

Balancing Stick

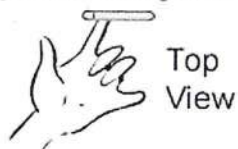
Materials:

- 1 Popsicle™ or craft stick
- 2 12-inch pipe cleaner
- 10 beads (2 charms or 2 washers that are about the same mass as the 10 beads)
- glue gun, glue stick or rubber cement (clay will also probably work but not as a permanent placement)
- Butterfly Template

Objectives: To understand the concept of balance or stability and center of gravity and how they correlate to one another.

Inquiry:

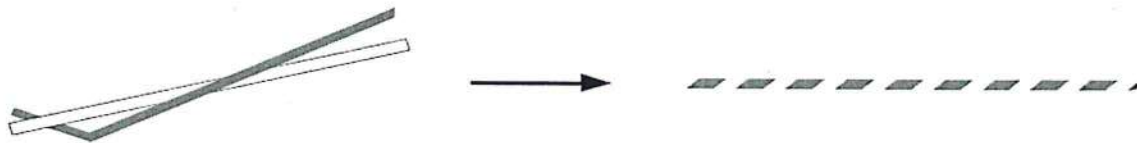
1. Pick up the Popsicle™ stick and try to lie it on your fingertip so that it will not fall off. Where did you have to place the stick so it will not fall off?



Is this the only place where you can balance the stick? Why or why not?

Procedure:

1. Pick up the butterfly template and glue it onto the Popsicle stick.
2. Pick up the two fuzzy stick. It is sometimes referred to as a pipe cleaner. Loosely twist or twine the pipe cleaners together so it would have double thickness.



3. Bend the pipe cleaner in half.



4. Place a mark on the near end of the Popsicle™ stick, about 1 inch from one end, either scoring it or using a pencil.

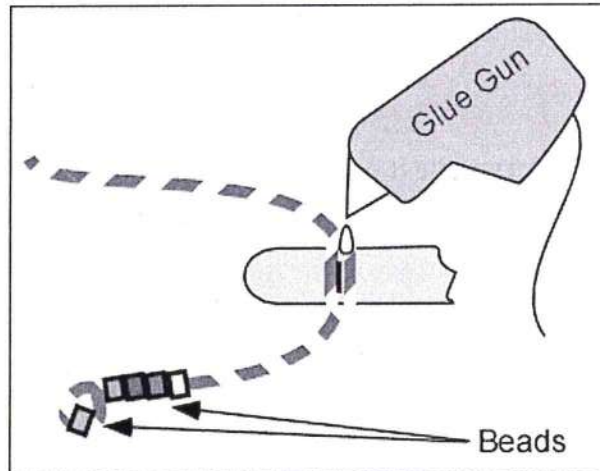


5. Wrap the pipe cleaner about the Popsicle™ two times at the pencil mark, ending up with two ends of the pipe cleaner about the same length and twist it tightly.

Optional: To insure that the pipe cleaner does not shift up and down the stick or rotate, put some glue (not A LOT!) where the wrapped pipe cleaner and stick meets.

6. Curve the pipe cleaner ends down, away from the long end of the butterfly.

7. Thread the end of the pipe cleaner through the opening of the bead or charm. Add four more beads. Twist the pipe cleaner's end around the last bead to keep the bead in-place.



8. Repeat this for the other end of the pipe cleaner.

9. Balance the butterfly (where the pipe cleaner is closer to) on your fingertip. If it tips over and falls off, observe which way it tipped. Try bending the pipe cleaner slightly and observe how it balances on your index finger.

In which direction did you have to bend the wires to obtain balance (stability) of the object?

a.) Was it above your finger or below your finger?

b.) Was it toward the back of your hand or toward the back of the butterfly?

Why does bending the wires balances the butterfly on your finger? What do you think is happening to the butterfly as you adjusted the wires?

9. Tape a pencil flat on the table with the eraser end sticking out from the table. Balance your butterfly (again at it's tip where the pipe cleaner is closer to) on the eraser. If needed, make minor adjustments to the pipe cleaners.

10. Where on the butterfly did you found it's balance? Was it the same as what you did for the stick in the inquiry?

Is this the only place where you can balance the stick? Why or why not?