



Microwave - What is the difference between an oven and a microwave?

Fact

- An oven uses heat to cook food. It surrounds the food in hot air.
- And an oven heats food up from the outside in.
- A microwave uses microwaves, which are a type of radio wave, to cook food.
- And a microwave heats food up from the inside out.
- Food is made up of tiny particles and the heat from the oven heats the particles on the outside of the food. When those particles are hot they heat the particles beside them until the heat works its way to the middle of the food.
- The microwaves make the food particles “excited”. That excitement makes the food heat.

Do you know

- Too much heat can cause food to go brown and crispy or even burn.
- Because a microwave “excites” water particles instead of heating them the food won’t brown or go crispy the same as in an oven.
- Another thing that ovens can do is cause water in the food to evaporate, which helps crisp things up. Microwaves don’t do that to the same extent.
- The food particles heated in the microwave can stay excited and keep vibrating and heating for some time so you should leave the food to sit for a couple of minutes before you eat it.

Experiments you can do

Try making your own bread and butter pudding

What you need: An adult to help you

4 slices of toast bread with the crust cut off, then buttered and cut into triangles

2 tablespoons of raisins

¼ cup of sugar

3 eggs

2 cups of milk

¼ teaspoon cinnamon

A medium sized ovenproof / microwave proof dish

A medium sized bowl

A whisk

Layer the triangles of bread in the ovenproof / microwave proof dish. Sprinkle the raisins over the bread and then sprinkle the cinnamon over the bread. Crack the eggs into the bowl, add the milk and beat them with a whisk. Stir the sugar into the egg mixture then pour the mixture over the bread.

Leave the pudding to stand while you heat the oven to 180 degrees Celsius then cook the pudding in the oven for about 30 minutes until the pudding is golden and the eggs have set and become quite firm. Get an adult to take the dish out of the oven and leave it to cool a little before you try it.

Or if you’re using a microwave:

Leave the pudding to stand for 10 minutes then cook the pudding in the microwave on medium setting for about 15 minutes until the eggs have set and become quite firm. Get an adult to take the dish out of the microwave and leave it to cool a little before you try it.

Other Investigations

Get an adult to help you with this experiment because water can heat up very quickly in a microwave and become hot enough to burn.

Heat one cup of water in the microwave to make a hot drink. Heat it for a minute at a time. How long did it take until the water was boiling? How long does it take if you only use half a cup? Or if you change the power from high to medium or if you put the microwave on auto-heat? Remember a scientist records all the results in their charts.

When you're having dinner think about the different ways the food has been cooked. Was any of it cooked with microwave radio waves? Was any of it cooked in the oven? What food was cooked in a pot? Cooking in a pot works the same way as cooking in an oven. The heat moves from the element to the pot to the outside of the food and then into the middle of the food!