Station I: Leavening agents

The leavening agents found at this station are numbered 1, 2, 3, and 4. Test each unknown using water, acid, and iodine. Record your results in the data chart. Guess the identity of each leavening agent and give reasons for your answers. When you are finished, answer the questions below.

	unknown 1	unknown 2	unknown 3	unknown 4
visual observation				
test with water				
test with acid				
test with iodine				
identity				
reasons for your identity answer				

1. Yeast is considered to be a leavening agent. What reactions take place in baked goods when yeast is used?

2. What is the effect of altitude on baked goods and how does higher altitude affect baking times needed?

3. List two different leavening agents and a baked item that typically uses each one that you have listed.

Station II: Viscometer

1. Show the viscometer that your group has designed. Have the event supervisor initial your paper to show that you have done this.

2. Show the standard curve that your group has made of the fluids you have tested with your own viscometer. Have the event supervisor initial your paper to show that you have done this.

3. Define viscosity.

4. Describe in your own words, the operation of the viscometer. In detail, how did you measure viscosity with it?

5. What unit is used for viscosity when tested with your viscometer?

6. You have been given two unknown solutions (#1 and #2).
a. What is the identity of each unknown?
b. What is the difference between these two solutions?
c. What ingredients were added and what was done to produce the difference between the two unknowns? Explain.

Station III: Food Labels

Using the food label given, answer the following questions:

1. How many Calories come from the protein in one serving of this product?

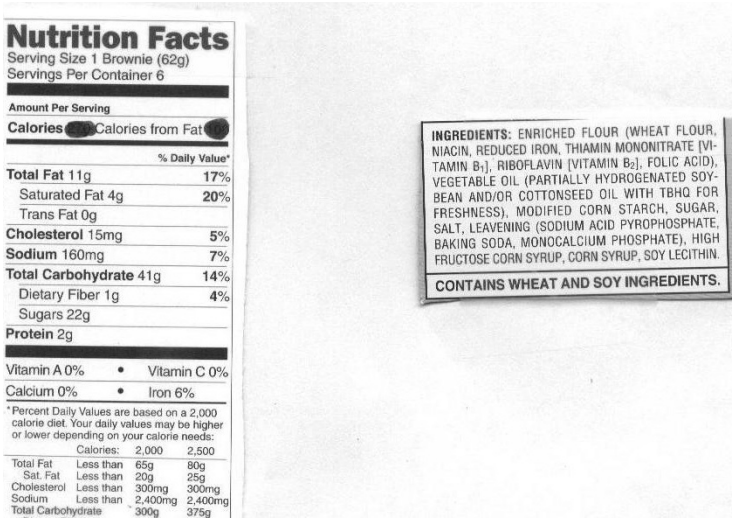
2. How many Calories come from the fat in one serving of this product?

3. How many Calories come from the carbohydrates in one serving of this product?

4. What is the total Calorie count for one serving of this product?

5. Using the food label of ingredients, list the four items found in the highest amounts in this product.

6.
a. What is the difference between saturated and unsaturated fat?
b. Which type of fat is healthier for you? Why?
c. Give one example of a food that contains the healthier fat and one that contains the less healthy fat.



Nutrition Facts
Serving Size 1 Brownie (62g)
Servings Per Container 6

Amount Per Serving
Calories [redacted] Calories from Fat [redacted]

	% Daily Value*
Total Fat 11g	17%
Saturated Fat 4g	20%
Trans Fat 0g	
Cholesterol 15mg	5%
Sodium 160mg	7%
Total Carbohydrate 41g	14%
Dietary Fiber 1g	4%
Sugars 22g	
Protein 2g	

Vitamin A 0% • Vitamin C 0%
Calcium 0% • Iron 6%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat. Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g

INGREDIENTS: ENRICHED FLOUR (WHEAT FLOUR, NIACIN, REDUCED IRON, THIAMIN MONONITRATE [VITAMIN B_1], RIBOFLAVIN [VITAMIN B_2], FOLIC ACID), VEGETABLE OIL (PARTIALLY HYDROGENATED SOYBEAN AND/OR COTTONSEED OIL WITH TBHQ FOR FRESHNESS), MODIFIED CORN STARCH, SUGAR, SALT, LEAVENING (SODIUM ACID PYROPHOSPHATE, BAKING SODA, MONOCALCIUM PHOSPHATE), HIGH FRUCTOSE CORN SYRUP, CORN SYRUP, SOY LECITHIN.

CONTAINS WHEAT AND SOY INGREDIENTS.

7. Using the unknowns provided, correctly match each to the macronutrients listed. There may be more than one answer per unknown and you may use the macronutrient labels more than once.

Macronutrients: Carbohydrate
Protein
Lipid

Unknown #1
Unknown #2
Unknown #3
Unknown #4
Unknown #5

Station IV: Recipes and Density

1. Calculate the density of the food products # 1 and # 2 at this station. Show your calculations.

2. At this station, you will find a sample of “Sloppy Joe” and Meatloaf. They have similar ingredients, but were made according to different recipes.

a. List the ingredients and basic cooking instructions that you would expect to find in the recipe for each.

b. Discuss what cooking instructions and ingredients make the two menu items different from each other. Be sure to include the purpose/function of the ingredients/instructions. Be specific with your answers and make sure you use enough detail so that the reader has a better understanding of recipes, ingredients, and their effect on the outcome of the food item.

Station V: Chemical Test #1

Use the Reagent (labeled #1) and test solutions 1, 2, 3, 4, 5. Record your results in the chart given. Then answer the questions listed below. Use any extra time to clean up the lab equipment so it will be ready for the next group.

	Reagent #1
unknown #1	
unknown #2	
unknown #3	
unknown #4	
unknown #5	

1. What is the identity of reagent #1?

2. Describe a positive reaction with this reagent (include original color and color change and any other experimental factors that are needed).

3. In your own words, summarize the content of the unknown solutions based on your experimental evidence.

Remember to clean up at this station.

STATION VI: MIXTURES AND SOLUTIONS

At this station there are two unknown mixtures (unknown #1 and unknown #2).

1. *Shake* unknown **#1** *vigorously*. *Observe*.
   In food chemistry, what is the ***specific name*** for this TYPE of mixture?
   _____

2. Allow unknown **#1** to set, *undisturbed*, on the counter.
a. What happens to the mixture?
b. Explain why this happens (use chemical/scientific terminology as much as possible):

3. *Observe* unknown **#2**. This contains the same mixture as unknown #1 plus one additional ingredient. (*Note* the difference in appearance between these two unknowns.)

a. What is the function/purpose of this "additional ingredient"? _____

b. What is the ***general name*** for this type of ingredient? _____
c. What, ***specifically***, is a common cooking ingredient that is used as this type of agent?
_____

4. In any grocery store, you can find many products which are examples of this type of mixture (your answer for question 1, above).
a. Other than dressings used for salads, give one ***specific*** example of this type of product:
   _____

and *list the two major ingredients* which are being mixed:

b. _____

c. _____

STATION VII: BREADS

At this station there are samples of two different types of bread (sample **A** and sample **B**).

Examine both samples. The two types of bread are different primarily because one ingredient was changed.

1. Describe the major difference between the two samples?

2. What is the ***general name*** for the type of ingredient that was changed to produce the difference?

3. What, ***specifically*****,** may have been the ingredient that was used in each, to produce the difference? Explain your answer.

a. sample **A**: _____

b. sample **B**: _____

STATION VIII: CHEMICAL REACTIONS

At this station there two sets of apple slices (set **a** and set **b**).

Examine both sets.

1. Describe the major difference between the two samples?
   _____

2. What is the name given to the process which is occurring in set **a**? _____

3. What type of reaction is this? _____

4. What is the ***specific*** name of the enzyme found in fresh produce that catalyzes this reaction?

5. Why isn't the same process occurring in set **b** (HINT: what was done to set **b** to prevent this process)?

6. What, **specifically**, is the substance used to prevent this process? _____

7. This type of substance belongs to the general category of agents called? _____

Station IX: Chemical Test #2

Use the Reagent (labeled #2) and test solutions 1, 2, 3, 4, and 5. Record your results in the chart given and then answer the questions below. Use any extra time to clean up the lab equipment used at this station so it will be ready for the next group.

	Reagent #2
unknown #1	
unknown #2	
unknown #3	
unknown #4	
unknown #5	

1. What is the identity of reagent #2?

2. Describe a positive reaction with this reagent (include original color and color change and any other experimental factors that are needed).

3. In your own words, summarize the content of the unknown solutions based on your experimental evidence.

<u>Remember to clean up at this station.</u>

Station X: Chemical Test #3

Use the Reagent labeled #3 and test solutions 1, 2, 3, 4, and 5. Record your results in the chart given and then answer the questions below. Use any extra time to clean up the lab equipment used at this station so it will be ready for the next group.

	Reagent #3
unknown #1	
unknown #2	
unknown #3	
unknown #4	
unknown #5	

1. What is the identity of reagent #3?

2. Describe a positive reaction with this reagent (include original color and color change and any other experimental factors that are needed).

3. In your own words, summarize the content of the unknown solutions based on your experimental evidence.

<u>Remember to clean up at this station.</u>