

**Astronomy 1102/1104**

Name: \_\_\_\_\_

**Spring 2016 - Problem Set 2**

Section # \_\_\_\_\_

Due in section the week of February 22nd

Problems are based off lecture and readings - Show all work - Don't forget units - 10pts total

**Q1) Orbits**

a) What is the angular speed of the moon around the Earth (in units of degree per hour)?  
(1pt)

b) Given that the moon subtends 0.5 degree on the sky from Earth, how long does it take the moon to traverse the sun's disk? (1 pt)

**Q2) Lunar Phases**

a) What is the main reason that there isn't an eclipse every new moon and full moon? (1 pt)

b) Based on your answer to part (a), why is a total eclipse still possible? (1 pt)

c) What is the lunar phase at a solar eclipse? Draw a schematic diagram to indicate this and label the objects. (2 pts)

d) Given that the moon takes 27.3 days to orbit the Earth once. Why does a full moon only occur every 29.5 days? (Hint: draw a diagram) (2 pts)

Q4) Kepler's Law

a) An asteroid takes 84 months to complete one orbit around the Sun. What is the semi-major axis of the object's orbit? (1 pt) Give your answer in units of AU.

b) Is the object orbiting closer or farther away from the Sun than the Earth? (1 pt)