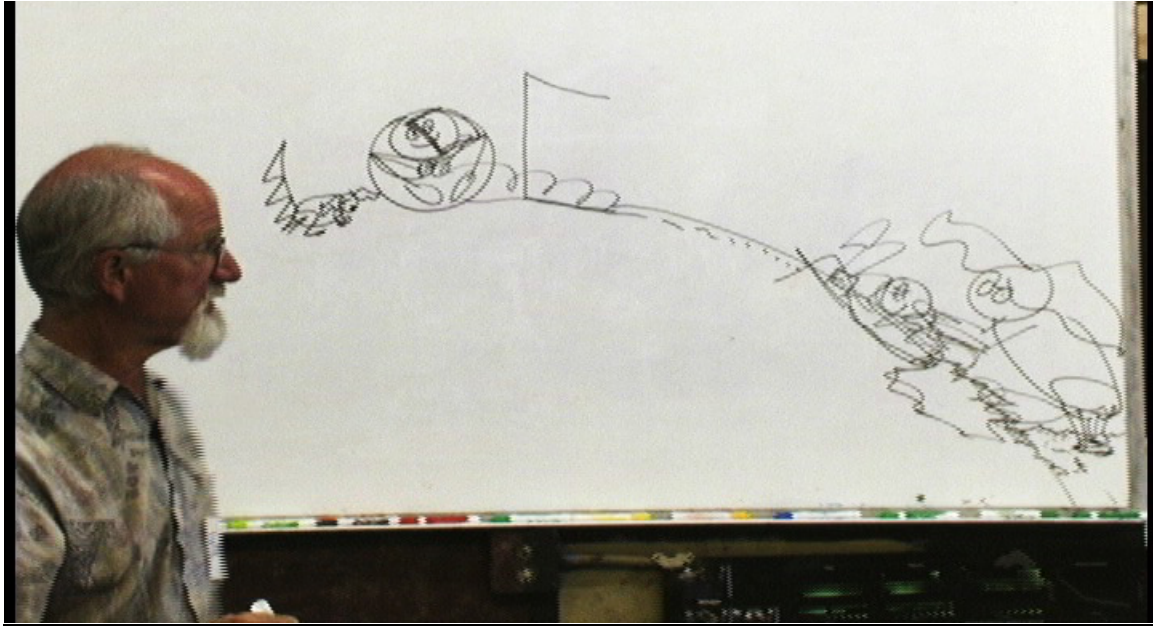


Rolling Forever (Slow Marbles) -- Intro & Story Summary



Intro:

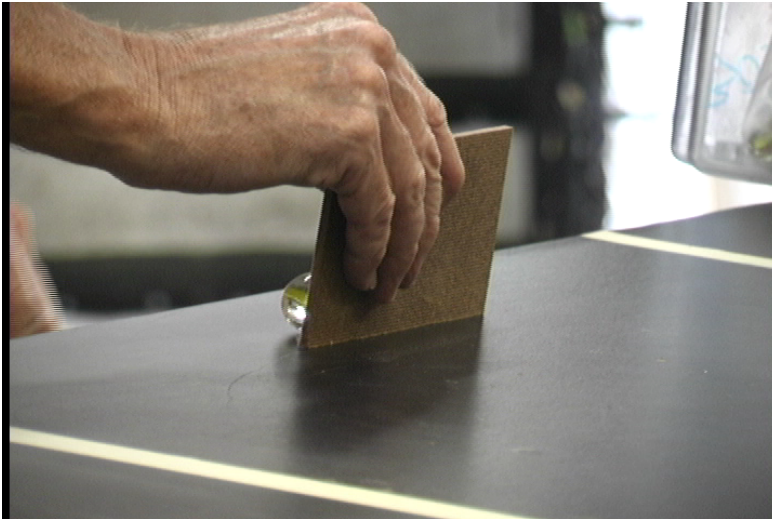
- Inertia – If something's moving, it wants to keep moving. But what if we don't want it to move?
- Your parents put you in a metal ball with a door in it.
- Your little dog Fido pushes the ball through the front door and down a hill toward the ocean.
- You hit cars, poles, etc. on the way.
- Fido wants to rescue you. So he runs in front of the ball and puts up his paws to stop it. Will he be able to stop it?
- What if Fido takes Insta-Grow pills and gets really big. Will he be able to stop the ball?
- What if he just wanted to slow it down? He could throw telephone poles in the way, put mud in the way so the ball gets stuck in the mud, or put bubble gum in the way.
- Today we're going to roll something, but we want it to take a long time before it ends up at the bottom.



Story:

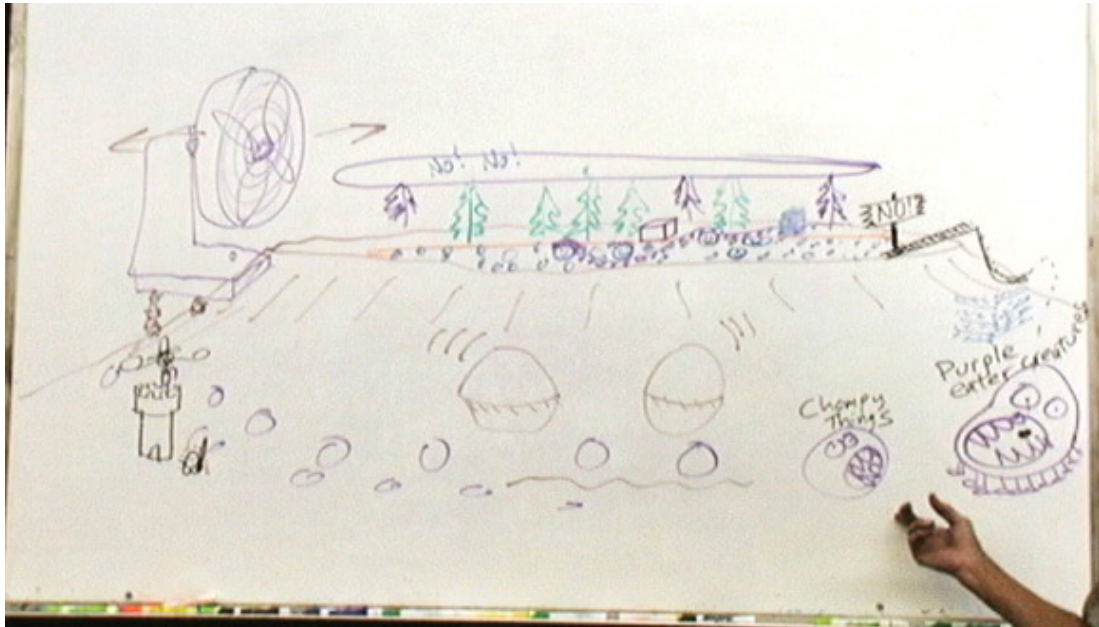
- There was a volcano named Vic. Vic used to be really active and could shoot lava far into the air.
- As Vic got older, he couldn't do as much, so now the lava just sits there. Eventually, the lava hardened on top, so Vic can't do anything with it.
- Vic became sad and just went to sleep.
- Then some monsters came to live on the slopes of the volcano. They had big mouths with teeth, and lots of legs. They were called Chompy Things.
- Anytime anything rolled down the mountain or flew by, the monsters would jump up and eat them.
- EMF wants the monsters to go to New York City and eat everyone there, but the monsters don't want to leave the volcano.
- EMF wanted to send his minions out to find out more about the monsters, but the monsters would eat the minions.
- EMF ordered Chompy repellent and sprayed it on the minions. But it wore off after an hour, and the Chompies would start eating the minions again.
- The minions never got a chance to explore the top of the mountain, so they didn't know there were creatures living on top of the lava called Roly-Polies.
- Roly-Polies have no nose or ears, no arms or legs. They're just a perfectly round head.
- They have to keep rolling all the time. If they stop, they develop a flat spot.
- When old Roly-Polies develop a flat spot, they can't roll. So they get flatter and flatter like a pancake, and eventually the other Roly-Polies just pile them up off to the side.

- If the Roly-Polies stop, they can get going again by sneezing. They sneeze in one direction and propel themselves in the opposite direction.
- Over the years, their numbers grew, and there was a lot of congestion. Even though they enjoyed bumping into each other, there were places where it was so congested they couldn't move, and they were developing flat spots.
- They called J&J to help out. J&J didn't know what it was like to be a Roly-Poly, so they ordered a transmogrifier and transformed themselves.
- J&J realized how hard it was to keep rolling with so many of them there. So they said some of the Roly-Polies had to go.
- The old ones wanted to get rid of the teenagers, and the teenagers wanted to get rid of the old guys. The middle-aged ones were trying to figure out what to do.
- One of the RPs ordered an escalator and put it on the edge with a slide coming down. He put up a sign saying it was forbidden to get on the escalator.
- So of course some of the RPs jumped on the escalator, went down the slide, and got eaten. But there were still too many RPS.
- The oldest RPs offered to go on the escalator and disappear, but only if they were given all the trees that were lining the volcano. But they wouldn't tell how they were going to use the trees until they had a chance to test them.



Experiment Intro:

- Divide the tables into sections with masking tape.
- Tilt the surface of the tables.
- Hold a small marble in one hand and a large one in the other and release them at the top of the slope at the same time to see which one falls off first.
- Sometimes a marble can stick to your fingers, so that affects the test.
- Repeat the test using a small piece of wood as a fence to hold the marbles, then lift it to release them.
- Students will work in groups of two, using only straws and masking tape to make a marble roll as slowly as possible. Each group gets 10 straws to start.
- Use a metronome to count the seconds.
- At the end, test each group's setup to see how many seconds it takes for the marble to roll to the bottom.
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End of Story:

- The RPs planned to put a bunch of trees at angles on the slope of the volcano and see how long they could live. Some of them tried it and figured they were moving slowly enough to live another hundred years.
- Then some of the other RPs decided to use the trees to build a platform with other trees holding it up, so they had twice the area to live on.
- EMF wants the Chompies to help him take over the world, but that won't happen if they don't get any food, because nothing is rolling down the mountain.
- He ordered a giant fan to blow the RPs toward the other end of the platform so they'd fall off the edge.
- The slope where the fan was placed was too steep, so EMF had minions stacked up under the base to keep it level.
- When he turned the fan on, it started blowing the RPs around, but it also put more pressure on the minions.
- The minions collapsed, and the fan twisted and fell onto EMF, chopping him into potato chips, which the Chompies ate.