Cycle 21 Center of Mass & Rotation

Spinny Ride Project

PURPOSE: Maximize the fun for 2 Lego riders (centripetal acceleration.)

MATERIALS: You will be provided a cardboard base. In addition, you may take up to 6 total of the things listed below.

Paper plate 1/2 m of string File folder Dixie cup

Tape is unlimited, but can only be used for connecting; no wrapping things up in tape.

So, for example, you could take…
ex1) 3 file folders, 2 paper plates and 1 dixie cup. 3+2+1=6
ex2) 2 file folder, 2 half meters of string and 2 dixie cups. 2+2+2=6
ex3) 4 file folders and 2 dixie cups. 4+2=6

INSTRUCTIONS:

- **Groups of no more than 3. Everyone turns in their own copy of this paper.**

- Use the materials to create a ride that accommodates two Lego riders.

- Your design should attempt to maximize the centripetal acceleration they get. **DU: 3 g's or more.**

- The ride will be spun by a record player, so it should fit onto the turntable. Use the record players on the side tables for preliminary testing.

- Your ride should be stable for at least 10 spins.

- Your Lego riders should never turn into projectiles. Otherwise, we'll have the Lego lawyers showing up with a Lego lawsuit. No one wants that.

DESIGN:

Sketch your design below. Explain how your design will maximize the acceleration.

MEASUREMENTS

RPMs	Radius of Riders (m)

CALCULATIONS

Use the RPMS to calculate the angular velocity of your riders in radians per second.

Use the angular velocity and the radius to calculate the tangential velocity of your riders.

Use the tangential velocity and the radius to calculate the centripetal acceleration of the riders. Then convert to g's.