Computer Screens and Toys

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Abstract

Experimenting with simple motion on a computer screen leads to a surprising variety of visual objects in the plane, and also to a description of natural objects in space. Use of commercial toys for building moving objects makes these constructions accessible to pupils from lower secondary on; coordinate systems in the plane and trigonometry can be introduced rather early in this way. Using a CAS enables the teacher much faster generation of the orbits of moving objects, together with their animation. A CAS will give a good visual impression of 3D objects. A CAS moreover provides a link to the underlying theories, and advanced theorems and applications can be motivated before they arise in the tertiary education curriculum. Part of this work was written in Mathematica under the "Exploot" (Experimental Learning Environment using CAS) project of the (Belgian) Flemish Ministry of Education at the Vrije Universtiteit Brussels.