

The Apple, the Hammer and Sir Isaac Newton

A stunning example of Newton's laws of motion

You will need....

- ✓ an apple
- ✓ a hammer
- ✓ a knitting needle/skewer

Background

A small force cannot accelerate a large mass at a high rate.

Follow these steps:

1. Put the knitting needle through the apple until the point is protruding about 5 cm.
2. Hold the knitting needle tightly in a horizontal position. Tap the flat end with the hammer and observe what happens to the apple.
3. Hold the knitting needle in a vertical position. Tap the flat end with the hammer and again observe what happens to the apple.

So what happened?

In both cases the needle moves through the apple because the apple has inertia.

What next?

1. How critical is the diameter of the knitting needle?
2. Compare the frictional force and the weight of the apple. Is there a critical weight for the apple?

