Curiosity Guide #406
Torque

Accompanies Curious Crew, Season 4, Episode 6 (#406)

Tip It Torque

Investigation #4

Description

Can you control the torque and win? Try this zany game!

Materials

- Tip It Game, http://www.cardinalgames.com/game/399
- A Friend

Procedure

1. Set up the game according to the rules.
2. Take turns removing discs without knocking down the system.

My Results

Explanation

Torque is a force that causes an object to rotate. When balanced, the Tip It game is in rotational equilibrium. However, each time a disc is removed, the total weight on the opposite side applies torque to the system and causes the opposite side to lower. In this case, the system is rotating on the point of support. When you take off the discs, you must think about where the discs are positioned in the system. Removing too many from the same side will apply too much torque and will upset the whole system. Torque is determined by how heavy the mass is and how far away the mass is from the center support.

Think about this: Have you ever noticed that doorknobs are on the opposite side of the door from the hinge? Well, when we open a door, we are applying a rotational force, also called a torque, against the door hinges. This torque makes the door swing. The harder you swing the door, the greater the force, and the faster the door swings. What would happen if the doorknob were near the hinges and you tried to open the door? It would be very difficult. Keeping the doorknob further away from the hinges gives you more torque so you don't have to apply so much force.

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