

# COLD AIR, WARM AIR

Ever wonder why warm air rises and cool air sinks?

## Materials needed:

- Plastic water bottle (16 ounce size)
- Balloon
- 2 medium-sized mixing bowls
- Ice water
- Hot water



## Directions:

1. Place your balloon over the opening of your water bottle, completely sealing the top of the bottle.
2. With the help of an adult, pour heated water (not boiling...be careful) into one of the medium-sized mixing bowls. Fill the bowl about half way.
3. With the help of an adult, pour water from the tap into a medium sized bowl with 10 or so ice cubes about halfway.
4. Place your water bottle with balloon into the bowl with heated water, submerging the bottom half of the bottle. Wait a couple of minutes. What happens to the balloon?
5. Remove the bottle from the water, and let it cool to its normal temperature.
6. Place your water bottle with the balloon into the bowl with ice water, submerging the bottom half of the bottle. Wait a couple of minutes. What happens to the balloon?

## Explanation:

Heating the molecules in air cause them to move faster and spread out. Heated air molecules expand and need more space, so it stretches out the balloon. When air molecules are cooled, they move slower and closer together. Cooled air molecules contract and need less space, so the balloon deflates. Since warm air requires more space than cold air, it is less dense, which causes it to rise. This is how hot air balloons operate!