

OpenStax Astronomy, Ch.14: WS Problems (Apr-2021)

Review Questions

1. In what ways are meteorites different from meteors? What is the probable origin of each?
2. How are comets related to meteor showers?
3. What do we mean by primitive material? How can we tell if a meteorite is primitive?
4. Describe the solar nebula, and outline the sequence of events within the nebula that gave rise to the planetesimals.
5. Why do the giant planets and their moons have compositions different from those of the terrestrial planets?
6. How do the planets discovered so far around other stars differ from those in our own solar system? List at least two ways.
7. Why are some planets and moons more geologically active than others?
8. Why do meteors in a meteor shower appear to come from just one point in the sky?
9. Why do iron meteorites represent a much higher percentage of finds than of falls?
10. Why is it more useful to classify meteorites according to whether they are primitive or differentiated rather than whether they are stones, irons, or stony-irons?
11. How do we know when the solar system formed? Usually we say that the solar system is 4.5 billion years old. To what does this age correspond?
12. We have seen how Mars can support greater elevation differences than Earth or Venus. According to the same arguments, the Moon should have higher mountains than any of the other terrestrial planets, yet we know it does not. What is wrong with applying the same line of reasoning to the mountains on the Moon?
13. Present theory suggests that giant planets cannot form without condensation of water ice, which becomes vapor at the high temperatures close to a star. So how can we explain the presence of jovian-sized exoplanets closer to their star than Mercury is to our Sun?
14. Why are meteorites of primitive material considered more important than other meteorites? Why have most of them been found in Antarctica?