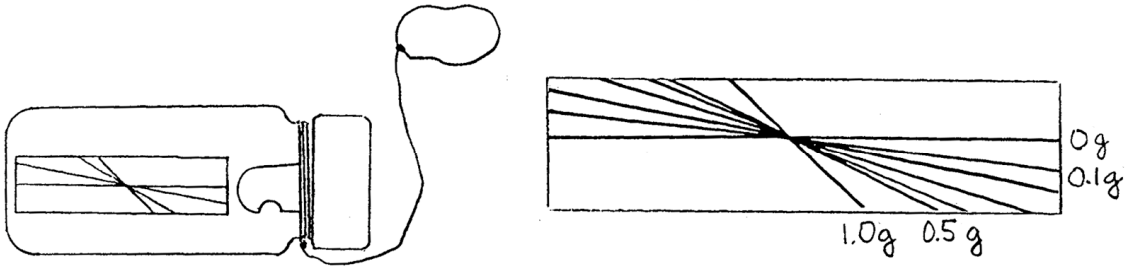
BABY BOTTLE USED AS A LATERAL OR LONGITUDINAL ACCELEROMETER

A 6 oz. clear plastic baby half-filled with water can give approximate values for lateral or longitudinal acceleration on rides where vibration is at a minimum, such as the carousel. On rides that are not smooth, the water surface splashes around so much that that the instrument is virtually useless. The bottle is held horizontally, pointing along the direction of acceleration to be measured. The slope of the water surface indicates the value of the acceleration.

By punching a hole in the side of the nipple with a paper punch, the flange of the nipple still acts as a seal with the nipple inside the bottle, but the nipple's potential for conversion to a squirt gun is significantly diminished!

A sticky-back label can be stuck to the side of the bottle, with lines drawn on the label to indicate acceleration values. On a carousel, a rider has a centripetal acceleration of less than 1 "g". The tangent of the angle gives the acceleration in "g's". For instance, at 1 "g", the angle on the label is 45˚ from the horizontal; at 0.5 "g", the angle is 26.6˚; at 0.1 "g", the angle is 5.7˚.



BABY BOTTLE WITH CORK USED TO INDICATE DIRECTION OF LATERAL OR LONGITUDINAL ACCELERATION

This instrument shows the DIRECTION of a lateral or longitudinal acceleration, but NOT the AMOUNT of the acceleration. When the bottle is held upside down, the floating cork at the end of the string will shift in the direction of any lateral or longitudinal acceleration of the bottle.

Completely cut off the end of the nipple, leaving a rubber ring to act as a gasket. Use a drill or a nail to make a small hole through the plastic cap, large enough to pass string through. Pass a length of strong, thin string through the hole (fishing line works well), and tie a knot on the part outside the cap so the string can't slip through the hole. Seal the hole on both sides with silicone rubber caulk. Be sure to let the silicone cure for at least two days before putting water in the bottle.

After the silicone rubber has cured, attach the string to a small cork or fishing bobber. (A staple or bent piece of paper clip can be used as an attachment for a cork, but it will rust if left in the water for a long time; the fishing bobber is relatively permanent, and is easy to attach to the string.)

Fill the bottle COMPLETELY with water. Put the cork string, and cap on the bottle, with the cut nipple as a gasket. Turn the bottle upside down, and it is ready to use.