GG104 F 2011 potential midterm-style questions, based on lectures and readings: these will be updated after each class meeting, and posted at:
http://www.higp.hawaii.edu/~scott/GG104/GG104_f11_midterm_review.pdf

1. Why do we know more about continents than oceans?
2. Why do we know more about the crust?
3. How do you divide up the Earth with respect to chemical composition?
4. How do you divide up the Earth with respect to physical properties?
5. Why was the original continental drift idea not accepted?
6. Why is it that sometimes descriptions of how things were done in olden-day Hawaiʻi are considered “inaccurate”?
7. In general, what was the migration route of the people who colonized Hawaiʻi in pre-western-contact times?
8. Why might they have made these migrations?
9. Where might stories of menehune have originated?
10. What is a shield volcano?
11. What are key aspects of “Hawaiian-style” volcanic eruptions?
12. If temperature increases downward inside the Earth, why is almost all of the mantle solid?
13. How are temperature, gas content, and silica content related to the explosiveness of an eruption?
14. What things got people thinking about continental drift in the first place?
15. What are the processes involved in making new lithosphere vs. getting rid of it?
16. What is a Wadati-Benioff zone?
17. What is a mid-ocean ridge?
18. What is a transform fault?
19. What are three ways that melting (to form magma) occurs within the Earth?
20. What is melting, by the way?
21. What is the shape and structure of a hotspot?
22. What is a possible connection between flood basalts and hotspot traces?
23. What is the difference between absolute plate motion and relative plate motion?
24. How can you get different compositions of magma from the same starting composition of rock that is being melted?
25. How does this relate to the magmas that feed eruptions of Hawaiian volcanoes?
26. What happens to eruption frequency as a volcano moves off the hotspot?
27. Why do we have individual Hawaiian volcanoes and not a continuous ridge?
28. What are the connections between magma chamber, eruption, lava flow, rock type, and potential use of that rock as an implement?
29. What are phenocrysts? Vesicles?
30. What is a dike? Why is dike rock so good for certain stone implements?
31. What is the molecular structure of glass?
32. How are cooling rate and gas content related to the texture (crystal size and vesicle content) of an igneous rock?
33. What are pōhaku ʻelekū and pōhaku ʻalā?
34. How is the texture (crystal size, presence/absence of vesicles, etc.) of an igneous rock related to the type of stone implement that it can be made into?
35. What is super-cooling and how is it related to stone implements in Hawai’i?
36. What are the 3 common minerals that you can find in Hawaiian basalt?
37. What is pyroclastic material?
38. What are the general characteristics (surface, interior, behavior, velocity, etc.) of ‘a’ā and pāhoehoe lava flows?
39. What is a lava tube? What is a lava tree?
40. What are observation and empiricism, and how were/are they useful to Hawaiian society?
41. What is the usefulness of having hundreds of different cloud names?
42. What are some examples of experimentation in pre-contact Hawai’i?
43. Is western science completely devoid of gut feelings and hunches?
44. Are hunches better or worse if you have background knowledge?
45. Why are pueo (owls) important to the restoration of Kaho’olawe despite not being key parts of the natural ecosystem?
46. In what order were the islands formed (born) according to the Kumulipo?
47. In what order did Pele visit the islands?
48. Does it make sense that the word ‘moku’ refers both to an island and a canoe?
49. Why is the expression: He lohe pepeiao, he ‘ike maka nō (did you hear it or did you actually see it?) relevant to science?
50. Why is the expression: O ka mea kū pono, pa’a; o ka mea hewa, kāpae a’e (that which is good, keep; that which isn’t set aside) relevant to science?
51. What are problems with the terms pre-historic and pre-history, with regard to Maori (and other Polynesian) societies?
52. Why was the word maori not used to describe a race of people until westerners arrived to Aotearoa (New Zealand)?
53. How common is Māui in Polynesian stories, and how does he relate to geology?
54. Why is it difficult (and usually incorrect) to interpret myths and legends as history?
55. Why are sweet potatoes (kumara in Maori, ‘uala in Hawaiian) important to Polynesian history?
56. Why might Polynesian people have set off on long ocean journeys to islands they’d never visited? How did they navigate?
57. What are some of the differences between New Zealand and Polynesian islands that the first settlers would have had to deal with?
58. What might you expect to happen if a party of Maori sailed out to the Chatham Islands, where the Moriori lived?
59. Who are Papa and Wākea, and what are some meanings of their names?
60. Are all the islands said to be children of the same parents?
61. Did Pele form the Hawaiian islands or did she come later?
62. Why might Pele have left Kahiki (Tahiti)?
63. Why did Pele have to keep moving on once she arrived in Hawai’i?
64. What are some ways that you might use stone(s) on a deserted island if you were stranded there?
65. What are the properties of pōhaku ‘elekū? What is it about these properties that make this rock better for producing complex rounded shapes via “pecking”?
66. What are the properties of pōhaku ‘alā? What is it about these properties that make this rock better for producing flat and/or sharp forms via “flaking”?
67. How do archaeologists try to figure out where stone implements come from?
68. How would a geologist help an archaeologist figure out the source of a stone implement?
69. What is a “sphere of influence”?
70. What are some of the different quarry types in the Pacific?
71. How would you identify a quarry if you were looking for one today?
72. What is the difference between a quarry and a workshop?
73. If you see a change with time in the type and original location of stone in an archaeological site, what might that indicate?
74. What are texture, mineralogy, and chemical composition with respect to stone implements?
75. Which of these three were exploited by indigenous people?
76. Why was travel between Pacific Ocean archipelagos difficult?
77. What two lines of evidence suggests that despite this difficulty, people did indeed travel between archipelagos back in pre-western-contact times?
78. What is the significance of finding basalt tools on coral atolls?
79. What allows geochemists to determine the source of a basalt tool?
80. How much information can you get from a quick glance of Collerson & Weissler’s Figure 2? (yikes!)
81. What are some speculative reasons why someone would bring a stone (or stone implement) all the way to Napuka from Kaho‘olawe?
82. What do you think was the main reason why westerners didn’t think that Polynesians traveled purposely between archipelagos?
83. What were some of the things that scientists tried to use to trace the migration routes of early Polynesians?
84. What are the threats to pōhaku kiʻi (petroglyphs) on the island of Hawaiʻi?
85. Why do you need to walk carefully when studying or viewing petroglyphs?
86. What methods were used to make petroglyphs?
87. What is the easiest way to make a drawing using only natural material?
88. What is a geologic reason why so many more petroglyphs are known from Hawaiʻi than from the older islands?
89. What are some of the ways that stories about Pele are perpetuated?
90. In which direction did Pele and her family travel once they arrived in Hawaiʻi?
91. What are some of the manifestations of volcanic eruptions that occur in many of the chants about Pele?
92. What are the relationships between moving lava and moving water in some of the Pele chants?
93. What are some of the uses of geologic materials from olden-day Hawaiʻi?
94. How is the orientation of a valley related to its productivity for growing?
95. What are some of the things you might say if you want something from a stranger?
96. Why are you saying these things?
97. How could you use a mo'olelo about building a large structure to determine the population of an island?
98. How did the kahuna of olden times break stones?
99. What are some uses of geologic materials in modern-day Hawai‘i?
100. What are some reasons you might pause before going into an unknown valley or unfamiliar beach to gather pōhaku, wood, medicinal plants, etc?
101. What are some uses of geologic materials in modern-day Hawai‘i?
102. Why is basalt not such a great material for modern high-rise construction?
103. What are some modern uses for basalt besides actually building things?
104. What is BTB, and how does it work?
105. What are the components of cement?
106. What does the size of a pyroclastic particle tell you about how explosive an eruption was?
107. What mechanism(s) are involved in producing a Hawaiian lava fountain?
108. What does the form of a vent tell you about the nature of the eruption that formed it?
109. What are the typical types of eruptions that occur in Hawai‘i?
110. What causes some Hawaiian eruptions to have high fountains and other to not?
111. What happens when you add water to a basaltic eruption?
112. Why are eruptions at subduction zone volcanoes typically more explosive than at hot spot volcanoes?
113. What is the relationship between Pele, her sisters, and some prominent volcanic features?
114. What is dry-stacking?
115. What is one probable reason why some heiau had walls whereas others didn’t?
116. Who were the menehune, (perhaps)?
117. What is the significance of finding a few rare, unusual stone carvings or cut-stone walls?
118. What was the traditional method of moving large numbers of stones from one place to another?
119. What determined where old Hawaiian loko i‘a (fishponds) were built?