

Purpose

The purpose of my experiment is to see which fruit absorbs the most heat energy from 400 degrees F for 20 min. I am doing this because I like food and I wondered which fruit would be the hottest before I sneak a piece. The heat is not always on the outside.

Hypothesis

My hypothesis for my experiment is, I think that the apple will absorb the heat. I thought this because the apple has a thin skin. This allows heat to pass through very quickly. While the orange has a very thick skin rejecting the heat.

Materials

- 4 apples
- 4 tomatoes
- 4 oranges
- 4 bananas
- 1 digital thermometer
- 1 cookie sheet
- 1 gas oven
- 1 timer
- 1 towel
- 2 pot holders
- 1 notebook
- 1 pencil / pen
- 1 scale
- 1 oven thermometer
- napkins
- knife (help of parent)

Procedure

1. Pre heat the oven to 400 F
2. Test oven to make sure it is at 400 F
3. Remove labels from each fruit
4. Gather one of each fruit and place them on the cookie sheet. (they should not touch each other)
5. Place the cookie sheet ,with the fruit on it, on to the middle shelf of the oven
6. After placing the fruit in the oven, set the timer for 20 min.
7. Wait until the timer goes off checking every 10-min.
8. Turn on the oven light to check
9. After the timer goes off take out the cookie sheet using the potholders and place it on the towel
10. Stick the end of the digital thermometer into each fruit and wait for the reading to stabilize
11. Record this data in you notebook.
12. Repeat the steps 1 – 11 three more times recording the data in your notebook.

Results

! CAUTION HOT!

- Apple 134, 154, 153, 155
- Banana 174, 182, 179, 179
- Orange 140, 141, 140, 151
- Tomato 137, 152, 138, 147

Descriptions

Banana turned black and its juice boiled, turn to mush.

Apple shriveled up and juice popped out, nice and hot.

Tomato's skin peeled off, looked like stewed tomato.

Orange stayed the same but became hot.

Range of temperatures

Apple = 134 – 155

Banana = 174 – 182

Orange = 140 – 151

Tomato = 137 – 152

Average of temperature

Apple = 149
Banana = 178.5
Orange = 143
Tomato = 143.5

Conclusion

My hypothesis was incorrect. The banana was the fruit that absorbed the most heat. The apple had such a thin skin that the heat passed right through it. The apple only caught some heat. The banana had the highest temperature out of all of the fruit. I think that the banana had the highest temperature because the banana turned to liquid so it would take in the most heat.

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Physics

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Abstract

The purpose of my experiment is to see which fruit absorbs the most heat energy from 400 degrees F for 20-min. Heat the oven at 400 degrees and then place the fruit on the cookie sheet in the oven for 20- min. Test each fruit's temperature with the digital thermometer. The banana had the highest temperature out of the fruit by far.

Bibliography

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By: Sandra Markle
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By: Ovid K. Wong, Ph. D
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By: Bill Nye
5. Be a Kid Physicist
By: William R. Wellnite, Ph. D
6. Science Projects About Physics in the Home
By: Robert Gardner

Review of Literature

Heat and Temperature

Heat is a form of kinetic or potential energy. Heat is created when atoms and molecules vibrate. As a substance gets hotter its molecules move faster and faster. Sources of heat include friction, the sun, coal, wood, oil, and gas. As well as interior sources as magma, lava, or steam. Heat is used to cook food, warm buildings, and used in factories. Without heat living things would **DIE!**

Heat is transferred in three ways. Means of conduction, convection, or radiation. When a warm object touches a cooler object its heat will go directly to the cooler object. This is conduction. When a warm object sits in cool air its heat will go off into the cool air. The cool air will rise as warm air. As more cool air comes in contact it will be come warmed. This is convection. Even if the warm object is in a vacuum, it will want to give up its heat. It will radiate is heat away. This is radiation.

Different matter, metal, paper, water, and people can carry heat. Heat can be produced by electricity. Metals are better conductors of heat and electricity than glass and wood. Plastics are bad conductors of heat. Bad conductors are called “insulators”.

Temperature tells how hot or how cold something is. It also tells you whether heat is flowing into a substance or flowing out of a substance. Temperature is measured with a thermometer (an instrument containing a substance that indicates the temperature of its surroundings). Reaching the same temperature as its surroundings does this. The thermometer depends on thermal expansion to work. The liquid in a thermometer is mercury (a silvery liquid metal or alcohol dyed red). A thermostat is made with a metal coil. Temperature is measured in degrees () F and C. F is for Fahrenheit and C is for Celsius.

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