



# Astronomy Homework 1

## Due 8/17/2016

1. Briefly describe the Moon's cycle of phases. Can you ever see a full moon at noon? Explain.
2. Why don't we see an eclipse at every new and full moon? Describe the conditions needed for a solar or lunar eclipse.
3. Many people incorrectly guess that the phases of the Moon are caused by Earth's shadow falling on the Moon. How would you go about convincing a friend that the phases of the Moon have nothing to do with Earth's shadow? Describe the observations you would use to show that Earth's shadow can't be the cause of phases.
4. A planet in another solar system has a circular orbit and an axial tilt of  $35^\circ$ . Would you expect this planet to have seasons? If so, would you expect them to be more extreme than the seasons on Earth? If not, why not?
5. Assume you live on the Moon near the center of the face that looks toward Earth.
  - a) Suppose you see a full earth in your sky. What phase of the Moon would people on Earth see? Explain.
  - b) Suppose people on Earth see a full moon. What phase would you see for Earth? Explain.
  - c) Suppose people on Earth see a waxing gibbous moon. What phase would you see for Earth? Explain.
  - d) Suppose people on Earth are viewing a total lunar eclipse. What would you see from your home on the Moon? Explain.
6. Refute this claim: "Although all the known stars appear to rise in the east and set in the west, we might someday discover a star that will appear to rise in the west and set in the east."