

Astronomy 305: Life in the Universe
Homework 4: Chapter 4

Total points: 50

1. (6 pts) Briefly describe why the study of geology is important to the study of life in the universe.
2. (6 pts) [a] Describe the three basic types of rock. [b] How does recycling occur among these rock types?
3. (15 pts) Describe the technique of radiometric dating, and explain how we know it is reliable. Include and define the terms radioactive isotope, parent and daughter isotopes, and a half-life in your answer.
4. (15 pts) Briefly describe the mechanism by which the greenhouse effect warms a planet. What are the most common greenhouse gases?
5. (2 pts) A rock's type (igneous, metamorphic, or sedimentary) tells us
 - (a) its age;
 - (b) its chemical composition;
 - (c) how it was made.
6. (2 pts) Earth has retained a lot of internal heat primarily because of its
 - (a) distance from the Sun;
 - (b) large iron core;
 - (c) relatively large size.
7. (2 pts) Earth has far less atmospheric carbon dioxide than Venus because
 - (a) Earth was born with less of this gas;
 - (b) Earth's carbon dioxide was lost in the giant impact that formed the Moon;
 - (c) Earth's carbon dioxide is locked up in carbonate rocks.
8. (2 pts) If Earth had more greenhouse gases in its atmosphere, it would
 - (a) heat up;
 - (b) cool off;
 - (c) accelerate plate tectonics.