

# Science in the Kitchen

*Video: Chemistry of Bread Making- <http://esg.mit.edu/videos/chemistry-of-breadmaking-an-introduction-to-the-science-of-baking/>*

Complete the chart for each ingredient found in making bread

Ingredient	Purpose
Water	
Yeast	
Glucose	
Flour	
Oil	
Sugar	
Salt	

What is the correct temperature to activate yeast? \_\_\_\_\_

What happens if it is too cold \_\_\_\_\_

What happens if it is too hot? \_\_\_\_\_

What is the chemical equation for the fermentation of Sugar?

What is the Maillard reaction?

Complete the following

\_\_\_\_\_1. What's the first change that occurs in your cookie dough after you put the pan in the oven? A. water boils B. butter melts C. proteins unfold  
D. caramelization occurs

\_\_\_\_\_2. Where do most of the proteins in cookie dough come from?  
A. sugar B. eggs C. butter D. flour

\_\_\_\_\_3. At what temperature does caramelization begin? A. 356 ° B. 400 °  
C. 310 ° D. 265 °

\_\_\_\_\_4. What is the leavening agent sodium bicarbonate another name for?  
A. carbon dioxide B. baking soda C. baking powder D. hydrogen

\_\_\_\_\_5. What makes cookies light and airy? A. steam evaporating  
B. carbon dioxide and gas created by the leavening agent  
C. butter melting D. Both A and B are correct

At what Temperature does butter melt? \_\_\_\_\_

At what temperature is salmonella killed at? \_\_\_\_\_

How many Americans get sick from salmonella each year? \_\_\_\_\_

At what temperature will proteins begin to change their shape? \_\_\_\_\_

At what temperature does water boil away at? \_\_\_\_\_

At what temperature does the Maillard reaction begin at? \_\_\_\_\_

At what temperature does caramelization begin at? \_\_\_\_\_

What is caramelization?

What is emulsion?

Give an example of emulsion: