

HEAT TRANSFER

In this experiment, we'll learn how conduction works and the importance of heat absorption by different materials.

INSTRUCTIONS:

Don't leave the candle unattended.

Use tongs or gloves to hold the paper cup if it gets hot.

Perform this experiment on a heat-resistant surface.

STEP 1: Fill the paper cup with water about halfway. Make sure it's an ordinary cup, not coated with wax or plastic.

STEP 2: Light the candle and hold the paper cup just above the flame or carefully let the bottom edge of the cup touch the flame.

STEP 3: As you hold the cup over the flame, the water in the cup will start to absorb the heat. Due to conduction, the heat from the flame transfers through the paper cup and into the water.

STEP 4: Eventually, you'll see bubbles as the water heats up, which indicates that the heat is being conducted through the cup into the water.

Materials

Candle
Paper cup
Water
Lighter or matches
Tongs or
heatproof gloves



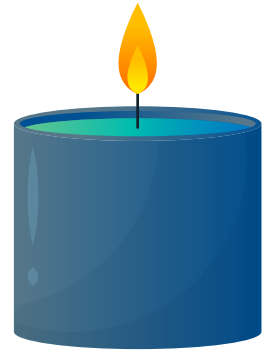
THE SCIENCE

Heat moves from warmer areas to cooler areas. In this case, heat from the candle flame is conducted through the paper cup and into the water inside. The heat continues to flow from the flame to the water until the water reaches a higher temperature.

Conduction is one way heat can transfer from one object to another, especially through solids. Paper is a conductor of heat, but it burns easily. However, when filled with water, the heat conducts through the paper and is absorbed by the water.

Heat Transfer Observations

Use this worksheet to process and evaluate your work.



What do you think will happen when paper is held over the flame?

How do you think the water inside will behave?

What happens to the bottom of the cup as it comes into contact with the flame?

What role does water play in preventing the paper cup from burning?

What did you learn about heat transfer?

