A question of balance

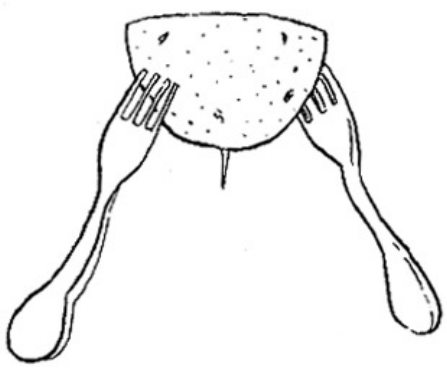
Ask your friends to balance a slice of potato on the end of a pencil. Chances are they'll be stumped. Here's how to do it.

You'll need:

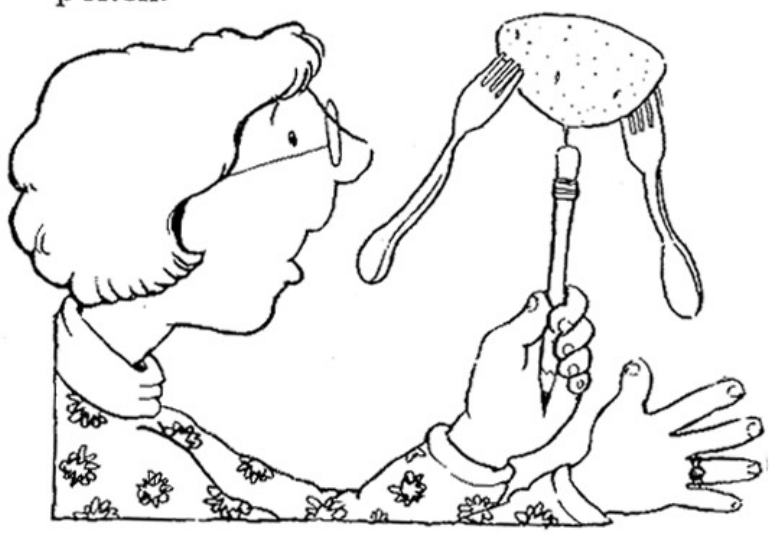
a sewing needle
half a potato
2 forks
a pencil with flat eraser end

1. Push the needle into the centre of the narrowest end of the potato so that the needle sticks out less than 2.5 cm (1 inch).

2. Stick a fork into each side of the potato half so that the handles hang down. Try sticking the forks about half-way down the potato.



3. Hold the pencil in one hand. Put the point of the needle on the eraser. It should balance. If it doesn't, try moving the forks so that they hang closer to the pencil.



4. Once the potato is balanced, try to give it a spin. What happens?

Congratulate yourself. You've just done a physics experiment in equilibrium (balance) and gravity.

If you try to balance a piece of potato on the point of a needle you can't do it. That's because with all the potato's lumps and bumps, you can't place the needle exactly underneath the potato's centre of gravity, also called the balancing point. When you stab the forks into the potato, the weight of the forks moves the centre of gravity. If you place the forks just right, the potato's balancing point moves so that it's right on top of the needle.

The minute your "potato-needle-fork-pencil-thing" stays still, you've discovered the balancing point.