

## PHYSICS

### ORBITER

#### Brief summary of activity:

For this puzzle the user has to successfully orbit a spaceship around a planet without crashing into it. To add a little pressure this has to be completed within a target time.

#### Specific Curriculum Area:

**Year 9** — Unit 9J: Gravity and space, Section 1: What is gravity? Section 6: a. What keeps the planets and satellites in orbit? Section 7: b. What keeps the planets and satellites in orbit?

#### Assessment method:

Teacher observation.

#### Differentiation:

There is no obvious area of differentiation within this task except for the increasing difficulty when levels are completed.

#### Learning objectives:

Children should learn: that gravity is an attractive force which acts on the Earth towards the centre of the planet, that gravity is an attractive force between objects with mass, about how the idea of gravity was related to empirical observations; that the Sun is massive and exerts a very large gravitational force, which keeps planets in orbit; to relate the model of circular motion to data on the orbits of planets and satellites; that the Moon is a natural satellite of the Earth, whose orbit is maintained by the Earth's gravitational pull.

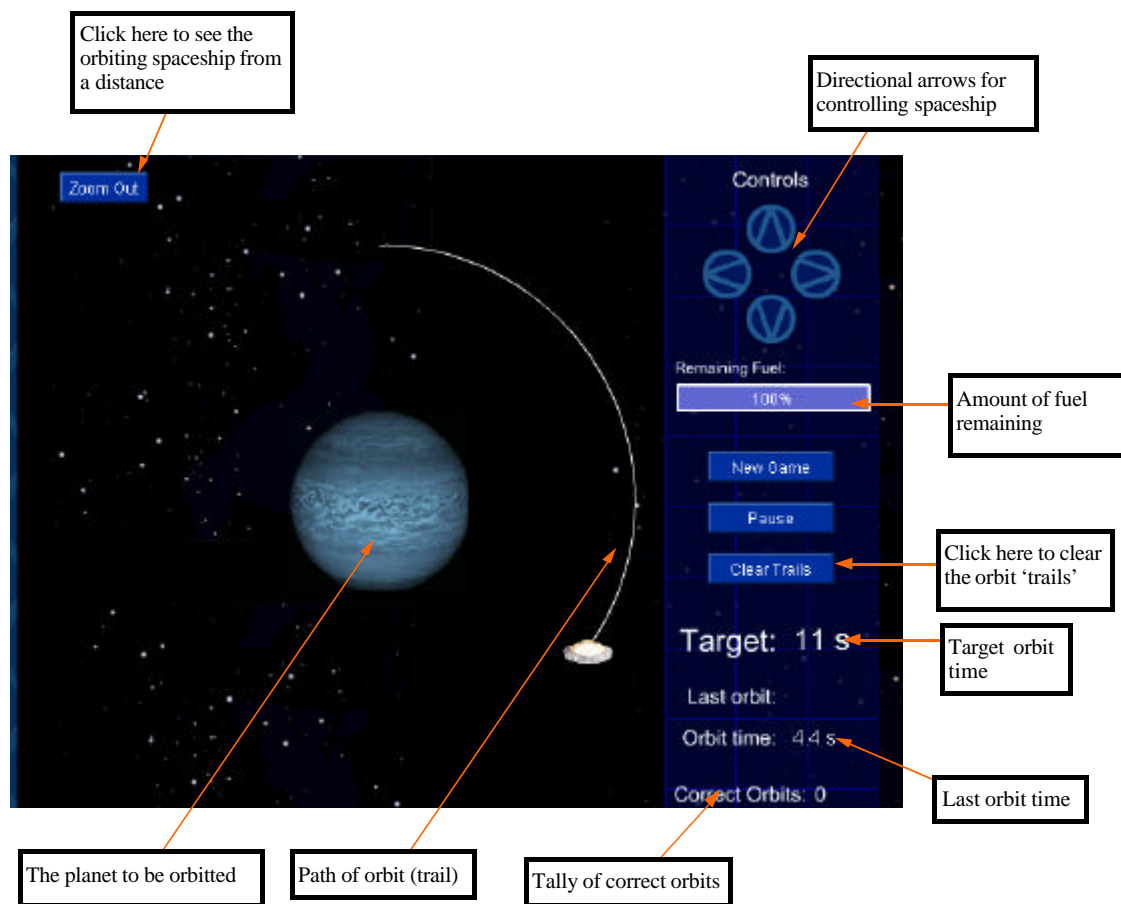
#### Use of Activity in a lesson:

This task could be set as a homework activity, assuming Internet access is possible. Alternatively, the teacher could demonstrate the task to the class (via an Interactive Whiteboard).

#### Hints and tips for teachers:

1. Tell pupils not to get frustrated if they do not succeed until having had many attempts—encourage trial and error.
2. Pupils having difficulty should keep the 'trail lines' visible so that they can see where their previous attempts have gone wrong.
3. The pupil can 'zoom out' in order to see the orbiting spacecraft at a distance.

URL:



### Troubleshooting:

If the spaceship disappears outside the window, use the ZOOM OUT button to see it from a distance.

### Other links:

[http://www.standards.dfes.gov.uk/schemes2/secondary\\_science/sci09j/09jq1](http://www.standards.dfes.gov.uk/schemes2/secondary_science/sci09j/09jq1)  
[http://www.standards.dfes.gov.uk/schemes2/secondary\\_science/sci09j/09jq5a](http://www.standards.dfes.gov.uk/schemes2/secondary_science/sci09j/09jq5a)  
[http://www.standards.dfes.gov.uk/schemes2/secondary\\_science/sci09j/09jq5b](http://www.standards.dfes.gov.uk/schemes2/secondary_science/sci09j/09jq5b)