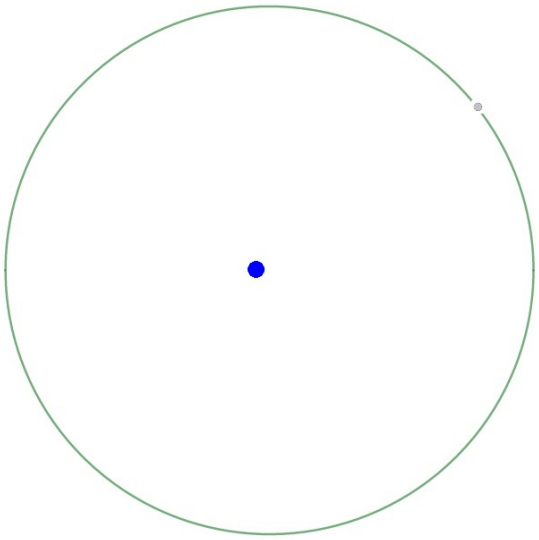
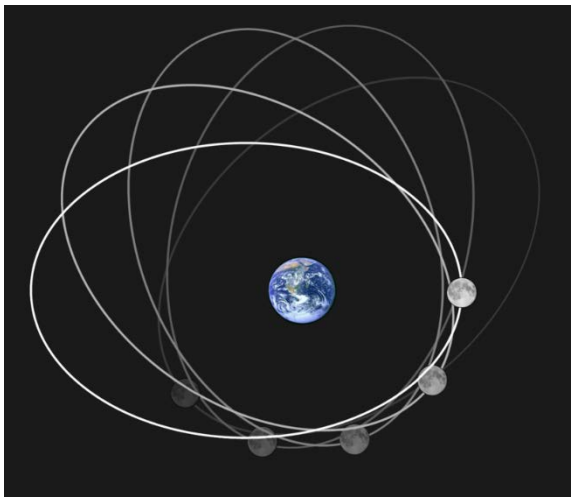
What is the path the moon travels around the earth?

Dear Jessica,



The moon takes needs a bit less than one month to rotate around the earth (27.32 days to be exact). We call the path that it takes the "orbit" of the moon around the earth. The picture on the right shows the earth in blue, the moon in grey, and the orbit of the moon "to scale". "To scale" means that the size of the moon in the sketch compared to the size of the Earth in the sketch is the same as in the real world (just drawn much smaller. If you look closely, you will see that the blue point is nearly at the center of the orbit, but just nearly (take a ruler to check). Moreover, the orbit looks like a perfect circle, but it is just ever so slightly flattened.



To the left is an image that exaggerates this orbit, so you can see better what I mean. On that image, you can also see that the orbit is moving around over time, and this movement of the orbit is called "precession". You can find some nice animation of the precession on Wikipedia. Because the Earth is not exactly at the center of the orbit, the moon is sometimes closer, and sometimes farther away from the Earth. Maybe you have heard of the word "supermoon" that we use when the moon is exceptionally close to the earth and therefore very large.

Finally, did you know that we can only ever see one side of the moons face (hence the name of the Pink Floyd Album, "The dark side of the moon". If don't know it, I recommend you give it a listen). How can that be? Put a cup (or some other small object) in the middle of the table. Let this cup be the Earth, and let your forefinger be the moon. Point that forefinger on

the table and draw a circle around the Earth. When you do that, the Earth will sometimes see the front of your forefinger (with your fingernail), and sometimes the back of your forefinger. In reality, we always see the same side of the moon. That can only happen if the moon rotates once around itself in exactly the same time that it rotates around the Earth (27.32 days). This is a bit hard to do with your finger, because you cannot rotate your wrist around in circles, but you can use a pen instead of your finger. In any case, this means that one entire day and night on the Moon is 27.32 days long. Imagine sleeping for 13 and a half days and then being awake for 13 and a half days… I guess, I'd stay on the Earth.

This is a still from a short movie (you can see it here). Do not try that at home!