

Topics: Begin study of each planet

Reading:

- Read sec. 1 of Ch. 10 in Ryden and Peterson.
- Optionally read beyond section 1, as well be doing the rest of Ch. 10 in our next assignment/class.

Summary of work to submit:

- Nothing to submit for Thursday's class.

Overview:

Ch. 10 presents a modest amount of detailed information about each planet. Section 1 is the (non-Earth) terrestrial planets. You should refer back to the Earth's properties in Ch. 9 to make comparisons (e.g. the size of each planet's iron core), and increase your familiarity with the Earth's key properties as well as note the differences and similarities among these planets.

Commentary on the reading, viewing, and other preparation:

The information about the interactions between orbital and rotational periods and the length of the day (on Mercury) looks a little complicated. Make sure you're clear on what each symbol means. Recall that the day on Earth is defined as the Earth rotating 360 degrees with respect to the Sun, but the planet is also orbiting while it rotates, so it needs to rotate a little more than 360 degrees with respect to the stars (to space, really; to its local inertial reference frame) to go 360 degrees with respect to the Sun.

So the solar day (length P_{sol}) is longer than the day defined by the rotation period (P_{rot}). (On Earth, it's four minutes different. The Earth rotates 360 degrees in 23 hours and 56 minutes.

Things are more dramatic with Mercury.

As you think about the math, remind yourselves what ω , the angular frequency is. Its definition in the first part of eqn. 10.3 should be useful.

Pay attention to the explanation of *why* Mercury has its funny small-integer ratio of rotation to orbital period. This is a pretty common phenomenon in orbits.

The Venus section is mostly about atmospheric chemistry.

And Mars...has so much in common with the Earth. It looks so Earth-like! Pay attention to the specific differences with the Earth as you read about Mars.

In general, as you're reading this chapter, don't be scared to go back to equations and chapters that are referred to in the text.

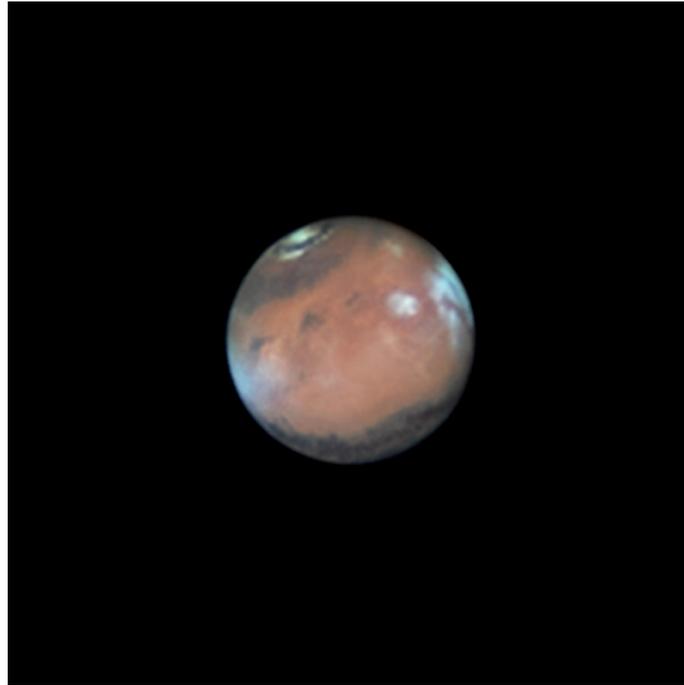


Fig. 1 <https://apod.nasa.gov/apod/ap140411.html>



Fig. 2 <https://apod.nasa.gov/apod/ap140812.html>