THE BABY MOBILE

A Scientific Explanation

To balance the baby mobile we built, we needed to find its balance point with respect to gravity. We call this point the "center of mass." In our case, the center of mass was between the masses hanging from either side of the stick. If the masses are equal, the center of mass will be found precisely at the middle of the stick. If they are not equal, the center will be closer to the larger mass.

A center of mass is a point that can be found for bodies and shapes, and represents the place that the entire mass of the body is supposedly located, as if the mass weren't spread out throughout its volume but concentrated in a single point in space. This is useful for conducting calculations that usually ignore the volumes of physical bodies.

The centers of mass of simple bodies are at their centers: In a cube - at the intersection of the diagonals; In a sphere - at the center of a sphere; and in a straight rod - at the center of the rod.

In irregularly shaped bodies, or in bodies whose mass is unevenly distributed, the center of mass is not necessarily found in the center of the body, and can actually exist outside of its physical bounds. Consider, for instance, the center of gravity of a hula hoop.

The center of gravity of a human body is in the abdomen, near the navel (belly button). When we stand upright, the brain makes sure that the center of gravity is found above our feet, so that we don't fall over. When we stand on one leg and want to maintain balance, we need to tilt our upper body so that our center of mass stays above the foot that we stand on.

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