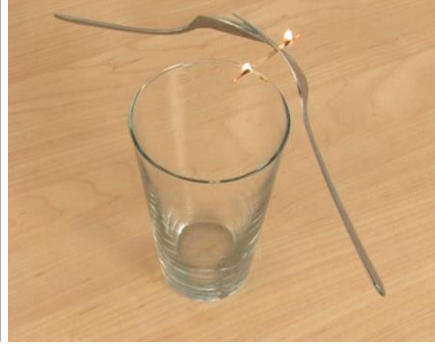


## Balancing Bird and Forks



### The Tricks

Balance a bird from the tip of its beak on a chopstick.  
Balance two forks and toothpick off the edge of a glass.  
Find the center of mass of a long object.  
Balance a soda can on its edge.

### How to do the tricks

#### Balancing Bird

1. Put the bird on the table. Slide the square end of the chopstick under the tip of the beak.
2. Carefully lift the bird with the chopstick.

#### Balancing Forks

1. Push the tines of the forks together.
2. Balance the forks on your fingertip to find the middle point. This is where the toothpick should be inserted between the forks. Work the toothpick into the tines of the forks.
3. Carefully set the toothpick on the rim of the glass. Slowly slide it in or out across the rim until you've found the best balance point. Both handles will be curving downward below the rim of the glass and the toothpick will be almost horizontal.

#### Finding the center of mass of a long object

1. Hold the object horizontally on one finger from each hand.
2. Carefully slide your fingers together, constantly watching the object—moving each finger so you keep the object level.
3. When your fingers meet, you can easily hold up the object with only one finger.

#### Balancing a soda can on its edge

1. Try to balance a soda can on its bottom edge.
2. Partially fill the can with water.
3. Tilt the can on its edge until it balances.

## Balancing Bird and Forks

### The Science

The \_\_\_\_\_ of any object is the point where the mass of the object is concentrated. If you support an object at its center of mass, it will balance or be in a state of “static equilibrium”.

In most cases, the center of mass of an object is a point with physical mass (for example, the center of a ball). In other instances, it can be located at a position that has no “physical mass” — for example, the center of a donut. If the object is irregular in shape, the center of mass is always located closer to the more massive end.

The terms “center of mass” and “center of gravity” may be used interchangeably as long as the object is affected by a gravitational field. In a weightless environment, “center of mass” is the correct term.

### Questions

- 1) Where do the pennies need to be on the bird for it to balance by its beak?
  
- 2) Where is the bird’s center of mass?
  
- 3) Where is the center of mass of the forks?
  
- 4) What three elements are needed for a fire?
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- 5) What element is removed when the flame touches the glass and the forks?
  
- 6) What type of heat transfer is occurring? \_\_\_\_\_