

Welcome to  
**YOUR GAME PLAN**  
for  
**FOOD SAFETY**

### Foodborne Illness is Serious!

More and more, foodborne illness is in the news. According to the Centers for Disease Control and Prevention, foodborne illnesses in the United States affect millions of people and cause thousands of deaths every year. An estimated 800,000 illnesses occur in children under the age of 10.

### Teaching Food Safety Is Important...

The good news is that there are many things children and families can do to help ensure that their food is safe to eat—at home, at school and even when eating out. All they need is a basic awareness of proper food handling, cleanliness practices, and the importance of temperature in controlling/killing bacteria. And

as an educator, you play a big role in helping to “spread the word—not the germs!” That’s where Your Game Plan for Food Safety fits in. As part of the Partnership for

Food Safety Education’s nationwide Fight BAC™ Campaign, this program is specially designed for use with 4th, 5th and 6th graders.

### ...And It’s Easy!

Your Game Plan for Food Safety helps you teach food safety in a way that is both easy and exciting. Using the inquiry approach to learning, the program inspires children to discover the science behind food safety as they experiment...investigate...and explore.

**Let’s Get Started!**



#### Proper Patties

##### Outcome:

For hamburger to be safe to eat, it must be cooked to an internal temperature of 160°F/71°C. This is the only way to make sure that all harmful bacteria that might be present have been killed. The color of the meat is *not* a reliable indicator that the meat has reached a temperature high enough to destroy harmful bacteria such as *E. coli* O157:H7. *If thermometer is not available, do not eat ground beef that is still pink inside.*

- Digital food thermometers and dial food thermometers have different usage instructions. Be sure to check the label!
- Don’t confuse instant-read food thermometers with dial roasting thermometers. The dial roasting kind is used in the oven; it stays in the meat or poultry the whole time it’s cooking. Again — check the label!

##### Integrated Learning:

###### Science learning:

- Observe, record, create data.

###### Mathematics:

- Measure using time and different variables like 1/4" from edge, center, 160°F/71°C.
- Graph data collected over time.

###### Language arts:

- Conduct oral and written share of experiments and results.

###### Technology:

- Learn to use a food thermometer properly and research the different types of food thermometers.

###### Social Studies:

- Research what foodborne illness you might get if the hamburger is not cooked to 160°F/71°C, and find an example in news stories of people contracting this illness from eating undercooked hamburger.

##### Optional Followup:

- Research what bacteria cells look like.



#### Be a Good Egg!

##### Outcome:

Scientists estimate that 1 in 20,000 eggs may contain harmful bacteria. The bacteria will be killed with thorough cooking. Eggs should be cooked until the yolks and whites are firm. Don’t use recipes in which eggs remain raw or only partially cooked.

##### Integrated Learnings:

###### Science learning:

- Observe, predict, hypothesize.

###### Mathematics:

- Develop system to chart data collected.
- Measure time and temperature, and make comparisons.

###### Language arts:

- Participate in oral and written share of experiment results.

###### Technology:

- Research safe food cooking temperatures for eggs, meat, poultry and fish.

# HOT STUFF

## E X P E R I M E N T

# PROPER PATTIES

### Materials Needed:

- 1/4 lb. of fresh, lean hamburger meat
- Food thermometer
- Access to toaster oven with a broiler and broiler tray (or an electric fry pan)
- Pot holder

### QUESTION

How can you tell when a hamburger patty is cooked to a safe temperature?

### MY HYPOTHESIS:

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### PROCEDURE

1. Form a round, thick (1") hamburger patty. Measure and record the temperature of the patty 1/4" from the edge. (See chart below.)
2. Now, take the meat's temperature in the very center of the patty.
3. Place the patty on the toaster oven broiling tray.
4. Place the tray in the toaster oven and turn the dial to broil.
5. When the burger looks cooked on one side, have your teacher turn over to brown the other side. Remove it from the toaster oven.
6. Now take the patty's temperature 1/4" from the outside edge, and again in the center of the patty. This must be done quickly so the patty doesn't lose its heat! Record your temperature readings on the chart below.
7. If the temperature reading is not 160°F, place the patty back in the oven and then take the meat's temperature every two to three minutes until the temperature is 160°F in the center.

### Hamburger Temperature Results

	Raw	Test 1 When outside looks cooked	Test 2 Time:	Test 3 Time:	Test 4 Time:	Done/Safe to Eat Time:
1/4" from edge						160°F
Center						160°F
Difference						0

### TIP



#### Thermometer Tips:

- Make sure the thermometer goes straight into the meat and does not come out the other side to touch the pan!
- Thermometers should be washed each time you take the temperature of the meat.

### DID YOU KNOW?

When a piece of meat is "ground up" to make hamburger, the bacteria that was on the surface of the meat can end up on the inside of the burger! That's why it's so important to cook the whole burger to a safe temperature of 160°F!

### MY OBSERVATIONS



- When I measured the meat temperature 1/4" from the edge and in the center the first time, the outside of the patty looked:
- When the thermometer read 160°F in the center,
  - The outside of the patty looked:
  - The inside of the patty looked:

### MY CONCLUSIONS



- The best way to tell if the hamburger is done and safe to eat is to:
- It's important to wash the thermometer after each use because:
- When meat is cooked to 160°F,
- If hamburger is not cooked to 160°F, this is what could happen:
- What do you think? Does the color of meat tell you whether it is cooked enough to be safe to eat?

### TELL YOUR FAMILY . . .



Check to see if your family has a food thermometer and uses it! Let them know what you learned about making meat safe to eat! Wash your hands after handling raw meat or poultry!

# HOT STUFF

## E X P E R I M E N T

# BE A GOOD EGG

### Materials Needed:

- Three large raw eggs
- Electric "hot pot" with access to outlet or pan (with lid) with access to heat source
- Slotted spoon
- 1 small, clear cup or jar
- 3 small paper plates
- Knife
- Permanent marker
- White sheets of paper for each student
- Pencils; yellow, orange and red crayons or markers
- Access to cold water

### QUESTION

How do you know when a hard-cooked egg is safely cooked?

### MY HYPOTHESIS:

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### DID YOU KNOW?

A raw egg spins more slowly than a cooked egg! The liquid inside the raw egg slows it down!

### GETTING READY

Choose three classmates to be "egg peelers."

Label the eggs and paper plates with permanent marker:

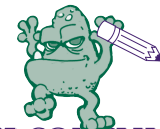
- #1: cooked 2 minutes
- #2: cooked 8 minutes
- #3: cooked 15 minutes

### PROCEDURES

1. Carefully place the three eggs in cold water in electric "hot pot" or pan. Heat until boiling; remove from heat and cover with lid.
2. Remove Egg #1 with the slotted spoon after 2 minutes, and cool under cold water.
3. Remove Egg #2 6 minutes later and cool under cold water.
4. Let Egg #3 stay in the hot water for 7 minutes more (total time: 15 minutes). Then cool under cold water.
5. Have each "egg peeler" peel one of the three cooked eggs, cut the egg in half, and put it on its labeled paper plate.
6. Observe and record the differences between the three eggs! (Use chart below.)

### Record your observations: What do you see?

Part of egg	#1: Cooked 2 minutes	#2: Cooked 8 minutes	#3: Cooked 15 minutes
Yolk			
White			



*Illustrate:* Draw a picture of each egg using pencil and yellow or orange marker or crayon to show the whites and the yolk. How are the yolks and whites different in the three eggs?

*Describe and Categorize:*

- List as many words as you can think of to describe the whites and yolks of each egg.
- Circle the ones that mean that an egg is safe to eat and put a red X through the ones that mean it is not.

### MY CONCLUSIONS

- This is what happens when you cook an egg longer:
- You can tell that an egg is cooked sufficiently by:
- What Do You Think? Is it okay to eat raw eggs if they are mixed in raw cookie dough?

### TELL YOUR FAMILY . . .



Bring home your picture of the three eggs and post it on your refrigerator.

Remind your family to cook eggs until the yolks and whites are firm. Don't use recipes in which eggs remain raw or only partially cooked.