Math Discovery Lab: Sample Project 2
The shape of stones (simulation / modeling)

It is intuitively clear that the process of erosion of stones on a beach will smooth out sharp corners. But more often than might be expected, one finds very symmetric stones resembling ellipsoids. On the other hand, nearly spherical stones seem to be relatively rare. The project is to model the process of erosion on a computer.

Try to model various processes mathematically, and implement the models on the computer to see what they produce. It will be easiest to begin by modeling the two-dimensional analogue.

Some examples of physical processes:
(a) the result of repeatedly dropping a rock with a random orientation onto a concrete floor.
(b) the evaporation of a moth ball.
(c) your bar of soap in the shower.