

611-0210 (40-230) Centrifugal Hoops

Curriculum Fit: Rotational Inertia, Deformation by Central Forces, Centrifugal Force, Centripetal Force.

Description:

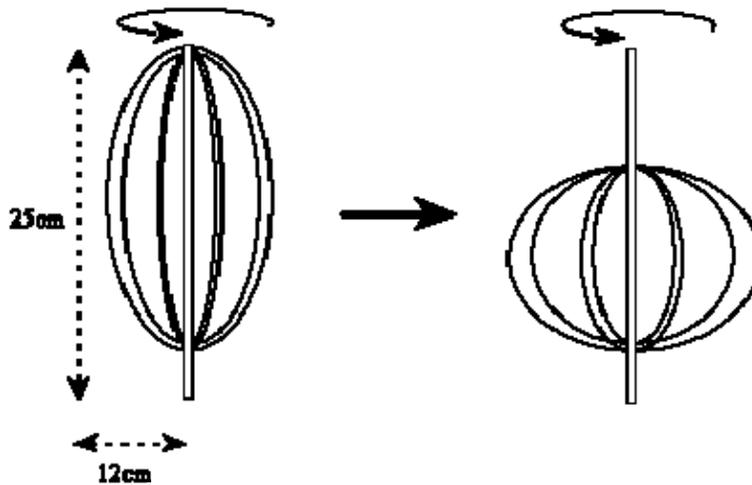
The rotation of a planet about its axis causes its equator to bulge due to the centrifugal force acting on its mass. Here a spinning wire frame simulates the effect.



Procedure:

Clamp the 40-230 Centrifugal Hoops in the chuck of the rotator or drill.

Beginning at a slow rate of speed, gradually increase the speed and observe the shapes assumed by the hoops.



Discussion:

Planets are actually oblate spheroids rather than spheres due to their rotation. This device consists of two spring metal rings mounted on a metal axis. The north pole is free to slide so that, as the frame spins, the hoops flatten and the equator bulges. This demonstration supports the theory of the oblate shape of the earth and other planets. The exact amount of flattening at the poles is determined by the mass, speed of rotation, density, and other factors.

This effect causes the equatorial radius of the Earth to be 43km greater than its polar radius. The effect is more pronounced for Jupiter, whose rotation period is under 10 hours. Jupiter's equatorial radius is 71492km, 4638km greater than its polar, giving the planet a distinctly flattened appearance.

Warranty and Parts:

We replace all defective or missing parts free of charge. Additional replacement parts may be ordered toll-free. We accept MasterCard, Visa, checks and School P.O.s. All products warranted to be free from defect for 90 days. Does not apply to accident, misuse or normal wear and tear. Designed for ages 13 and up. Item is not a toy. It may contain lead or small objects that can be choking hazards.