessment #3 – Igneous & Sedimentary Rocks

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Learning assessments are graded using a checklist-style rubric. The purpose of the checklist is to clearly and concisely show students where they lost marks on the assignment and why. When students are reviewing their work they initially focus on the areas they got incorrect as identified on the checklist.

The checklists also help to ensure that grading is transparent to the students. They help maintain consistency amongst graders, which may be a challenge in large courses with multiple instructors/teaching assistants marking the same assignment.

Note: Because this learning assessment was completed in two class periods, there are two separate grading checklists. The first is for Parts I & II and the second is for Part III.

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LEARNING ASSESSMENT #3 (IGNEOUS AND SEDIMENTARY ROCKS) GRADING CHECKLIST

PART 1: (/26)

Area 1

Predominant Rock Type/Name - 4 pts

- Rock type – Extrusive
- Rock name - any one of: dacite, andesite, basalt, or tuff
- Rock chemistry – must match rock type listed (dacite = silicic, andesite = intermediate, basalt = mafic, tuff = silicic)
- Other rock types - list more rocks that occur in this area (BONUS QUESTION)

Igneous Processes – 3 pts

- Igneous process (volcanic eruptions)
- Igneous processes (solidification)
- Description – magma is erupting and solidifying at the Earth's surface, igneous rocks are forming

Area 2

Predominant Rock Type/Name – 4 pts

- Rock type – Intrusive
- Rock name – Diorite or Gabbro – MUST match with rock type from Area 1
- Rock chemistry – intermediate, silicic/felsic or mafic (MUST match rock type given)
- Other rock types – list more rocks that are found in this area that are consistent with Area 1 rocks (BONUS QUESTION)

Igneous Processes (any three of the following, if all 4 listed one bonus point) – 4 pts

- Igneous process (solidification)
- Igneous processes (fractional crystallization)
- Igneous processes (assimilation and/or contamination)
- Igneous processes (transport)
- Description: magma chamber - magma is solidifying (and fractionating), assimilating surrounding rock

Area 3

Predominant Rock Type/Name – 3 pts

- Rock type – Intrusive
- Rock name – Gabbro

Rock chemistry - Mafic

Igneous Processes and Causes – 4 pts

- Igneous process (transport)
- Igneous processes (contamination)
- Igneous processes (solidification)
- Buoyant magma rises upward from melting area

Area 4

Predominant Rock Type/Name – 3 pts

- Rock type - Intrusive
- Rock name - Peridotite
- Rock chemistry – ultramafic
- Bonus: Basalt or Gabbro (the subducting oceanic crust)

Igneous Processes – 3 pts

- Melting
- Partial melting
- Description - Addition of volatiles causes melting of mantle

PART 2: (/9)

Labelled clearly on Cross Section:

1. Areas of Weathering and Erosion

- Weathering & Erosion – Eurasia
- Weathering & erosion – Japan

2. Areas of Transport

- Transport –Eurasia
- Eurasia to depositional basin transport direction (arrow)
- Transport – Island of Japan
- Japan transport direction (westward to the Japan Sea)
- Japan transport direction (eastward to the trench)

3. Areas of Deposition

- Deposition & lithification (Japan Sea)
- Deposition & lithification (Pacific)

Sub Total: /35

Bonus: Sedimentary Rock Types (9 points)

- ___ sandstone (edge of Eurasia)
- ___ sandstone (west edge of Japan)
- ___ conglomerate (edge of Eurasia)
- ___ conglomerate (either edge of Japan or at/near volcano)
- ___ conglomerate and/or sandstone (in the trench)
- ___ siltstone and shale (deep basin of Japan sea)
- ___ siltstone and shale (ocean basin east of trench)
- ___ limestone (shallow marine in Japan sea)
- ___ limestone (shallow marine in Japan sea – other side as well)

TOTAL including Bonus: /35

NAME: _____

**LEARNING ASSESSMENT #3: IGNEOUS AND SEDIMENTARY ROCKS
GRADING CHECKLIST (Part III)**

PART 3: Geologic History of the Daisen Volcano (18 points)

1.3-1.2 Ma

- eruption of mafic or basaltic magma / lava flows
- formation of basalt or forming volcano
- diagram showing shield-like volcano structure
- diagram indicates / labels basalt

1.0 – 0.02 Ma

- andesite lava flow eruption at 1 Ma (first activity during this period)
- early dacite eruptions and rock formation (lava flows)
- explosive eruption forming tuff at 0.6 Ma
- post 0.6 Ma eruptions of dacite
- 0.5 Ma eruption of more andesite
- last to happen: pyroclastic eruptions / flows and mudflows
- diagram showing composite volcano shape
- diagram shows correct order of rock types

0.02 – 0 Ma

- weathering and erosion of volcanic rocks / NO volcanic eruptions through this time
- formation of sedimentary gravel / talus deposits
- diagram showing composite volcano shape
- diagram shows correct order of rock types and more dacite over tuff (indicating activity between 0.6 and 0.02 Ma)
- diagram indicates weathering / erosion / transport processes or gravel / talus deposits
- transport of sediment eroded from volcanic rocks into Japan Sea

Total: /18