

Gravitation - Lesson 7

The Barycentre



Incidentally, an object falling towards the earth also accelerates the earth towards it (according to Newton's third law of motion). Still, the magnitude of the acceleration is so small that it does not affect anything whatsoever. The same holds true for the Sun. The earth does accelerate the Sun towards it, but it is negligible. However, when the small, negligible force of all the planets (thrown in the asteroid belt as well) is combined, the Sun does start to revolve around a point, and this point, known as the barycenter, is the centre of our solar system, not the Sun. Everything in our solar system revolves around this point, including the Sun. Formally barycentre is defined as the central point around which two or more bodies revolve.

You should, now, be able to answer the following questions:

1. Does a small object falling towards the earth makes it accelerate?
2. What is the centre of our solar system?

Conclusion

The Barycentre is the central point around which two or more bodies revolve.

Note to Teacher

This lesson aims to throw light on the fact that every body, no matter how massive it is, does experience an equal and opposite force as stated in Newton's third law. The goal is to realise that the sun itself revolves around a point and this is true for all solar systems present in the universe. The text intends to create intriguing thoughts in the reader's mind.

Student Worksheet

1. If an object falling towards the earth also accelerates the earth towards it. Why don't we feel the acceleration?
2. Does the moon, really, revolve around the earth?

Answers

1. Yes
2. The barycentre

Student Worksheet Answers

1. Because the acceleration is very small and hence, negligible.
2. No, both the moon and the earth revolves around a common centre. That point is, actually, inside the earth, but it is not the centre of the earth.