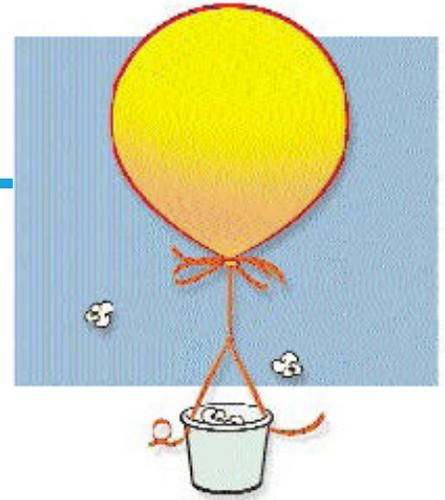


Balloon Flinker

How can you make a balloon “flink” — neither float nor sink, but stay still mid-air?



Instructions

Students experiment with equilibrium as they discover how much weight a helium balloon can carry while it “flinks” in air.

ACTIVITY PART 1:

- 1** Poke a hole on each side of a small paper cup using the pencil or hole punch.
.....
- 2** Put the balloon’s ribbon through both holes and tie a knot so that the cup is attached.
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- 3** Make the balloon flink—neither float nor sink—by changing one thing, such as the length of the ribbon or cutting away small pieces of the cup.
.....
- 4** Make the balloon flink for 10 seconds.

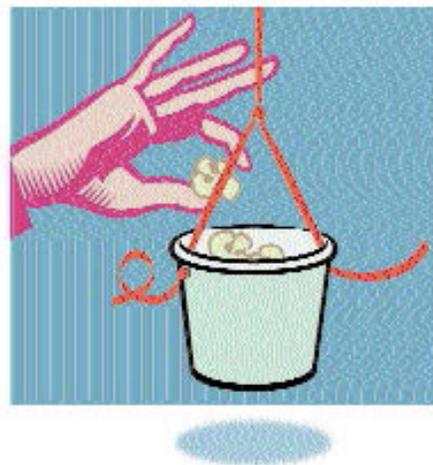
ACTIVITY PART 2:

- 5** Redesign your setup so that something can be carried in the cup, like popcorn, a message, or something else that is light.
.....
- 6** Make changes so that the balloon flinks again.

Materials

PER STUDENT:

- Small paper cup
- Pencil or hole punch
- Helium balloon with ribbon attached
- Scissors



Engineering & Science Connections

-  Flinking is a state of equilibrium: the state in which the system is stable, so the balloon neither floats nor sinks. Engineers often work with states of equilibrium like this. Submarines, for example, have to flink in the water by carefully adjusting the ballast in their tanks.

-  Civil engineers who help design buildings need to make sure that the forces acting on the structure are in a state of equilibrium. Structures will only be stable (and safe) if the force of gravity pulling the structure down is equal and opposite to the strength of the structure pushing up.

-  Helium is the second most abundant element in the universe. Helium is a lighter gas than air, which is why helium balloons float up. Helium's properties make it the perfect gas for many important uses. The number one use of helium is as a cooling gas for machines in hospitals and science labs. Helium is also used in blimps, party balloons, and to inflate car airbags after impact.

Guiding Questions ?

How does a balloon filled with helium behave differently from a balloon filled with air?

How does changing the length of the ribbon affect the balloon?

Why is it harder to make a balloon flink for 10 seconds instead of 3?

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