

Gravitation - Lesson 5

Centripetal Force



So, if we think about it, the moon is continuously “falling” towards the earth. The earth, along with other planets, is continuously “falling” towards the Sun and this, so called “fall”, is due to the gravitational force. “Falling” is not scientifically accurate, in reality things are pulled towards the centre. **A force that keeps an object in a circular motion by pulling it towards the centre is known as centripetal force.** This is why the moon is orbiting the earth, the earth, along with other planets, is orbiting the Sun and this very force is also responsible for the falling of objects on the ground when thrown up. This force is provided by the earth to the moon making it constantly revolve around the earth and not flying off on a tangent! The same is true for the Sun and Earth system.

What happens if there is no centripetal force?

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

1. What is centripetal force?
2. Is it the same force that we experience when a vehicle takes a turn?
3. Give some real-world examples where we see centripetal force in action?

4. Is gravitational force a type of centripetal force?

Conclusion

Centripetal force is a centre-pulling force that acts on objects when moving in a circular motion. Gravitational force is a type of centripetal force.

Note to Teacher

The goal of the text is to introduce centripetal force and its importance. It is important to realise that gravitational force is a centripetal force and subsequently the word "falling" is a consequence of this centripetal force.

Student Worksheet

1. The force that acts towards a point (central) is also known as _____.
2. What force causes an apple to fall?
3. Is the moon also orbiting the earth due to the same force?
4. What is the name of the centripetal force exerted by all objects which has mass?

Answers

1. A force that keeps an object in a circular motion by pulling it towards the centre is known as centripetal force.
2. Yes
3. Below are few real-world examples where we see centripetal force in action:
 - (a) When a train, aeroplane or any vehicle takes a turn while moving.
 - (b) In mixer grinder and blender.
 - (c) While whirring a stone on a thread.
 - (d) When fan is rotating.
4. Yes

Student Worksheet Answers

1. Centripetal Force
2. Gravitational Force
3. Yes
4. Gravitational Force