

Newton #1

Try It Out

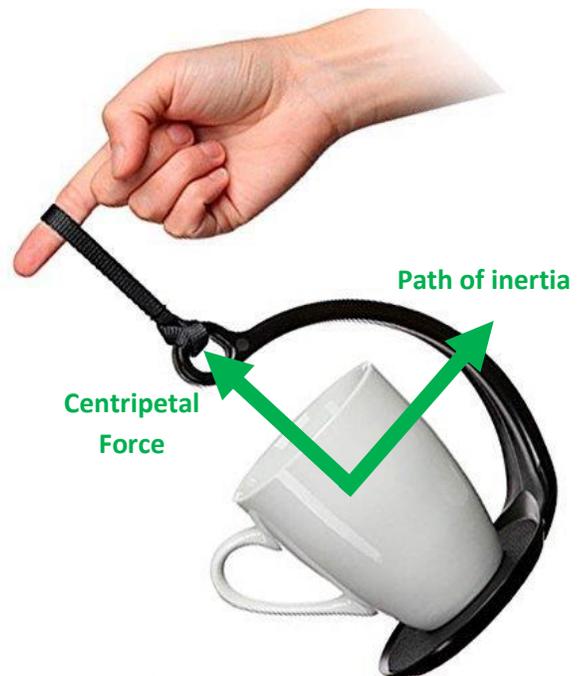
Fill the cup to a reasonable level if it isn't full already. Place the cup on the center of the coaster on the "Spill Not" device. Pick up the "Spill Not" by hooking a finger through the fabric loop at the top. Swing it gently back and forth. Walk with it. It's not perfect, but notice how easy it is to carry the cup without spilling!

What's Going On?

Sir Isaac Newton's **first law of motion** describes inertia by stating that every object will remain at rest or in uniform motion *in a straight line* unless compelled to change its state by the action of an external force. In this case, a **centripetal force** applied by the Spill Not is that external force. A centripetal force makes an object follow a curved path. And because the water *wants* to follow a straight path instead of a curved one, it generally stays in the bottom of the cup!

Why Does It Matter?

Understanding Newton's first law is why we have seatbelts to keep us safe in cars. We are affected by this law all the time. Have you ever tripped while walking? Something on the ground may have caused your foot to stop moving forward, but the rest of your body kept moving, didn't it?



Centripetal force illustrated on the Spill Not
(Image: SpillNot)

Wonder While You Walk...

What other ways can you think of that Newton's first law affects us?

Bonus question: If the force is called "centripetal," why do you always hear people talk about "centrifugal" force?



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