

The Golden Curve Teacher Information Sheet

This activity can be run with KS3 students around Level 5 and involves using decimal numbers, predicting the next term of a sequence and seeing that this sequence can relate to a geometrical picture.

We recommend that students work in groups of 3 to 5 people as one of the main points of the activity is to encourage students to talk about the mathematics.

Students should have calculators and be familiar with decimal numbers and sequences.

Suggested timings:

- 5+ minutes Discussion of where you can see maths in the world
(Some slides are included in this pack, see below.)
- 20+ minutes Students work through the worksheet in groups.
We usually had a couple of breaks for whole-class discussion.

The Golden Curve deals with ideas connected to the Fibonacci sequence and golden ratio.

Guide to slides:

We wanted to show some simple examples of where mathematical ideas and patterns appear in the real world. The Simpsons is generally popular at our events with students, so we started off by talking about maths in the Simpsons. The picture on the right is taken from a Halloween special where Homer Simpson walks through a wall into Maths World (a scary experience). It might be possible to arrange to show the clip itself.

The message we wanted to emphasise was that maths helps us design, plan and understand.

Examples of design are the iPod and clothes shown as well as the UN building shown later, whose cross-section is a rectangle with sides in the ratio 1.618... : 1, the golden ratio.

Examples of planning are working out who should play in a given football team, or where the best place to go on holiday might be (or if you're the airline company, how many flights you schedule).

Examples of understanding are our understanding of why the sun shines, why tsunamis happen, or why a sea-creature's shell has a certain shape of curve (the golden curve).

The next few slides can be used for whole-class discussion: how much maths can you see in each picture? Answers can be very varied: from the vibration of a string to how much money the guitarist or violinist might make from their album.

The other slides are to assist discussion of the content of the worksheet itself. There are many websites discussing the Fibonacci sequence and the golden ratio. However a good site to start with is <http://www.newton.cam.ac.uk/wmy2kposters/january/> from Cambridge University.

www.moremathsgrads.org.uk