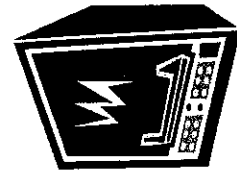


Hot Spots

Mapping Hot Spots in a Microwave Oven



Introduction

Where food is placed in a microwave oven may affect cooking speed, quality, and appeal. A **stirrer fan** scatters microwaves throughout the oven. However, it cannot distribute them perfectly evenly. As a result, there are more microwaves in some parts of the oven than others. This uneven distribution of microwaves causes hot spots in the oven. The part of the food located where microwaves are concentrated may get hot and overcook. The part located where there are fewer microwaves stays cool and undercooked.

There are more microwaves near the sides of the oven than in the center. Therefore, foods near the sides will get hotter than foods in other parts of the oven. For example, a pan of brownies may have dry, overcooked edges and a soggy, undercooked center. Unevenly cooked foods are less appealing and of poorer quality than evenly cooked foods.

Objective

Knowing where the hot spots are in a microwave oven can help you prepare foods that are cooked evenly. This experiment will help you see where the hot spots are in a microwave oven.

Procedure

1. Lightly grease the baking dish.
2. In a mixing bowl, blend 1 cup of flour and 1 cup of light corn syrup. Use a rubber spatula to spread the mixture evenly in the baking dish.
3. Remove the turntable from the microwave oven. Center the glass dish in the microwave oven. Cook on high for 5 minutes. Use the pot holder to carefully remove the dish from the oven. Let it cool for five minutes.
4. Using a ruler and a knife, score the baked mixture from top to bottom and side to side to form 1-inch (2.5-cm) squares.
5. The brown areas on the baked mixture show where the microwaves were concentrated. When microwaves are concentrated in an area, that area becomes hotter than other areas. Note the locations of the hot spots on the baked mixture. Record your observations in the data table by placing an X in each space where a hot spot occurred.
6. Carefully lift the pan and notice the locations of the hot spots on the bottom. Record your observations in the data table.
7. One by one, remove the squares with hot spots. Break them open and notice whether the browned areas are also found on the interior of the baked mixture.
8. Repeat Steps 1 to 6, but after the mixture has cooked 2 minutes, turn the dish a quarter turn.
9. Repeat Steps 1 to 6, but leave the turntable in the microwave oven.

Word to Know

stirrer fan. A fan in a microwave oven that distributes microwaves around the oven.



Supplies

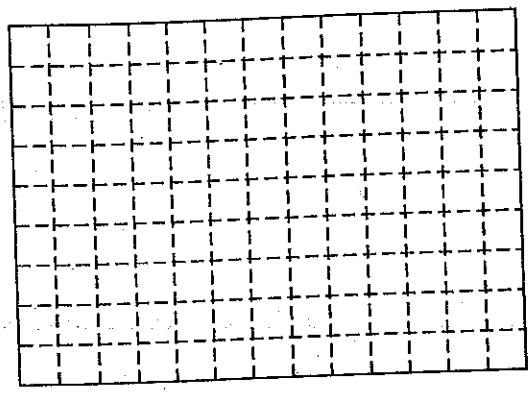
- 3 9x13-inch (22.5x32.5-cm) clear glass baking dishes
- shortening
- mixing bowl
- 3 cups flour
- 3 cups light corn syrup
- rubber spatula
- microwave with removable turntable
- ruler
- knife
- pot holder

Hot Spots

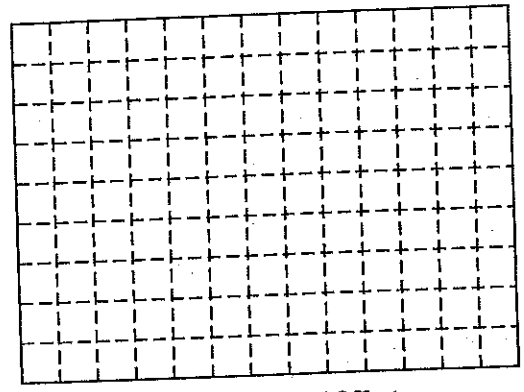
Name _____ Date _____ Period _____

Data

Map of hot spots for mixture cooked for 5 minutes without turning:

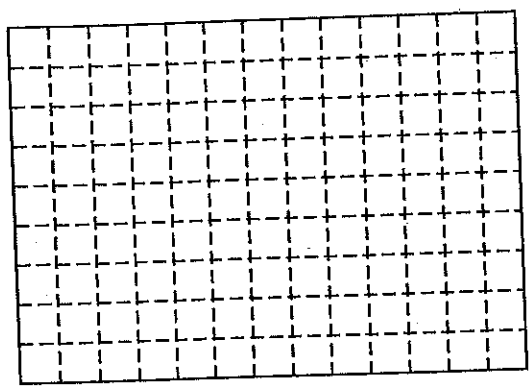


Top of Baked Mixture

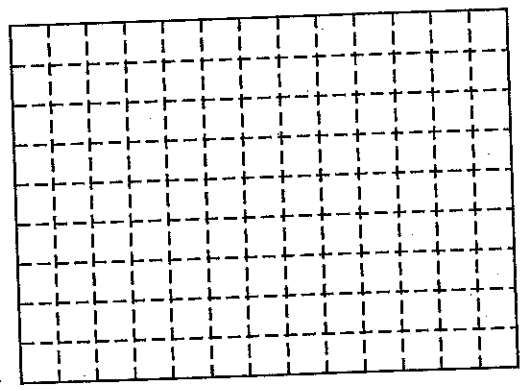


Bottom of Baked Mixture

Map of hot spots for mixture turned a quarter turn:

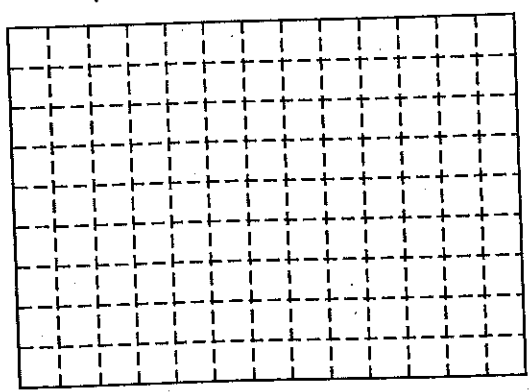


Top of Baked Mixture

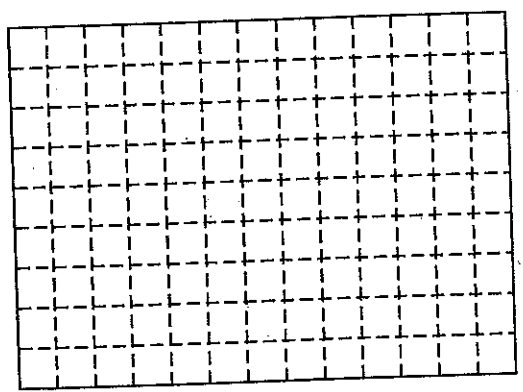


Bottom of Baked Mixture

Map of hot spots for the mixture cooked on a turntable:



Top of Baked Mixture



Bottom of Baked Mixture

Hot Spots

Name _____

Analysis

1. Describe where most of the hot spots occurred on the top of the first baked mixture. _____

2. Describe where most of the hot spots occurred on the bottom of the first baked mixture. _____

3. Describe what you observed when you examined the interior of the first baked mixture. _____

4. Compare the locations of the hot spots in the first mixture to those in the mixture that was turned a quarter turn. _____

5. Compare the locations of the hot spots in the first baked mixture to those in the baked mixture that was cooked on a turntable. _____

6. A. Which baked mixture had the least hot spots? _____
B. What caused the difference in the location and number of hot spots? _____

7. How can you use this information? _____

