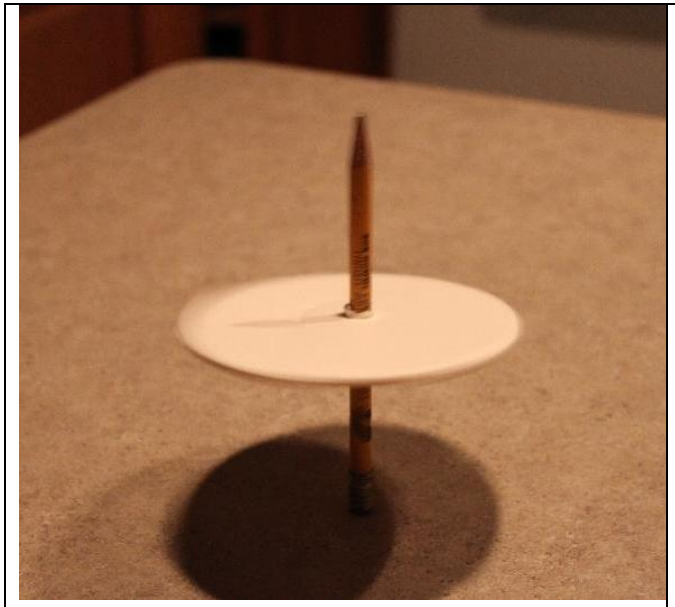
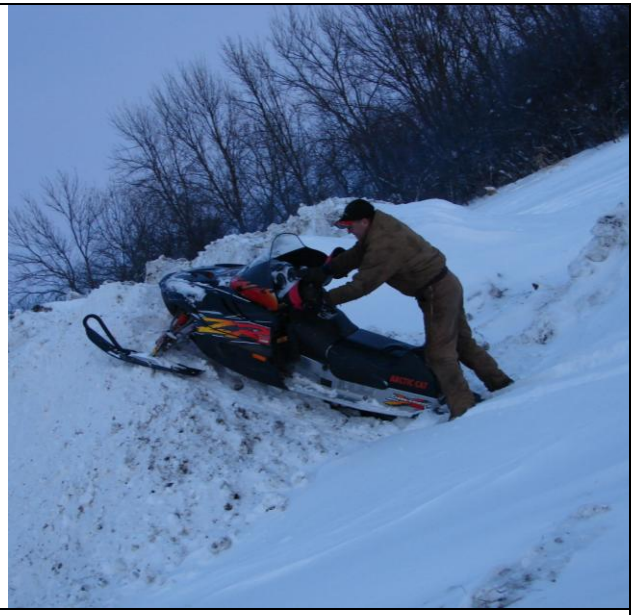


Centrifugal Force

This is a picture of a normal number two lead pencil with a round piece of thick tag board around it. When spun with your fingers this pencil spun for at least 8 or 10 seconds **(as seen above)** before losing velocity and falling over. Why is this? Center of mass and centrifugal force are the two biggest contributing factors. **$F_c = mv^2/r$, where F_c = centrifugal force, m = mass, v = speed, and r = radius.** When the tag board is added to the pencil, it creates more centrifugal force and moves its center of balance therefore making it balance while rotating.

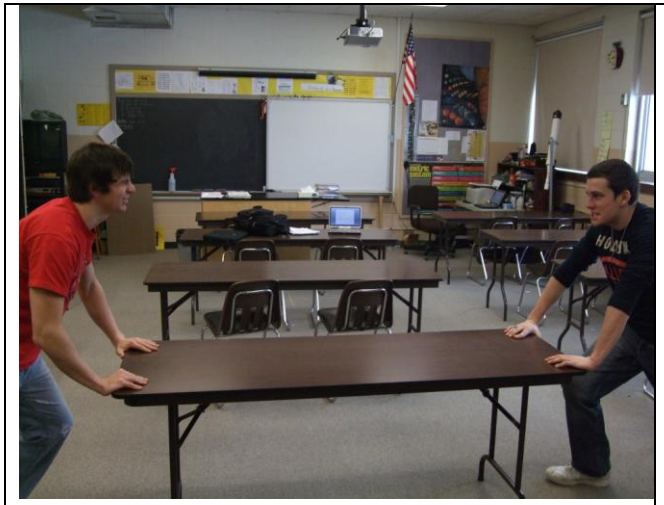
Collision

In this picture the two football players are jumping up to give each other a chest bump before the big game. While gravity is pulling them back to the ground they both exert a force upward, and will accelerate in that direction until the force of gravity will bring them to a stop and pull them back down. Newton's law also says that for every action there is an equal and opposite reaction, so when the players bump chest in the air they will react by bouncing back with the same force they exerted on each other. As the players jump into the air they accelerate to their maximum height, which was determined by how much force each player applied, and then gravity will accelerate them down to the ground. Who knew physics could get someone so excited for a football game?



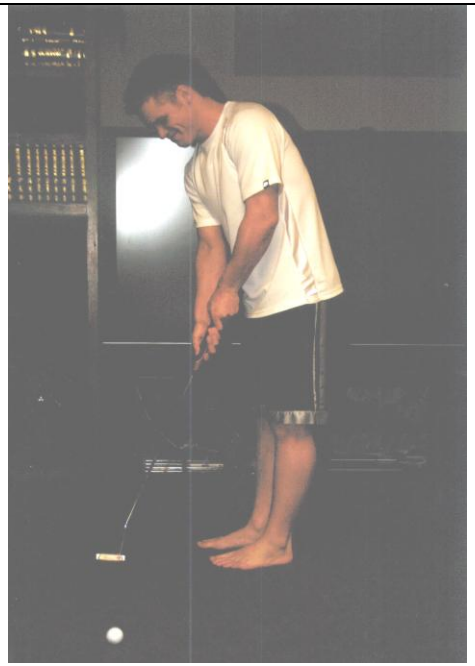
Friction

This picture was taken, as the snowmobile was the point to where the vehicle was stopped and was on the verge of sliding back down the hill. I measured the height of the hill to come out to be 10ft tall the base of it 9 ft long, I found the angle the snowmobile was at, 48 degrees. On an angle of 45 degrees the fiction between two objects would be 1 and at that angle objects do not stay stationary very long. This snowmobile was at angle of 48 degrees, the friction was still greater than one but the vehicle was barely moving. Why was this so? When we think of snow we think of it as being a slippery but since the studs on the stack dig into the snow the snowmobile is able stay on the incline of the snow hill.



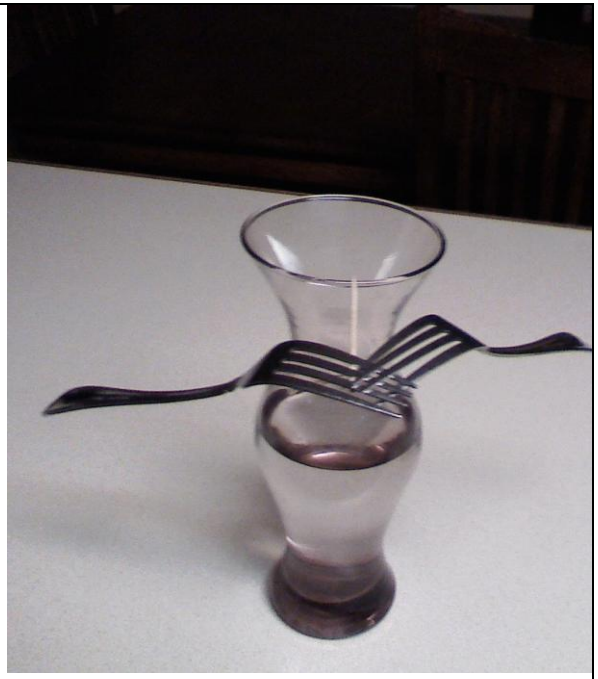
Net Force

In this photo a friend and I were both pushing on a table with the same force of 75 Newtons. If we both push on the table with the same amount of force, but in different directions the table will not move. This is called “net force” for the reason that if we push in opposite directions with the same force the net force will therefore equal 0 and the table will not move.



Newton’s Second Law

In this picture, I am demonstrating physics by striking a golf ball with a putter. It is exercising physics through Newton’s 2nd law (F=ma). Newton’s second law states that the force applied to a body produces a proportional acceleration. The force is coming from a combination of myself and the putter. I am using the momentum of my arms to move the putter hard enough to strike the golf ball. The masses are the putter and the golf ball. Since the ball was at rest and the club is in motion, the club is the dominant force. Once the club hits the ball, the ball undergoes acceleration. Thus, Newton’s 2nd Law.



Center of Mass

In this picture there are two forks intertwined together with a tooth pick stuck between them. The tooth pick is sticking out and is balancing on the very edge of the glass. The reason it is balancing and not falling over is because the center of gravity is at the tip of the tooth pick. The center of gravity is at the tip of the tooth pick because the weight on the forks is a little heavier on the ends and they are spread out to spread the weight out more evenly so it can balance properly.