
OpenStax Astronomy, Ch.8: WS Problems (Apr-2021),

Review Questions

1. What are Earth's core and mantle made of? Explain how we know.
2. What is the source of Earth's magnetic field?
3. Why is the shape of the magnetosphere not spherical like the shape of Earth?
4. Although he did not present a mechanism, what were the key points of Alfred Wegener's proposal for the concept of continental drift?
5. List the possible interactions between Earth's crustal plates that can occur at their boundaries.
6. In which atmospheric layer are almost all water-based clouds formed?
7. What is, by far, the most abundant component of Earth's atmosphere?
8. Briefly describe the greenhouse effect.
9. How do impacts by comets and asteroids influence Earth's geology, its atmosphere, and the evolution of life?
10. Why are there so many impact craters on our neighbor world, the Moon, and so few on Earth?
11. Detail some of the anthropogenic changes to Earth's climate and their potential impact on life.
12. Why is a decrease in Earth's ozone harmful to life?
13. Do you think scientists should make plans to defend Earth from future asteroid impacts? Is it right to intervene in the same evolutionary process that made the development of mammals (including us) possible after the big impact 65 million years ago?
14. Europe and North America are moving apart by about 5 m per century. As the continents separate, new ocean floor is created along the mid-Atlantic Rift. If the rift is 5000 km long, what is the total area of new ocean floor created in the Atlantic each century? (Remember that 1 km = 1000 m.)
15. Suppose a major impact that produces a mass extinction takes place on Earth once every 5 million years. Suppose further that if such an event occurred today, you and most other humans would be killed (this would be true even if the human species as a whole survived). Such impact events are random, and one could take place at any time. Calculate the probability that such an impact will occur within the next 50 years (within your lifetime).
16. How do the risks of dying from the impact of an asteroid or comet compare with other risks we are concerned about, such as dying in a car accident or from heart disease or some other natural cause? (Hint: To find the annual risk, go to the library or internet and look up the annual number of deaths from a particular cause in a particular country, and then divide by the population of that country.)
17. What fraction of Earth's volume is taken up by the core?

