Kepler's Laws of Planetary Motion

AS-level Physics

Classroom Activity

Overview

Age Range:

16-17

Prep. Time:

0

Lesson Time:

40 minutes – 1 hour

Cost per activity:

Low (print costs)

Includes the use of:

Internet Access

Outline

This activity can be used as a revision task for Kepler's laws of planetary motion or as an introduction to it.

It makes use of a simulator to help visualise the concepts and contains questions for each of the laws and for Newtonian features.

Students can also use the simulator to explore Kepler's laws and gain a better understanding of them.

Pupils will Learn:

- Kepler's three laws of planetary motion
- Combining knowledge with visual simulations

Lesson Plan:

Overview of the time required to complete lesson.

Description	Time	Notes
Introduction to the subject	0-10 min	
Activity 1	~40 min	Use: http://astro.unl.edu/naap/pos/animations/kepler.html

Introduction to the subject:

If students already have an understanding of Kepler's laws set them off straight away with the activities in the student guide. Otherwise spend some time introducing the concept of Kepler's laws and planetary motion.

Optional introductory video: https://www.youtube.com/watch?v=htxGvdQbl5w

Activity 1:

- Distribute student guides to the students and have them all set up at computers/laptops, whether they share or not depends on the number of computers available.

Introduce the activity and tell students to work their way through the student guide.

1. Make sure all students have got the correct simulator (NAAP's Planetary Orbit Simulator) up and running. If flash needs to be enabled guide students to the 'general overview' page (http://astro.unl.edu/naap/help/general_overview.html).
2. Give students time to work through the activities on their student guide, ensuring everyone uses the simulators of each of the laws and Newtonian features.