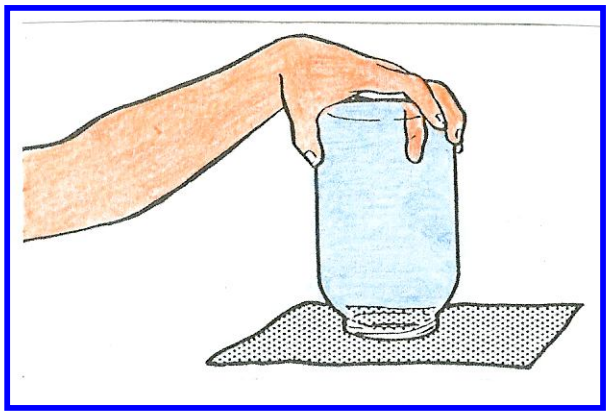
It's All About Air Pressure

Look at the illustration. It shows a jar filled with water. An index card is over the opening of the jar. The jar is upside down or inverted. Of course, the water is going to come out of the jar and push the card out of the way. Common sense tells you that this will happen. But science is so interesting because the card could remain on the jar!

You Will Need

jar or glass
water
index card (4 inches by 6 inches works best)
sink



What to Do

Do this activity over a sink!

1. Fill a glass with water. It does not have to be filled to the rim.
2. Place an index card over the opening.
3. With one hand hold the bottom of the glass. With your other hand, firmly hold down the index card.
4. Keeping your hand on the index card, invert the glass over the sink. Make sure the card is making contact with the rim.
5. Slowly begin to remove your hand from the index card.

What Did You Observe

The card should remain on the glass as shown. If not, try again. Make sure the card makes contact with the rim. If you do not have a good seal, air will get under the card and force the water out.

Why It Works

Why doesn't the card come off? Certainly the water is pushing down on the card. But the air pressure on the outside of the glass is holding the water in. We can say that the downward weight of the water and card matches the outside air pressure acting upward.

Learn More

Surface tension forms a seal around the rim of the glass. Learn more by looking at the two surface tension activities, *The Amazing Paper Boat* and *More Surface Tension.* You will find these activities by clicking on *Science Activities* at www.pmec.org. Also, read about the fact that at sea level there are 14.7 pounds of pressure on every square inch.