

Tides Homework

1. How many low tides are there in a day?

2

2. How many high tides are there in half a day?

2 per day, so **1 per half day**

3. Why is the tide cycle a little longer than 24 hours? Think of what the moon is doing while the earth spins on its axis.

During one day the moon will move as it goes around the earth, so the earth has to make more than one complete turn on its axis to get back to the same point where one of the tidal bulges is.

4. Draw what the tidal bulges would look like if the moon's gravity was the only factor involved in tides.



If it's assumed that gravity only acts on the bulging parts(it doesn't; it acts everywhere) then there would only be one bulge.

5. Draw the actual bulges.

The moon's gravity acts on ocean water everywhere and causes two bulges. Centrifugal forces due to the earth's movement around the moon-earth center of mass also play a role.

6. Why are tides more pronounced in certain areas of the planet than others?

The type of coastline plays a role on how much of a difference you see between high and low tide.

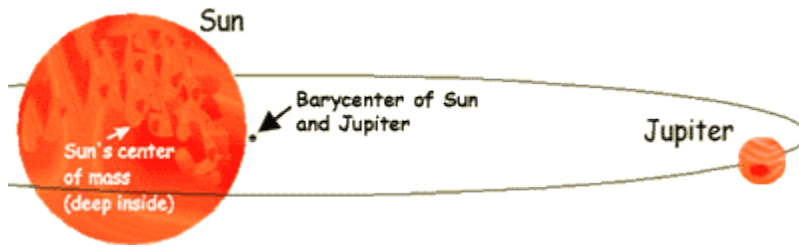
7. a) Why is it not completely accurate to say that the moon revolves around the earth? What is the earth also doing aside from spinning on its axis and revolving around the earth-sun center of mass?

The moon and the earth both revolve around the moon-earth center of mass

- b) Where is the earth-moon center of mass?

1700 km below the surface of the Earth.

8. Why do you think the center of mass for the Jupiter-sun system is outside of the sun, whereas that of the earth-sun system is inside of the sun?



Jupiter is more massive than the Earth.