

# **Introduction To Earth Science**

Spring 2020

**Please answer the following question.**

What happens at convergent plate boundaries where oceanic lithosphere collides with continental lithosphere, and why does this happen?

**Include a discussion and description of the following topics in the response.**

1. mineral assemblages (the minerals in the rocks of each type of lithosphere – be specific)
2. provenance of oceanic lithosphere (the reasons for oceanic lithosphere composition)
3. mineral chemistry (specify the composition of minerals – be specific)
4. rock types associated with the two types of lithosphere (be specific)
5. chemical condensation sequence
6. convergent plate boundary
7. Titus-Bode relationship
8. valence shell electrons
9. unstable isotopes
10. subduction zone
11. iron catastrophe
12. Big Bang Theory
13. atomic number
14. specific gravity
15. Pauling's Rules
16. Benioff zone
17. atomic mass
18. Bohr theory
19. lithosphere
20. convection
21. seismicity
22. volcanoes
23. octet rule
24. neutrons
25. isostasy
26. protons
27. density
28. mol

(over)

## Guidelines

- a) The paper should have a cover page with your name, an appropriate and informative title, and date.
- b) Tell a story that uses all 28 topics, shows their interrelationships, and lets me know (the reader who assigns the grade) that you comprehend the content areas and the connections.
- c) Use at least the following five subheadings in the response: Thesis, Introduction, Discussion, Conclusion, and Laboratory Procedure – add appropriate subheadings as necessary to defend the thesis.
- d) The paper should start with a thesis statement; present and use the data and observations from the lab to defend the thesis. All statements in the paper must support the thesis.
- e) Use the concepts (1-28) and the lab work to make the case for subduction.
- f) The laboratory discussion should include the method, purpose, and possible errors and discrepancies.
- g) The conclusion should summarize the main points of the paper and defend the thesis – do not introduce new ideas in the conclusion.
- h) Write clearly and concisely – avoid vague statements.
- i) The response must be typed – spelling, grammar, and presentation do count.
- j) Use 1.5 line spacing.
- k) Include all topics (1-28) in the response and **embolden** each of the terms only once.
- l) Each of the topics should be used to clearly support the thesis.
- m) The paper should be based on the laboratory work related to specific gravity – use the data from lab.
- n) Use page numbers (no page number on title page; page 1 starts with first page of text).
- o) Use one staple to hold all pages together.
- p) Avoid use of word ‘you’ and other personal pronouns.
- q) Capitalize proper nouns – Earth is a proper noun.
- r) Do not use abbreviations.

The paper should be a seamless presentation that clearly elucidates what happens at collisional boundaries. This assignment is **not** a treatise on plate tectonics. Focus on the material discussed in lab this week and in class (this semester) and use all topics listed on the previous page. Use the topics to defend the thesis.

Please note that the order the topics were presented above is not the best way to present the topics in the paper. Put related topics together; include them in a section with an informative subheading – show the connections between the ideas – develop eloquent segues. Use the topics to defend the thesis.

## Assessment

This paper is worth **two** lab grades. Points will be distributed in the following way:

<b>Points</b>	<b>Content</b>
5	cover page (no page number)
5	thesis statement – take a stance; use a subheading
10	use of lab data, discussion of lab procedure (so one could repeat the laboratory), and discuss the potential sources of error.
5	embolden key words (1-28)
10	segues, paragraphs, and subheadings as required (statement ‘c’ above) and as necessary
50	use of concepts – tell a story, show relevance, and be sure to support the thesis
10	writing style (grammar, spelling, sentence structure, capitalization, use of paragraphs, and avoidance of personal pronouns – do not create a glossary)
5	presentation style (line spacing, staple, use of white space, and page numbering – no number on title page; first page of text is page 1)
–	late fee (due at the beginning of lab – loss of 10 points per calendar day)
100	Total