Chapter 7: Mercury
Spin-orbit coupling-- every 2 orbits = 3 spins on axis. Surface temp. 740 K towards the Sun but only 90 K away from the Sun. Extensive cratering record. Two terrain types, highlands (with intercrater plains) and lowland plains. Secondary craters created by ejecta of planetary bombardment. Lowland plains appear inside impact basins, impact melt vs. volcanic flow. Very large core for its size, core is now solid, high density. Regolith on surface, possibility of water. Origin due to catastrophic impact.
Chapter 8: Venus
Similar size as Earth, lots of greenhouse gases, surface temperature 750 K. Cloud cover prevents visual observation of surface. Venera and Pioneer Venus missions, Magellan orbiter. Cratering record reveals that the surface is young. Surface renewed by volcanism. Equilibrium hypothesis vs. catastrophe hypothesis. Craters have irregular appearances, indicating influence of atmosphere. Basaltic surface, shield volcanoes, lava domes, coronae. Lack of plate tectonics, crust motions due to upwellings and collapsing of crust, canyons, ridge belts.

Chapter 9: Earth
Interior zones: solid core, liquid core, lower mantle, upper mantle, crust. P and S waves. Compositions of core (iron/nickel), mantle (basalts) and crust (silicates like quartz and feldspars). Differentiation. Lithosphere and plate tectonics, sea floor spreading, continental drift, subduction zones, bouyant continents vs. dense seafloors, convection in the mantle.
Chapter 10: the Moon
Orbital period = spin period. Two kinds of terrain, highlands and maria. Cratering record reveals age difference between them. Surface covered by regolith. Maria are basaltic material from mantle that fill large impact basins. Highlands comprised of less dense minerals. Differentiation. KREEP and the age of the lunar crust. Lunar interior and relative sizes of crust, mantle and core. How did the Moon form? How did Apollo samples change our ideas of this?

Chapter 11: Mars
Mars is covered with wind-blown dust. The rocks seen by landers are a mixture of volcanic or impact in origin. Two surface terrains, highlands and plains. Highlands are older, with more craters. Plains appear to be either volcanic flows, or else created by huge floods of liquid water. Many craters show signs of wind and/or water erosion. Very large shield volcanoes, especially in the Tharsis bulge region, as well as fractured crust creating canyons like Vallis Marineris. Flood channels and valley networks provide evidence for once abundant water on the surface. Polar regions contain ice caps that grow and recede with the seasons.
Chapter 12: Surfaces and Interiors of the Terrestrial Planets

The terrestrial planets have a number of similarities and differences, which can be explained by the relative importance of 5 primary factors during the history of each of the planets:

- Impact cratering
- Volcanism
- Tectonism (surface processes)
- Differentiation
- Internal heat supply (internal influences)