



MICROWAVE COOKING CHECKLIST

Required for Exhibit

- _____ Fill out Microwave Record Sheet and turn in to club leader for his or her signature.
- _____ Create fair exhibit according to Microwave Cooking Exhibit Guidelines in appropriate manual
- _____ Fill out a recipe card no larger than 5 ½" x 8 ½" and bring it with finished product to project check-in.

Suggested Activities

- _____ Complete at least 3 activities in appropriate Microwave Magic Manual (Levels A,B,C,D), each from a different "bite" category. Answer all questions in manual related to chosen activities. Turn in to club leader for his or her review.

Resources available in Extension Office

Microwave Magic Level A Manual—Bag of Tricks (4-HCCS BU-08087, grades 3-4), Microwave Magic Level B Manual—Micro Magicians (BU-08088, grades 5-6), Microwave Magic Level C Manual—Amazing Rays (BU-08089, grades 7-9), Microwave Magic Level D Manual—Presto Meals (4-HCCS BU-08090, grades 10-12), www.extension.purdue.edu/elkhart, *Microwave Magic Helper's Guide (4-HCCS BU-08091)

*Items available for sale; contact Extension Office for current prices

Revised 10/2023

Purdue University is an affirmative action, equal access/equal opportunity institution.



Purdue Extension Food Safety Policy (revised 10/2022):

For Food Competitions: Fillings, frostings, glazes, and meringues are not permitted to contain cream cheese, sour cream, heavy cream, or whipped cream if they are not fully cooked/baked. These items are allowed as ingredients in food products IF the final product is cooked/baked. Additionally, raw milk, raw milk products or uncooked eggs/egg whites are not permitted. Eggs/egg whites that have been cooked to 160⁰F (i.e. pasteurized **or** included as part of a batter and baked) are acceptable. No home- canned fruits, vegetables, or meats are permitted as ingredients in food products.

Foods should be transported to the competition in a way that minimizes contamination and maintains the quality of the food (i.e. foods that are judged as frozen should remain frozen at all times).

Recipes must be provided that identifies all ingredients that were used in each part of the product. Any ingredient that could be a potential allergen must be clearly identified. Potential food allergens include, but are not limited to, milk, eggs, peanuts, tree nuts, fish, crustacean shellfish, wheat, soy and sesame. Each food product must be labeled with the following information:

- Name
- Address (4-H member information can be taken from enrollment if needed)
- Contact information (phone and/or email address; 4-H member information can be taken from enrollment if needed)
- Date the food product was made

Contestants should carefully wash their hands and make sure that their hands do not have any open cuts before preparing foods. If cuts are present, the wound should be bandaged and a single use food service glove worn on the hand during all stages of food production. Contestants should not be preparing food exhibits for competition within 48 hours of recovering from any illness. People experiencing symptoms of vomiting, diarrhea, fever, and/or jaundice should not be allowed to prepare food.

Judges and individuals who will consume products from county and/or state competitions should be informed that they are at risk for foodborne illness since the established policy cannot guarantee that an entry has been properly prepared or handled before, during or following the competition. The food products for competitions are home produced and processed and the production area is not inspected by the Indiana Department of Health. Tasting of a food product is solely at the discretion of the judge and consumers. Judges are **NOT** to taste any home preserved foods such as low-acid or acidified foods like green beans, tomatoes or tomato products, jams/jellies/fruit preserves or fermented products produced in the home.

4-H FOODS RECIPE CARD

Project Level (circle level) A B C D

Name _____

Baked Preserved (check one)

County _____

Name of Product: _____ Recipe Source _____

INGREDIENTS:

INSTRUCTIONS:

(continue on back if needed)

4-H FOODS RECIPE CARD

Project Level (circle level) A B C D

Name _____

Baked Preserved (check one)

County _____

Name of Product: _____ Recipe Source _____

INGREDIENTS:

INSTRUCTIONS:

(continue on back if needed)

4-H Microwave Project Grid – No State Fair Exhibit

Chapter	Book A	Book B	Book C	Book D
1 – Techniques & utensils	Tricks of the Trade – How a Microwave Works – Wattage & Safety a. Cookware – dish test – hot chocolate b. Hot spots – boiling water c. Covering – hot dogs	Stirring, Shielding, Shapes of Dishes & Food, Types of Covers a. Output wattage b. Arranging potatoes & toppings c. Quantity - bacon	Defrosting & Browning a. Defrosting – hamburger – make chili b. Browning – hamburgers c. Browning – pork chops	Doneness – Probes, Standing & Holding Time a. Oven bag – pot roast b. Whole Chicken – standing time & shielding c. Comparison shopping for a microwave – features & costs
2 – Nutrition	Food Guide Pyramid a. Breakfast – energy - Scrambled eggs b. Apples – browning test, baked c. Pizza snacks	Vitamins (A, C & D)& Minerals (Calcium) a. Vegetables – Fresh canned & frozen & toppings b. Pudding – different types of milk c. Chocolate Fondue	Protein & Meat Alternatives a. Lemon broccoli chicken breasts b. Meatloaf – different shapes c. Lasagna –frozen vs. homemade & pasta tips	Healthy Substitutes • Chocolate Cake – substitute oil & egg • Sugarless Carrot cake • Adapting a recipe – conventional to microwave
3 – Food Preparation Match exhibit requirements	Power Levels a. Popcorn with cheese topping b. Granola Snack Mix c. Fudge – chocolate & peanut butter	Microwave Baking Tips – bar cookies & cakes a. Bar Cookies with frosting b. Brownies c. Pineapple upside down cake	Candy & Chocolate Tips a. Coffee cake b. Peanut Brittle c. Fruit Crisps	Benefits of Microwave Cooking, Quality of Cakes & Pies a. Microwave Layer Cake b. Jams & Jellies c. Pie – cherry & pecan
4 – Meal	Breakfast & snacks – Carbohydrates, sugar a. Prepackaged – breakfast foods b. Chili dip c. Banana split	Lunch Ideas & Fight Bac Rules a. Macaroni & cheese b. Sloppy joes c. Chicken nuggets	Dinner - Storing & Reheating Left-overs a. Vegetable & Rice Casserole b. Ground beef & potato casserole c. One-dish spaghetti	Planning a Menu – Schedule microwave to cook several dishes • Breakfast - Quiche • Lunch - Tuna casserole • Italian chicken • Dinner – Beef Teriyaki, Veggies & Rice
Exhibit	Grade 3 – Microwave Snack Grade 4 – Fudge	Grade 5 – Bar Cookies or brownies Grade 6 – Upside down cake	Grade 7 – Fruit Crisp Grade 8 – Coffee Cake Grade 9 - Candy	Grade 10 – Double layer or bundt cake Grade 11 – Pie Grade 12 – Jam or Jelly

Microwave Magic Level A Year 1 Record Sheet

Name _____ Grade _____ Year _____

Name of Club _____ Year in Club Work _____

County _____ Township _____

1. List three new things you learned using the microwave.

2. What types of cookware are recommended for use in the microwave?

3. List at least two safety tips you practiced while completing your project.

4. Did you give a demonstration on your microwave project? _____ Yes _____ No

Name of demonstration _____

5. List the foods you prepared in the microwave this year.

Food Prepared	Number of times prepared	Amount prepared	Total cooking time

6. Write in the number of times you completed these activities.

Activity	Number of Times
Tried new recipes	
Set table	
Helped serve family meals	
Cleaned up kitchen	
Shopped for groceries	
Put away groceries	

I have reviewed this record and made comments about the individual's progress and project completion.

Signature of Project Helper _____ Date _____

Microwave Magic Level A Year 2 Record Sheet

Name _____ Grade _____ Year _____

Name of Club _____ Year in Club Work _____

County _____ Township _____

1. How do you think you have helped yourself and your family by taking this project?
2. How does microwave energy cook food? How is it different from cooking on top of the stove?
3. What is the purpose of using different power levels while cooking?
4. Did you give a demonstration on your microwave project? ____ Yes ____ No
(If yes, what was the name of your demonstration?)
5. List the foods you prepared in the microwave this year.

Food Prepared	Number of times prepared	Amount prepared	Total cooking time

6. Write in the number of times you completed these activities.

Activity	Number of Times
Tried new recipes	
Set table	
Helped serve family meals	
Cleaned up kitchen	
Shopped for groceries	
Put away groceries	

I have reviewed this record and made comments about the individual's progress and project completion.

Signature of Project Helper _____ Date _____

Microwave Magic Level B Year 1 Record Sheet

Name _____ Grade _____ Year _____

Name of Club _____ Year in Club Work _____

County _____ Township _____

1. List three new things you learned using the microwave.

2. Why is it important to arrange the food you are cooking in the microwave?

3. List three safety tips you practiced while completing your project.

4. Did you give a demonstration on your microwave project? _____ Yes _____ No

Name of demonstration _____

5. List the foods you prepared in the microwave this year.

Food Prepared	Number of times prepared	Amount prepared	Total cooking time

6. Write in the number of times you completed these activities.

Activity	Number of Times
Set table	
Helped serve family meals	
Collected recipes	
Tried new recipes	
Shopped for groceries	
Put away groceries	

I have reviewed this record and made comments about the individual's progress and project completion.

Signature of Project Helper _____ Date _____

Microwave Magic Level B Year 2 Record Sheet

Name _____ Grade _____ Year _____

Name of Club _____ Year in Club Work _____

County _____ Township _____

1. What was the most surprising thing you learned about yourself by taking this project?

2. Why are different power levels used in microwave cooking of cookies and cakes?

3. List three types of coverings that can be used when cooking in the microwave.

4. Did you give a demonstration on your microwave project? _____ Yes _____ No

Name of demonstration _____

5. List the foods you prepared in the microwave this year.

Food Prepared	Number of times prepared	Amount prepared	Total cooking time

6. Write in the number of times you completed these activities.

Activity	Number of Times
Set table	
Helped serve family meals	
Planned and cooked entire meal	
Collected recipes	
Tried new recipes	
Shopped for groceries	
Put away groceries	

I have reviewed this record and made comments about the individual's progress and project completion.

Signature of Project Helper _____ Date _____

Microwave Magic Level C Year 1 Record Sheet

Name _____ Grade _____ Year _____

Name of Club _____ Year in Club Work _____

County _____ Township _____

1. As a result of the activities you completed this year, what will you do differently?

2. Why is it important to use browning agents with meat products?

3. What have you learned about cooking fruit crisp in the microwave?

4. Name of demonstration _____

Date of demonstration _____ Location of demonstration _____

5. List the foods you prepared in the microwave this year.

Food Prepared	Number of times prepared	Amount prepared	Total cooking time

6. Write in the number of times you completed these activities.

Activity	Number of Times
Set table	
Helped serve family meals	
Planned and cooked entire meal	
Collected recipes	
Tried new recipes	
Taught a sister, brother, or someone younger to cook in the microwave	
Helped younger 4-H'ers with activities in their microwave manual	

I have reviewed this record and made comments about the individual's progress and project completion.

Signature of Project Helper _____ Date _____

Microwave Magic Level C Year 3 Record Sheet

Name _____ Grade _____ Year _____

Name of Club _____ Year in Club Work _____

County _____ Township _____

1. List four safety tips that you practiced while completing this project.

2. Name the different types of candy you cooked. How did you know when they were done cooking?

3. How do you think you have helped yourself and your family by taking this project?

4. Name of demonstration _____

Date of demonstration _____ Location of demonstration _____

5. List the foods you prepared in the microwave this year.

Food Prepared	Number of times prepared	Amount prepared	Total cooking time

6. Write in the number of times you completed these activities.

Activity	Number of Times
Helped serve family meals	
Planned and cooked entire meal	
Collected recipes	
Tried new recipes	
Shopped for groceries	
Taught a sister, brother, or someone younger to cook in the microwave	
Helped younger 4-H'ers with activities in their microwave manual	

I have reviewed this record and made comments about the individual's progress and project completion.

Signature of Project Helper _____ Date _____

Microwave Magic Level C Year 2 Record Sheet

Name _____ Grade _____ Year _____

Name of Club _____ Year in Club Work _____

County _____ Township _____

1. What did you learn this year in the microwave project that you did not know before?

2. How does the defrosting process work in the microwave?

3. What is the advantage of using the microwave oven in preparing a main dish?

4. Name of demonstration _____

Date of demonstration _____ Location of demonstration _____

5. List the foods you prepared in the microwave this year.

Food Prepared	Number of times prepared	Amount prepared	Total cooking time

6. Write in the number of times you completed these activities.

Activity	Number of Times
Collected recipes	
Tried new recipes	
Helped serve family meals	
Planned and cooked entire meal	
Shopped for groceries	
Put away groceries	
Taught a sister, brother, or someone younger to cook in the microwave	

I have reviewed this record and made comments about the individual's progress and project completion.

Signature of Project Helper _____ Date _____

Microwave Magic Level D Year 1 Record Sheet

Name _____ Grade _____ Year _____

Name of Club _____ Year in Club Work _____

County _____ Township _____

1. What was the most surprising thing you learned about yourself while completing this project?

2. What did you learn about selecting healthy foods to include in meals?

3. What did you learn about cooking entire meals in the microwave?

4. Did you give a demonstration on your microwave project? _____ Yes _____ No

Name of demonstration _____

5. List the foods you prepared in the microwave this year.

Food Prepared	Number of times prepared	Amount prepared	Total cooking time

6. Write in the number of times you completed these activities.

Activity	Number of Times
Collected recipes	
Tried new recipes	
Helped serve family meals	
Planned and cooked entire meals	
Kitchen cleanup	
Taught a sister, brother, or someone younger to cook in the microwave	
Helped younger 4-H'ers with activities in their microwave manual	

I have reviewed this record and made comments about the individual's progress and project completion.

Signature of Project Helper _____ Date _____

Microwave Magic Level D Year 2 Record Sheet

Name _____ Grade _____ Year _____

Name of Club _____ Year in Club Work _____

County _____ Township _____

1. What three new things did you learn in using the microwave this year?

2. How would you compare the food quality of baked items—such as the pie or cake made in the microwave oven versus the conventional oven?

3. What did you learn about adapting recipes?

4. Did you give a demonstration on your microwave project? _____ Yes _____ No

Name of demonstration _____

5. List the foods you prepared in the microwave this year.

Food Prepared	Number of times prepared	Amount prepared	Total cooking time

6. Write in the number of times you completed these activities.

Activity	Number of Times
Planned special occasion	
Collected recipes	
Tried new recipes	
Set table	
Planned and cooked entire meal	
Kitchen cleanup	
Helped younger 4-H'ers with activities in their Microwave manual	

I have reviewed this record and made comments about the individual's progress and project completion.

Signature of Project Helper _____ Date _____

Microwave Magic Level D Year 3 Record Sheet

Name _____ Grade _____ Year _____

Name of Club _____ Year in Club Work _____

County _____ Township _____

1. List four safety tips you practiced while completing your project.

2. What did you learn about making jam or jelly in the microwave?

3. As a result of the activities you completed this year, what will you do differently?

4. Did you give a demonstration on your microwave project? _____ Yes _____ No

Name of demonstration _____

5. List the foods you prepared in the microwave this year.

Food Prepared	Number of times prepared	Amount prepared	Total cooking time

6. Write in the number of times you completed these activities.

Activity	Number of Times
Planned special occasion	
Shopped for groceries	
Put away groceries	
Set table	
Helped serve family meals	
Planned and cooked entire meal	
Kitchen cleanup	

I have reviewed this record and made comments about the individual's progress and project completion.

Signature of Project Helper _____ Date _____

Microwave Snack Mix
Score Sheet

Name – Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete
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Project Manual Activities

(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the trade
 2. Once you swallow
 3. Kitchen magic
 4. Magnificent meals
- Record Sheet Year A-1

Excellent	Good	Needs to Improve
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Snack Product

- Appropriate display
- Appearance-eye appeal
- Well-blended flavors
- Easy to serve/eat
- Creative recipe
- Nutritional value

Recipe Card

- Clear, legible, and complete

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COMMENTS:

Microwave Snack Mix
Score Sheet

Name – Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete
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Project Manual Activities

(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the trade
 2. Once you swallow
 3. Kitchen magic
 4. Magnificent meals
- Record Sheet Year A-1

Excellent	Good	Needs to Improve
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Snack Product

- Appropriate display
- Appearance-eye appeal
- Well-blended flavors
- Easy to serve/eat
- Creative recipe
- Nutritional value

Recipe Card

- Clear, legible, and complete

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COMMENTS:

Microwave Fudge
Score Sheet

Name – Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete

Project Manual Activities
(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the trade
 2. Once you swallow
 3. Kitchen magic
 4. Magnificent meals
- Record Sheet Year A-2

Excellent	Good	Needs to Improve

Outside Characteristics
Uniform size and height
Not sticky when touched
Shiny surface, not dry

Inside Characteristics
Creamy, smooth texture (non-grainy)
Soft, moist, not hard, crystallized, or dry
Nuts are finely chopped (if used)

Flavor
Characteristic of ingredients (not strong or bitter)
Well-blended without lumps

Recipe Card
Clear, legible, and complete

Microwave Fudge
Score Sheet

Name – Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete

Project Manual Activities
(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the trade
 2. Once you swallow
 3. Kitchen magic
 4. Magnificent meals
- Record Sheet Year A-2

Excellent	Good	Needs to Improve

Outside Characteristics
Uniform size and height
Not sticky when touched
Shiny surface, not dry

Inside Characteristics
Creamy, smooth texture (non-grainy)
Soft, moist, not hard, crystallized, or dry
Nuts are finely chopped (if used)

Flavor
Characteristic of ingredients (not strong or bitter)
Well-blended without lumps

Recipe Card
Clear, legible, and complete

Microwave Bar Cookies Score Sheet

Name -- Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete

Project Manual Activities

(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the trade	
2. Once you swallow	
3. Kitchen magic	
4. Magnificent meals	
Record Sheet Year B-1	

Excellent	Good	Needs to Improve

Outside Characteristics

Uniform shape
Uniform size

Inside Characteristics

Moist, neither too soggy nor too dry
Chewy, or soft according to kind
Tenderness
Even cells or holes

Flavor

Well-blended, characteristic of ingredients
Not too much spice, flavoring
No off-flavor from fat, leavening, nuts, etc.

Recipe Card

Clear, legible, and complete

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Microwave Bar Cookies Score Sheet

Name -- Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete

Project Manual Activities

(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the trade	
2. Once you swallow	
3. Kitchen magic	
4. Magnificent meals	
Record Sheet Year B-1	

Excellent	Good	Needs to Improve

Outside Characteristics

Uniform shape
Uniform size

Inside Characteristics

Moist, neither too soggy nor too dry
Chewy, or soft according to kind
Tenderness
Even cells or holes

Flavor

Well-blended, characteristic of ingredients
Not too much spice, flavoring
No off-flavor from fat, leavening, nuts, etc.

Recipe Card

Clear, legible, and complete

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Microwave Upside-Down Cake
Score Sheet

Name – Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete

Project Manual Activities

(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the trade
 2. Once you swallow
 3. Kitchen magic
 4. Magnificent meals
- Record Sheet Year B-2

Excellent	Good	Needs to Improve

Outside Characteristics

Eye appeal/color
Shape – even smooth and slightly rounded
Size – large compared to weight
Fruit evenly distributed on top

Inside Characteristics

Moist and tender crumb
Neither soggy nor too dry
Fine and even cells or holes

Flavor

Well-blended, characteristic of ingredients
Not too much flavoring
No off-flavor from fat, leavening, etc.

Recipe Card

Clear, legible, and complete

Microwave Upside-Down Cake
Score Sheet

Name – Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete

Project Manual Activities

(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the trade
 2. Once you swallow
 3. Kitchen magic
 4. Magnificent meals
- Record Sheet Year B-2

Excellent	Good	Needs to Improve

Outside Characteristics

Eye appeal/color
Shape – even smooth and slightly rounded
Size – large compared to weight
Fruit evenly distributed on top

Inside Characteristics

Moist and tender crumb
Neither soggy nor too dry
Fine and even cells or holes

Flavor

Well-blended, characteristic of ingredients
Not too much flavoring
No off-flavor from fat, leavening, etc.

Recipe Card

Clear, legible, and complete

Microwave Fruit Crisp
Score Sheet

Name -- Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete

Project Manual Activities

(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the trade
2. Once you swallow
3. Kitchen magic
4. Magnificent meals

Record Sheet Year C-1

Excellent	Good	Needs to Improve

Outside Characteristics

- Eye appeal/color
- Appropriate topping
- Topping is cooked

Inside Characteristics

- Fruit is cooked
- Neither soggy nor too dry

Flavor

- Well blended flavors
- No off flavors

Recipe Card

- Clear, legible, and complete

Microwave Fruit Crisp
Score Sheet

Name -- Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete

Project Manual Activities

(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the trade
2. Once you swallow
3. Kitchen magic
4. Magnificent meals

Record Sheet Year C-1

Excellent	Good	Needs to Improve

Outside Characteristics

- Eye appeal/color
- Appropriate topping
- Topping is cooked

Inside Characteristics

- Fruit is cooked
- Neither soggy nor too dry

Flavor

- Well blended flavors
- No off flavors

Recipe Card

- Clear, legible, and complete

Microwave Coffee Cake
Score Sheet

Name – Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete

Project Manual Activities
(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the trade
 2. Once you swallow
 3. Kitchen magic
 4. Magnificent meals
- Record Sheet Year C-2

Excellent	Good	Needs to Improve

Outside Characteristics

- Eye appeal/color
Appropriate topping
Shape – even smooth and slightly rounded
Size – large compared to weight

Inside Characteristics

- Moist and tender crumb
Fine and even cells or holes

Flavor

- Well-blended, characteristic of ingredients
Not too much flavoring
No off-flavor from fat, leavening, etc.

Recipe Card

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- Clear, legible, and complete

Microwave Coffee Cake
Score Sheet

Name – Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete

Project Manual Activities
(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the trade
 2. Once you swallow
 3. Kitchen magic
 4. Magnificent meals
- Record Sheet Year C-2

Excellent	Good	Needs to Improve

Outside Characteristics

- Eye appeal/color
Appropriate topping
Shape – even smooth and slightly rounded
Size – large compared to weight

Inside Characteristics

- Moist and tender crumb
Fine and even cells or holes

Flavor

- Well-blended, characteristic of ingredients
Not too much flavoring
No off-flavor from fat, leavening, etc.

Recipe Card

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- Clear, legible, and complete

Microwave Hard Candy
Score Sheet

Name – Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete
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Project Manual Activities

(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the trade
 2. Once you swallow
 3. Kitchen magic
 4. Magnificent meals
- Record Sheet Year C-3

Excellent	Good	Needs to Improve
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Outside Characteristics

- Eye appeal
- Uniform size
- Uniform shape (not brittles)
- Pieces keep shape alone

Inside Characteristics

- Good texture – not grainy
- Brittle breaks easily

Flavor

- Balanced flavor
- No off flavors

Recipe Card

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- Clear, legible, and complete

Microwave Hard Candy
Score Sheet

Name – Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete
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Project Manual Activities

(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the trade
 2. Once you swallow
 3. Kitchen magic
 4. Magnificent meals
- Record Sheet Year C-3

Excellent	Good	Needs to Improve
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Outside Characteristics

- Eye appeal
- Uniform size
- Uniform shape (not brittles)
- Pieces keep shape alone

Inside Characteristics

- Good texture – not grainy
- Brittle breaks easily

Flavor

- Balanced flavor
- No off flavors

Recipe Card

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- Clear, legible, and complete

4-H 8090d-W
Microwave Double Layer or Bundt Cake
 Score Sheet

Name -- Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete
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Project Manual Activities

(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the Trade
 2. Once you Swallow
 3. Kitchen Magic
 4. Magnificent Meals
- Record Sheet Year D-1

Excellent	Good	Needs to Improve
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Outside Characteristics

- Eye appeal/color
- Even layers
- Appropriate shape
- Size -- large compared to weight

Inside Characteristics

- Appropriate filling
- Moist and tender crumb
- Fine and even cells or holes

Flavor

- Well-blended, characteristic of ingredients
- Not too much flavoring
- No off-flavor from fat, leavening, etc.

Recipe Card

- Clear, legible, and complete

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4-H 8090d-W
Microwave Double Layer or Bundt Cake
 Score Sheet

Name -- Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete
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Project Manual Activities

(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the Trade
 2. Once you Swallow
 3. Kitchen Magic
 4. Magnificent Meals
- Record Sheet Year D-1

Excellent	Good	Needs to Improve
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Outside Characteristics

- Eye appeal/color
- Even layers
- Appropriate shape
- Size -- large compared to weight

Inside Characteristics

- Appropriate filling
- Moist and tender crumb
- Fine and even cells or holes

Flavor

- Well-blended, characteristic of ingredients
- Not too much flavoring
- No off-flavor from fat, leavening, etc.

Recipe Card

- Clear, legible, and complete

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Microwave Fruit Pie
Score Sheet

Name -- Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete

Project Manual Activities

(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the Trade.....		
2. Healthy Food Selection.....		
3. Kitchen Magic.....		
4. Mealtime Magic.....		
Record Sheet Year 2.....		

Excellent	Good	Needs to Improve

Outside characteristics

Color		
Crust - uniform.....		
Shape		
Pastry -- edge regular without bulges.....		
Size		
Crust -- fits pan.....		
Filling -- fills crust...		

Inside Characteristics

Crust -- tender, not crumbly; flaky.....		
Filling -- fruit cooked, plump not dry; color attractive.....		

Flavor

Crust -- well blended, not doughy; no off flavor from fat.....		
Filling -- characteristic of kind; not too sweet, no raw starch.....		

Recipe Card

Clear, legible, and complete.....		
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Microwave Fruit Pie
Score Sheet

Name -- Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete

Project Manual Activities

(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the Trade.....		
2. Healthy Food Selection.....		
3. Kitchen Magic.....		
4. Mealtime Magic.....		
Record Sheet Year 2.....		

Excellent	Good	Needs to Improve

Outside characteristics

Color		
Crust - uniform.....		
Shape		
Pastry -- edge regular without bulges.....		
Size		
Crust -- fits pan.....		
Filling -- fills crust...		

Inside Characteristics

Crust -- tender, not crumbly; flaky.....		
Filling -- fruit cooked, plump not dry; color attractive.....		

Flavor

Crust -- well blended, not doughy; no off flavor from fat.....		
Filling -- characteristic of kind; not too sweet, no raw starch.....		

Recipe Card

Clear, legible, and complete.....		
-----------------------------------	--	--

Microwave Jams or Jelly
Score Sheet

Name -- Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete

Project Manual Activities

(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the Trade
 2. Once you Swallow
 3. Kitchen Magic
 4. Magnificent Meals
- Record Sheet Year D-3

Excellent	Good	Needs to Improve

Outside Characteristics

- Natural bright color
- Standard canning jar
- Appropriate processing

Inside Characteristics

- Clear -- jelly
- Fruit evenly distributed -- jam
- Free from cloudiness/crystals or foreign particles
- Texture -- keeps shape, jelled, not runny

Recipe Card

Clear, legible, and complete

Microwave Jams or Jelly
Score Sheet

Name -- Entry No. _____ Placing _____

All questions completed	Some questions completed	Did not complete

Project Manual Activities

(Must complete a minimum of three (3) activities, each from a different "bite" category.)

1. Tricks of the Trade
 2. Once you Swallow
 3. Kitchen Magic
 4. Magnificent Meals
- Record Sheet Year D-3

Excellent	Good	Needs to Improve

Outside Characteristics

- Natural bright color
- Standard canning jar
- Appropriate processing

Inside Characteristics

- Clear -- jelly
- Fruit evenly distributed -- jam
- Free from cloudiness/crystals or foreign particles
- Texture -- keeps shape, jelled, not runny

Recipe Card

Clear, legible, and complete

Microwave Magic

Bag of Tricks

Level A



Microwave Project Youth Activity Guide

Name _____ County _____

Purdue University Cooperative Extension Service • West Lafayette, Indiana



REVIEWED & RECOMMENDED
National 4-H Curriculum

Note to Project Helper

Congratulations, a young person has asked you to be his or her helper. Your role as a helper is very important to the total educational experience of the young person. Not only will you be providing encouragement and recognition, you will also be the key person with whom the young person shares each of the experiences outlined in this activity guide.

The “Microwave Magic” curriculum series is full of exciting hands-on activities that focus on using the microwave to prepare everything from simple snacks to complete meals. The curriculum is designed around four major categories: techniques and equipment, healthy food selection, food preparation, and meal time magic.

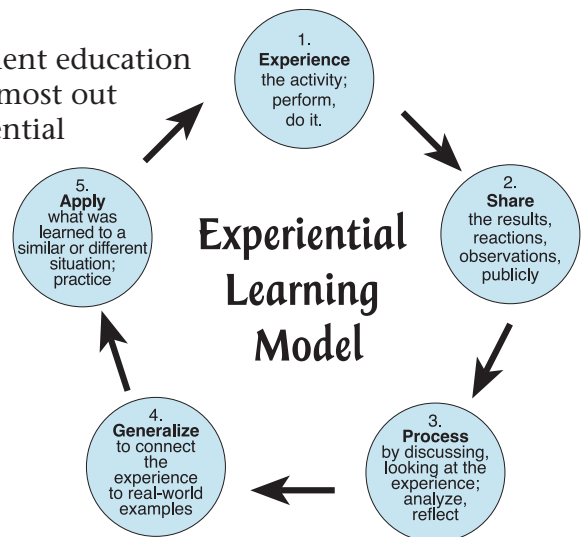
A total of five pieces are available in the “Microwave Magic” curriculum series. The four activity guides – *Bag of Tricks*, *Micro Magicians*, *Amazing Rays*, and *Presto Meals* – have been designed to be developmentally appropriate for grades 3-4, 5-6, 7-9, 10-12 respectively, but may be used by youth in any grade based on their project skills and expertise. The fifth piece, the *Project Helper Guide*, has been designed to provide you with some additional background information and some tips on helping youth through the activities in their guide.

The Experiential Learning Model

Experiential learning distinguishes 4-H youth-development education from many formal educational methods. Youth get the most out of each experience and activity by following the experiential model’s five steps.

1. Youth “learn by doing” an activity. (Experience)
2. They share their experience and reactions. (Share)
3. They discuss or reflect on what they did. (Process)
4. Youth relate skills they practiced to everyday situations. (Generalize)
5. They apply their experience to other real-world situations. (Apply)

Project helpers guide youth as they explore an activity. Questions at the end of each activity help students reflect on the experience.



Pfeiffer, J.W., & Jones, J.E., “Reference Guide to Handbooks and Annuals” © 1983 John Wiley & Sons, Inc. Reprinted with permission of John Wiley & Sons, Inc.

Acknowledgments:

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Important

Microwave oven cooking times vary based on the output wattage of the microwave oven. You should always check the item(s) being cooked when the recommended minimum cooking time has been reached. You can add additional cooking time, if needed.

When a word that is listed in the Glossary first appears in the text, the word is in *italic* type and is underlined.

Having Fun with Microwave Magic!

Are you ready?

Are you ready to do hands-on activities and use the microwave oven to prepare simple snacks and complete meals? That's what "Microwave Magic" is all about. You'll have fun learning about the microwave and using it to make lots of foods.

Your project manual is divided into four "bites": *Tricks of the trade*, *Once you swallow*, *Kitchen magic*, and *Magnificent meals*. Use the achievement sheet to plan your activities. After completing an activity, write the date completed and have your project helper initial it.

Your project helper

Your project helper is an important part of your experience in the microwave project. This person may be your project leader or advisor, a neighbor, a family member, a friend, or anyone who has the interest to work with you to complete your activities. You need to involve your helper as you work with each activity and answer the questions. They are there to give you support and help you be successful. Write the name and phone number of your project helper here:

My project helper _____

Phone _____

E-mail _____

Action demonstrations

An action demonstration is a fun way to share what you have learned with others. The key is getting your audience involved in doing what you are doing, not just showing them. An action demo can be given anywhere there are a lot of people, like a county or state fair or a shopping mall.

An action demo can be on almost any topic. Here are some questions to ask yourself when choosing a topic.





- Is it something that can be done in 3 to 5 minutes?
- Is it something that would interest the general public?
- Is there something "hands-on" for the audience to do?
- Can the supplies for the "hands-on" activity be used over and over again or will they have to be replaced every time? (Note: If they have to be replaced, this will add to the cost.)

Your demonstration should last about 3 to 5 minutes, and you need to be able to do it over and over again with many different people. There is no prepared speech in an action demo, it is a two-way conversation. Your goal is to involve the audience, and you can do this by having them:

- Do what you are doing.
- Answer questions.
- Play a game.
- Do a hands-on activity.

"Bag of Tricks" Achievement Sheet

Each year, you should complete a minimum of three activities, each from a different "bite" category. Within the two-year project period, you should have completed at least six activities and at least one activity from each of the four "bite" categories. Write the month, day, and year beside each of the activities you completed. Ask your project helper to initial the form after you have discussed the activity with them.

	Date Completed Month/Day/Year	Helper Initial		Date Completed Month/Day/Year	Helper Initial
 <p>Tricks of the trade</p> <p>1a Testing 1, 2, 3 ___/___/___ _____</p> <p>1b Hot spots ___/___/___ _____</p> <p>1c Keep it clean ___/___/___ _____</p>			 <p>Kitchen magic</p> <p>3a Popcorn treats ___/___/___ _____</p> <p>3b Snacks in a snap ___/___/___ _____</p> <p>3c Fabulous fudge ___/___/___ _____</p>		
 <p>Once you swallow</p> <p>2a Scrambled start ___/___/___ _____</p> <p>2b Awesome apples ___/___/___ _____</p> <p>2c Micro snacks ___/___/___ _____</p>			 <p>Magnificent meals</p> <p>4a Breakfast bites ___/___/___ _____</p> <p>4b Chili dip ___/___/___ _____</p> <p>4c Add a dessert ___/___/___ _____</p>		

Did you do an action demonstration? Yes No Location _____

Title of action demonstration given _____

Name _____ Grade _____

Club/School _____

I certify that this youth has completed all requirements for Level A of the "Microwave Magic" project and is ready to move on to Level B.

Project helper's signature _____ Date _____

Tricks of the trade

Introduction

How a microwave works

A microwave oven is a metal-lined box that holds a microwave-generating tube called a *magnetron*. Each microwave oven has double safety locks so that microwaves won't leak or escape. It also has an air vent, which allows steam to escape, but not microwaves.

Microwaves, which are a kind of radio wave, cook by causing food *molecules* to rub and vibrate against one another. The constant rubbing produces heat inside the food. The cooking of food occurs throughout the food, instead of from the outside as in a regular oven. This makes foods cook very quickly, but makes it challenging to cook thick foods such as a meat roast. Thick foods can be cooked on a lower power level for a longer period of time.

How are microwaves different from ovens and stoves? Each method cooks food in a different way. For example, in stove and oven cooking, the container helps heat the food. But the container used in microwave cooking is only to hold the food as it is zapped with microwaves. Look at the chart below for other differences.

Cooking method	Description
Range top (stove)	Heat source is from an electric coil or gas burner. Heat warms the pan, and then the pan warms and cooks the food.
Oven	Heat source is from the hot air in the oven. Food cooks or bakes in a pan placed in the hot oven.
Microwave	Microwaves cause molecules in the food to rub and vibrate against one another. This causes friction, which then causes heat. The heat then cooks the food.

What's a watt?

Watt and wattage are terms used to describe the microwave's power. The higher the number of watts, the faster the microwave oven will cook food. Find your microwave's output wattage by looking in the owner's manual or reading the name plate/serial number label on your microwave oven. The number should be between 650 and 1,200 watts. A 650-watt microwave oven may take twice as long to cook something as a 1,000- or 1,200-watt microwave oven.

Microwave safety

Cooking with a microwave can be a lot of fun. However, it is important to play it safe. There are a few safety rules you should follow when using a microwave.

- Always get permission before you cook, and make sure an adult is nearby in case you need help or run into a problem.
- Have an adult teach you how to operate the microwave. Learn how to open and close the door properly, program the time, and turn the microwave oven on and off.
- Never operate an empty microwave. If you want to practice using the microwave, place a cup of water inside to absorb the microwave energy.
- Never operate the microwave with the door open.
- Never operate the microwave if it is damaged. This could be a bent door, broken or loosened hinges and latches, broken door seals, or broken inside surfaces.
- Never wedge an object in the oven door.
- The microwave should be repaired only by a qualified repairman.
- Use only microwave-safe dishes.
- Do not use metal cookware and metal utensils in the microwave. Don't use aluminum foil pans or dishes and utensils with a metal trim.
- Use potholders when removing dishes from the microwave.
- Carefully remove coverings by lifting the side farthest away from you first. Steam is very hot and can cause burns.
- Keep the inside of the microwave clean. If spills occur, wipe them up immediately.

MAGIC

1a. Testing 1, 2, 3

Project skill

Testing to determine microwave-safe dishes

Life skill

Mastering technology

Dish test supplies

- glass dish
- plastic dish
- 1 or 2 other kinds of dishes
- 1- or 2-cup glass liquid measuring cup
- 1 cup water

There are many shapes and styles of dishes you may use in microwave cooking. First, you must decide which dishes will fit in your microwave. If your microwave has a built-in turntable, choose dishes that won't bump into the walls as they turn.

Next, you must test the dishes to see if they are microwave-safe. Some dishes may say microwave safe, others may not. That doesn't mean they can't be used in the microwave. Here are some examples of dishes that can be used in the microwave:

- Glass.
- Ceramics such as pottery, stoneware, porcelain, china, and stone cookware.
- Plastics (be careful; some may melt).
- Paper products.

Here are some examples of dishes that **can't** be used in the microwave.

- Plastic storage containers.
Note: Containers such as margarine tubs, take-out containers, and whipped topping bowls should not be used in microwave ovens. These containers can warp or melt.
- Cracked dishes – they may shatter.
- Metal dishes or cookware.
- Any glassware, china, pottery, stoneware, or other dish that has a metal trim.

Gather some dishes in the kitchen and test to see if they are microwave safe.

1. Place the dish to be tested inside the microwave. Remember, do not test any metal dish or cookware, or any dish that has metal, gold, or silver trim on it.
2. Measure 1 cup of water into the 1- or 2-cup glass liquid measuring cup.
3. Place the filled measuring cup beside the dish to be tested. If your dish is large, you may have to place the measuring cup inside the dish. If you do, make sure the cup is steady and won't tip or fall during cooking, especially if your microwave has a turntable.
4. Microwave on High (100%) power for 1 minute.

- If the dish is cool and the water is warm, the dish is microwave safe. Be careful, the water or dish may be hot.
- If the dish is hot and the water is cool, do not use the dish for microwave cooking.
- Repeat steps with another dish. Record your findings in the chart under Micro Talk.

Micro Talk

- What types of dishes did you test?

Type of dish	Microwave safe	Not microwave safe
Glass		
Plastic		

- Which dishes were not microwave safe?

- What did you learn about the different dishes?

- How would you explain to a friend why it is important to use only microwave-safe dishes?



Use construction paper and markers to make a list of microwave-safe dishes in your family's kitchen. Hang the list near your family's microwave or on the refrigerator.

Hot chocolate

Use the hot water from your dish test to make a mug of hot chocolate. First, prepare the mix.

Ingredients

- 1½ cups instant nonfat dry milk powder
- ¼ cup nondairy creamer powder
- ¼ cup sugar
- ¼ cup unsweetened cocoa powder

Supplies

- medium size microwave-safe bowl
- measuring cups
- storage container

- In a medium size bowl, *mix* together the nonfat dry milk, nondairy creamer, sugar, and cocoa.
- Transfer mixture into a storage container.
- Put ⅓ cup of mix into a microwave-safe mug.
- Pour 1 cup hot water from the dish test into the mug. Stir. If the water is too cool, microwave on High (100%) power for 30 seconds to 1 minute.
- If you would like to add marshmallows to your hot chocolate, put them in the mug and heat for about 10 or 15 seconds.
- Enjoy! Be careful, it may be very hot.

1b. Hot spots

Project skill
Determining microwave hot spots

Life skill
Processing information

Hot spot supplies

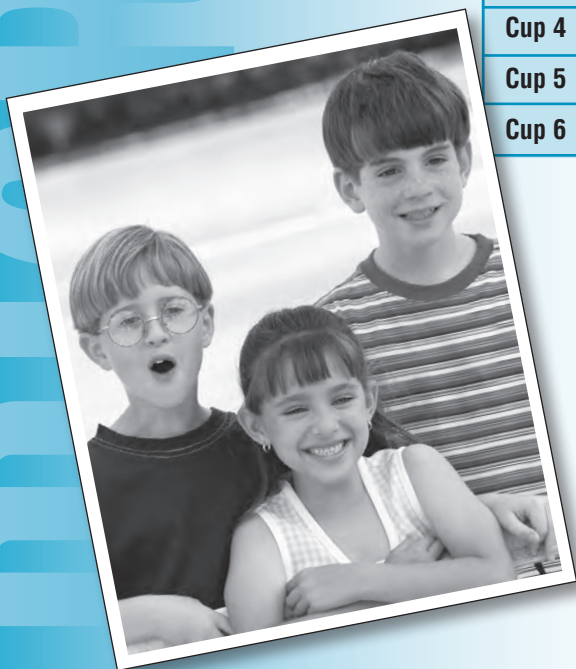
- 6 foam cups
- permanent marker
- water

When you cook in the microwave, does one section of food always seem to bubble and get hot first? If so, your microwave may have a *hot spot*. A hot spot is where a greater amount of microwaves hit that specific area. This means that one section of food may cook more quickly than the other sections. You can cook around hot spots by using different shapes and sizes of dishes that avoid the hot spot.

Let's find out if your microwave has a hot spot.

1. Use a permanent marker and label the foam cups 1 through 6.
2. Fill each cup half full with water.
3. Arrange each cup in the microwave oven.
4. Microwave on High (100%) power for 5 minutes. During the 5 minutes, pay close attention to when each cup of water begins to boil. Record the boiling time for each cup in the chart below.

Cups	Boiling time	
	Minutes	Seconds
Cup 1		
Cup 2		
Cup 3		
Cup 4		
Cup 5		
Cup 6		



Micro Talk

1. Draw a picture to show the cups as you placed them in the microwave oven. Number the cups.
2. Using a different color pen, label the cups in your drawing in the order in which they began to boil: 1st, 2nd, 3rd, 4th, etc.
3. What did you learn about microwaves and how they are absorbed?

4. How will you cook differently to avoid microwave hot spots?



Go to a friend's or another family member's house and do the hot spot test in their microwave. Are their microwave's hot spots the same as yours? How are they different?

Cooking with hot spots

Don't let your microwave's hot spots keep you from cooking. You can cook with hot spots by stirring and rotating. Halfway through the cooking time, stir and *rotate* the food. Stirring from the outside to the center of the dish helps to even out the temperature of the food. Rotating also helps the food to cook more evenly. Rotate the dish one-half turn by turning the dish until the side which was to the back of the microwave is to the front.

MAGIC

1c. Keep it clean

Project skill

Covering foods while cooking in the microwave

Life skill

Completing a task

Hot dog ingredients

- 1 hot dog
- 1 hot dog bun
- catsup, mustard, and/or pickle relish

Supplies

- paper towel or paper napkin

It is important to keep your microwave clean. It's easy, too. Whenever a splatter or spill occurs, immediately wipe it up with a paper towel or a cloth or a sponge. For tough spills and stains, you may need to use a small amount of dish soap mixed with warm water. Even if spills don't occur, you should occasionally use a cloth or sponge to wipe around the door seals to remove any grease build-up.

Splatters may be prevented by covering foods while they cook in the microwave. Covering foods also helps keep them moist and tender and allows them to cook evenly. The chart below lists types of coverings and how they can be used.

Covering	Use for covering
Paper towel or napkin	Reduces spatters. Absorbs moisture from baked goods and potatoes.
Waxed paper	Reduces spatters. Retains heat and allows excess steam to escape.
Plastic film (example: Saran Wrap™)	Distributes heat evenly, retains moisture, and speeds heating.
Casserole cover, saucer, or other dish	Retains moisture during long-term cooking.

Be careful when removing any covering used while cooking. The steam that is trapped inside is hot and can cause burns. Carefully remove the covering by slowly lifting the edge that is farthest away from you.

Practice covering foods by cooking a hot dog in the microwave.

1. Place the hot dog in the bun.
2. Wrap hot dog and bun in a paper towel or napkin.
3. Microwave on High (100%) power for 30 to 45 seconds.
4. Carefully remove paper towel or napkin.
5. Add your choice of catsup, mustard, and/or pickle relish.
6. Eat and enjoy!

Micro Talk

1. Why did you cover the hot dog?

2. Did any steam escape as you uncovered the hot dog?

3. List two good reasons why you should cover foods before cooking them in the microwave.

4. How will you use what you learned the next time you use the microwave?

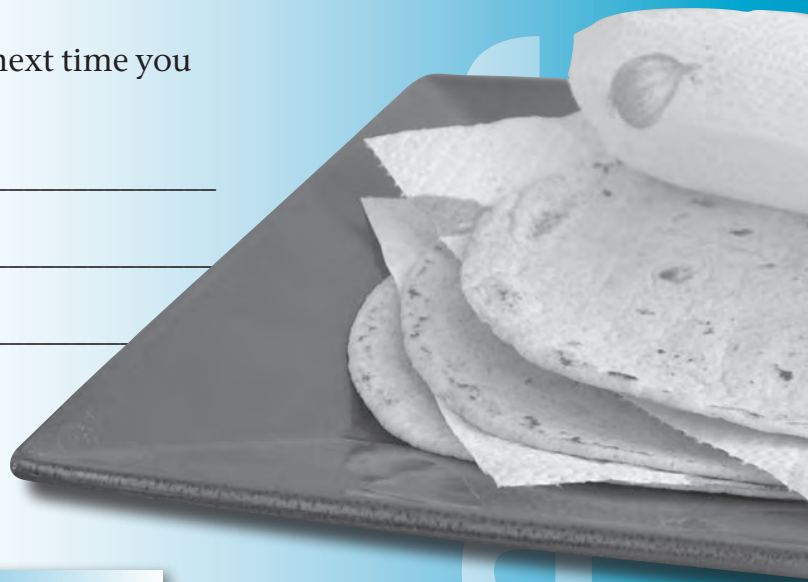
Cover me

The next time your family eats tacos or fajitas, soften the tortillas in the microwave. Place moist paper towels between four tortillas on a microwave-safe plate. Microwave on High (100%) power for 10 to 20 seconds or until soft. Other foods to cover while cooking in the microwave include:

- Spaghetti sauce.
- Frozen vegetables such as corn, peas, and lima beans.
- Bacon.



Remove microwave odors by adding $\frac{1}{4}$ cup of lemon juice to $\frac{3}{4}$ cup of water in a microwave-safe glass liquid measuring cup. Microwave on High (100%) power for $1\frac{1}{2}$ to 2 minutes or until it begins to boil. Carefully remove measuring cup. Your microwave should smell fresh and clean! This will also help to loosen any stubborn baked-on spatters or spills.



Once you swallow

Introduction

MyPyramid

The MyPyramid food guide introduced by the United States Department of Agriculture in 2005 shows that people should eat a variety of foods every day. The pyramid also has a person climbing some steps as a way to remind us to be physically active each day.

Physical movement should be a regular part of your daily routine. It is important to stay physically active throughout your life, and it is important to build good habits while you are young. You should try to be involved in physical activity at least an hour each day – this can include things such as basketball, volleyball, swimming, running, playing tennis, or even taking the dog for a walk. The key is to be really active for at least 10 minutes at a time. If you do this several times a day, your activity probably will add up to more than an hour per day.

Eating a variety of foods and getting plenty of rest combined with physical activity will help keep you healthy. Each day you should be eating whole grains, vegetables, fruits, milk, and meats or beans. Just as with physical activity, it's important now to start making good food choices and developing good eating habits.

Whole grains include wheat, corn, rice, oats, barley, sorghum, and rye – when these foods are eaten in their “whole” form. Whole grains even include popcorn! To find out if a food contains whole grains you will need to look for the *first* ingredient on a food label and look for words such as brown rice, oatmeal, whole oats, whole wheat, or wild rice.

Any vegetable or 100% vegetable juice counts as a member of the vegetable group. For a little variety, you may want to eat vegetables raw or cooked, whole, cut-up, or mashed. To make the most of fruit choices, try eating a whole or cut-up banana, apple, or pear or use fruit as a topping for cereal, pancakes, and other foods. You can even add fruit to salads, pudding, and yogurt.

Source: MyPyramid.gov



MyPyramid.gov

STEPS TO A HEALTHIER YOU

GRAINS Make half your grains whole	VEGETABLES Vary your veggies	FRUITS Focus on fruits	MILK Get your calcium-rich foods	MEAT & BEANS Go lean with protein
<p>Eat at least 3 oz. of whole-grain cereals, breads, crackers, rice, or pasta every day</p> <p>1 oz. is about 1 slice of bread, about 1 cup of breakfast cereal, or ½ cup of cooked rice, cereal, or pasta</p>	<p>Eat more dark-green veggies like broccoli, spinach, and other dark leafy greens</p> <p>Eat more orange vegetables like carrots and sweetpotatoes</p> <p>Eat more dry beans and peas like pinto beans, kidney beans, and lentils</p>	<p>Eat a variety of fruit</p> <p>Choose fresh, frozen, canned, or dried fruit</p> <p>Go easy on fruit juices</p>	<p>Go low-fat or fat-free when you choose milk, yogurt, and other milk products</p> <p>If you don't or can't consume milk, choose lactose-free products or other calcium sources such as fortified foods and beverages</p>	<p>Choose low-fat or lean meats and poultry</p> <p>Bake it, broil it, or grill it</p> <p>Vary your protein routine – choose more fish, beans, peas, nuts, and seeds</p>
<p>For a 2,000-calorie diet, you need the amounts below from each food group. To find the amounts that are right for you, go to MyPyramid.gov.</p>				
<p>Eat 6 oz. every day</p>	<p>Eat 2½ cups every day</p>	<p>Eat 2 cups every day</p>	<p>Get 3 cups every day; for kids aged 2 to 8, it's 2</p>	<p>Eat 5½ oz. every day</p>

2a. Scrambled start

Project skill
Making scrambled eggs

Life skill
Making healthy lifestyle choices

Scrambled egg ingredients

- butter
- eggs (you choose how many)
- milk

Supplies

- microwave-safe dish
- fork

Believe it or not, breakfast is the most important meal of the day. It gives a great start to your busy day. Eating breakfast also helps you concentrate and do well in school. Your growing body needs the energy and *nutrients* that a great breakfast meal will provide.

Scrambled eggs make a delicious breakfast treat. Eat them with pancakes, toast, sausage, or fruit. Making scrambled eggs in the microwave is quick and easy. Choose how many eggs you would like to scramble and let's scramble!

Eggs	Butter	Milk	Time
1	½ Tablespoon	1 Tablespoon	45 to 55 seconds
2	½ Tablespoon	1 Tablespoon	1½ to 2 minutes
4	1 Tablespoon	2 Tablespoons	2½ to 3 minutes
6	1 Tablespoon	¼ cup	3½ to 4½ minutes
10	2 Tablespoons	½ cup	5½ to 6½ minutes

1. Place butter in a serving dish or casserole. A round dish will work best. Remember: Only use microwave-safe dishes.
2. Microwave on High (100%) for 20 seconds or until butter melts.
3. Add eggs and milk.
4. Use a fork to scramble the eggs.
5. Microwave on High for half of the cooking time.
6. Remove from microwave and break up the cooked parts around the edges and move them to the center of the dish.
7. Continue microwaving. Stop one more time to break up the cooked parts and move them to the center.
8. When the time is complete, remove from the microwave.
9. Stir and enjoy.

Micro Talk

1. Rate your scrambled eggs on a scale from 1 to 3.
(1 = excellent 2 = good 3 = poor)

Appearance	
Texture	
Flavor	

2. What was the hardest part about making scrambled eggs in the microwave?

3. How does eating breakfast help you do well in school and other activities?

4. Eating breakfast gives you a healthy start for the day. What else can you do to keep your growing body healthy?



Use the microwave to heat pastry treats for a quick and easy breakfast. Just put from one to three treats on a paper towel or napkin and heat 15 seconds for each pastry. Be careful, the sugar in the jelly causes it to be hotter than the crust. Don't burn your tongue!

Eggs- General tips

Eggs are delicious when cooked in the microwave oven. However, they require a few special cooking techniques:

- The yolk cooks faster than the white due to the higher fat content of the egg yolk. If you continue to cook until the white is firm, the yolk will be tough. Remove early and let the white continue to cook during standing time.
- Pressure can build up in eggs. Thus, it is necessary to puncture the yolk prior to cooking. (This is the same principle as poking holes in a baked potato.)
- For fluffier egg dishes, decrease the power level to 70% or 50%.
- Never cook eggs in their shell in the microwave oven.

	1/4 c. Egg Substitute	1 Egg
<i>Calories</i>	30	75
Fat (g)	0	5
Cholesterol (mg)	0	210
Protein (g)	6	6

2b. Awesome apples

Project skill
Understanding fruit oxidation

Life skill
Using scientific methods

Browning exercise ingredients

- apple
- 2 Tablespoons lemon juice
- 2 Tablespoons sugar
- 2 Tablespoons water

Supplies

- 4 paper plates
- marker
- cutting board
- paring knife

Eating fruits such as apples, oranges, and bananas will provide you with lots of vitamins and nutrients. Your body doesn't make vitamins, so you must get them from foods. One vitamin that is in some fruits is vitamin C. Fruits that are high in vitamin C are strawberries, kiwi, oranges, grapefruit, and cantaloupe. Vitamin C boosts your immune system and helps protect you against colds and the flu.

Fruits like apples are very easy to cook in the microwave. You can make baked apples or apple crisp. Sometimes when you are cutting up or peeling apples for a recipe, the pieces turn brown. They still taste good, but they don't look very good. Oxidation happens when the oxygen in the air touches an enzyme in the fruit called polyphenol oxidase. The reaction causes the fruit to turn brown. You can stop this browning by adding something to the fruit.

Experiment with apples to unlock the secret to stopping browning. One plate will be your control, or what stays the same. The other plates will be your variables, or what is changed.

1. Label each plate as follows:
 - Plain.
 - Lemon juice.
 - Sugar.
 - Water.
2. Use a cutting board and carefully *slice* the apple so there are eight pieces.
3. Place two slices on each labeled plate.
4. According to the plate labels, sprinkle the apple slices with lemon juice, sugar, and water.
5. Observe and record the color of the apple slices after 15 minutes, 30 minutes, and 1 hour.

	15 minutes	30 minutes	1 hour
Plain			
Lemon juice			
Sugar			
Water			

Micro Talk

1. Which plate of apple slices turned the darkest after 1 hour?

2. Which plate is the control?

Which plates are the variables?

3. How will you prevent fruit oxidation the next time you use apples?

4. Lemon juice contains vitamin C (ascorbic acid), which you probably observed is very effective in stopping browning. If you are making a fruit salad with apples, peaches, and bananas, what could you add to the fruit salad besides lemon juice to prevent browning?



Next time you are at the grocery, look at all the varieties of apples. Try tasting some different varieties to find your favorite. Check out some cookbooks to see which varieties are best for baking.

Baked apples Ingredients

- 2-4 apples
- brown sugar
- butter

Supplies

- microwave-safe dish
- measuring spoons
- plastic wrap
- mixing spoon

# of apples	Brown sugar	Butter
2	2 Tablespoons	1 Tablespoon
3	3 Tablespoons	1½ Tablespoons
4	4 Tablespoons	2 Tablespoons

1. Wash and slice each apple into 6-8 pieces. Place slices into microwave-safe dish.
2. Add brown sugar and butter.
3. Microwave on High (100%) power for 1 minute or until butter melts.
4. Stir and cover with plastic wrap.
5. Microwave on High power according to the following:
 - 2 apples – 2½ to 4½ minutes
 - 3 apples – 3½ to 5 minutes
 - 4 apples – 4 to 6½ minutes
6. Rotate dish after 2 minutes.
7. Let stand for 2 minutes.
8. When done, apples should be tender when touched with a fork. If they are not done after the standing time, cook for 30 seconds longer, then check again. Repeat until done.

2c. Micro snacks

Project skill
Making microwave pizza snacks

Life skill
Practicing creativity

Pizza ingredients

- 1 English muffin
- ¼ cup pizza sauce
- 6 to 8 slices pepperoni (you may use more)
- 1 Tablespoon onions, green peppers, or your choice of vegetable (*chopped*)
- ½ cup shredded mozzarella cheese

Supplies

- cutting board
- knife
- measuring cups
- measuring spoons
- wax paper

Your body needs lots of energy and nutrients as you grow and are active at school and play. An afternoon snack gives your body the extra energy and nutrients it needs. There are lots of foods that can make snack time fun. It's best to choose snacks that are healthy, nutritious without a lot of sugar, and require little or no preparation.

Pizza snacks are quick and easy to prepare in the microwave. They are also full of nutrients. See below how they fit into the MyPyramid food groups.

- English muffin – Grain Group
- Pizza sauce – Vegetable Group
- Pepperoni – Meat Group
- Cheese – Milk Group

Transform your snack time into a pizza parlor. Share your pizza snacks with your brother, sister, or a friend.

1. Use a cutting board and carefully cut the English muffin in half.
2. Place pieces on a microwave-safe plate.
3. Spread pizza sauce on pieces.
4. Top each piece with pepperoni, onions, green peppers, or other vegetables.
5. Sprinkle cheese over toppings.
6. Cover with wax paper.
7. Microwave on High (100%) power for 15 seconds. If cheese is not melted, microwave for another 15 seconds or until melted.
8. Enjoy!



Micro Talk

1. What toppings did you add to your pizza snacks?

2. List the food group for each of your toppings.

3. What food group(s) was missing in your pizza snack and what could you serve from that food group so that all food groups were part of your snack?

4. What is another snack you could make that would include all of the food groups?



For some extra pizza pizzazz, try adding a fruit such as pineapple chunks. What other toppings could you add?

Time savers

Here are some other nutritious snacks that require little or no preparation. Put a check mark by your favorites.

- fresh fruit
- raw vegetables
- popcorn
- tortilla chips and salsa
- bagel
- yogurt
- cheese and crackers

MAGIC

Kitchen magic

Introduction

Power levels

Microwave ovens have different power levels that are similar to different temperatures in an oven. Some older microwaves have only one power level for very simple cooking, while others might have several levels. You should always check the owner's manual that came with the microwave to understand the differences in the power levels. The lower the power level, the longer something will take to cook. All ovens cook at 100 percent power (the button that says High), but to defrost certain foods before cooking, you need a 30 percent power level (the button that says *Medium-Low* or Defrost) and to cook foods, you need a 50 percent power level (the button that says *Medium*).

Percent	Number pad	Word pad	Type of cooking
100%	10	High	Cook
70%	7	Medium-High	Roast
50%	5	Medium	Simmer
30%	3	Medium-Low	Defrost
10%	1	Low	Warm

It is very important to follow the directions in recipes for how long and at which power level something should cook in the microwave. You should always cook for the shortest amount of time in a recipe and add more time if you need to. Overcooking can cause food to dry out, get tough, smoke, or burn. The biggest problem with baked goods, including hot dog and hamburger buns, is that they may dry out and get tough.

While microwave ovens come in a wide range of power levels, most recipes are written for a 700- to 1,000- watt oven. **Ask your helper to help you find the output wattage for the oven you are using. (See tips on page 7 to find the output wattage.)** If it is not in the 700- to 1,000- watt range, you will need to find a chart to help you know how to change the cooking time and/or power level. Some microwaves have extra buttons that are set for foods such as breads, popcorn, beverages, and baked potatoes, so all you have to do is put the item in and press the button.

It is important to know where the “stop” or “cancel cooking” button is. If you open the door to remove an item from the microwave before the timer has finished, you should stop or cancel the cooking before you close the door. This is to keep the oven from accidentally starting the cooking process again with nothing inside of it.



3a. Popcorn treats

Project skill

Making cheesy microwave popcorn

Life skill

Completing a task

Cheesy popcorn ingredients

- ½ cup grated American cheese
- 10 cups popped microwave popcorn (check the box for how many cups a full bag of popcorn makes; most bags make 11½ cups)
- ¼ cup butter or margarine
- ¼ teaspoon seasoned salt

Supplies

- shredder
- bowl for cheese
- large bowl
- measuring cups
- custard cup
- measuring spoons

Who can resist the smell and taste of popcorn? Americans have been snacking on popcorn through both good and hard times. During World War II, sugar was sent overseas, so it was hard to make candy. Many people ate popcorn instead. When movie theaters opened, popcorn was a huge hit. With the invention of the TV, many people stopped going to the movie theaters and popcorn sales fell. Eventually, people realized they could make and enjoy popcorn at home, and the sales of popcorn soared.

All ages of people eat popcorn at home, work, in movie theaters, and at sporting events. The average person eats about 68 quarts of popcorn a year. That is 17 gallons of popcorn! Popcorn can be popped by a hot air popper, an oil popping machine, or in the microwave. Microwave popcorn is packaged and sealed with added oil. This added oil creates steam that causes the kernels to pop. Special flavorings like butter, cheddar, and Parmesan are added during packaging to offer choices for everyone's taste buds.

Try making this version of cheesy microwave popcorn.

1. With the help of an adult, carefully grate American cheese until you have ½ cup. Set aside.
2. Pop microwave popcorn according to manufacturer's instructions. Be careful when opening the bag, hot steam can cause burns. Measure 10 cups of popped corn and put in a large bowl.
3. Place butter or margarine in a small microwave-safe dish or custard cup. Microwave on Medium (50%) power for 45 to 60 seconds or until melted. Drizzle over popcorn.
4. Sprinkle with grated cheese and seasoned salt.
5. Gently stir to mix toppings.
6. Your cheesy popcorn treat is ready to serve.

Micro Talk

1. How did your cheesy popcorn taste?

2. What was the hardest part about making cheesy popcorn?

3. How does the microwave make it easier for you to complete cooking projects?

4. Explain how will you plan and organize another cooking project after making cheesy popcorn.



Try making cheesy popcorn with different kinds of cheese. Try cheddar, mozzarella, or Parmesan. You could try different seasonings, like taco mix or seasoned salt.

Surprise pop

A long time before microwave popcorn was invented, a scientist named Perry Spencer was working on his own experiment with microwaves and popcorn. In 1946, Spencer was experimenting with what happens when certain foods are placed in front of a magnetron, a voltage tube that produces microwave energy. At first, a candy bar melted. Then Spencer placed some popcorn kernels in front of the magnetron and they began to pop. From the reaction of these foods, work began to develop the first microwave oven.



3b. Snacks in a snap

Project skill
Making granola mix

Life skill
Mastering technology

Granola mix ingredients

- ½ cup butter or margarine
- ½ cup honey
- 3 cups oats
- ¾ cup sunflower seeds
- 1 cup coarsely chopped nuts
- ½ cup wheat germ
- ½ cup brown sugar
- ½ cup raisins

Supplies

- small microwave bowl
- measuring cups
- wooden spoon
- large microwavable mixing bowl
- cookie sheet

Snacks can be made quickly in the microwave to save time and energy. You can make snacks for parties or gatherings. You can invite neighbors and friends over to share your homemade snack. Or, you can share your snack at soccer games, after-school activities, or any other fun activity.

Preparing snacks in the microwave also will improve your microwave cooking techniques. As you are making snacks, pay attention to the following techniques:

- **Stirring** – Helps to even the temperature of food and sometimes shortens the cooking time. Stir from the outside to the center of the dish.
- **Rotating** – Rotate dish one-half turn or one-quarter turn once or twice during cooking to keep food at an even cooking temperature.
- **Covering** – Food cooks more evenly if covered with a paper towel or napkin. The covering absorbs excess moisture, catches food spatters, and keeps the microwave cleaner.

Let's make some granola snack mix.

1. Put ½ cup butter or margarine in a small *microwavable* glass bowl. Microwave on Medium (50%) for 1¼ to 1½ minutes or until melted.
2. Add honey to the melted butter or margarine.
3. In a microwavable mixing bowl, mix oats, sunflower seeds, nuts, wheat germ, and brown sugar. (HINT: Choose a mixing bowl that is large enough, but will still fit in your microwave.)
4. Add the honey mixture to the mixing bowl.
5. Stir with a wooden spoon until well mixed.
6. Microwave mixture on High (100%) for 4 minutes. Stir mixture.
7. Microwave on High for 2 minutes. Stir mixture.
8. Microwave on High for 1 minute. Stir.
9. Stir in the raisins.
10. Microwave on High for 1 minute.
11. Carefully remove from microwave. You may need to use potholders.

12. Pour granola mix onto a cookie sheet. Use the back of a wooden spoon and spread out until even.
13. When mix cools, store in a covered container or sealed bag.

Micro Talk

1. What was the total cooking time for your microwave granola mix?

2. How many times did you stop the microwave and stir the mix?

How many times did you rotate the dish?

3. What is the purpose of stirring and/or rotating while cooking in the microwave?

4. How will you use the stirring and rotating techniques the next time you cook in the microwave?



S'mores are quick and easy to make in the microwave. Just put a large marshmallow between two squares of chocolate candy bar. Put them inside two graham cracker squares. Microwave on a microwavable plate or paper towel on High (100%) for 15 seconds and enjoy!

Honey tips

Uncrystallize honey by removing the metal lid and microwaving the jar on High (100%) for 1 minute per cup of honey. Stir until the graininess disappears. Don't put the plastic bear-shaped honey containers in the microwave; they melt.

MAGIC

3c. Fabulous fudge

Project skill
Making fudge

Life skill
Processing information

Fudge ingredients

- 1 pound powdered sugar
- $\frac{1}{3}$ cup cocoa
- $\frac{1}{2}$ cup margarine or butter
- $\frac{1}{4}$ cup evaporated milk
- 1 teaspoon vanilla
- $1\frac{1}{4}$ cup chopped nuts

Supplies

- 8" x 8" x 2" baking pan
- sifter
- measuring cups
- 2-qt. microwavable bowl
- measuring spoons
- wooden spoon
- spatula

Who can resist the creamy and rich taste of fudge? It is a wonderful dessert often served at holiday gatherings and special occasions. Tourist attractions and festivals sell special flavors and varieties of fudge. Many times it is advertised that the fudge is homemade. Special homemade fudge in flavors such as mint, peanut butter, and caramel are sometimes sold for over \$8 a pound.

Making delicious fudge takes some practice. It can't be too soft or too hard. The checklist on the next page lists characteristics of award-winning fudge.

Try making fudge in the microwave. Then use the checklist to compare your fudge to award-winning fudge. If you are not satisfied with your first batch of fudge, you may need to make another batch.

1. Prepare an 8" x 8" x 2" baking pan by greasing the bottom and sides with butter or margarine.
2. If you have a sifter, sift the powdered sugar and cocoa. If you do not have a sifter, pour them each into separate bowls and gently work out all large lumps with a fork or spoon. Set bowls aside.
3. Put the $\frac{1}{2}$ cup margarine or butter in a 2-quart microwavable bowl and heat on Medium (50%) for $1\frac{1}{4}$ to $1\frac{1}{2}$ minutes or until melted.
4. Add powdered sugar and cocoa mixture, and evaporated milk.
5. Cook on High (100%) for 2 minutes or until warm and mixture becomes thin. Half way through the cooking time, stop microwave to stir and rotate dish.
6. Add vanilla and chopped nuts. Stir until well mixed.
7. Pour mixture into buttered baking pan. Use a wooden spoon or spatula to spread mixture until it is even.
8. *Chill* in the refrigerator until it becomes firm. Then cut into squares.

Micro Talk

1. What was the hardest part about making fudge?

2. How did your first batch of fudge compare with the award-winning fudge?

Award-winning fudge characteristics	My fudge Batch 1	My fudge Batch 2
Shiny surface		
Not sticky		
Creamy and smooth texture		
Is not grainy		
Moist		
Well blended (no lumps)		
Nuts are finely chopped		

3. What did you learn from using the checklist?

4. How does information such as an evaluation checklist help you when cooking in the kitchen?



Try adding different kinds of chopped nuts to your fudge. Which ones do you like best?

Peanut butter fudge

Ingredients

- 3 cups peanut butter chips
- 14 oz. can sweetened condensed milk
- ¼ cup margarine or butter

Supplies

- large bowl
- wooden spoon
- 8" x 8" x 2" microwave-safe baking dish

1. Place all ingredients in a large bowl. Microwave at Medium (50%) power for 3 to 5 minutes until the peanut butter chips are melted, stirring once or twice during cooking.
2. Pour into well-greased 8" x 8" x 2" baking dish.
3. Refrigerate until set.



Magnificent meals

Introduction

Fuel for our bodies

It is important to start your day right by eating breakfast. As the name implies, breakfast means breaking the fast. A fast is when a person hasn't eaten in a long time. From the time you go to bed at night until you wake up in the morning can be as long as 10 or 12 hours.

First thing in the morning, your body is hungry because it has gone a long time without food. If you skip breakfast, you will feel worn out by the middle of the day. Research has shown that students who eat breakfast have more energy and do better in school than those who skip breakfast.

Our bodies need fuel, just like cars need fuel to run. If your parents fail to put gas in the car, or put in the wrong kind of gas, the car will sputter, jerk, and not run well. For our bodies, food is our fuel. We need a variety of foods to give us the energy to work and play, and to be healthy. So what happens to our body when we don't give it enough of the right fuel or food? We feel tired, may slow down, and we might even get sick.

Carbohydrates

One group of food that gives us lots of energy is the grain group. Foods from the grain group supply our bodies with carbohydrates. Our bodies need carbohydrates, just like a car needs gasoline for the energy to go. Carbohydrates supply the body with energy. When people eat food, they grow, keep their bodies healthy, and have energy to play, work and do what they need to do!

There are two kinds of carbohydrates: sugars and starches.

1. Sugar – natural sugars are found in foods such as fruits, vegetables, and honey. Sugar is added to other foods, such as cakes, candy, and soda.
2. Starch – starches are found in bread, rolls, cereals, pasta, potatoes, corn, applesauce, and bananas.

Sugar

Many of us have a sweet tooth. From the time we are little, we seem to like foods that taste sweet. Sugar can be found in a lot of foods, such as cakes and cookies. There is natural sugar in fruits, and this is OK. It's the added sugar we need to think about. Many companies add sugar to their foods so we'll buy their foods. Did you know sugar is often added to pizza sauce, crackers, and cereal? Foods from the grain group are good for us because they supply carbohydrates for energy. However, we don't need to eat foods with a lot of sugar added. Too much sugar can make us overweight and cause cavities in our teeth. You can be a carbohydrate detective and scope out the amount of sugar in foods. To do this you must learn to read the nutrition label.

Nutrition label

On the nutrition label, look for the section, "Total Carbohydrate," then find "Sugars." The amount of grams of sugar listed includes all the sugar that is in the food, whether it was added or naturally occurring. To find out how much sucrose or table sugar is added to the food item, find the word "Ingredients." It should be located below the Nutrition Facts box. Ingredients are listed in order of how much is present. The first ingredient is the one in the largest amount. Sugar can be listed as sugar, corn syrup, or brown sugar.

Nutrition Facts	
Serving Size 1 cup (228g)	
Servings Per Container 2	
Amount Per Serving	
Calories 250	Calories from Fat 110
% Daily Value*	
Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	
Cholesterol 30mg	10%
Sodium 470mg	20%
Potassium 700mg	20%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
Protein 5g	
Vitamin A	4%
Vitamin C	2%
Calcium	20%
Iron	4%

*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
Dietary Fiber	25g	30g

4a. Breakfast bites

Project skill
Comparing breakfast meals

Life skill
Managing resources

Breakfast meal ingredients

- 3 packaged breakfast meals

Supplies

- paper
- pencil

Do you like big, warm breakfast meals? Do you need waffles, pancakes, French toast, bacon, sausage, or eggs to get your day started right? If so, then packaged breakfast meals are just for you. These microwave breakfast meals are convenient, easy to clean up, and provide you with all the nutrients and energy you need for a great start to a full day of work and play.

Breakfast meals come in all varieties. Pancakes, French toast, bacon, eggs, hash browns, and sausage are packaged in every possible combination.

If you haven't tried these breakfast meals, pick out some and put them to the test.

1. Find three packaged breakfast meals to compare. Try to compare the same meals or food. If you like pancakes, find three different meals with pancakes.
2. Label each meal 1, 2, and 3.
3. Fill in the chart below with brand names or create your own way of identifying them.
4. Prepare each breakfast meal according to the microwave instructions on the packaging.
5. Compare each meal in the chart below. Rate flavor on a scale from 1 to 3 (1 = excellent, 2 = good, 3 = poor).

	Brand	Food item	Cost	Preparation time	Cooking time	Cleanup time	Flavor
Meal 1							
Meal 2							
Meal 3							

Micro Talk

1. Which breakfast meal required the least amount of cooking time?

2. Which breakfast meal was the cheapest?

3. Explain which breakfast meal would be the best choice for you and why.

4. After this activity, how will you better manage your resources of time and money?



Add another row to the chart and compare what you normally eat for breakfast with the three breakfast meals. Now which breakfast meal would be best for you?

Bite of nutrition

Instead of only comparing the breakfast meals for cost and convenience, use the food label and compare them by:

- Calories.
- Amount of fat.
- Amount of sugar.

Which meal is lowest in calories?

Which meal is lowest in fat?

Which meal has the least sugar?

Did you list the same meal as the answer to all of those questions?

If not, which characteristic – total calories, fat, or sugar – is most important to you?

4b. Chili dip

Project skill
Making chili dip

Life skill
Completing a task

Chili dip ingredients

- 1 can (15 ounces) chili without beans
- 1 jar (8 ounces) processed cheese spread or 8 ounces processed cheese, cubed
- tortilla chips or raw vegetables such as carrots or green peppers, cut into strips

Supplies

- microwavable bowl or dish

You may have heard your parents or other adults talk about appetizers, or you may have ordered an appetizer at a restaurant. An appetizer is a food or a drink that is served before the meal. Appetizers are supposed to stimulate your appetite or prepare your senses and stomach for a large meal. Appetizers are typically served at:

- Sit-down or full-service restaurants.
- Special occasions.
- Holiday gatherings.

Most appetizers are finger foods and don't require any silverware. Some may require a plate. Recipes for appetizers range from simple to very elegant and exotic. Lots of exotic cheeses, seafood, and other ingredients are used in appetizers. However, a classic appetizer is a vegetable tray with raw vegetables and ranch or blue cheese dip.

Appetizers can also be added to a simple meal to make it complete. For example, this chili dip recipe could be served with a cold cut sandwich and raw vegetables for a delicious meal. Here's how to make chili dip.

1. Pour the can of chili into a microwavable bowl or dish.
2. Pour or place the cheese on top.
3. Microwave on High (100%) for 1 minute.
4. Stir mixture with a wooden spoon.
5. Microwave again on High for 1 minute, then stir. Repeat until mixture is hot. This will take 3 to 5 minutes.
6. Serve with tortilla chips or raw vegetables.



Micro Talk

1. How many minutes did you have to microwave your chili dip?

2. What was the most difficult part of making chili dip?

3. What did you learn about making chili dip?

4. How will you apply what you learned the next time you complete a task in the kitchen?



Go to the library and check out an appetizer cookbook. Pick an appetizer that is in the gourmet section. Invite some friends over and share your gourmet appetizer. How did they like it?

Get cheesy

If you like the cheesy part of the chili dip more than the chili, then this appetizer is for you.

Ingredients

- 2 jars (16 ounces) salsa
- 16 ounces cream cheese
- 4 cups (16 ounces) taco cheese, shredded
- 1 bag of taco or tortilla chips

Supplies

- microwavable 2-quart glass bowl or casserole dish

1. Add salsa, cream cheese, then taco cheese to the glass dish.
2. Microwave on High (100%) for 1 minute. Stir with a wooden spoon.
3. Microwave again for 1 minute, then stir. Continue microwaving and stirring until the cheese has melted.
4. Serve with taco or tortilla chips.

4c. Add a dessert

Project skill
Creating an ice cream serving table

Life skill
Practicing creativity

Banana split ingredients

- vanilla ice cream

Toppings (choose at least 3)

- chocolate
- caramel
- ice cream topping flavor or flavors
- nuts, walnuts, or pecans, chopped
- strawberry halves
- small candies (M&M's™)
- whipped topping

Supplies

- plastic bowls
- plastic spoons
- napkins

Sometimes a meal is not complete without a delicious dessert. A favorite among all ages is ice cream. Or is it the ice cream toppings that are such a hit? Either way, a bowl of ice cream with toppings makes a great treat after a meal.

Design your own ice cream toppings bar and use the microwave to prepare your toppings.

1. Choose the toppings for your ice cream table and draw a sketch below.
2. Prepare your toppings according to the following instructions. It is best to soften your ice cream because it will be easier to serve.

To soften ice cream:

- Put one pint of frozen ice cream in a microwavable container. Microwave on High (100%) for 15 seconds or until soft.

Bowls
Spoons
Napkins

Vanilla
ice
cream

Chocolate:

- Place desired number of chocolate squares in a microwavable glass measuring cup. For 1 square (1 ounce), microwave on High (100%) for 1 to 2 minutes. For 2 squares (2 ounces), microwave on High for 1½ to 2½ minutes. Stir every minute during cooking. The chocolate won't seem melted until stirred.
- For 1 cup chocolate chips (6-ounce package), microwave on High (100%) for 1½ to 2½ minutes. For 2 cups (12-ounce package), microwave on High for 2 to 3 minutes. Remember to stir every minute during cooking.

Caramel:

- Place desired number of unwrapped caramels in a microwavable glass measuring cup. For 14 caramels, microwave on High (100%) for 30 to 60 seconds. For 25 caramels (½ of a 14-ounce package), microwave on High for 1 to 2 minutes. For a 14-ounce package, microwave on High for 2½ to 3½ minutes. Stir every minute during cooking. They won't seem melted until you stir them.

(continued on next page)

Calcium and you

Ice cream contains a very important nutrient, calcium. Actually calcium is a mineral, and there is more calcium in your body than any other mineral. Almost all of the calcium is in your bones and teeth. Together with vitamins and other minerals, calcium keeps your bones and teeth growing strong and sturdy. Your body also uses calcium to keep your heart and other muscles working. Most of the calcium you get comes from foods in the milk group, such as milk, cheese, and yogurt.

MAGIC



Ice cream topping (any flavor):

- Place desired amount of topping in a microwavable glass measuring cup. For $\frac{1}{4}$ cup of topping, microwave on High (100%) power for 30 to 60 seconds or until warm. For $\frac{1}{2}$ cup of topping, microwave on High for $\frac{1}{2}$ to $1\frac{1}{2}$ minutes or until warm. For 1 cup of topping, microwave on High for 1 to 2 minutes or until warm.

Nuts, walnuts, or pecans, chopped:

- Nuts, walnuts, and pecans can be bought already chopped. All you have to do is decide which nut is your favorite.

Strawberry halves:

- Wash with cold running water the number of strawberries you would like to serve. Using a cutting board and paring knife, carefully cut off each stem. Then cut each strawberry in half.

Small candies:

- Candy can be bought in all shapes and sizes. Pick candies that are real small and would mix well with ice cream.

Whipping topping (frozen):

- Whipped topping is sometimes bought frozen. To thaw a 4-ounce container, microwave on Medium-Low (30%) for 45 to 60 seconds or until softened. To thaw an 8-ounce container, microwave on Medium-Low for 1 to $1\frac{1}{2}$ minutes or until softened.

Micro Talk

1. What toppings did you choose for your ice cream serving table?

2. Which topping was the hardest to prepare? Why?

3. What would you do differently the next time you set up an ice cream serving table?

4. How can you be creative in the toppings that you add to other foods?



Add some twists to your ice cream serving table. Put the toppings before the ice cream so they are at the bottom of the bowl. Each bite would be a surprise. You could even have toppings on both sides of the ice cream, so you can have them on the bottom and on the top. Think of other ways you can be creative with your ice cream toppings.

Amount of calcium in foods

Your body needs “10 bones” of calcium each day. For each “bone” of calcium in the list below, your body receives about 10% of the daily value needed. Foods high in calcium are listed as two-, three- and four-bone foods. However, foods that contain a half bone or one bone of calcium still help you achieve your daily goal of 10 bones of calcium.

Food	Serving Size	# Bones
Milk shake	12 oz.	4
Tofu, fortified	½ cup	4
Milk	8 oz.	3
Yogurt	1 cup	3
Orange juice, fortified	8 oz.	3
Cocoa	8 oz.	3
Macaroni & cheese	1 cup	3
Cheese	1 oz.	2
Cheeseburger	1	2
Salmon, canned	3 oz.	2
Sardines, canned	3 oz.	2
Yogurt smoothie	12 oz.	2
Burrito	1	2
Cheese pizza	1 slice	1
Ice cream	1 cup	1
Pudding	½ cup	1
Orange	Medium	½
Beans	½ cup	½
Bok choy, cooked	½ cup	½
Broccoli	½ cup	½
Mixed greens, cooked	½ cup	½

Glossary

Calories – a measure of heat that helps to produce energy

Chill – to refrigerate food to make cooler

Chopped – to cut into small pieces

Cool – to allow hot food to come to room temperature

Cover – to cover food with a lid, plastic food wrap, paper towel, or waxed paper while it microwaves or stands

High – full power or 100% setting on a microwave

Hot spots – spots in the microwave where foods may cook faster

Ingredients – food items in a recipe

Low – lowest power setting (10%) on a microwave oven that can be used for cooking

Magnetron – part of the microwave that converts household current energy into microwave energy

Medium – half or 50% power

Medium-High – moderately high microwave power, or 70% power

Medium-Low – moderately low microwave power level, or 30% power

Microwavable – containers, coverings, and accessories that are safe for microwave use

Microwaves – short, high-frequency, electromagnetic waves

Mix – to combine ingredients to distribute them evenly

Molecule – the smallest particle of a substance that retains the properties of the substance

Nutrients – chemical substances found in food that are essential for good health

Rotate – to turn a dish for one-quarter turn or one-half turn for more uniform cooking

Seal – to fasten or close securely and to keep airtight

Slice – to cut into same size pieces

The 4-H Pledge

I pledge
my Head to clearer thinking,
my Heart to greater loyalty,
my Hands to larger service, and
my Health to better living,
for my club, my community,
my country, and my world.



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Microwave Magic

Micro Magicians

Level B



Microwave Project Youth Activity Guide

Name _____ County _____

Purdue University Cooperative Extension Service • West Lafayette, Indiana



REVIEWED & RECOMMENDED
National 4-H Curriculum

Note to Project Helper

Congratulations, a young person has asked you to be his or her helper. Your role as a helper is very important to the total educational experience of the young person. Not only will you be providing encouragement and recognition, you will also be the key person with whom the young person shares each of the experiences outlined in this activity guide.

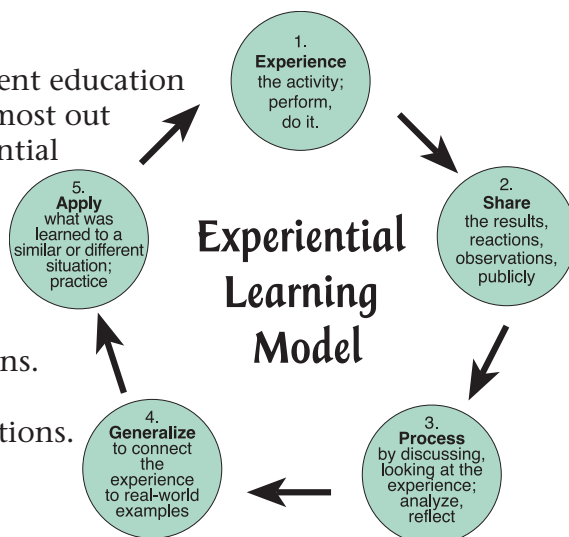
The “Microwave Magic” curriculum series is full of exciting hands-on activities that focus on using the microwave to prepare everything from simple snacks to complete meals. The curriculum is designed around four major categories: techniques and equipment, healthy food selection, food preparation, and meal time magic.

A total of five pieces are available in the “Microwave Magic” curriculum series. The four activity guides – *Bag of Tricks*, *Micro Magicians*, *Amazing Rays*, and *Presto Meals* – have been designed to be developmentally appropriate for grades 3-4, 5-6, 7-9, 10-12 respectively, but may be used by youth in any grade based on their project skills and expertise. The fifth piece, the *Project Helper Guide*, has been designed to provide you with some additional background information and some tips on helping youth through the activities in their guide.

The Experiential Learning Model

Experiential learning distinguishes 4-H youth-development education from many formal educational methods. Youth get the most out of each experience and activity by following the experiential model’s five steps.

1. Youth “learn by doing” an activity. (Experience)
2. They share their experience and reactions. (Share)
3. They discuss or reflect on what they did. (Process)
4. Youth relate skills they practiced to everyday situations. (Generalize)
5. They apply their experience to other real-world situations. (Apply)



Project helpers guide youth as they explore an activity. Questions at the end of each activity help students reflect on the experience.

Pfeiffer, J.W., & Jones, J.E., "Reference Guide to Handbooks and Annuals" © 1983 John Wiley & Sons, Inc. Reprinted with permission of John Wiley & Sons, Inc.

Acknowledgments:

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Important

Microwave oven cooking times vary based on the output wattage of the microwave oven. You should always check the item(s) being cooked when the recommended minimum cooking time has been reached. You can add additional cooking time, if needed.

When a word that is listed in the Glossary first appears in the text, the word is in *italic* type and is underlined.

Having Fun with Microwave Magic!

Are you ready?

Are you ready to do hands-on activities and use the microwave oven to prepare simple snacks and complete meals? That's what "Microwave Magic" is all about. You'll have fun learning about the microwave and using it to make lots of foods.

Your project manual is divided into four "bites": *Tricks of the trade*, *Once you swallow*, *Kitchen magic*, and *Magnificent meals*. Use the achievement sheet to plan your activities. After completing an activity, write the date completed and have your project helper initial it.

Your project helper

Your project helper is an important part of your experience in the microwave project. This person may be your project leader or advisor, a neighbor, a family member, a friend, or anyone who has the interest to work with you to complete your activities. You need to involve your helper as you work with each activity and answer the questions. They are there to give you support and help you be successful. Write the name and phone number of your project helper here:

My project helper _____

Phone _____

E-mail _____

Action demonstrations

An action demonstration is a fun way to share what you have learned with others. The key is getting your audience involved in doing what you are doing, not just showing them. An action demo can be given anywhere there are a lot of people, like a county or state fair or a shopping mall.

An action demo can be on almost any topic. Here are some questions to ask yourself when choosing a topic.





- Is it something that can be done in 3 to 5 minutes?
- Is it something that would interest the general public?
- Is there something "hands-on" for the audience to do?
- Can the supplies for the "hands-on" activity be used over and over again or will they have to be replaced every time? (Note: If they have to be replaced, this will add to the cost.)

Your demonstration should last about 3 to 5 minutes, and you need to be able to do it over and over again with many different people. There is no prepared speech in an action demo, it is a two-way conversation. Your goal is to involve the audience, and you can do this by having them:

- Do what you are doing.
- Answer questions.
- Play a game.
- Do a hands-on activity.

"Micro Magicians" Achievement Sheet

Each year, you should complete a minimum of three activities, each from a different "bite" category. Within the two-year project period, you should have completed at least six activities and at least one activity from each of the four "bite" categories. Write the month, day, and year beside each of the activities you completed. Ask your project helper to initial the form after you have discussed the activity with them. In addition, you may choose to do an action demonstration at the club/school or county level.

	Date Completed Month/Day/Year	Helper Initial		Date Completed Month/Day/Year	Helper Initial
 <p>Tricks of the trade</p> <p>1a Power in watts ___/___/___ _____</p> <p>1b Potato bake ___/___/___ _____</p> <p>1c Cooking two or more ___/___/___ _____</p>			 <p>Kitchen magic</p> <p>3a Bar cookies ___/___/___ _____</p> <p>3b Crumbs and chunks of brownie ___/___/___ _____</p> <p>3c Upside-down cake ___/___/___ _____</p>		
 <p>Once you swallow</p> <p>2a Vegetable parade ___/___/___ _____</p> <p>2b Dairy discoveries ___/___/___ _____</p> <p>2c Fondue fun ___/___/___ _____</p>			 <p>Magnificent meals</p> <p>4a Cheesy macaroni ___/___/___ _____</p> <p>4b Super sloppy joes ___/___/___ _____</p> <p>4c Chicken nuggets ___/___/___ _____</p>		

Did you do an action demonstration? Yes No Location _____

Title of action demonstration given _____

Name _____ Grade _____

Club/School _____

I certify that this youth has completed all requirements for Level B of the "Microwave Magic" project and is ready to move on to Level C.

Project helper's signature _____ Date _____

MICROWAVE MAGIC

Tricks of the trade

Introduction

Terms and techniques

To ensure even cooking in your microwave, you will want to become familiar with these terms and techniques.

- **Stirring** – Stir from the outside to the center of the dish to even the temperature of the food; sometimes stirring will shorten the cooking time.
- **Turn food over** – Large dense foods, such as whole vegetables or roasts, should be turned over occasionally as they are cooking, because items near the top of the oven may cook faster.
- **Rotating** – When food cannot be stirred or turned over, you will want to rotate the dish in your microwave oven. Rotate it one-quarter or one-half turn once or twice during cooking to maintain an even cooking temperature throughout the food. NOTE: Some microwave ovens have a *turntable*, which automatically rotates dishes.
- **Arranging food in a dish** – When placing unevenly shaped foods in a dish, place the thinner areas toward the center of the dish to prevent overcooking. Thicker and denser parts, which take longer to cook, should be placed toward the outside. Thus, broccoli spears should be in the center, and the denser stalks should be to the outside.
- **Shielding** – Sensitive areas can be protected from overcooking by shielding. Aluminum foil strips can be used over the corners of square dishes to prevent overcooking in the corners. Shielding is also necessary when cooking whole poultry or chicken legs in the microwave oven.

Shapes of dishes

- Round shapes allow more even cooking than square or rectangular dishes. In a square or rectangular dish, more energy penetrates the corners of the dish, so the food there may overcook. To prevent overcooking, try shielding the corners.
- The height of the container also affects cooking. When preparing the same quantity of food, it will cook faster in a shallow container vs. a deep container because more food surface is exposed to the microwave energy.
- Use casserole dishes with straight sides. Casserole dishes with sloping sides will cause the food to cook unevenly.

Shape and arrangement of food

The ideal shape for microwave cooking is a “doughnut,” which has no center and no corners. This shape allows the *microwaves* to penetrate evenly so that cooking can take place from all angles. A microwave-safe ring-mold can be used for cooking many foods. It may shorten the cooking time and reduce the need to stir or turn the food. As a substitute for a baking ring or a ring-mold, some recipes suggest placing a heavy-bottomed glass in the center of the cooking container before putting in the food. You might try this idea when cooking meatloaf. For small items such as potatoes, custards, or meatloaf in individual custard cups, place the dishes in a circle.

Covering cooking tips

- *Cover* any dish you would cover for conventional cooking.
- Covering the container will help speed the cooking of most foods and keep the heat evenly distributed for uniform cooking. Plus, covering will help to reduce splatters.
- NOTE: The covering you use will make a difference in the cooking time and the texture of the finished food.

CAUTION

Use caution when removing any type of covering or lid. Steam builds up in covered containers and can cause burns. Always lift the side farthest away from you first. Plastic film coverings should be punctured before they are removed.

Types of covers

- Paper towels or napkins are useful as covers for reducing splatters and trapping fat from meats such as bacon. They are also effective in absorbing moisture from foods such as potatoes or baked goods. Covering with wax paper also reduces splatters, and wax paper will hold in more heat than a paper towel or napkin.
- Some plastic films help distribute heat evenly, retain moisture, and hasten heating. You should “vent” the plastic wrap. This can be done by rolling back one edge of the wrap from the side of the dish to form a narrow opening. Venting plastic wrap lets excess steam escape so the plastic wrap does not burst open.
- Casserole covers, glass lids, saucers, or other dishes make satisfactory covers for long-term cooking when moisture must be retained.
- Aluminum foil can be used in the microwave oven for shielding. Small pieces may be used to cover tips of a roast or wing tips of poultry or corners of square containers. Use a full wrapping only after removing foods from the microwave oven. Foil helps keep foods hot until serving.

1a. Power in watts

Project skill

Determining your microwave's wattage

Life skill

Mastering technology

Output wattage supplies

- 1-quart microwavable glass measuring cup
- 2 cups tap water
- thermometer

Do some microwave ovens have more power than others? How is power measured? When talking about microwaves, watt and wattage are the words used to describe the amount of power. Think of something else that is measured in watts. Light bulbs! The higher the wattage, the more light they give off. It is the same with microwaves. A higher wattage microwave cooks foods faster than a lower wattage microwave.

There are two types of microwave wattage:

- **Input wattage** – the amount of energy that goes into the microwave, which allows it to operate. Find your microwave's input wattage on the nameplate where the serial number is printed.
- **Output or cooking wattage** – the amount of wattage the microwaves use to cook the food.

In this activity you will determine your microwave's output wattage. Knowing this will help you when preparing recipes. Many recipes have a disclaimer stating they have been tested under a certain number of watts. If your microwave's wattage is above or below the tested wattage, you may need to adjust the cooking times. For example, all the recipes in this manual have been tested with a 1,000-watt microwave. If your microwave has 600 watts, you need to increase the cooking time.

Let's find your microwave's output wattage.

1. Pour 2 cups tap water into a 1-quart *microwavable* glass measuring cup.
2. Take the water temperature and record below.
3. Microwave uncovered on High (100%) for 1 minute.
4. Take the water temperature and record below.

Beginning water temperature _____

Ending water temperature _____

5. Complete the formula to determine your microwave's wattage. You may need to use a calculator.

Ending water temperature _____

(Subtract) -

Beginning water temperature _____

Result _____

(Multiply) X 18.5

Microwave's wattage _____

Micro Talk

1. What is your microwave's output or cooking wattage?

2. What was the hardest step in this activity?

3. According to your microwave's output or cooking wattage, do you need to increase or decrease the cooking times for the recipes in this manual? (Note: Recipes in this manual were tested in a 1,000-watt microwave.)

4. Why is it important to know your microwave's output or cooking wattage?

5. What other household items are also labeled to let you know the wattage?



More watts does not always mean better. A lower output wattage microwave just takes longer to cook. Do more watts mean a more expensive microwave? Go to a department or discount store and research the prices of microwaves. Compare their prices to their output wattage.

Power levels

When you cook on a stove or in an oven, you regulate the temperature by turning the heat up or down. However, when cooking in a microwave, you don't have these controls. Instead you can use power levels. Different microwaves offer different levels. Some have High, Medium, and Low, while others have up to ten different levels. The following chart identifies each power level and what it is used for.

% of power	Control setting	Cooking function
100%	<i>High</i>	Full power
70%	<i>Medium-High</i>	Roast
50%	<i>Medium</i>	Simmer
30%	<i>Medium-Low</i>	Defrost
10%	<i>Low</i>	Warm

According to your wattage activity results, figure out your microwave's wattage at High (100%), Medium (50%), and Low (10%).

High (100%) _____

Medium (50%) _____

Low (10%) _____

1b. Potato bake

Project skill
Making baked potatoes

Life skill
Processing information

Baked potato ingredients

- 1 to 5 baking potatoes
- butter, sour cream, or cheese (topping)

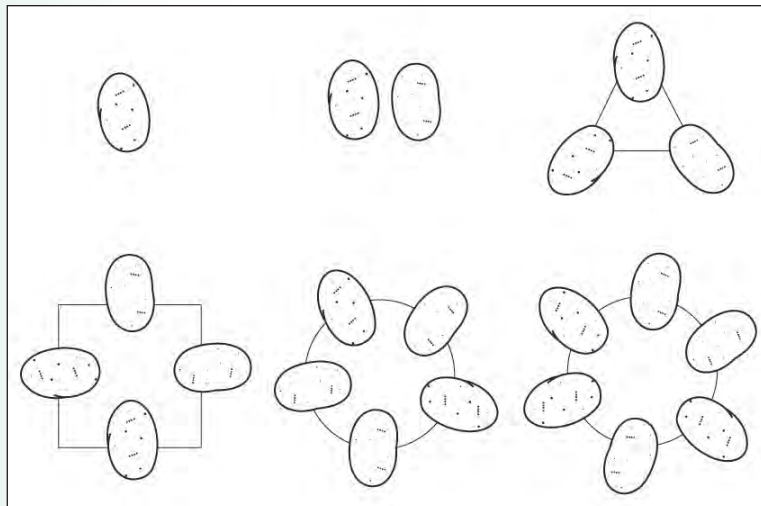
Supplies

- fork
- clean kitchen towel

What do you think of when you hear the word potato? Potato chips, fried potatoes, scalloped potatoes, or baked potatoes? Potatoes are high in carbohydrates, which is your body's main source of energy. They are also a good source of fiber and vitamin C, both important *nutrients* for your body. Different methods of preparing potatoes, such as frying, may remove some nutrients. Instead, try baked potatoes. Cooking baked potatoes in the microwave is a great way to learn the arrangement technique.

Here's how to bake potatoes in a microwave.

1. Scrub the potatoes under running water until they are clean. If there are any spots, carefully remove them with a paring knife.
2. Pierce the scrubbed potatoes twice with a fork so steam can escape. This is a very important step. If they are not pierced, they may explode while cooking.
3. Arrange your potatoes in the microwave following the diagram below. Be sure to leave a couple inches between each potato.



4. Microwave on High (100%) for half of the total cooking time. Use the cooking guide on the next page.
5. Turn your potatoes over and rotate.
6. Microwave on High for the remaining time.
7. Remove from microwave and let stand for 5 to 10 minutes. They may feel firm, but they continue to cook while standing. You may want to wrap them in aluminum foil or a clean kitchen towel for the standing time and to hold the cooked potatoes longer.
8. Serve with butter, sour cream, or cheese.

Number of potatoes	Cooking time
1	3 to 5 minutes
2	4 to 6 minutes
3	7 to 10 minutes
4	10½ to 12½ minutes
5	12½ to 14 minutes

Micro Talk

- How many baked potatoes did you cook at one time?

- Illustrate how you arranged the potatoes by drawing a picture below.

- Why is it important to arrange foods before cooking in a microwave?

- How can you teach your friends or family members about the arrangement technique?



Standing time means that some cooking will continue after the food is removed from the microwave oven. Check the recipe for the amount of standing time needed for doneness.

Top that tater

Below is a cheesy broccoli topping to add to your baked potatoes.

Ingredients

- 1 Tablespoon margarine or butter
- ½ cup shredded sharp cheddar cheese
- 1 Tablespoon flour
- ½ cup milk
- ½ cup chopped broccoli, cooked and drained
- ¼ teaspoon salt
- ¼ teaspoon dry mustard

Supplies

- 1-quart glass measuring bowl
- table knife
- measuring cups & spoons
- fork or whisk

- Place the margarine or butter in a 1-quart glass measuring cup. Microwave on High (100%) for 30 seconds.
- Use a fork or whisk to stir in the flour, salt, and mustard.
- Gradually stir the milk into the mixture. Microwave on High for 2 to 3 minutes. Stir every minute with the fork or whisk until the mixture is thick.
- Gently stir in the cheese.
- Add the cooked and drained broccoli.
- Microwave on High for 1 minute or until hot.
- Split open your baked potatoes and pour the topping on. Enjoy!

1c. Cooking two or more

Project skill

Determining cooking times for two or more food items

Life skill

Completing a task

Bacon ingredients

- 12 slices of bacon

Supplies

- paper towels

A difference between cooking with an oven or stove and cooking with a microwave is how the total cooking time is calculated. If you are cooking three rolls or 20 rolls in a conventional oven, the cooking time would be the same. But if you are cooking in a microwave, the cooking time is determined by the number of items. When there are several foods in the microwave, it takes longer for the energy waves to hit each food. Therefore, the cooking time is longer.

The greatest challenge in microwave cooking is determining the cooking time for several food items. There is usually a range. It is best to start with the shortest cooking time, and then check the food for doneness. If the food is not done, continue microwaving until done.

Sometimes foods are given a cooking time per item. Then multiply the cooking time by the number of items you are cooking. Let's try it with bacon.

1. Choose a cooking surface for your bacon. Use a microwavable plate, dish, or the microwave turntable.
2. Layer 3 paper towels on your choice of cooking surface.
3. Place 4 slices of bacon on the paper towels. Be sure none of the bacon overlaps another piece. Cover with another paper towel.
4. Determine the cooking time according to the slice key below. **NOTE:** Cooking times are based on High (100%). Remember to multiply the cooking time by the number of slices you are fixing.

1 to 6 slices – 45 seconds to 1 minute per slice
over 6 slices – 30 to 45 seconds per slice

5. Remove the bacon from the microwave when the cooking time is complete. It may look a little underdone.
6. Let slices stand for 5 minutes.
7. Serve with toast, or add tomato and lettuce to make a B.L.T.
8. Now repeat the process, but this time cook 8 slices of bacon.

Micro Talk

1. How many slices of bacon did you cook?

2. From preparation to cleanup, how long did it take you to complete the task of making bacon?

3. Why is it important to understand the difference in cooking times between microwave and conventional ovens?

4. Describe how you will use what you learned the next time you complete a cooking task in the microwave.



Microwaves are absorbed near the surface of food and lose power the deeper they go. That's why thin foods cook rapidly and evenly, while thicker foods cook faster near the surface. Try cooking a different thickness of bacon. What is the difference in cooking time?

Bacon and cheese snacks

Ingredients

- 6 slices cooked bacon, crumbled
- ½ cup shredded cheddar cheese
- 3 Tablespoons mayonnaise
- 1 teaspoon parsley flakes
- 24 round crackers

Supplies

- small bowl
- microwave-safe plate

1. Combine crumbled bacon, cheddar cheese, mayonnaise, and parsley flakes in a small bowl.
2. Spread half of the mixture onto 12 crackers. Arrange the crackers on a microwavable plate.
3. Microwave on High (100%) for 30 to 60 seconds, until heated, rotating the plate one-quarter turn after 20 seconds.
4. Repeat with the remaining spread and crackers.





Bite

Once you swallow

Introduction Vitamins and minerals

You need vitamins and minerals to stay healthy and keep your body working properly. Your body cannot make vitamins and minerals, so you must get them from food. Some foods have more vitamins and minerals than others. Also, your body needs larger amounts of some minerals, such as calcium, to grow and stay healthy. Let's look more closely at some vitamins and minerals.

Calcium

How strong do you think your bones are? Did you know you can help your bones to become stronger by getting the recommended amount of calcium each day? *Calcium* is a mineral that your body uses to:

- Build strong bones and teeth.
- Clot your blood when you have a cut.
- Keep your heart functioning normally.

Almost all of the calcium in your body is in your bones and teeth. As you and your bones grow, it is important that you receive the proper amount of calcium daily. Calcium amounts are measured in milligrams. Your age group (ages 9 to 18) needs 1,300 milligrams per day. That is equal to four glasses of milk a day!

Drinking milk is a great way for you to get all the calcium you need. Other dairy foods such as yogurt, cheese, and ice cream also contain calcium. Some dark green leafy vegetables such as collards, mustard greens, and turnip greens contain calcium. To make sure you receive the right amount of calcium, try to eat four servings of dairy foods per day. One serving equals:

- 1 cup of skim, 1%, 2%, or whole milk.
- 1 cup of 1% or 2% chocolate milk.
- 8 ounces of plain or fruited yogurt.
- 1½ ounces of natural cheese.
- 2 ounces of processed American cheese.
- Orange juice with calcium. (Read the label to find out how much juice equals a serving of milk.)

Different kinds of milk contain different amounts of fat, but they contain the same amounts of calcium. While we need milk for calcium and vitamin D, we don't need to eat a lot of fat. Fortunately, we can get the vitamin D and calcium we need, and not eat too much fat, if we are choosy. Read the labels and find the best milk for you.



	Whole	2%	1%	Skim	Chocolate
Calories	150	120	100	80	160*
Fat calories	70	45	20	0	25
Calcium	30	30	30	30	30
Vitamin D	25	25	25	25	25

*The chocolate milk was made with 1% milk, but added sugar adds calories.

Vitamins

All your life, you have probably been told to eat your vegetables! But why? Vegetables and fruits taste great, add color and variety to meals, and are low in calories. Many vegetables and fruits are also packed with vitamins. The color of vegetables gives you a clue to the amount of vitamins in the vegetables. The dark green and deep yellow or orange vegetables have more vitamins than the pale-colored vegetables. Each day, you need 1½ to 2 cups of various fruits and 1½ to 3½ cups of various vegetables. You should try to eat 3 cups of dark green and 3 cups of bright orange vegetables weekly.

Vitamin C

Your body uses vitamin C for healthy gums, for fighting infections, and for healing cuts and bruises. Vitamin C is an important vitamin found in fruit. Sometimes it is called ascorbic acid. Vitamin C is important because it helps your body:

- Heal cuts and burns.
- Fight off illness.
- Absorb the mineral iron.

Citrus fruits – oranges, lemons, limes and grapefruits – are a special group of fruits that contain lots of vitamin C. Broccoli, brussels sprouts, cauliflower, collards, and potatoes are vegetables that contain vitamin C. Because people in the United States eat so many potatoes, the potato may actually provide us with up to 20 percent of our vitamin C.



Vitamin A

Your body needs vitamin A for growth, healthy skin, and good vision at night. If you do not get enough vitamin A, you may not be able to see well in dim light. The main sources of vitamin A are the dark green, deep yellow, and orange vegetables and fruits. Foods such as eggs, liver, and dairy products (milk, cheese, butter and yogurt) also provide vitamin A. Vitamin A is found in common vegetables such as broccoli, carrots, green beans, peas, and tomatoes. Your body needs vitamin A to:

- Grow and develop.
- Keep your skin cells healthy.
- Maintain good vision, especially at night.

Vitamin D

Vitamin D helps bones use calcium to make them hard. Think how difficult it would be to run if your bones were soft and limp like cooked spaghetti! Only a few foods contain vitamin D. They are eggs, liver, and some fish. But this vitamin can also be obtained from sunshine! There is a substance in your skin that changes to vitamin D when the sun's rays reach your skin. Vitamin D is often added to milk. Milk is a perfect choice to add this vitamin to since milk also contains calcium. Vitamin D and calcium work together to build strong bones and teeth. Read a milk carton to see if it says "Fortified with vitamin D" or "Vitamin D added."



Calcium

2a. Vegetable parade

Vegetables are a great addition to any meal. Eating vegetables gives you vitamins and minerals or nutrients that your body cannot make.

You can buy vegetables from the grocery store in four different forms:

- Fresh.
- Canned.
- Frozen.
- Dried.

Fresh vegetables such as broccoli, cauliflower, carrots, and celery can be eaten raw or cooked. Other vegetables such as green beans, peas, and corn are available in canned and frozen form. Canned vegetables are processed and packaged in a water/salt solution.

When preparing vegetables, you have lots of options. Fresh vegetables may just need to be washed and *sliced*. Canned and frozen vegetables may be steamed, boiled, or even microwaved. Unfortunately, heat destroys some of the vitamins and nutrients that are in the vegetables. But vegetables that are micro-cooked don't lose as many nutrients as those that are boiled on a stove. This is because they cook faster and there is less time for the heat to destroy the nutrients.

Choose fresh, canned, or frozen vegetables to cook in the microwave.

Project skill

Micro-cooking fresh, frozen, or canned vegetables

Life skill

Making healthy lifestyle choices

Vegetable ingredients

Choose one of the following:

Fresh

- 1 bunch broccoli (1 to 1½ pounds)
- ½ cup water

Canned

- choice of 8- to 9-ounce can of vegetables

Frozen

- choice of 8- to 10-ounce package

Supplies

- microwave dish
- measuring cups & spoons
- plastic wrap



Fresh vegetables

1. Cut broccoli into spears.
2. Wash with running cold water.
3. Pour ½ cup water into a microwavable dish.
4. Arrange the broccoli so that the heads are towards the center.
5. Cover the dish with plastic wrap.
6. Microwave on High (100% power) for 8 to 12 minutes. Rotate the dish after half of the cooking time.
7. Let covered dish stand for 2 to 3 minutes.
8. Choose a topping to add to your micro-cooked broccoli.

Canned vegetables

1. Drain the liquid from your choice of canned vegetables into a bowl or cup.
2. Place the drained vegetables and 2 Tablespoons of the drained liquid into a microwavable dish.
3. Cover dish with plastic wrap.
4. Heat for 2 to 3 minutes. Rotate and stir the dish halfway through the cooking time.
5. Choose a topping to add to your micro-cooked canned vegetables.

Frozen vegetables

1. Place your choice of frozen vegetables in a microwavable dish.
2. Add 2 Tablespoons water.
3. Cover dish with plastic wrap.
4. Because cooking times vary with each vegetable, cook according to the times on the package directions.
5. Choose a topping to add to your micro-cooked frozen vegetables.



Some recipes may call for peeled tomatoes, or you may like eating fresh tomatoes without the skin. Here is an easy way to peel tomatoes.

- Place a tomato on a microwavable plate.
- Cover and microwave on High (100%) for 10 to 15 seconds.
- Let stand for 5 minutes. Your peeling should be easy!

Vegetable tips

- Prepare vegetables for cooking as you normally would for conventional cooking, but don't add salt. If you salt the vegetables before you cook them, they will be dry and tough. Salting the top of vegetables before microwaving can also cause dark, dried-out spots.
- Pierce the skins of vegetables such as squash, potatoes, or sweet potatoes before cooking. Piercing will allow steam to escape during cooking so the vegetables don't "explode."
- Arrange the toughest and/or thickest parts of the vegetables toward the outside of the dish, where they will cook faster.
- Whole vegetables will require a slightly longer cooking time than vegetables cut in pieces. For fast, even cooking, cut vegetables into small, uniformly shaped pieces.
- When cooking freshly washed vegetables, enough water usually remains on the vegetables that there is no need to add any additional water.

Dress up your veggies

Here are some toppings that you can add to vegetables.

Lemon butter sauce

Ingredients

- ½ cup butter
- 1 Tablespoon lemon juice
- dash of chopped parsley or dill weed

Supplies

- microwavable dish
- measuring spoons

1. Melt butter in a microwavable dish.
2. Add lemon juice and chopped parsley or dill weed.
3. Pour over your choice of vegetables.

White sauce

Ingredients

- 2 Tablespoons butter or margarine
- 2 Tablespoons flour
- ¼ teaspoon salt
- ⅛ teaspoon pepper
- 1 cup milk

Supplies

- microwavable bowl
- measuring spoons & cups
- spoon
- paper towel

1. Melt butter in a microwavable bowl on High (100%) for 30 to 50 seconds.
2. Stir in flour and seasonings until smooth.
3. Blend milk into mixture.
4. Cover with paper towel.
5. Microwave on High for 6 to 8 minutes or until thickened. Stir after every minute of cooking.
6. Pour over your choice of vegetables.

White sauce variations:

Add these between step 5 and 6 of the white sauce recipe.

- Add 1 cup shredded cheese and ¼ teaspoon dry mustard to thickened sauce. Stir until cheese melts, or microwave 1 minute.
- Add 1 teaspoon freshly chopped herbs, such as parsley or dill, to thickened sauce.

Micro Talk

1. What vegetable did you cook in the microwave?

2. Did you choose fresh, canned, or frozen vegetables?

3. In what ways do vegetables help your body stay healthy?

4. How can you teach your friends and family the importance of eating vegetables?

Vitamin A veggies

Unscramble these vegetables that are good sources of vitamin A:

TRRACO

KNIPUMP

LLDSRAOC

IBCOCLRO

HSPCAIN



A fun and nutritious lunch idea is to create a baked potato bar that offers a variety of toppings, such as:

- Butter
- Sour cream
- Shredded cheese
- Bacon bits
- Drained cooked broccoli

2b. Dairy discoveries

Project skill
Making pudding

Life skill
Making healthy lifestyle choices

Can you name a drink that could be called “the drink of a lifetime”? If you answered milk, you are right! Milk is important for babies, children, teenagers, and adults. Milk and milk products are packed with nutrients. Besides having protein, which the body uses for growth, milk contains vitamins A, D, and riboflavin, plus the mineral calcium. Calcium plays several important roles in your body:

- Gets your blood to clot when you get a cut.
- Builds strong bones and teeth.
- Keeps your bones from becoming brittle when you get older.

You need at least 1,300 milligrams of calcium each day. In addition to drinking milk, you can get calcium by eating dairy products such as yogurt, pudding, and cheese.

Pudding ingredients

- 3 pkgs. vanilla pudding/pie filling
- 2 cups skim milk
- 2 cups 2% milk
- 2 cups whole milk

1. Let’s compare three batches of pudding, one with each kind of milk. For each batch, *mix* pudding/pie filling with ½ cup milk; add remaining 1½ cups milk, blend well.
2. Microwave on High (100%) for 6 to 8 minutes, stirring every 3 minutes.

Supplies

- microwave-safe bowl
- measuring cups
- spoon

Milk	Describe			Rate 1 poor, 2 fair, 3 good, 4 excellent			Total Points	Ranking
	Color	Taste	Texture	Color	Taste	Texture		
Skim								
2%								
Whole								

Micro Talk

1. What difference did you notice in the color, texture, and taste of the three puddings?

2. Read the nutrition labels on the milk carton labels. Can you figure out what caused the differences in color and taste?

3. What is the benefit of calcium for your body?

4. What are some other foods you could eat to get the calcium you need each day?



Add a fruit twist to your pudding. Slice a banana or 4 or 5 strawberries and put them on top of your pudding, then stir them in.

OR

Make a frozen pudding cup by pouring the warm pudding into a small paper cup. Put a wooden stick into the center of the cup and freeze until firm. Peel off the paper cup for a frosty pudding treat.

Smooth and creamy pudding

Ingredients

- ½ cup sugar
- 2 Tablespoons cornstarch
- 2 cups milk (may use skim)
- 2 eggs or egg substitutes
- 2 Tablespoons margarine
- 1 teaspoon vanilla

Supplies

- 1-qt. microwavable glass measuring bowl
- measuring cups & spoons
- spoon
- fork

1. Combine sugar and cornstarch in 1-quart microwave-safe measure, mix well. Gradually stir in milk, blending until smooth.
2. Microwave on High (100%) uncovered, for 5 to 6 minutes or until mixture boils. Stir twice during last half of cooking time. *Beat* eggs with fork. Gradually beat in some of hot mixture. Add egg mixture to hot mixture, blending well.
3. Microwave on High, uncovered, for about 1 minute or until bubbly around edge, stirring 2 or 3 times. Stir in margarine and vanilla. Cook slightly. Spoon into serving dishes. Serve warm or *chilled*.

TIPS:

- For creamy chocolate pudding, increase sugar to ⅔ cup and add 3 Tablespoons unsweetened cocoa with cornstarch.
- For creamy banana pudding, slice two bananas into serving dishes before adding pudding.

2c. Fondue fun

Project skill
Making chocolate fruit fondue

Life skill
Valuing diversity

Fondue ingredients

- ½ cup heavy cream
- 2 Tablespoons light corn syrup
- 1 package (11½ ounces) milk chocolate chips
- 1 teaspoon vanilla
- Fresh fruit chunks, such as strawberries or bananas
- Canned fruit, such as pineapple chunks

Supplies

- toothpicks
- measuring cups & spoons
- microwavable bowl
- paper towel
- spoon

Think of all the different ways you can eat fruits. Raw apples, bananas, oranges, grapes, and pineapple are great snacks. Apples, blueberries, strawberries, and raspberries turn into tasty pies. You can even be creative and dip fruit in a chocolate fondue dip.

Fondue is a dish of hot melted cheese, chocolate, or other blended sauces served with pieces of bread, fruit, or meat. The pieces are dipped into the melted mixture for a delicious fondue treat. The Swiss invented fondue. The mountain geography of Switzerland causes a very snowy winter. The snow makes travel difficult, and each small village and town must provide enough food for its people. In the summer, cheese makers make plenty of cheese to last throughout the year. However, through the winter months the cheese becomes very hard and dry. So, the stale cheese was melted and some seasonings were added to create a fondue dipping treat.

Today fondue is a great treat to share with friends and family. Try making this chocolate fondue dish for dipping fresh slices of fruit.

1. Put the heavy cream and corn syrup in a microwavable glass bowl. Cover with paper towel or napkin.
2. Microwave on High (100%) for 15 seconds. Stir.
3. Add milk chocolate chips. Cover.
4. Microwave on High for 45 seconds. Stir.
5. After stirring, microwave on High for 45 to 60 seconds.
6. Stir in vanilla.
7. Serve chocolate fondue in a bowl.
8. Place a toothpick in each piece of fruit.
9. Dip fruit into chocolate fondue. It is best to eat immediately or the chocolate fondue may become hard.



Micro Talk

1. What types of fruit did you choose to dip in your chocolate fondue?

2. What was the most difficult part about making chocolate fondue?

3. What did you learn about Swiss food culture?

4. How can you use fondue to teach your friends about another country?



Rather than slicing all the fresh fruit for fondue, buy already sliced frozen fruit. Frozen fruit can easily be softened in the microwave. Place fruit in a microwavable glass bowl, cover, and microwave following package directions.

Fruit freeze

Try this combination of fresh fruit and chilled topping!

Ingredients

- ½ cup orange juice
- 1 Tablespoon sugar
- 1½ teaspoons cornstarch
- 3 to 4 cups of cut-up assorted fruits (melons, blueberries, strawberries, bananas, apples, grapes, peaches) or 3 to 4 cups of well-drained canned fruits

Supplies

- measuring cups & spoons
- microwavable bowl
- paper towel
- spoon
- serving bowl

1. Combine the orange juice, sugar, and cornstarch into a microwavable glass bowl.
2. Cover with paper towel or napkin.
3. Microwave on High (100%) for 1 to 2 minutes. Be sure to stir each minute.
4. Chill the mixture in the freezer for 10 to 15 minutes.
5. Prepare fresh or canned fruit in a medium-size serving bowl.
6. Pour the chilled mixture over the fruit. Gently stir.
7. Enjoy!

Kitchen magic

Introduction

Microwave baking tips

You can bake cakes, bar cookies, and brownies in a microwave, often in less time than it would take to just preheat a conventional oven.

Bar cookie tips

- Bar cookies are a microwaving specialty. Many recipes can be microwaved in 5 to 8 minutes.
- No dish preparation is necessary, unless called for in a recipe. If you flour the baking dish, the flour will form a layer on the bottom of the cookie.
- Round or tube-shaped dishes microwave best. Foods, such as cakes and cookies for example, microwaved in square or rectangular dishes tend to overcook at the corners.
- Shield corners with foil during the first half of microwaving if they tend to overcook in your microwave oven.
- Set dish on an inverted saucer during microwaving, and rotate one-quarter turn frequently to help bars bake evenly and quickly.
- To test for doneness, touch top in center and several other places. It should spring back. A small amount of moisture on the surface will dry during standing time.
- Check for doneness of the center bottom. Very little unbaked batter should appear. Layered bars should appear cooked. Let stand on countertop 5 to 10 minutes to complete cooking.
- Frost bars while they are warm. Heat improves the flavor of the frosting.
- Cut the bars with a sharp knife when completely *cool*.

NOTE: Bar cookies are easier to prepare in the microwave oven. Drop-type cookies are not well suited for the microwave.

Cake tips

A microwave cake should be:

- Moist and tender.
- Not soggy or too dry.
- Full of well-blended flavor.
- Slightly rounded on top with smooth sides.

Here are some tips that will help you achieve those results.

- Round and ring-shaped baking dishes bake most evenly, square dishes are OK, and rectangular dishes are the least recommended.
- No preparation of the dish is needed if the cake is to be served from the dish. If the cake is to be removed from the dish, line the bottom of the dish with a piece of wax paper cut to fit the bottom.
- Microwave cakes rise higher, so fill the dishes no more than half full.
- Place the cake on an inverted saucer to microwave. This helps the cake to bake more uniformly.
- Start cooking using 50% power to rise, and then finish the cooking on High (100%) to set the batter.
- Cakes are done when a toothpick inserted near the center comes out clean or when the top springs back when lightly pressed with a finger. The cake will usually start to come away from the edge of the dish. **NOTE:** Microwave cakes will appear slightly moist on top near the center. This moisture will dry during standing time.



MAGIC

3a. Bar cookies

Project skill
Making microwave bar cookies

Life skill
Planning and organizing

Bar cookie ingredients

- ½ cup butter, softened
- ¾ cup packed brown sugar
- 1 egg
- 1 Tablespoon milk
- 1 teaspoon vanilla
- 1¼ cup flour
- ½ teaspoon baking powder
- ⅛ teaspoon salt
- 1 cup semisweet chocolate chips
- ½ cup chopped nuts (optional)

Supplies

- 8" round microwavable baking dish
- nonstick cooking spray
- measuring cups & spoons
- mixing bowl
- mixer

Are you an organized baker? Or is the kitchen a disaster area after you are through baking? Read each statement below and check which answer best describes you.

	Yes	No
I read the entire recipe before starting.		
I gather only the necessary kitchen utensils.		
I check to see that I have all of the ingredients before starting.		
I clean up spills as they occur.		
I clean the utensils as I use them.		
I wipe all countertops when finished baking.		

You have to plan and organize to bake in the microwave. The microwave can bake some foods in less time than it takes for an oven to pre-heat. This makes baking in the microwave very convenient.

Use the microwave to bake these chocolate chip bar cookies.

1. Spray an 8" round microwavable baking dish with nonstick cooking spray or lightly grease with butter.
2. Put butter and brown sugar into medium-size mixing bowl.
3. Beat with mixer until well mixed and fluffy.
4. Add egg, milk, and vanilla. Beat until well mixed.
5. Add flour, baking powder, and salt. Beat on low speed until well blended.
6. Gently stir in **only ½ cup** of semisweet chocolate chips and optional chopped nuts.
7. Spread batter in greased microwavable baking dish.
8. Add the other ½ cup semisweet chocolate chips to the top of the batter.
9. Cover dish with paper towel or napkin.
10. Microwave on Medium (50%) for 5 minutes. Turn dish and microwave on Medium for another 5 to 6 minutes until done.
Note: Bar cookies are done when:
 - The top springs back when you touch the center and around the center.
 - Very little unbaked batter appears when you lift the dish and look at the bottom.
11. When bar cookies are cool, carefully cut into bars with a knife.

Micro Talk

1. What was the most difficult part about making bar cookies?

2. What was the total cooking time for your bar cookies?

3. According to the checklist, are you an organized baker?

What areas need improvement?

4. How can you use what you learned in this activity to plan and organize another baking project?



Use the microwave to make stale, hardened cookies taste fresh again. Place them in the microwave on a paper towel or napkin. Cover with a paper towel or napkin and microwave on High (100%) for 5 to 10 seconds.

Tasty topping

For a tasty topping, add frosting to your bar cookies. It is best to frost your bar cookies while they are warm. The heat helps lock in the flavor of your frosting.

Ingredients

- $\frac{2}{3}$ cup softened butter
- 4 cups powdered sugar
- 2 Tablespoons milk
- 1 teaspoon vanilla extract
- 4 drops of food coloring (choose your favorite color)

Supplies

- measuring cups & spoons
- medium size mixing bowl
- mixer
- knife or spatula

1. Put butter, powdered sugar, and milk into a medium-size mixing bowl.
2. Beat with a mixer for 3 to 4 minutes or until light and fluffy.
3. Add vanilla and food coloring and beat until well mixed.
4. Spread frosting over bar cookies.

3b. Crumbs and chunks of brownie

Project skill
Making brownies in the microwave

Life skill
Completing a task

Fudge brownie ingredients

- 2 ounces unsweetened chocolate squares
- ½ cup butter or margarine
- 1 cup packed brown sugar
- ¾ cup all-purpose flour
- ½ teaspoon baking powder
- ¼ teaspoon salt
- 2 eggs
- ½ teaspoon vanilla
- ½ cup finely chopped nuts (optional)

Supplies

- microwavable glass bowl
- measuring cups & spoons
- spoon
- paper towel or napkin

Brownies are one of America's best-loved foods, and they are easy to make from scratch. You can mix the batter in one bowl and scrape it into a baking dish, bake it in the microwave and serve it from the dish you baked it in! Most brownie recipes have five ingredients in common, but in varying amounts: chocolate and/or cocoa, flour, sugar, butter or margarine, and eggs. Once you have completed the task of making the brownie recipe below, you can try experimenting with the recipe by adding nuts or even chunks of chocolate to the recipe.



1. In a microwavable bowl, mix together chocolate, butter, and sugar. Cover with a paper towel or napkin.
2. Microwave on Medium (50% power) for 2 to 4 minutes, or until melted. Stir until well mixed.
3. Add all other ingredients to the bowl. Stir with a spoon until well blended.
4. Spread batter in a microwavable 8" round baking dish. Cover with a paper towel or napkin.
5. Microwave on High (100%) 4 to 7 minutes or until done. Rotate dish at the 2-, 4-, and 5-minute mark.
6. Cool 5 to 10 minutes.
7. Cut into bars and serve.

Micro Talk

1. How long did it take to prepare the brownies from start to finish?

2. What other ingredients could you add to brownies to create your own special recipe?

3. What did you notice about the cooking times between the different brownie recipes?

4. Describe how what you learned from changing a part of the recipe could apply to some other tasks you do.



Try changing the fudge brownie recipe to make cake brownies. Change the following ingredients:

- Sugar – use 1 cup
- Flour – use $\frac{3}{4}$ cup
- Milk – add 2 teaspoons

Apple brownies

Try this microwave apple brownie recipe.

Ingredients

- $\frac{1}{2}$ cup butter or margarine
- 2 ounces unsweetened chocolate squares
- 1 cup packed brown sugar
- $\frac{1}{2}$ cup applesauce
- 2 eggs
- 1 teaspoon vanilla extract
- 1 cup all-purpose flour
- $\frac{1}{2}$ teaspoon baking powder
- $\frac{1}{4}$ teaspoon baking soda
- 1 cup chopped apple

1. In a microwavable bowl, mix together butter and chocolate. Cover with a paper towel or napkin.
2. Microwave on High (100%) 1 to 2 minutes or until melted.
3. Add sugar, applesauce, eggs, and vanilla. Stir until well blended.
4. Stir in flour, baking powder, and soda. Stir until well blended.
5. Gently stir in chopped apple.
6. Spread batter in a microwavable 8" x 8" baking dish. Cover with a piece of plastic wrap. When covered, use a fork to poke two holes in the plastic covering. This allows steam to escape while the brownies are baking.
7. Microwave on Medium (50%) for 10 to 12 minutes. Rotate dish halfway through the cooking time.
8. After removing dish from the microwave, let it stand covered for 5 minutes.
9. Then carefully remove the covering and let it cool uncovered for 10 minutes.
10. When completely cool, cut into squares and serve.

3c. Upside-down cake

Project skill

Making microwave upside-down cake

Life skill

Managing resources

Pineapple upside-down cake ingredients

Topping

- ¼ cup butter or margarine
- ½ cup packed brown sugar
- 4 to 5 pineapple rings
- 9 maraschino cherries

Cake

- 1 cup all-purpose flour
- ⅔ cup sugar
- 1¼ teaspoon baking powder
- ½ teaspoon salt
- ½ teaspoon vanilla
- ⅓ cup shortening
- 2 eggs
- ⅓ cup milk

Supplies

- 9" round glass baking dish
- paper towel
- medium mixing bowl
- measuring cups & spoons
- electric mixer

There is always time to make a dessert with a microwave. You can make a dessert in about the same time it takes to pre-heat an oven. Microwave cakes can be done in less than half the time it takes to bake one in the oven. Plus, they are lighter, moister, and more tender than conventionally baked cakes. Try making a microwave-baked cake.

1. Place butter in a microwavable 9" round baking dish. Cover with a paper towel and microwave on Medium (50%) 45 to 60 seconds.
2. Sprinkle brown sugar over butter.
3. Arrange the pineapple rings in the baking dish.
4. Place a maraschino cherry in the center of each pineapple ring.
5. Cover dish with a paper towel or napkin and microwave on High (100%) for 4 minutes. Set dish aside.
6. Place all cake ingredients in a medium-size mixing bowl.
7. Use an electric mixer and blend at low speed until well mixed. Then, beat at medium speed for 2 minutes.
8. Carefully spoon cake batter evenly over fruit.
9. Cover dish and microwave on Medium for 6 minutes. Rotate dish a quarter turn at the three-minute mark.
10. Microwave on High for 2½ to 8 minutes or until done. The cake is done when:
 - It pulls away from the sides of the pan.
 - A toothpick comes out clean when put into the center.
 - The top springs back when touched.
- NOTE:**
 - Microwave-baked cakes do not brown like cakes baked in the oven.
 - There may be moist spots on the surface of the cake. They will dry when the cake cools.
11. Cool cake for 5 minutes.
12. Carefully loosen the edges and flip the cake over onto a serving plate. The pineapple rings with cherries should be on top. Serve cake warm with whipped cream.

Micro Talk

1. Do you think cake baked in the microwave tastes as good as those that are baked in the oven?

2. From gathering ingredients to cleanup, how long did it take you to make your microwave upside-down cake?

3. Which method of baking cakes makes the best use of your time?

4. What are some other things you can do to better manage your time?



Compare your microwave cake to a cake that is baked in the oven.

- How long did it take for each cake to bake?
Microwave _____
Oven _____
- Which cake is the tallest? _____
- Which cake has the best texture? _____
- Which cake has the best flavor? _____

Top this

The texture of microwave cakes makes it hard to spread an even coating of icing over them. Therefore, they make great upside-down cakes. Below are some more recipes for upside-down cake toppings. Remember to put the toppings in the baking dish before spreading the cake batter.

Peach upside-down cake

- ¼ cup butter or margarine
 - ½ cup packed brown sugar
 - 4 to 5 peach halves
1. Place butter in a microwavable 8" round baking dish. Cover with a paper towel and microwave on Medium (50%) for 45 to 60 seconds.
 2. Sprinkle brown sugar over melted butter.
 3. Arrange peach halves in the baking dish.
 4. Cover dish with paper towel or napkin and microwave on High (100%) for 4 minutes.
 5. Follow steps 6 to 12 on page 32.

Apple upside-down cake

- 2 Tablespoons butter or margarine
 - ½ cup packed brown sugar
 - 2 cups apples (about 2 or 3)
 - 1 teaspoon cinnamon
1. Wash, peel, core, and slice each apple into 6 or 8 pieces.
 2. Place butter in an 8" round microwavable baking dish. Cover with a paper towel and microwave on Medium (50%) for 45 to 60 seconds.
 3. Sprinkle brown sugar and cinnamon over melted butter.
 4. Arrange apple slices in baking dish.
 5. Microwave on High (100%) for 2½ to 4½ minutes. Rotate after 2 minutes. Cook until fork tender. Let stand for 2 minutes.
 6. Follow steps 6 to 12 on page 32.

Magnificent meals

Introduction

Healthy, safe food

Some foods are healthier for you, because they contain more vitamins or minerals and less fat or “empty” calories. But even a healthy food can make you sick if it becomes contaminated with bad bacteria. Here are some ideas for healthy lunches and how to keep your food safe to eat.

Lunch ideas

Lunch provides a mid-day meal that gives your body a chance to refuel. When selecting lunch foods, be sure to choose a variety of foods from each of the food groups.

Sample lunch ideas:

■ **Meal #1:**

Meat Group – Taco meat
Grain Group – Taco shells or nacho chips
Vegetable Group – Lettuce, tomato
Milk Group – Cheese
Fruit Group – Fruit salad

■ **Meal #2**

Meat Group – Sloppy joes
Grain Group – Hamburger bun or bread
Vegetable Group – Carrot and celery sticks
Fruit Group – Apple slices
Milk Group – Milk

■ **Meal #3**

Grain, Meat & Milk Groups – Macaroni with ham and cheese
Vegetable Group – Broccoli and cauliflower pieces
Fruit Group – Baked apple

■ **Meal #4**

Meat Group – Chicken nuggets
Vegetable & Milk Groups – Gourmet potatoes
Grain Group – Roll
Fruit Group – Orange slices

Food safety tips

An invisible enemy called BAC (bacteria) can make people sick. You can't see, smell, or feel bacteria, but they can live on food products, kitchen surfaces, knives, and other utensils. You have the power to Fight BAC! and to keep food safe from harmful bacteria. It's as easy as following these four simple steps:

1. Clean
2. Separate
3. Cook
4. Chill

Clean means to thoroughly wash your hands before you prepare any food, and to keep all surfaces clean. To thoroughly wash your hands, you must use warm, soapy water and rub your hands together for at least 20 seconds, which is long enough to sing the *A, B, C* song.

Separate means to keep raw meat separate from other food items. If the juice from raw meat or chicken drips onto another food in the refrigerator, it can transfer harmful bacteria to that food. The same thing can happen if you touch raw meat with your hands or a kitchen utensil and then touch another food without washing your hands or the utensil.

Cook means that cooked foods must be heated for a long enough time – and at a high enough temperature – to kill harmful bacteria. These temperatures vary, depending on the food.

Chill means that after a meal, you put foods that need to be cold in the refrigerator. Do NOT allow food to sit at room temperature for more than one hour.

Cooking meats

When cooking chicken and other meats, be sure to follow the food safety tips below. Bacteria can grow in foods that aren't handled properly. The bacteria can make people very sick.

- Wash your hands with hot water and soap before and after handling raw chicken and other meats.
- After using knives and cutting boards to prepare raw chicken and meat, be sure to scrub them in hot soapy water.
- Never use the same cutting board or plate for raw and cooked meat unless you have thoroughly scrubbed it between uses.
- Be sure to cook the meat to the correct temperature.
 - chicken breasts – 170°F.
 - chicken dark meat – 180°F.
 - ground beef – 155°F.
- Keep hot food hot (above 140°F.) until serving time.
- Keep cold foods cold (below 40°F.)

4a. Cheesy macaroni

Project skill
Making macaroni and cheese

Life skill
Processing information

Cheesy macaroni ingredients

- 1½ cups uncooked macaroni noodles
- 2 cups hot water
- 8 ounces processed cheese, ½" cubes
- ¼ cup milk

Supplies

- measuring cups
- 2-qt. casserole with lid
- spoon

Pasta is fun to cook because it can turn into macaroni and cheese, spaghetti, soup, lasagna, tortellini, and many other foods. Here are some tips to follow when cooking with pasta:

- Choose a 2-quart microwave-safe casserole with a lid for cooking because pasta expands to two or three times its original size.
- To keep pasta from sticking to the casserole, add one or two drops of oil to the water before cooking.
- Use a colander to drain pasta.

With the microwave, pasta can be made and served in the same bowl.

1. Place macaroni and hot water in a microwavable 2-quart casserole. Cover with lid.
2. Microwave on High (100%) for 5 minutes. Remove from microwave and stir.
3. Cover casserole with lid and microwave on High for 5 minutes or until the noodles are tender.
4. Carefully drain the noodles. You may want an adult to help you with this step. There will be a lot of steam, and hot steam can cause burns.
5. Return noodles to the casserole.
6. Add cheese cubes and milk. Stir.
7. Cover casserole with lid and microwave on High for 3 minutes. Stir.
8. Remove from microwave and let stand 5 to 10 minutes. Don't worry if it looks runny, the macaroni will absorb the milk during the standing time.
9. Serve and enjoy!



Micro Talk

1. What was the hardest part about making macaroni and cheese?

2. Did you have any problems with your pasta sticking to the casserole? If so, what can you do to prevent it the next time you fix macaroni and cheese?

3. Name two things you will do differently the next time you fix pasta in the microwave.

4. What advice would you give to a friend or family member who is cooking pasta in the microwave for the first time?



Try adding ham to make ham and cheese macaroni. Add 1 cup cooked ham sliced into ½" cubes after step 5 of the recipe. Follow all other steps for a tasty treat of ham and cheese macaroni.

Make it a meal

Turn your macaroni and cheese into a lunch meal. Just add one or more foods from each of the following categories to make a complete meal.

Fruit

Apple
Pineapple
Orange

Vegetable

Carrots
Celery with peanut butter

Drink

Milk
Fruit juice
Water

Dessert

Cookie
Cupcake

MAGI

4b. Super sloppy joes

Project skill
Making sloppy joes

Life skill
Managing resources

Sloppy joe ingredients

- 1 pound ground meat
- 1 can (8 ounces) tomato sauce
- 1 Tablespoon brown sugar
- 1 Tablespoon barbecue sauce
- ½ Tablespoon Worcestershire sauce

Supplies

- 2-qt. microwavable bowl
- fork
- plastic wrap
- colander
- paper towel
- measuring spoons

A meat dish is usually the main part of each meal. It is also the most expensive part. There are many varieties of meat, and you can purchase them in small or large quantities.

At the grocery, the meat cutters package the meat to be sold. The most common ground meat is ground beef. In the process of making ground beef, different amounts of fat are added. That is why ground beef is labeled a certain percent lean. The higher the percentage, the less fat has been added to the meat. For example:

- Ground beef is ____% lean. (Percentage of lean varies with grocery stores.)
- Ground chuck is 70% lean.
- Ground round is 80% lean.
- Ground sirloin is 90% lean.

Not only is there a difference in the fat content of these meats, there also is a price difference. Meat costs more than fat, so ground sirloin is usually the most expensive.

Before choosing ground meat for your sloppy joes, do a price comparison of the following meats at your grocery store. Choose the meat that best fits into your family's budget.

1. Ground beef \$_____ per pound
 2. Ground chuck \$_____ per pound
 3. Ground round \$_____ per pound
 4. Ground sirloin \$_____ per pound
1. Place ground meat in a 2-quart glass measuring cup or microwave-safe bowl. Microwave on High (100%) for 3 minutes. Break the meat apart with a fork. Cover.
 2. Microwave for another 1½ to 3 minutes on High until the meat is no longer pink. Stir again with a fork.
 3. Carefully drain the grease into a suitable container. Rinse the meat in a plastic colander. Wipe any leftover grease out of the 2-quart bowl with paper towels.
 4. Return the ground meat to the glass measuring cup or bowl.
 5. Add tomato sauce, brown sugar, barbecue sauce, and Worcestershire sauce. Stir until well mixed.
 6. Cover with paper towel or napkin and microwave on High for 5 minutes. Stir.
 7. Serve on your choice of bun.

Micro Talk

1. What type of ground meat did you use to make your sloppy joes?

2. According to the comparison you did, which type of ground meat is the most expensive?

3. Which type of meat is the best choice for your family?

Why?

4. How can comparing prices at the grocery help you and your family better manage your resources?

Ground beef cooking tips

It is easy to cook ground beef in the microwave oven when you want to use it as cooked ground beef in many main dishes.

- Crumble ground beef into a 2-quart glass measuring cup or microwave-safe dish.
- For faster cooking and to prevent spattering, cover the container with a tight-fitting lid or vented plastic wrap.

NOTE:

To vent plastic wrap, just fold back a small corner.

- Stir and break up the ground beef halfway through the cooking.
- For one-step cooking and draining, select a high-grade plastic colander and place it inside the casserole dish. Crumble meat into the colander. Fat will drain into the casserole dish during cooking.



Sometimes ground meat is cheaper when it is packaged in large quantities. Grocery stores sell packs of meat that are five pounds or more. These usually cost less per pound than does a smaller package. If you have freezer space to store the extra meat, it may save your family a few dollars at the grocery store.

4c. Chicken nuggets

Project skill
Making chicken nuggets

Life skill
Completing a task

Chicken nugget ingredients

- 1 pound boneless chicken breast
- 1 egg
- 1 Tablespoon milk
- ¼ cup seasoned bread crumbs
- ¼ cup grated Parmesan cheese

Supplies

- cutting board
- knife
- small bowl
- whisk or fork
- measuring spoons & cups
- spoon
- large plastic bag that seals
- microwavable dish with lid
- plastic wrap

When cooked in the microwave, chicken is tender and juicy. However, the microwave does not brown the chicken as the stove or oven does. To make the chicken look brown, you can cover it with a crumb coating or a browning agent. This will add flavor and eye appeal.

Use seasoned bread crumbs and grated Parmesan cheese for your crumb coating to make tasty chicken nuggets in the microwave.

1. Rinse boneless chicken breast pieces. Use a cutting board and cut them into 1" cubes. Set aside.
2. Crack the egg into a small bowl. Use a whisk or a fork and beat egg until bubbly.
3. Add milk to the beaten egg. Stir until mixed together.
4. Put the chicken cubes into the bowl and stir until all pieces are covered with mixture. Set aside.
5. Find a large plastic bag that seals. Put the seasoned bread crumbs and grated Parmesan cheese into the bag and seal. Shake bag until they are well mixed.
6. Add half of the chicken cubes to the bag. Seal and shake bag until the pieces are well-coated.
7. Carefully remove chicken pieces from bag and place in a microwavable dish. Add the other half of the chicken cubes to the bag. Seal bag and shake until the pieces are well-coated. Add chicken cubes to dish. Follow these tips when adding chicken cubes to dish:
 - Arrange the chicken cubes in a single layer. Do not stack one on top of the other.
 - Place thick pieces near the outside of the dish.
 - Place small pieces in the center of the dish.
8. Cover dish with lid or plastic wrap. If you use plastic wrap, vent a corner.
9. Microwave on High (100%) for 6 to 8 minutes. Rotate dish at the 2-, 4-, and 6-minute mark.
10. Choose two pieces of chicken to check for doneness. If you have a meat thermometer, pierce the center of the pieces. The temperature should read 170°F. If you do not have a meat thermometer, use a knife and cut into two pieces. The juices should run clear and there should be no signs of pink.
11. If the chicken is not done, microwave on High 1 to 2 minutes and then check again for doneness. Continue doing this until the chicken is done.
12. Arrange your chicken nuggets on a serving plate.

Micro Talk

1. What was the most difficult part about making chicken nuggets in the microwave?

2. How did you check the chicken for doneness?

3. What did you learn about food safety while completing this activity?

4. How can you use what you learned when completing another task in the kitchen?



Sometimes raw chicken is easier to cut when it is partially frozen. If you cut a chicken breast into cubes before it has completely thawed, rinse the cubes under running water to remove any ice crystals.

Dipping sauce

Make your own barbecue dipping sauce for your homemade chicken nuggets.

Ingredients

- ½ cup catsup
- ¼ cup water
- ½ Tablespoon dried minced onion
- 1 Tablespoon brown sugar
- 2 Tablespoons vinegar
- ½ Tablespoon Worcestershire sauce
- ⅛ teaspoon celery seed
- ⅛ teaspoon salt
- dash of hot pepper sauce

Supplies

- microwavable dish
- measuring cups & spoons
- spoon

1. Combine all ingredients in a microwavable glass bowl.
2. Microwave on High (100%) for 2-3 minutes until the sauce is hot and bubbly.

Glossary

Arrange – to place two or more pieces of food in a specific pattern so that they will microwave evenly, such as in a circle or side by side

Beat – to mix ingredients vigorously with a spoon, hand beater, or electric mixer until smooth

Calcium – an element that is a basic component of most plants and animals; people must have enough calcium to form and maintain strong bones and teeth

Chill – to refrigerate food to make cooler

Chop – to cut into small pieces

Cool – to allow hot food to come to room temperature

Cover – to cover food with a lid, plastic food wrap, paper towel, or waxed paper while it microwaves or stands

High – full power or 100% setting on a microwave

Ingredients – food items in a recipe

Low – lowest power setting (10%) on a microwave oven that can be used for cooking

Medium – half or 50% power

Medium-High – moderately high microwave power, or 70% power

Medium-Low – moderately low microwave power level, or 30% power

Microwavable – containers, coverings, and accessories that are safe for microwave use

Microwaves – short, high-frequency, electromagnetic waves

Mix – to combine ingredients to distribute them evenly

Nutrients – chemical substances found in food that are essential for good health

Rotate – to turn a dish for one-quarter turn or one-half turn for more uniform cooking

Seal – to fasten or close securely and to keep airtight

Slice – to cut into same size pieces

Standing time – period of time after cooking to allow heat to distribute evenly throughout the food

Turntable – a plate that rotates food slowly as it microwaves to ensure even cooking

The 4-H Pledge

*I pledge
my Head to clearer thinking,
my Heart to greater loyalty,
my Hands to larger service, and
my Health to better living,
for my club, my community,
my country, and my world.*



*Explore more curriculum projects online at:
www.4-hcurriculum.org*

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Amazing Rays

Level C



Microwave Project Youth Activity Guide

Name _____ County _____

Purdue University Cooperative Extension Service • West Lafayette, Indiana



Note to Project Helper

Congratulations, a young person has asked you to be his or her helper. Your role as a helper is very important to the total educational experience of the young person. Not only will you be providing encouragement and recognition, you will also be the key person with whom the young person shares each of the experiences outlined in this activity guide.

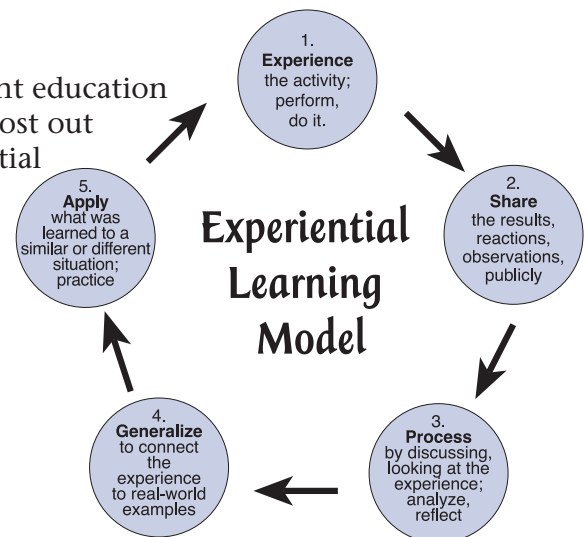
The “Microwave Magic” curriculum series is full of exciting hands-on activities that focus on using the microwave to prepare everything from simple snacks to complete meals. The curriculum is designed around four major categories: techniques and equipment, healthy food selection, food preparation, and meal time magic.

A total of five pieces are available in the “Microwave Magic” curriculum series. The four activity guides – *Bag of Tricks*, *Micro Magicians*, *Amazing Rays*, and *Presto Meals* – have been designed to be developmentally appropriate for grades 3-4, 5-6, 7-9, 10-12 respectively, but may be used by youth in any grade based on their project skills and expertise. The fifth piece, the *Project Helper Guide*, has been designed to provide you with some additional background information and some tips on helping youth through the activities in their guide.

The Experiential Learning Model

Experiential learning distinguishes 4-H youth-development education from many formal educational methods. Youth get the most out of each experience and activity by following the experiential model’s five steps.

1. Youth “learn by doing” an activity. (Experience)
2. They share their experience and reactions. (Share)
3. They discuss or reflect on what they did. (Process)
4. Youth relate skills they practiced to everyday situations. (Generalize)
5. They apply their experience to other real-world situations. (Apply)



Pfeiffer, J.W., & Jones, J.E., "Reference Guide to Handbooks and Annuals" © 1983 John Wiley & Sons, Inc. Reprinted with permission of John Wiley & Sons, Inc.

Project helpers guide youth as they explore an activity. Questions at the end of each activity help students reflect on the experience.

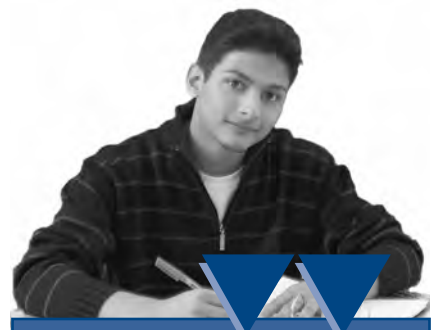
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Important

Microwave oven cooking times vary based on the *output wattage* of the microwave oven. You should always check the item(s) being cooked when the recommended minimum cooking time has been reached. You can add additional cooking time, if needed.

When a word that is listed in the Glossary first appears in the text, the word is in *italic* type and is underlined.

Having Fun with Microwave Magic!

Are you ready?

Are you ready to do hands-on activities and use the microwave oven to prepare simple snacks and complete meals? That's what "Microwave Magic" is all about. You'll have fun learning about the microwave and using it to make lots of foods.

Your project manual is divided into four "bites": *Tricks of the trade*, *Once you swallow*, *Kitchen magic*, and *Magnificent meals*. Use the achievement sheet to plan your activities. After completing an activity, write the date completed and have your project helper initial it.

Your project helper

Your project helper is an important part of your experience in the Microwave project. This person may be your project leader or advisor, a neighbor, a family member, a friend, or anyone who has the interest to work with you to complete your activities. You need to involve your helper as you work with each activity and answer the questions. They are there to give you support and help you be successful. Write the name and phone number of your project helper here:

My project helper _____

Phone _____

E-mail _____

Action demonstrations

An action demonstration is a fun way to share what you have learned with others. The key is getting your audience involved in doing what you are doing, not just showing them. An action demo can be given anywhere there are a lot of people, like a county or state fair or a shopping mall.

An action demo can be on almost any topic. Here are some questions to ask yourself when choosing a topic.





- Is it something that can be done in 3 to 5 minutes?
- Is it something that would interest the general public?
- Is there something "hands-on" for the audience to do?
- Can the supplies for the "hands-on" activity be used over and over again or will they have to be replaced every time? (Note: If they have to be replaced, this will add to the cost.)

Your demonstration should last about 3 to 5 minutes, and you need to be able to do it over and over again with many different people. There is no prepared speech in an action demo, it is a two-way conversation. Your goal is to involve the audience, and you can do this by having them:

- Do what you are doing.
- Play a game.
- Answer questions.
- Do a hands-on activity.

"Amazing Rays" Achievement Sheet

Each year, you should complete a minimum of three activities, each from a different "bite" category. Within the three-year project period, you should have completed at least nine activities and at least one activity from each of the four "bite" categories. Write the month, day, and year beside each of the activities you completed. Get your project helper to initial that you have discussed the activity with them. In addition, you may choose to do an action demonstration at the club/school or county level.

	Date Completed Month/Day/Year	Helper Initial		Date Completed Month/Day/Year	Helper Initial
 <p>Tricks of the trade</p> <p>1a Full of beans ___/___/___ _____</p> <p>1b Well-done brown ___/___/___ _____</p> <p>1c Pork chop ___/___/___ _____</p>			 <p>Kitchen magic</p> <p>3a Coffee cake ___/___/___ _____</p> <p>3b Microwave candy ___/___/___ _____</p> <p>3c Fruit crisps ___/___/___ _____</p>		
 <p>Once you swallow</p> <p>2a Chicken breast ___/___/___ _____</p> <p>2b Mighty meatloaf ___/___/___ _____</p> <p>2c Luscious lasagna ___/___/___ _____</p>			 <p>Magnificent meals</p> <p>4a Vegetable feast ___/___/___ _____</p> <p>4b Colorful health ___/___/___ _____</p> <p>4c One-dish spaghetti ___/___/___ _____</p>		

Did you do an action demonstration? Yes No Location _____

Title of action demonstration given _____

Name _____ Age _____

Club/School _____

I certify that this youth has completed all requirements for Level C of the "Microwave Magic" project and is ready to move on to Level D.

Project helper's signature _____ Date _____

MICROWAVE MAGIC



Tricks of the trade

Introduction

Defrosting and browning

Defrosting

Defrosting meats and other frozen items is a snap in the microwave. Many microwaves offer two types of defrost settings.

- Auto defrost or Compu defrost settings have been pre-programmed for select food items within a specified weight range. Follow the directions in your use and care manual. Many of these pre-programmed defrost settings will start out with a higher percent power and gradually reduce the percent power as your food begins to defrost.
- Manual defrost or Timed defrost settings always use 30% power. For either raw or previously cooked frozen food, the rule of thumb is approximately 4 to 5 minutes per pound.

If you have an older microwave that does not have a defrost setting, you can still defrost frozen meats. Microwave the frozen meat on Medium-Low (30% power) for 1½ to 3 minutes, and then let it stand for 1½ to 3 minutes. Continue this cooking/standing cycle until the meat is thawed. You can use the chart below for determining the safety and times used for thawing in the microwave as well as a brief description for other methods.

Methods	Refrigerator Thawing	Cold Water Thawing	Microwavable Thawing
Overview	Place meat in refrigerator	Submerge poultry in cold tap water	Place meat in microwave at medium-low power setting
Time Factor	5 hrs/lb.	2 hrs/lb.	4 to 5 minutes/lb.
Bacterial Factor	Safe	Moderately safe	Safe

Follow these tips when defrosting meat in the microwave:

- Remove the meat from the store wrap or packaging. This includes the Styrofoam tray and paper liner. Place the meat in a microwavable dish.
- Check the meat often while defrosting. Break apart frozen chunks of meat that are partially thawed. Remove any meat that is completely thawed.
- Cover meat with wax paper. This holds warmth around the food as it begins to defrost.
- Meat defrosted in the microwave must be cooked immediately. It **must not** be stored for use later.

Browning

When cooking a piece of meat, you expect the color to turn from pinkish-red to brown. *Browning* occurs when the fat and protein inside the meat rise to the surface and become hot enough to partially burn or carbonize. Meats that are cooked in a conventional oven automatically become brown. But sometimes meats that are cooked in the microwave look done, but do not turn the same brown color as those cooked conventionally.

Fatty meats that are cooked in the microwave for more than 10 minutes will become brown on the surface. Non-fatty meats or small pieces of meat will not brown because they have not been microwaved long enough. *Microwaves* cook the meat so fast there is not enough time for the fat and protein to rise to the surface and create the browning. In this case, you might want to use a *browning agent*. Browning agents are sauces or mixes that add color and taste to the piece of meat.

Browning agents can be savory, sweet, or unflavored. Some liquids are applied full strength, but many are diluted with water or butter. Dry browning agents are sprinkled on before or during microwaving. Choose a browning agent from the chart that compliments your food.

Browning agent	Suggested meats to meat	Method of applying
Soy or teriyaki sauce	Hamburger, beef, pork, poultry	Brush on
Barbecue sauce	Hamburger, beef, pork, poultry	Brush or pour on
Worcestershire or steak sauce	Hamburger, beef, pork	Brush on
Onion soup or gravy mix	Hamburger, beef	Sprinkle on
Taco seasoning mix	Hamburger	Sprinkle on
Melted butter with paprika	Poultry	Brush on butter; sprinkle with paprika
Jelly, preserves, or glazes	Ham or poultry	Glaze ham after microwaving; glaze poultry after half the cooking time
Bread crumbs	Poultry or pork	Coat by shaking pieces together in a sealed bag

MAGIC

1a. Full of beans

Project skill
Making chili

Life skill
Completing a task

Chili ingredients

- 2 Tablespoons chopped green peppers
- ¼ cup chopped onions
- 1 pound frozen ground beef (can use ground chuck or sirloin)
- 1 (16-ounce) can diced tomatoes
- 1 (15½-ounce) can kidney beans
- 2 teaspoons chili powder
- ¼ teaspoon ground cumin
- ⅛ teaspoon salt
- ⅛ teaspoon pepper

Supplies

- 2-qt. microwavable bowl
- fork
- plastic wrap
- colander
- paper towel
- measuring spoons
- can opener
- spoon

A warm bowl of chili tastes great, especially on a cold day. Tomatoes and beans can be found in almost every bowl of chili. Besides tomatoes and beans, there are lots of other ingredients that can be added to chili. Each chili recipe is different. Below is a list of ingredients that can be added to any bowl of chili.

- Shredded American cheese
- Shredded Cheddar cheese
- Shredded taco cheese
- Minced garlic clove
- Crackers
- Corn chips
- Chopped red peppers
- Whole-kernel corn

Try making chili in the microwave. You also can use the microwave to defrost the ground beef, if it is frozen. For extra taste, add one or more of the listed ingredients above.

1. Defrost 1 pound of ground beef per directions in your use and care manual or use 30% power for 4 to 5 minutes. See tips on defrosting on page 6.
2. Place ground meat in a 2-quart glass measuring cup or microwave-safe bowl. Microwave on High (100% power) for 3 minutes. Break the meat apart with a fork. Cover.
3. Microwave for another 1½ minutes on High until the meat is almost cooked.
4. Carefully drain the grease into a suitable container. Rinse the meat in a plastic colander. Wipe any leftover grease out of the measuring cup or bowl with paper towels.
5. Return the ground meat to the glass measuring cup or bowl. Break the meat apart into small pieces.
6. Add chopped onions and green peppers. Stir. Microwave on High for 4 to 5 minutes until vegetables are tender and meat is cooked.
7. Add the remaining ingredients. Stir.
8. Cover with large paper towel.
9. Microwave on Medium (50% power) for 20 to 25 minutes. Stir and rotate bowl halfway through the cooking time.

Save it for later

Did you have any *leftover* chili? Don't throw it out, save it for later. Follow these simple steps to freeze your leftover chili.

1. Think about how many people will be eating the next time your family eats chili. Rather than freezing the chili in one big container, freeze in portion sizes. If four people will be eating the leftover chili, freeze enough for four or if there are only two, freeze for two. You may have more than one container of chili to freeze.

2. Find a moisture- and vapor-resistant freezer container. It is best to use a container that can also be used in the microwave. This makes it easy when it is time to reheat your chili. When pouring chili in the container, leave 1 inch of headspace, so there is room for it to expand as it freezes. Select storage containers designed for the freezer and the microwave. Read the label carefully. Do not use plastic containers such as margarine tubs, take-out containers, one-time use containers, or whipped topping bowls. These containers warp and melt in the microwave oven. They do not seal the food from the cold, dry air of the freezer, causing loss of quality.
3. Record the date, contents, and amount frozen on the container or a piece of freezer tape. Reheat your frozen chili within three months. **NOTE:** Beans will get soft in the freezer.

Micro Talk

1. What is your favorite ingredient in a bowl of chili?

2. Did you add any of the listed ingredients to your chili?

3. What did you learn about defrosting meats in the microwave?

4. Name two tips you would give to a family member or friend who is defrosting meat in the microwave for the first time.



Practice good freezer management. Use the “First In First Out” rule. Label meats with name, date, and quantity. When you are ready to defrost meats, don’t grab the first one you see in the freezer. Find the one that has been there the longest.

Reheat leftovers

Three important factors in reheating are the starting temperature, the quantity of food, and whether it can be stirred. Most foods should be refrigerated if they are to be held more than two hours. If you are reheating a refrigerated plate or small bowl of food, cover with wax paper and reheat on High (100% power) for 2½ to 3 minutes, checking frequently.

Casseroles and main dishes should be covered with wax paper. Stir or rotate after half the time. Reheating times for casseroles:

- 1 serving – 2 to 4 minutes.
- 2 servings – 4 to 6 minutes
- 4 to 6 servings – 6 to 8 minutes.

When large amounts cannot be stirred (such as lasagna), microwave on Medium (50% power). You will need to increase the cooking time – you probably should double it. Be sure to check and rotate the food frequently, especially during the second half of cooking.

1b. Well-done brown

Project skill
Comparing browning agents

Life skill
Mastering technology

Hamburger ingredients

- 1 pound hamburger
- 3 browning agents of your choice

Supplies

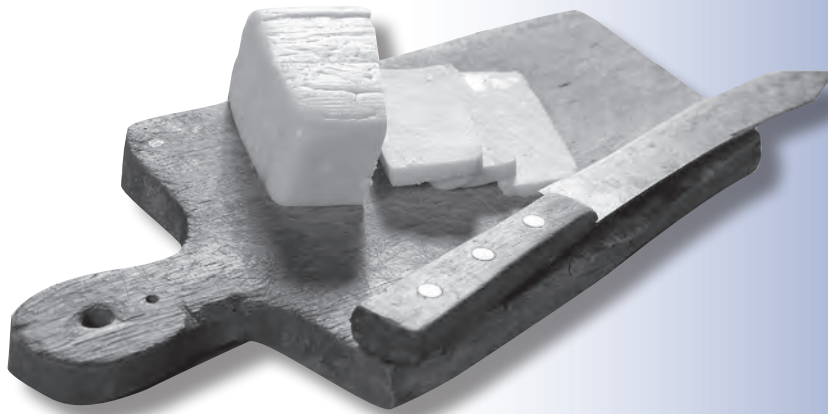
- Microwavable dish or plate
- Wax paper (optional)

Choose three browning agents from the list below and try them on hamburgers cooked in the microwave.

- Soy sauce
- Teriyaki sauce
- Barbecue sauce
- Worcestershire sauce
- Taco seasoning
- Gravy mix
- Seasoning of your choice

1. Divide 1 pound of hamburger into four equal sections.
2. Form each section into a patty, approximately $\frac{1}{2}$ inch thick.
3. Set aside one patty as plain.
4. Coat each remaining patty with a different browning agent. Use the browning agent on both sides of the patty.
5. Place the hamburgers in a microwavable dish or on a microwavable plate. Remember which browning agent was used by drawing a diagram on a piece of paper. If your microwave has a turntable, identify the top left patty as the patty with no browning agent. After cooking, you will easily see which patty had no browning agent.
6. For juicy hamburgers, cover the dish or plate with wax paper. Microwave the hamburgers uncovered if you want a drier surface.
7. Microwave on High (100%) for 2 to 2½ minutes.
8. Turn each patty over and microwave on high for another 2 to 3 minutes.
9. Let stand, covered in wax paper, 2 to 3 minutes after cooking. Verify that each patty has reached 160°F by placing a *food thermometer* in the center of each hamburger. Do not use the thermometer in the microwave when it is operating.
10. Observe each patty and answer the questions on the following page before serving.





Micro Talk

1. Which browning agents did you choose?

2. Which hamburger had the most appealing brown coating?

3. What did you learn about microwaving meat?

4. How would you apply what you have learned to cooking a different meat in the microwave?



Think of other browning agents that can be used when cooking meats in the microwave. Here are some ideas:

- Lay strips of bacon over a meatloaf or roast.
- Put crumb coating or topping on chicken.

Mountain high extras

Add some condiments to your hamburger. Choose from the list below. Add a favorite if it is not on this list.

Sauces

- Catsup
 - Barbecue sauce
 - Mustard
 - Mayonnaise
 - Pickle relish
- _____
- _____

Vegetables

- Lettuce
 - Tomatoes
 - Onions
 - Cucumbers
 - Pickles
 - Mushrooms
- _____
- _____

Cheeses

- American cheese
 - Swiss cheese
 - Cheddar cheese
 - Pepperjack cheese
- _____
- _____

1c. Pork chop

Project skill
Cooking pork chops

Life skill
Preventing disease

Pork chop ingredients

- 4 pork chops, thawed
- ½ cup bread crumbs or prepared coating mix

Supplies

- plastic bag to shake on coating
- 8" square microwavable dish
- wax paper
- tongs

Pork will cook in the microwave just as quickly as poultry. However, it is also just as risky. Some tips to remember when cooking pork in the microwave:

- When microwaving unequal size pieces of pork, arrange in dish or on rack so thick parts are toward the outside of dish and thin parts are in the center, and cook on Medium-High (70% power) or Medium (50% power).
- Place a roast in an oven cooking bag or in a covered pot.
- If you cook large pieces of pork on Medium power for longer times and include a little liquid in a covered dish, the pork won't dry out.
- Remember to stir or rotate the meat once or twice while it is in the microwave.
- To be sure that the meat is safely cooked, use a meat thermometer or the oven's temperature probe to verify the pork has reached a safe temperature of 160°F for medium or 170°F for well-done.
- When microwave-defrosting pork, plan to cook it immediately after thawing because some areas of the food may become warm and begin to cook during microwaving. Holding partially cooked food is not recommended because any bacteria present wouldn't have been destroyed.
- Never brown or partially cook pork, then refrigerate and finish cooking later, because any bacteria present wouldn't have been destroyed. It is safe to partially pre-cook or microwave pork **immediately** before transferring it to the hot grill or oven to finish cooking.

Follow these steps to make pork chops with bread coating.

1. Place bread crumbs or prepared coating mix in plastic bag. Add pork chops. Shake to coat pork chops.
2. Arrange chops in 8" square microwavable dish, with meaty portions to outside. Cover with wax paper.
3. Microwave on Medium (50%) for 8 to 9 minutes per pound.
4. Rearrange chops so less-cooked areas are to outside of dish. Discard wax paper.
5. Microwave on Medium for 8 to 9 minutes per pound, until pork chops are 160°F for medium.
6. Let stand 5 minutes.

Micro Talk

1. Why is it important to add bread crumbs when cooking pork chops?

2. At what internal temperature should pork be cooked?

3. What happens if partially cooked meat isn't completely cooked before you place it in the refrigerator?

4. How will what you learned about cooking pork apply to safely preparing other meats in the microwave?



Think of some other pork products. How could you incorporate what you have learned about cooking pork with those pork products? Try making those dishes using the method on the previous page.

Sauces

Sauces add extra flavor to foods that may have a boring taste. Dipping sauces are great for meats like pork. What are some of your favorite dipping sauces? Barbecue sauce is a great example, and it has been described in the chart below as having a tangy, rich flavor. List some of your favorite dipping sauces and describe the taste of each sauce.

Sauce	Taste
Barbecue sauce	Tangy, rich flavor

Cook a fresh pork chop following the directions on the previous page. Use the dipping sauces you listed in the chart with the pork chop. Which sauces do you prefer with pork?

Once you swallow

Introduction Protein and meat alternatives

Meat, fish, poultry, eggs, and legumes (beans and peas) all contain **protein**. Milk, cheese, yogurt, and grains also supply this important *nutrient*. Your body needs protein to grow and to maintain all its body cells. Everybody needs protein throughout life to continuously replace cells on the inside and the outside of their body.

When your body is growing, it must constantly make cells. If you are a girl around 15 years old or younger, or a boy around 19 years old or younger, you are growing rapidly. At the end of each day, you have more muscle, skin, and blood cells in your body than when you began the day. You need protein to make these new cells and to maintain or replace old cells.

In addition to protein, meat, poultry, fish, eggs, and legumes contain fat, B vitamins, and minerals such as iron. All of us need these nutrients to be healthy.

Iron is important because your body uses it to help make substances in your blood that carry oxygen to all cells. Remember, when you are growing, your body is making more cells. When there are more cells, there must be blood to carry more oxygen! This makes iron a very important nutrient during times of rapid growth, such as the teen years. These are some of the foods that give you the iron your body needs:

Meat
Poultry
Eggs
Fish
Molasses

Spinach
Dried apricots
Prunes
Raisins
Whole grains



Meats, poultry, fish, eggs, peanuts, and soybeans all contain some **fat**, which is important in the diet. Fat gives you energy and helps to maintain the health of your skin and hair. It protects your body from extreme temperatures and is necessary for your body to make use of the vitamins A, D, E, and K. Fat also adds flavor to your foods and gives you a satisfied feeling of fullness.

Then why is there so much concern about eating foods that contain fat? The problem is that many people eat **too much** fat. Fat is a more concentrated energy source than protein and *carbohydrate* foods because it contains more calories:

- 1 gram fat = 9 calories
- 1 gram protein = 4 calories
- 1 gram carbohydrate = 4 calories

Eating too much fat can cause a person to become overweight. Many serious health problems, such as heart disease and some forms of diabetes and cancer, have been linked to being overweight and eating too much fat. The Dietary Guidelines for Americans is information written by nutrition and health experts and published by the government. The guidelines suggest that people choose a diet low in fat, saturated fat, and cholesterol.

The key to good nutrition is variety in the diet. Youths 12 to 15 years old should have 5 to 7 ounces of meat, fish, poultry, eggs, or legumes each day. Legumes are all kinds of beans and peas such as Great Northern beans, black-eyed peas, chickpeas or garbanzo beans, kidney beans, split peas, lentils, peanuts, and soybeans. Some of these are used in baked beans or soup. Look at the list to the right. Check the foods you have eaten in the past month. Is there variety in your diet?

Put variety in your diet

MEAT

- | | |
|-------------------------------|------------------------------------|
| <input type="checkbox"/> Beef | <input type="checkbox"/> Lamb |
| <input type="checkbox"/> Pork | <input type="checkbox"/> Rabbit |
| <input type="checkbox"/> Veal | <input type="checkbox"/> Wild game |

POULTRY

- | | |
|----------------------------------|--------------------------------|
| <input type="checkbox"/> Chicken | <input type="checkbox"/> Goose |
| <input type="checkbox"/> Turkey | <input type="checkbox"/> Eggs |
| <input type="checkbox"/> Duck | |

FISH

- | | |
|-------------------------------------|----------------------------------------|
| <input type="checkbox"/> Cod | <input type="checkbox"/> Haddock |
| <input type="checkbox"/> Lake trout | <input type="checkbox"/> Salmon |
| <input type="checkbox"/> Catfish | <input type="checkbox"/> Orange roughy |
| <input type="checkbox"/> Halibut | |
| <input type="checkbox"/> Sardines | |

SHELLFISH

- | | |
|-----------------------------------|-----------------------------------|
| <input type="checkbox"/> Oysters | <input type="checkbox"/> Clams |
| <input type="checkbox"/> Scallops | <input type="checkbox"/> Mussels |
| <input type="checkbox"/> Lobster | <input type="checkbox"/> Crab |
| <input type="checkbox"/> Shrimp | <input type="checkbox"/> Crayfish |

LEGUMES

- | | |
|------------------------------------------|---------------------------------------|
| <input type="checkbox"/> Black-eyed peas | <input type="checkbox"/> Peanuts |
| <input type="checkbox"/> Baked beans | <input type="checkbox"/> Soybeans |
| <input type="checkbox"/> Garbanzo beans | <input type="checkbox"/> Split peas |
| | <input type="checkbox"/> Kidney beans |
| | <input type="checkbox"/> Lentils |

FA

2a. Chicken breast

Project skill
Making lemon broccoli chicken

Life skill
Preventing diseases

Lemon broccoli chicken ingredients

- 4 chicken breast halves
- 1 can (10¾ ounces) cream of broccoli soup
- ½ cup milk
- ⅛ teaspoon pepper
- 1 lemon

Supplies

- microwave-safe dish
- 1 mixing bowl
- knife & cutting board
- measuring cups & spoons
- plastic wrap
- tongs

Poultry cooks quickly in the microwave. To quickly cook chicken, microwave on Medium-High (70%) according to these times:

- Whole chicken, 9 to 10 minutes per pound.
- Bone-in parts 8 to 9 minutes per pound.
- Boneless breasts halves, 6 to 8 minutes per pound.

To use cooked chicken in a casserole, remove meat from the bones and cut it up into smaller pieces when cool enough to handle. One large chicken breast will yield 1 cup of cut-up cooked chicken. Although cooking chicken in the microwave is fast, it can also be dangerous if the poultry isn't cooked to its recommended internal temperature. A food thermometer is the best way to check the doneness of meats and poultry. Poultry should be cooked to an internal temperature of 170°F. for chicken breast and 180°F. for dark meat and whole chicken. *Salmonella* is a common bacterium that may be on some raw foods. The bacteria are killed when foods are cooked properly, but they may survive on undercooked foods and make you sick. To keep this from happening, you should be sure to cook poultry to its safe temperature. Test the temperature of the chicken with a thermometer. Do not put the thermometer into the microwave. Let's make a casserole using our chicken-cooking skills.

Follow these steps to make lemon broccoli chicken.

1. Arrange four thawed boneless chicken breast halves in a microwavable dish with the thicker parts to the outside and thinner parts to the center.
2. In a mixing bowl, combine soup, milk, and pepper.
3. Cut four thin slices of lemon. Squeeze 2 teaspoons juice from remaining lemon into the soup mixture. Stir together.
4. Pour soup mixture over chicken. Cover with vented plastic wrap.
5. Microwave on Medium (50%) for 15 minutes. Turn chicken over. Re-cover.
6. Microwave on Medium for 10 to 20 minutes, until chicken reaches 170°F. and is fork tender.
7. Place the four thin slices of lemon on top and serve.

Micro Talk

1. How do you quickly cook chicken in the microwave?

2. What temperature should poultry be cooked to?

3. What can you use to check the internal temperature of meats and poultry?

4. Why is food safety in the kitchen important?

5. How can you help your family practice safe preparation, serving, and storage of food?



Think of other casseroles you can make using cooked chicken. Try making this same casserole using other types of soups, such as cream of mushroom, cream of celery, or even cream of chicken.

Turning it into a meal

Use the microwave to make an entire meal. Remember to cook the chicken breast to 170°F to kill bacteria like salmonella.

Ingredients

- 2 cups water
- 2 cups white instant rice
- ½ teaspoon salt
- 2 teaspoons butter

Supplies

- 1½-quart microwave-safe dish

1. In a microwave-safe dish, combine water, rice, salt and butter. Cover with vented plastic wrap.
2. Microwave on High (100%) for 8 minutes.
3. Remove from microwave and let stand until all water is absorbed (about 5 minutes).
4. Place cooked rice on a platter and top with the lemon broccoli chicken.
5. Serve with chilled canned fruit, such as peaches or pears, or a tossed salad.



2b. Mighty meatloaf

Project skill

Defrosting meat to make meatloaf

Life skill

Mastering technology

Meatloaf ingredients

- 1½ pounds ground beef
- 2 eggs, lightly beaten
- ¼ cup fine bread crumbs
- 1 small onion, chopped
- 2 Tablespoons Worcestershire sauce
- 1 teaspoon seasoned salt
- ½ teaspoon dry mustard
- ¼ teaspoon pepper

Topping choices

- 2 Tablespoons catsup, steak sauce, barbecue sauce, or chili sauce

Supplies

- large mixing bowl
- measuring cups & spoons
- spoon
- microwavable dish
- wax paper or paper towel

Microwave meatloaves tend to be more moist than those made in a conventional oven. Thus, if you want to convert a favorite meatloaf recipe, you will want to omit the addition of liquid (milk or water).

Microwaved meatloaves can be formed into many different shapes. See the shape tips on page 19. The shape you select should be based on your oven's cooking pattern and your own taste.

1. Place all ingredients into a large mixing bowl and *mix* together.
2. Choose a shape for your meatloaf from the sidebar. The sidebar lists many different shapes and how microwave cooking affects each one. Find a microwavable dish for the shape you choose.
3. Spread the meatloaf mixture into the dish.
4. Top the meatloaf with your choice of sauce.
5. Cover with wax paper or paper towel. If you want a browner surface, leave your meatloaf uncovered.
6. Cook on High (100%) according to the shape:

Shape	Cooking time
Loaf	13 to 18 minutes
Round	12 to 18 minutes
Ring	8 to 13 minutes
6 individual cups	10 to 13 minutes

7. Rotate the dish after one-half of the cooking time.
8. At end of cooking time, check the internal temperature of the meatloaf. A food thermometer should register 155°F to 160°F. It's best to test the temperature in more than one place. Always test the center of the meatloaf, since this will be the last area to cook.
9. Let stand 5 to 10 minutes. During this time, it will complete cooking to 160°F to 170°F, plus it will become firm, allowing you to slice it easier.
10. Serve and enjoy.

Micro Talk

1. Which shape did you choose for your meatloaf?

2. What was the hardest part about making meatloaf?

3. From start to cleanup, how long did it take you to make the meatloaf?

4. Describe how you might apply what you learned about shapes to another recipe.



Meatballs

Use the meatloaf recipe to make either 20 small (1½") or 12 large (2") meatballs. Cook for 5 to 7 minutes on High (100% power). Drain off fat. Rearrange meatballs, bringing those on the outside of the dish to the center. Cover the meatballs with an 8-oz. can of tomato sauce. Cook for another 5 to 8 minutes.

Shapes of meatloaf

Loaf

The loaf shape is the most traditional shape of meatloaf. This shape works in all ovens on High power, but the corners may overcook. To prevent the corners from overcooking, reduce the power level to Medium (50% power) and increase the cooking time.

Round

The round or pie shape can be formed in any microwavable round dish. A 10" round pie plate works the best. This shape works in all ovens on High power, but the edges may overcook before the middle is done. To prevent this, reduce the power level to 70% to 90% and increase the cooking time.

Ring

The ring shape works well in microwaves. The ring-shaped meatloaf is deeper than the round shape, but it will cook more evenly. If you cannot find a ring-shaped dish, try placing a 6-ounce custard cup in the center of a 2-quart casserole dish.

Individual

Make individual loaves by putting the meatloaf mixture into six 6-ounce glass custard cups. Arrange the filled cups in a ring in the microwave.

2c. Luscious lasagna

Project skill
Making a pasta casserole

Life skill
Making decisions

Microwave lasagna ingredients

- 1 lb. ground pork, beef, or turkey
- ½ cup onion, chopped
- ½ cup green pepper, chopped
- two 15-oz. cans tomato sauce
- ½ teaspoon garlic powder
- ½ teaspoon oregano
- ½ teaspoon basil
- 8 oz. lasagna noodles (about 9)
- 2 cups cottage cheese, small curd
- 8 oz. mozzarella cheese, shredded
- ½ cup parmesan cheese

Supplies

- 2-qt. glass measuring cup
- microwavable casserole dish
- paper towel
- colander
- measuring cups & spoons
- can opener
- spoon

You can make lasagna with a variety of ground meats, and if you cook it in the microwave, you don't have to precook the noodles.

In a grocery store, you will find several choices of ground meat, such as:

- Ground beef
- Ground turkey
- Sausage
- Ground pork – which is unseasoned

Also, ground beef is available with different amounts of fat, from 70% lean to 90% lean. Sometimes, these are labeled “ground chuck” and “ground round.”

If you use lean ground beef, ground turkey, or ground pork in your lasagna, there should be very little grease to drain off of the meat.

1. Crumble ground meat in 2-quart glass measuring cup. Add chopped onion and green pepper. Cover with paper towel. Microwave on High (100%) for 5 to 6 minutes or until meat is cooked, stirring once. Drain and rinse in a colander. Pour grease into a suitable container.
2. In the 2-quart glass measuring cup, add the tomato sauce, garlic powder, oregano, and basil. Mix together. Add the drained cooked meat, onions, and peppers. Stir together. Cover. Microwave on high 4 to 5 minutes until mixture boils.
3. In a microwavable casserole dish, pour one-third of the sauce (about 2 cups). Add a layer of the noodles (raw). Top with 1 cup of cottage cheese and spread evenly. Sprinkle 1 cup of mozzarella cheese on top. Spoon half of the remaining sauce on top. Repeat the layering of noodles, cottage cheese, and mozzarella cheese. Add remaining sauce. Cover with plastic wrap.
4. Microwave on High for 15 minutes. Rotate. Microwave on Medium (50%) for 15 to 20 minutes or until the noodles are tender.
5. Carefully remove the plastic wrap away from you to avoid steam burns. Sprinkle with Parmesan cheese. Microwave on High, uncovered, for 1 to 1½ minutes. Let stand about 10 minutes before cutting into squares for serving. This allows the lasagna to finish cooking and to get firmer for cutting.

Micro Talk

1. What meat did you use to make the lasagna?

2. What was the hardest part about making the lasagna?

3. Describe the benefit of standing time when preparing lasagna.

4. What other recipes could you modify by substituting lean ground turkey or pork for regular hamburger?



Compare a frozen prepared lasagna casserole to the lasagna dish you made in the microwave oven.

Comparison Chart	Homemade lasagna	Frozen prepared lasagna
Preparation Time		
Taste		
Cost		
Appearance		

Pasta cooking tips

With the microwave, pasta dishes can be made and served in the same dish. Below are a few tips to keep in mind.

- When using a microwave recipe with uncooked noodles or other pasta, keep the ingredients covered as the mixture cooks so the steam that forms will help cook the pasta.
- Pasta will expand to 2 or 3 times its original size when cooked, so select a large container to allow room for the expansion.
- To cook pasta in boiling water, select a large bowl with a cover so the water won't boil over the sides and create a sticky mess.
- To prevent the pasta from sticking together, you can add a little oil to the water at the beginning.
- Drain the cooked pasta into a colander. Be very careful, because there is a lot of steam. Rinse the pasta under hot water. Drain off moisture.
- Pasta will continue to absorb the liquid as it stands. Let stand 5 to 10 minutes before serving.



Kitchen magic

Introduction Candy tips

Both short-cut and old-fashioned cooked candies microwave easily with a minimum of stirring. Candy will not scorch in a microwave, because there is no direct heat. It needs stirring only a couple of times during cooking to equalize the temperature.

Because candy syrups boil hard and can become very hot, use a large container with handles that can withstand high temperatures.

Do not use a conventional candy thermometer in the microwave oven. Instead, use an instant-read thermometer when you stop the microwave oven to check the progress. Instant-read thermometers cannot be left in the microwave oven. Special microwave candy thermometers are available.

The *cold-water test* will work fine if you do not have a candy thermometer. Drop a small amount ($\frac{1}{2}$ teaspoon) of mixture into a dish of very cold water. It will either form a ball or separate into threads. Below are the temperature ranges for the various stages.

Cooking Stages for Candy

Candy	Stage	Temperature (°F)	Cold-Water Test
Fudge, Penuche, Fondants	Soft ball	234 - 240	Flattens when removed from water
Caramels	Firm ball	242 - 248	Holds shape unless pressed
Divinity, Taffy	Hard ball	250 - 260	Very firm but still pliable
Butterscotch, Hard candies	Soft crack	270 - 284	Separates into threads which are hard but not brittle
Nut brittles, Toffee	Hard crack	300 - 310	Separates into hard brittle threads

Other tips

- Almost any candy recipe can be adapted to microwaving with no change in ingredients. You will need to convert the cooking method and time to reflect microwave practices.
- Stir candies a few times during cooking. Frequent stirring is not necessary because mixtures will not scorch.
- Select a large container for sugary mixtures, which boil high in the microwave oven. The cookware should be 2 or 3 times as large as the volume of candy.
- Select High (100% power) for sugary syrups. Reduce power for chocolate, which is sensitive to microwave energy.

Chocolate

Chocolate may be used in snacks, candies, and desserts. Chocolate melts like magic in the microwave oven. Microwave chocolate on Medium (50% power) and stir often. Fully microwaved chocolate may hold its shape. If you judge the chocolate by appearance alone, it can become too hot. Be sure to stir the chocolate throughout the cooking process.

Follow the chart below for melting chocolate in the microwave.

Product	Microwave time	Additional time
Unsweetened baking chocolate – 1 square = 1 oz.	1 min.	30 sec.
Semi-sweet baking chocolate – 2 squares = 2 oz.	1 min.	15 sec.
Semi-sweet chocolate chunks – 10 oz. package	1½ min.	15 sec.
Milk chocolate chips – 11.5 oz. package	1½ min.	15 sec.
Peanut butter chips – 10 oz. package	1 min.	15 sec.
Semi-sweet chocolate chips – 12 oz. package	1½ min.	15 sec.
Mini chips, semi-sweet – 12 oz. package	1½ min.	15 sec.

Tips for cooking with chocolate

- Break large pieces of chocolate into smaller pieces to promote even and faster melting.
- Never cover chocolate when melting. Steam will condense on the bottom of the lid. Water dropping in the chocolate will cause it to thicken and lose its shine.
- Never add water, milk, or other liquids directly to chocolate.
- White chocolate may be colored by using a paste, not liquid food coloring.
- When chocolate will not melt properly, it is probably old. Stir in about a tablespoon of vegetable oil.
- Store chocolate tightly wrapped, because it readily absorbs odors. Never store in the freezer or refrigerator; it may become damp and not melt properly.
- Bark candy is a good way to use bits of leftover dipping chocolate.

3a. Coffee cake

Project skill
Making coffee cake

Life skill
Managing resources

Coffee cake ingredients

For cake:

- 1½ cups all-purpose flour
- 1½ teaspoons baking powder
- ½ cup sugar
- ¾ teaspoon salt
- 1 egg
- ¾ cup milk
- ½ cup oil

Topping:

- ½ cup brown sugar
- 5 Tablespoons flour
- 2 teaspoons cinnamon
- ¼ cup melted butter or margarine

Supplies

- large mixing bowl
- microwave-safe round 9" cake dish
- small mixing bowl
- spoon
- measuring cups & spoons

Making a coffee cake can be quite a task. Lucky for you, coffee cakes can be purchased at the store. Of course there might be a difference in cost, taste, and appearance. However, they are much quicker to prepare than a homemade cake. Coffee cakes can be found in the bakery section of most grocery stores. There are many types of coffee cakes, such as cinnamon walnut, Danish cheese-filled coffee cake, and cinnamon apple with raisins. Let's make a coffee cake in the microwave and compare it to a coffee cake from the grocery store.

1. Place flour, baking powder, sugar, and salt into a large mixing bowl.
2. Carefully stir mixture with a spoon. Be sure to work out all the lumps.
3. Add egg, milk, and oil. Stir until well blended.
4. Pour batter into a round microwavable glass cake dish. There is no need to grease the dish. Set aside.
5. Melt butter or margarine in a small bowl, then add brown sugar, flour, and cinnamon for topping.
6. Stir with spoon until all the lumps are removed.
7. Sprinkle topping over the cake batter.
8. Microwave on Medium (50%) for 7 to 8 minutes. Rotate dish one-quarter turn every 2 minutes.
9. Check for doneness by inserting a toothpick into the center of the cake. If toothpick is clean, cake is done. If toothpick is not clean, continue microwaving on Medium for 2 minutes. Check for doneness and repeat cook/check cycle until done.



Micro Talk

1. What must you insert into the center of the cake to check for doneness?

2. Using the chart below, compare a store-bought coffee cake with the microwave coffee cake.

Comparison Chart	Store-Bought Coffee Cake	Microwave Coffee Cake
Preparation Time		
Taste		
Cost		
Appearance		

3. Which is more important for your family, saving time or saving money?
-
4. How can you apply what you have learned the next time you are deciding whether to make a microwave coffee cake and buy one at the store?
-
-



Add some different toppings to your coffee cake. Here are some ideas. Can you think of any others?

- Add $\frac{1}{2}$ cup pecans, walnuts, or peanuts to the topping mix.
- Instead of butter, drizzle with $\frac{1}{2}$ cup powdered sugar mixed with 2 teaspoons of milk.
- Sprinkle $\frac{1}{4}$ cup mini chocolate chips over cake while it is warm.
- Drizzle cake with chocolate syrup.

Freezing coffee cakes

You can freeze coffee cakes without topping or frosting and store them for two months. You may do this to plan ahead for a party or special occasion. Freezing coffee cakes is very simple, just follow the directions below.

1. Prepare coffee cake according to normal directions. DO NOT add any topping or frosting.
2. Let cool until it reaches room temperature.
3. Package cake tightly in heavy-duty foil, freezer wrap, or a moisture- and vapor-resistant container. Label with contents and date prepared. Place in freezer.
4. Cake may be stored in freezer for two months.
5. When you are ready to prepare your frozen coffee cake, remove from freezer and defrost on kitchen counter.
6. When completely defrosted, microwave cake on High (100%) for 1 to 2 minutes or until warm.
7. Top with your favorite topping and serve.

3b. Microwave candy

Project skill

Making microwave peanut brittle

Life skill

Planning and organizing

Peanut brittle ingredients

- 1 cup granulated sugar
- ½ cup light corn syrup (white)
- dash of salt
- 1 cup peanuts
- 1 Tablespoon butter or margarine
- 1 teaspoon vanilla
- 1½ teaspoons baking soda

Supplies

- large cookie sheet
- large microwave-safe dish
- measuring cups & spoons

Follow these steps to make peanut brittle in the microwave.

1. Grease a large cookie sheet with butter, margarine, or cooking spray ahead of time. Set aside.
2. Combine sugar, corn syrup, and salt in a large microwavable casserole dish.
3. Stir in peanuts.
4. Microwave on High (100%) 7 to 9 minutes, stirring twice during cooking time.
5. Remove from microwave and stir in butter and vanilla. Stir until well mixed.
6. Microwave on High 1 to 2 minutes. Be careful, the syrup will be very hot.
7. Add baking soda. Gently stir until it is light and foamy.
8. Pour entire mixture on the greased cookie sheet.
9. For brittle candy, spread mixture very thin.
10. Let cool 30 minutes to 1 hour.
11. When completely cool, break into small pieces.



Micro Talk

1. What is the cold-water test for peanut brittle?

2. What is the appropriate temperature for cooking brittles?

3. Why is it important to grease the cookie sheet?

4. How will you apply what you have learned to the next time you make candy?



Dip pretzels in melted chocolate coating for a tasty treat. Microwave 1 cup of chocolate chips and 2 tablespoons of vegetable shortening on Medium (50%) for 2½ to 4 minutes until shiny. Stir at least twice during cooking and watch closely so that it does not scorch. Drop the pretzels into the melted chocolate coating and remove with a fork. Cool them on wax paper. If chocolate coating starts to harden while dipping the pretzels, microwave it on Medium for 5 to 10 seconds.

Toffee

Use the microwave to make toffee candy.

Ingredients

- 1 cup butter
- 1 ⅓ cups sugar
- 1 Tablespoon light corn syrup
- 2 teaspoons water
- 1 ½ teaspoons vanilla
- ½ cup chocolate chips
- ½ cup finely chopped pecans

Supplies

- measuring cups & spoons
- spoon
- large microwavable bowl
- instant-read thermometer
- 13" x 9" greased pan

1. Combine butter, sugar, corn syrup, and water in a large microwavable bowl.
2. Microwave on Medium-High (70%) for 15 to 20 minutes or to hard crack stage (300°F). Use the cold-water temperature test if you do not have a candy (instant-read) thermometer. Drop a small amount of the toffee mixture into a cup of very cold water. Test for the desired candy stage according to the chart on page 22.
3. Stir in vanilla.
4. Pour mixture into a 13" x 9" greased pan.
5. Sprinkle chocolate chips over mixture.
6. Let the chocolate melt for two minutes, and then spread over toffee.
7. Sprinkle nuts over toffee. Lightly press them into the chocolate.
8. When completely cool, break into pieces.

3c. Fruit crisps

Project skill
Making apple crisp

Life skill
Practicing creativity

Apple crisp ingredients

- 5 cups sliced apples
- $\frac{3}{4}$ cups quick-cooking oats
- 1 cup flour
- 1 cup brown sugar
- 1 teaspoon cinnamon
- $\frac{1}{2}$ teaspoon salt
- $\frac{1}{2}$ cup butter or margarine

Supplies

- mixing bowl
- measuring cups & spoons
- fork
- spoon
- 2-quart casserole dish

Fruit crisps were a creative idea that the early settlers had when they had few supplies to work with. Usually they are made from a fruit or berry that is in season. The toppings for your crisp can be made many different ways. For example, nuts, bread crumbs, cookie crumbs, or graham cracker crumbs can be used instead of oatmeal. You can be creative in the kitchen by trying different toppings or displaying your product decoratively. Using colorful napkins, plates, or baskets is a fun way to display a yummy crisp. Let's get started!

1. In mixing bowl, combine the oats, flour, brown sugar, salt, and cinnamon.
2. Cut in margarine with a pastry blender or fork until crumbly.
3. Set aside.
4. Place the apple slices in a 2-quart casserole dish.
5. Sprinkle oatmeal mixture evenly over the apples.
6. Microwave on High (100%) for 15 minutes, rotating dish one-quarter turn every 5 minutes.



Micro Talk

1. Why do you rotate the casserole dish when making apple crisp?

2. What would you change to be creative with this recipe?

3. What did you learn about being creative when you are cooking?

4. How might you practice creativity in another project you are working on?

Be creative

Find a different recipe for a fruit crisp. Compare it to the recipe in this chapter and find the differences and similarities. Try to put a new spin on an old recipe. Maybe try a new topping or fruit. Be creative when displaying your crisp – a little creativity can go a long way. Don't forget to compare the tastes of the crisps!



Try substituting different types of apples. There are many different types, and each one has its own unique taste. Or try a different fruit. Pears and peaches make good fruit crisps. If you want to make a crisp tart, try using cranberries or blueberries.

APP



Magnificent meals

Introduction Storing and reheating leftovers

Bacteria grow best in low-acid foods, such as meat, fish, poultry, milk, eggs, and cooked vegetables. When these foods are left over, they need special care.

- Don't handle food carelessly; keep hands, utensils, and cutting boards clean.
- Cook and serve food as soon as possible after removing it from storage, and refrigerate food immediately after the meal is over.
- Transfer leftovers to shallow microwave-safe containers with tight-fitting covers.
- Label with the name of the food and the date.
- Don't crowd the shelves; the cool air must circulate to keep the food safe.
- Use leftovers within 1 to 2 days.
- Don't depend on appearance, taste, or smell of food to tell you when it is unsafe. Contaminated foods that can cause illness may look fine and have no off-flavor or odor.
- When in doubt, throw it out.

All food stored in the refrigerator will be safer if the refrigerator temperature is 34°F to 40°F. At temperatures above 40°F foods spoil rapidly. Check the temperature with a refrigerator thermometer. Clean the refrigerator regularly. The freezer should be at 0°F for the best quality foods.

How can I make food hot again?

Most foods reheat in the microwave oven without loss of quality or texture. They taste freshly cooked, not warmed over. Main dishes reheat especially well; some even improve in flavor if they are made in advance.

Here are some tips when reheating plates of assorted foods:

- Arrange the thick and dense foods to the outside of the plate and the delicate and less dense foods to the center.
- Spread out the main dish to a shallow layer to allow for quick and even heating.
- Cover the plate with wax paper or plastic wrap to hold in heat and moisture.
- Reheat to 165°F to ensure that bacteria are destroyed. Check the food with a thermometer inserted in 2 to 3 places.

Below are some reheating tips for specific foods:

Breads, Rolls, and Sandwiches

- Wrap in a paper towel to help retain moisture and prevent sogginess. Microwave on High (100%) for 8 to 12 seconds for 1 roll or slice of bread and 18 to 22 seconds for four rolls. Be careful, bread becomes tough when it cools if it was overheated.

Main Dishes or Casseroles:

- Stir, spread out, and cover main dish. Microwave on High (100%) until warm, stirring often. If you have a casserole that cannot be stirred, microwave on Medium (50%) until warm.

Meats:

- Thin slices of meat reheat more evenly than thick slices. Add a sauce or gravy to dry meats to provide moisture. Microwave on Medium (50%) until warm.

Vegetables:

- Saucy vegetables reheat the best. Stir and rotate the dish often. Microwave on High (100%) until bottom of plate or dish is hot.

Desserts:

- Reheat very carefully, checking, stirring, and rotating often. Sugary fillings get hot quickly, while the crust or pastry may still be cool.



MAGIC

4a. Vegetable feast

Project skill
Making a vegetable casserole

Life skill
Completing a task

Vegetable rice casserole ingredients

- 1 cup uncooked brown rice
- 1 Tablespoon butter or margarine
- 2 Tablespoons diced onions
- $\frac{2}{3}$ cup vegetable broth
- $\frac{1}{2}$ cup frozen corn
- $\frac{1}{2}$ cup frozen green beans
- $\frac{1}{8}$ teaspoon garlic powder
- $\frac{1}{8}$ teaspoon pepper

Supplies

- microwavable dish for rice
- measuring cups & spoons
- spoon
- large microwaveable dish for casserole

Vegetables are a good source of essential vitamins and fiber. There are many different types of vegetable casseroles, and the microwave oven is an excellent way to cook casseroles. Vegetables usually retain a natural color and a tender, crisp texture when cooked in the microwave oven. Generally less liquid is needed for a microwave casserole because of the short cooking time. Remember, foods cooked in the microwave continue to cook even after removed from the oven. Standing time should be considered when determining the doneness of your food.

Let's make a casserole.

1. Follow the directions on the box and cook the brown rice. When done, set aside.
2. Combine a tablespoon of butter or margarine and onions in a large microwavable dish. Cook on High (100%) for 2 to 3 minutes until tender.
3. Add rice and vegetable broth to the onions.
4. Add frozen corn and green beans. Stir until well mixed.
5. Sprinkle garlic and pepper over casserole. Stir.
6. Cover dish with lid or a paper towel.
7. Microwave on High for 10 minutes. Stir and rotate dish half way through the cooking time.
8. Let stand for 5 minutes.
9. Serve warm.



Micro Talk

1. What was the easiest part about cooking the casserole?

2. Why is less liquid required to cook casseroles in the microwave?

3. Why is standing time required for foods cooked in the microwave?

4. What will you do differently the next time you make a microwave casserole?



Be creative with your rice and vegetable casserole. Substitute other vegetables such as green peas and carrots. Add meat such as chicken or ham. Use precooked meat when adding to this casserole dish.

Tuna and rice casserole

Ingredients

- 1 pkg. (3 oz.) cream cheese
- 1 can (10¾ oz.) cream of mushroom soup, undiluted
- 2 cups cooked rice
- 1 can (6½ to 7 oz.) tuna, drained
- 1 can (4 oz.) mushroom stems and pieces, drained
- ¼ cup chopped green onions
- 1 tablespoon parsley
- ⅛ tsp. pepper
- ¼ cup Parmesan cheese
- Paprika

Supplies

- 2-qt. casserole dish
- can opener
- measuring cups and spoons
- spoon

1. Soften cream cheese in a 2-qt. casserole dish on High (100%) for 20 to 25 seconds.
2. Blend in soup. Stir in rice, tuna, mushrooms, onions, parsley, and pepper.
3. Microwave on High for 5 minutes.
4. Stir well. Sprinkle with cheese and paprika.
5. Microwave on High 4 to 6 minutes until thoroughly heated. Rotate dish after half of the cooking time.

4b. Colorful health

Project skill

Making a vegetable casserole

Life skill

Making healthy lifestyle choices

You say “tomahto,” I say “tomayto.” No matter how you say it, tomatoes are a great source of *lycopene*. Lycopene is a red pigment that occurs naturally in some plants, and it works as a powerful antioxidant. Antioxidants may help keep the immune system healthy and reduce the risk for cancer and other diseases. Lycopene has been proven to help prevent cancers, heart disease, and other diseases. It is most abundant in red tomatoes and processed tomato products. Tomatoes are a fruit, but the MyPyramid food guide lists them as part of the Vegetable Group. The Pyramid suggests that a 13-year-old should eat 2½ to 3½ cups of vegetables each day, plus 2 cups of fruit. Processed tomato products contain more lycopene than raw tomatoes.

Casserole ingredients

- 1 lb. ground beef
- 1 (16-ounce) package frozen shredded seasoned potatoes
- 1 (8-ounce) jar processed cheese sauce
- 1 (14½-ounce) can diced tomatoes

Supplies

- microwavable dish & lid
- fork
- colander
- paper towel
- can opener
- spoon

Let's make a casserole high in lycopene.

1. Place ground meat in a microwave-safe bowl. Microwave on High (100%) for 3 minutes. Break the meat apart with a fork. Cover with lid.
2. Microwave for another 1½ to 3 minutes on High until the meat is no longer pink. Stir again with a fork.
3. Carefully drain the grease into a suitable container. Rinse the meat in a plastic colander. Wipe any leftover grease out of the bowl with paper towels and return meat to bowl.
4. Add remaining ingredients, cover the bowl and cook on High for 10 to 12 minutes. Stop microwave and stir after 6 minutes.
5. Rotate dish and cook remaining 6 minutes
6. Let stand for 5 to 10 minutes.
7. Serve and enjoy!



Micro Talk

1. Lycopene is most abundant in which vegetable?

2. Why is lycopene good for you?

3. What nutrients do some other vegetables have?

4. How would you apply what you have learned to make food choices in the future?



Using construction paper and markers, create two meal plans that include foods that are high in lycopene. Explain to your family and friends how lycopene is a beneficial food for everyone to enjoy.

Creamy tomato soup

Ingredients

- 2 Tablespoons finely chopped onion
- 3 Tablespoons butter or margarine, divided
- 1½ lbs. ripe tomatoes
- ¼ cup water
- 1 Tablespoon minced fresh basil
- 1 Tablespoon sugar
- 2 Tablespoons flour
- ½ teaspoon salt
- ¼ teaspoon white pepper
- 2 cups milk

Supplies

- 2 microwave-safe bowls
- knife
- cutting board
- measuring cups and spoons
- whisk
- spoon
- food processor or blender

1. In a microwave-safe bowl, combine onion with 1 tablespoon butter or margarine.
2. Microwave on High (100%) for 2 minutes or until onion is tender.
3. Peel, seed, and chop tomatoes.
4. Save ¼ of tomatoes for topping.
5. Add remaining tomatoes to onion mixture.
6. Add water, basil, and sugar.
7. Stir and microwave on High for 4½ to 5 minutes or until tomatoes are softened.
8. In bowl, melt 2 tablespoons butter.
9. Whisk in flour, salt, and pepper.
10. Stir in the milk.
11. Microwave on High 4 to 5 minutes or until thickened, stirring frequently.
12. In food processor or blender, process tomatoes thoroughly.
13. Pour in the milk mixture and continue to process.
14. Pour into serving bowls, top with chopped tomato, serve hot or cold.

4c. One-dish spaghetti

Project skill
Making spaghetti

Life skill
Making healthy lifestyle choices

Spaghetti ingredients

- 1 lb. ground beef
- 1 large onion, chopped
- 2 cans (8 oz. ea.) tomato sauce
- 1½ cups water
- ½ teaspoon salt
- ½ teaspoon dried oregano
- 4 oz. uncooked spaghetti, broken into thirds
- grated Parmesan cheese

Supplies

- 2½-qt. microwave-safe dish with lid
- knife and cutting board
- colander
- paper towel
- can opener
- measuring cups & spoons
- spoon

Pasta is a carbohydrate that can be used in many dishes. Carbohydrates, proteins, and fats are the three main nutrients in foods that we eat. Many foods contain carbohydrates, including grains, vegetables, fruits, milks, and table sugar. There are two types of carbohydrates – sugars and starches. Pasta, which is made from flour, is an example of a starch, while a candy bar is an example of a sugar. Pasta is used in many Italian dishes; the pasta usually is covered with a sauce.

Follow these steps to make microwave spaghetti, using the same dish to cook and serve it.

1. In a 2½-qt. microwave-safe dish, combine ground beef and onion. Cover with lid and microwave on High (100%) for 2½ minutes. Stir to break apart the meat.
2. Cook 1½ to 2½ minutes longer or until meat is no longer pink.
3. Carefully drain the grease into a suitable container. Rinse the meat in a plastic colander. Wipe any leftover grease out of the dish with paper towels and return meat to dish.
4. Add tomato sauce, water, salt and oregano. Mix well. Cover and microwave on High for 4 minutes.
5. Add the spaghetti. Mix well and cover. Cook on High for 14 to 16 minutes, stirring twice. Let stand for 5 or 10 minutes. Serve with Parmesan cheese.



Micro Talk

1. What are the three main nutrients in foods that we eat?

2. What are the two types of carbohydrates?

3. Why are carbohydrates important in your diet?

4. What are some ideas you can use to add carbohydrates to your diet?

Alfredo sauce

Use the microwave to make a cheese sauce for your spaghetti.

Ingredients

- 2 tablespoons butter or margarine
- 2 tablespoons flour
- ¼ tsp. salt
- ⅛ tsp. pepper
- 1 cup milk
- ½ cup shredded cheese

Supplies

- 4-cup glass measuring cup
- measuring spoons & cups
- mixing spoon

1. Melt butter in 4-cup glass measuring cup on Medium (50%) for 45 to 60 seconds.
2. Stir in flour and seasonings until smooth. Stir in milk.
3. Microwave on High (100%) for 6 to 8 minutes, until thickened, stirring every minute.
4. Add cheese. Stir until melted.



Think of the dishes you could prepare using pasta. Besides spaghetti, what other types of pasta can you think of? Fettucini, angel hair, lasagna, and ziti are all forms of pasta. Create a dish using various types of pastas. What type of sauces can you spread over the top?

RAMA

Glossary

Browning – the change in outside food color which occurs in cooking; in microwave cooking, the degree of browning is related to the length of cooking time, the type of food, the surface temperature, and the weight and mass of the food

Browning agents – sauces or mixes that add color and taste to a piece of meat

Carbohydrate – one of main nutrients found in foods

Cold-water test – test used to determine the stage of candy syrup

Cover – to cover food with a lid, plastic food wrap, paper towel, or waxed paper while it microwaves or stands

Defrosting – heating frozen food until it is thawed

Food thermometer – used to measure the interior temperature of food

High – full power or 100 percent setting on a microwave

Leftovers – food not eaten immediately after it is prepared

Low – lowest power setting, or 10 percent, on a microwave oven that can be used for cooking

Lycopene – antioxidant that naturally occurs in some plants like tomatoes and watermelons

Medium – half or 50 percent power

Medium-High – moderately high microwave power, or 70 percent

Medium-Low – moderately low microwave power level, or 30 percent

Microwavable – containers, coverings, and accessories that are safe for microwave use

Microwaves – short, high-frequency, electromagnetic waves

Mix – combine ingredients to distribute them evenly

Nutrients – chemical substances found in food that are essential for good health

Output wattage – the amount of energy that a microwave oven produces to cook food; a higher wattage microwave cooks food faster than a lower wattage microwave

Reheat – heating a food after it has been prepared and cooled

Rotate – to turn a dish one-quarter turn or one-half turn for more uniform cooking

Salmonella – bacteria that may survive on undercooked poultry and other foods, sickening those who eat them

Seal – to fasten or close securely and to keep airtight

The 4-H Pledge

*I pledge
my Head to clearer thinking,
my Heart to greater loyalty,
my Hands to larger service, and
my Health to better living,
for my club, my community,
my country, and my world.*



*Explore more curriculum projects online at:
www.4-hcurriculum.org*

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Microwave Magic

Presto Meals

Level D



Microwave Project Youth Activity Guide

Name _____ County _____

Purdue University Cooperative Extension Service • West Lafayette, Indiana



Note to Project Helper

Congratulations, a young person has asked you to be his or her helper. Your role as a helper is very important to the total educational experience of the young person. Not only will you be providing encouragement and recognition, you will also be the key person with whom the young person shares each of the experiences outlined in this activity guide.

The “Microwave Magic” curriculum series is full of exciting hands-on activities that focus on using the microwave to prepare everything from simple snacks to complete meals. The curriculum is designed around four major categories: techniques and equipment, healthy food selection, food preparation, and meal time magic.

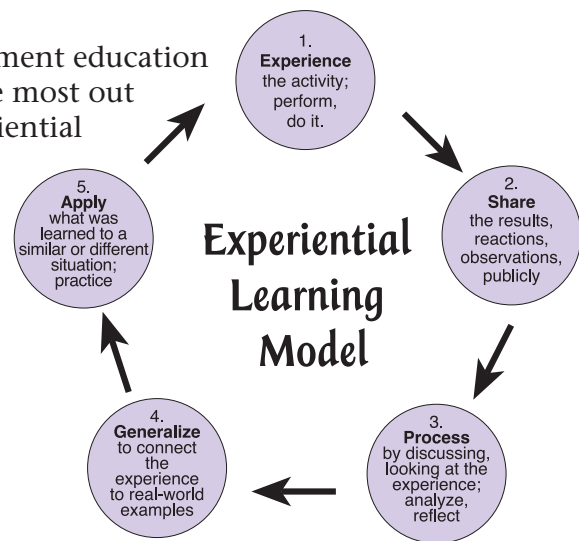
A total of five pieces are available in the “Microwave Magic” curriculum series. The four activity guides – *Bag of Tricks*, *Micro Magicians*, *Amazing Rays*, and *Presto Meals* – have been designed to be developmentally appropriate for grades 3-4, 5-6, 7-9, 10-12 respectively, but may be used by youth in any grade based on their project skills and expertise. The fifth piece, the *Project Helper Guide*, has been designed to provide you with some additional background information and some tips on helping youth through the activities in their guide.

The Experiential Learning Model

Experiential learning distinguishes 4-H youth-development education from many formal educational methods. Youth get the most out of each experience and activity by following the experiential model’s five steps.

1. Youth “learn by doing” an activity. (Experience)
2. They share their experience and reactions. (Share)
3. They discuss or reflect on what they did. (Process)
4. Youth relate skills they practiced to everyday situations. (Generalize)
5. They apply their experience to other real-world situations. (Apply)

Project helpers guide youth as they explore an activity. Questions at the end of each activity help students reflect on the experience.



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“Presto Meals” was written by Susan Barkman and Meredith Page, Purdue University, along with a curriculum design team comprised of Foods and Nutrition specialists Bill Evers and Charles Santerre and Extension Educators Nancy King, Anne Wilcox, Joanne Lytton, Peg Ehlers, Dianne Roell Paris, and Barbara Bowman, and volunteers Cara Gibson, Lyneen Burrow, Ruth Palmer, Linda Jones, and Deanna Engleking. Subject matter editor, Virginia Servies.

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Important

Microwave oven cooking times vary based on the output wattage of the microwave oven. You should always check the item(s) being cooked when the recommended minimum cooking time has been reached. You can add additional cooking time, if needed.

When a word that is listed in the Glossary first appears in the text, the word is in *italic* type and is underlined.

Having Fun with Microwave Magic!

Are you ready?

Are you ready to do hands-on activities and use the microwave oven to prepare simple snacks and complete meals? That's what "Microwave Magic" is all about. You'll have fun learning about the microwave and using it to make lots of foods.

Your project manual is divided into four "bites": *Tricks of the trade*, *Once you swallow*, *Kitchen magic*, and *Magnificent meals*. Use the achievement sheet to plan your activities. After completing an activity, write the date completed and have your project helper initial it.

Your project helper

Your project helper is an important part of your experience in the Microwave project. This person may be your project leader or advisor, a neighbor, a family member, a friend, or anyone who has the interest to work with you to complete your activities. You need to involve your helper as you work with each activity and answer the questions. They are there to give you support and help you be successful. Write the name and phone number of your project helper here:

My project helper _____

Phone _____ E-mail _____

Action demonstrations

An action demonstration is a fun way to share what you have learned with others. The key is getting your audience involved in doing what you are doing, not just showing them. An action demo can be given anywhere there are a lot of people, like a county or state fair or a shopping mall.

An action demo can be on almost any topic. Here are some questions to ask yourself when choosing a topic.



- Is it something that can be done in 3 to 5 minutes?
- Is it something that would interest the general public?
- Is there something "hands-on" for the audience to do?
- Can the supplies for the "hands-on" activity be used over and over again or will they have to be replaced every time? (Note: If they have to be replaced, this will add to the cost.)

Your demonstration should last about 3 to 5 minutes and you need to be able to do it over and over again with many different people. There is no prepared speech in an action demo, it is a two-way conversation. Your goal is to involve the audience, and you can do this by having them:

- Do what you are doing
- Answer questions.
- Play a game.
- Do a hands-on activity.

"Presto Meals" Achievement Sheet

Each year, you should complete a minimum of three activities, each from a different "bite" category. Within the three-year project period, you should have completed at least nine activities and at least one activity from each of the four "bite" categories. Write the month, day, and year beside each of the activities you completed. Get your project helper to initial that you have discussed the activity with them. In addition, you may choose to do an action demonstration at the club/school or county level.

	Date Completed Month/Day/Year	Helper Initial		Date Completed Month/Day/Year	Helper Initial
 <p>Tricks of the trade</p> <p>1a Large and in charge ___/___/___ _____</p> <p>1b Cooking a whole chicken ___/___/___ _____</p> <p>1c Comparison shopping ___/___/___ _____</p>			 <p>Kitchen magic</p> <p>3a Microwavable cake ___/___/___ _____</p> <p>3b Jellies and jams ___/___/___ _____</p> <p>3c Making a cherry pie ___/___/___ _____</p>		
 <p>Once you swallow</p> <p>2a Chocolate cake ___/___/___ _____</p> <p>2b Sugarless carrot cake ___/___/___ _____</p> <p>2c Make it your own ___/___/___ _____</p>			 <p>Magnificent meals</p> <p>4a Breakfast time ___/___/___ _____</p> <p>4b Lunch time ___/___/___ _____</p> <p>4c Dinner is served ___/___/___ _____</p>		

Did you do an action demonstration? Yes No Location _____

Title of action demonstration given _____

Name _____ Grade _____

Club/School _____

I certify that this youth has completed all requirements for Level D of the "Microwave Magic" project.

Project helper's signature _____ Date _____

Tricks of the trade

Introduction

When is it done?

While some microwaved foods may look different than they would if they were conventionally cooked, many of the tests for *doneness* are similar.

- Cakes – Sides will pull away from the pan but the top will not be brown. The top may also have moist spots on the surface that will dry during standing time. When inserting a toothpick to test for doneness, avoid the moist spots.
- Meat – It is done when it is fork tender. Use a meat probe or thermometer to test the temperature.
- Poultry – The legs should move freely and juices should run clear. Test with a meat probe or thermometer.

Probes and microwave thermometers

Both probes and microwave thermometers will measure the internal temperature of food. Insert them as you would a conventional meat thermometer.

- Meat – Insert into the center of the thickest part of meat. Do not allow it to touch bone, fat, or gristle.
- Poultry – Insert into the thickest part of the breast and the thigh area. Do not allow it to touch bone, fat, or gristle.

A probe shuts the oven off automatically when it reaches a pre-set temperature. Because of the fat pockets in poultry, you may not get an accurate reading with a probe and the probe may shut the oven off before the poultry is cooked.

Some tips to remember:

- Always allow standing time, which completes the cooking, before checking the internal temperature with a food thermometer.
- Be sure to wash temperature probes and thermometers with hot soapy water before and after each use.
- Do not use conventional meat or candy thermometers in the microwave oven. They can be used to check temperatures outside of the microwave oven. Only microwave thermometers can be used during cooking in a microwave.

U.S. Department of Agriculture recommended internal temperatures:

- Beef and veal: steaks, roasts – 145°F for medium rare; 160°F for medium
- Pork chops, ribs, and roasts – 160°F
- Ground beef and pork – 160°F
- Ground turkey and chicken – 165°F
- Stuffing and casseroles – 165°F
- Leftovers – 165°F
- Chicken breasts – 170°F
- Chicken and turkey: whole, legs, thighs, wings – 180°F

Standing time

Standing time is a part of the cooking process. It completes the cooking, tenderizes the food, and allows for easier cutting and serving.

Many times foods are still cooking even after they are removed from the microwave. This happens because the molecules in the food continue to rub and vibrate. Recipes will instruct you to let your food stand for a certain time after removing from the microwave. Standing time prevents foods from overcooking and allows the heat to move to the center of the dish. This helps the food to be more evenly cooked.

When cooking foods such as eggs, meats, custards, bread, and any baked items, let them stand after removing them from the microwave. Standing time is not necessary for vegetables, fruits, soups, and sauces.

NOTE: Meat temperatures may rise 5°F to 10°F during standing time. Plus, roasts will be easier to carve after standing. Remember to check the internal temperature *after* the standing time and verify that it has reached the level in the USDA guidelines.

Holding Time

Holding time is the length of time that food will retain its heat after cooking time and standing time are completed.

- Wrap large, whole vegetables in plastic or foil.
- Cover meats loosely with a foil *tent*. Tightly wrapping meats will cause them to acquire a steamed taste.
- Meats that are cooked in a plastic bag or tightly covered dish should be left covered.

Holding times

Long Holding Time: 20 to 45 minutes

Baked beans, dish tightly wrapped
Cauliflower, whole, dish tightly wrapped
Corn on the cob, in husk, tightly wrapped individually
Ham, tented
Potatoes, baked, individually wrapped
Potatoes, scalloped, dish tightly wrapped
Roasts, beef, not well done, 4 pounds or more, tented
Sweet potatoes, whole, individually wrapped
Turkey, tented
Winter squash casserole, dish tightly wrapped

Medium Holding Time: 10 to 20 minutes

Broccoli, dish tightly wrapped
Carrots, whole, dish tightly wrapped
Casseroles, dish tightly wrapped
Cauliflowerettes, dish tightly wrapped
Chicken, tented
Corn on the cob, in husk or husked, loosely wrapped individually
Ham slice, 1 inch or thicker, dish tightly wrapped
Meatloaf, tightly wrapped
Potatoes, mashed, dish tightly wrapped
Rice, fluffed with fork, dish tightly wrapped
Roasts, 2 to 4 pounds, tented
Winter squash, individually wrapped

Short Holding Time: 5 to 10 minutes

Beans, green or wax, dish tightly wrapped
Carrots, sliced, dish tightly wrapped
Chops, dish tightly wrapped or stacked and wrapped
Corn, whole kernel, tightly wrapped
Fish fillets, dish tightly wrapped or stacked and wrapped
Hamburgers, dish tightly wrapped or stacked and wrapped
Mushrooms, dish tightly wrapped
Peas, dish tightly wrapped

1a. Large and in charge

Project skill
Cooking for large groups

Life skill
Completing a task

Pot roast ingredients

- 2- to 3½-lb. boneless chuck roast

Sauce

- ¼ cup tomato paste
- ½ cup water
- 1 Tablespoon instant beef bouillon granules
- ½ teaspoon thyme
- ½ teaspoon salt
- 1 bay leaf

Vegetables

- 4 medium carrots cut in 1" lengths (2 cups) [halve thick carrots lengthwise before slicing]
- 1 medium onion, cut in eighths
- 1 large potato, cut in half-inch cubes (1½ cups)

Supplies

- deep casserole dish
- cooking bag
- measuring cups & spoons
- spoon
- cutting board and knife

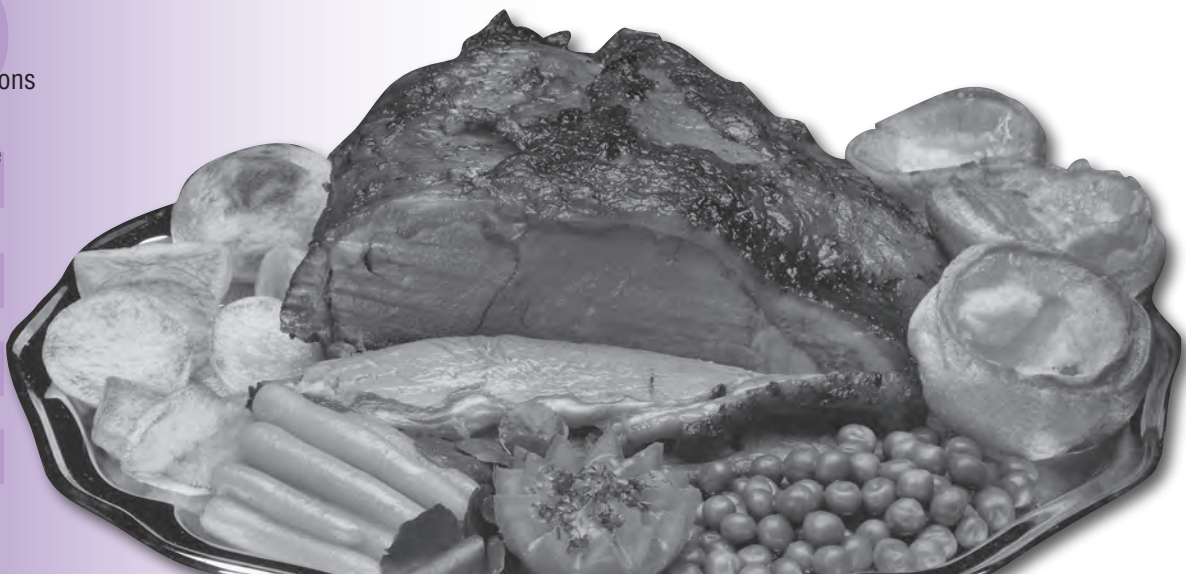
Cooking for a large group or family can be difficult and time-consuming. You can cook a pot roast with vegetables in the microwave, then use the standing time of 20 to 30 minutes to assemble the rest of the meal.

Pot roasts can be successfully tenderized during microwaving by using the following techniques:

- Liquid will provide additional moisture when cooking.
- A cooking bag will hold in the steam.
- Use a *Medium* power setting (50%) to allow the meat to cook slower and absorb the flavors. This also allows heat to reach the center without overcooking outer areas.
- Allow a standing time of 20 to 30 minutes to complete the tenderizing.

Let's get that pot roast in the oven!

1. Puncture the meat with a fork on all sides. This allows flavoring and moisture to reach the interior.
2. Place your roast in the cooking bag and then in a casserole dish.
3. Combine the sauce ingredients. Pour the sauce over the roast.
4. Close the cooking bag by gathering the ends together. Tie loosely with the tie that came with the cooking bag or a plastic strip cut from the cooking bag. Leave a small space for steam to escape. Tuck the end of the bag inside the dish.
5. Microwave on Medium (50%) for 13 to 15 minutes per pound.
6. Turn roast over. Open the bag carefully to avoid the steam.
7. Add vegetables to the bag and re-tie. Microwave for an additional 13 to 15 minutes per pound. Let stand in the closed bag for 20 to 25 minutes.



Micro Talk

1. Was your roast moist or tough?

2. What was the easiest part about using your microwave to make a roast?

3. List the similarities and differences between your microwaved roast and any other roast you have had before.

Similarities	Differences

4. Name other foods you might prepare in the microwave that would also require standing time to complete the cooking process.



Try a roast with gravy. Use a 2½- to 3-lb. eye of round roast. Place a third of a can of undiluted cream of mushroom soup in the bottom of the cooking bag. Add the roast. Sprinkle 1 envelop of onion and mushroom soup mix on top of the roast. Cover with the remaining soup from the can. Cook per directions for the pot roast.

Oven cooking bags

Oven cooking bags help to hold in flavors. Plus, since the juices circulate within the bag, there is no need to baste.

Tips for using cooking bags:

- Shake 1 tablespoon of flour in an oven bag before cooking. The flour will blend the fat and juices and help to protect against bursting. Add more than one tablespoon of flour for recipes with thickened sauces or gravies.
- Do not slash the cooking bag to vent. You will turn the cooking bag over during cooking, and juices may escape.
- Tie the cooking bag shut with the tie that came with the cooking bag or a half-inch strip cut from the open end of the bag. Do not use plastic trash bag ties – they will melt! Do not use plastic- or paper-covered wire ties – they can cause arcing and might even create a fire.

1b. Cooking a whole chicken

Project skill
Roasting a chicken

Life skill
Completing a project or task

Lemon herb chicken ingredients

- Whole chicken

Lemon herb marinade

- ¼ cup vegetable oil
- ¼ cup fresh lemon juice
- ½ teaspoon dried oregano leaves
- ¼ teaspoon paprika
- ¼ teaspoon pepper
- ¼ teaspoon salt

Supplies

- small mixing bowl
- measuring cups & spoons
- spoon
- microwavable roasting rack
- microwavable dish
- basting brush
- aluminum foil
- wax paper

Most Americans eat chicken at least once a week. It is an ideal food for microwaving. Chicken cooked in the microwave is tender and juicy. A whole chicken will turn a light golden brown during microwaving. For a richer or darker color, use a browning agent or sauce, such as teriyaki sauce or a barbecue sauce. In this activity, you will try a lemon herb marinade.

1. In a small mixing bowl, combine the ingredients for the lemon herb marinade.
2. Wash the chicken and remove any extra fat. Don't forget to remove the bag of extra pieces from the body cavity. Pat dry. Bend back the wings.
3. Brush marinade on the entire chicken. Place chicken, breast side down, on microwavable roasting rack in microwavable dish. (**NOTE:** The roasting rack raises the chicken so it doesn't sit in its own grease during cooking.) Use aluminum foil to shield the wing tips and leg ends. Cover with wax paper.
4. Microwave on High (100%) for 3 minutes.
5. Microwave on Medium-High (70%) for 4 to 5 minutes per pound.
6. Carefully remove shields. Turn the chicken over. Recover.
7. Cook on Medium-High for another 4 to 5 minutes per pound. **NOTE:** leg bone should move easily and juices should run clear.
8. Let stand for 10 minutes.
9. Check for doneness with a meat thermometer. Insert the thermometer into the thickest part of the breast and the thigh area. Do not allow it to touch bone, fat, or gristle. The chicken is done when the internal temperature of the thickest part of the breast area is 170°F. and the thickest part of the thigh area is 180°F. If it has not reached these temperatures, return to the microwave and cook on Medium-High for 4 or 5 more minutes.



Micro Talk

1. What power levels should be used to cook chicken in the microwave oven?

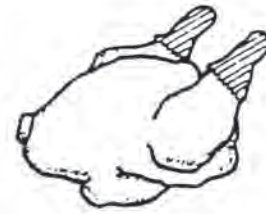
2. How can you check the doneness of poultry?

3. Why is it important to check the endpoint temperature of poultry in more than one location?

4. Shielding is important when cooking whole chicken. Describe other times when shielding would be beneficial.



For a breaded flavoring, combine 1 cup of seasoned dry bread crumbs with 1 teaspoon of paprika. Brush $\frac{1}{3}$ cup of milk onto the chicken skin. Then sprinkle on the breaded flavoring.



Shielding

Unevenly shaped foods, such as poultry, are difficult to cook uniformly in the microwave. To improve this situation, use aluminum foil to shield the thin areas to prevent overcooking. Place small pieces or strips of foil around the ends of roasts and delicate parts of poultry, such as chicken wings and legs. The foil prevents cooking until the bulky parts are nearly done. When foil is removed, all parts will finish cooking together. Foil should never touch the walls of the oven; it may cause damage to them.

mag

1c. Comparison shopping

Project skill
Purchasing a microwave

Life skill
Managing resources

Visit two or three stores to compare microwave ovens. One of your stores should be an appliance store and one should be a discount store. When comparing microwave ovens, you will want to compare price, features, and warranties. Complete the chart below.

Compare microwaves

Store				
Brand name				
Style of microwave (countertop, over-the-range, built-in, mini)				
Cost				
# of power levels				
Output wattage				
Oven racks				
Turntable				
Cooking features				
• Sensor cooking				
• Defrost setting				
• Pre-programmed cooking codes				
• Probe				
• Convection				
• Browning feature				
Warranty type and length				

Micro Talk

1. Was there a difference in price between the discount store and the appliance store?

2. How is price related to features?

3. What do you think was the best microwave for you to purchase? Why?

4. When will you use comparison-shopping techniques again?



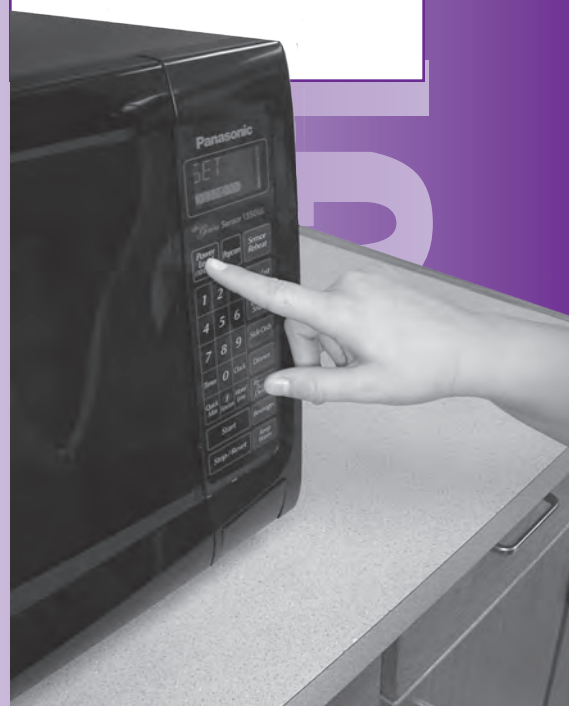
Try comparing warranties with different products and even different manufacturers. Which is the best product, and who has the best warranties? Also try comparing prices. Does the more expensive item have a better warranty?

Warranties

There are two main types of warranties: full and limited. Full warranty means the manufacturer agrees to repair or replace any product that is defective within a certain period of time. Usually warranties last one full year, but sometimes they last longer. A limited warranty means the manufacturer will only cover certain parts of the product within a given length of time. Let's find a warranty booklet.

Read through the booklet, and answer some questions.

1. What is the product?
2. Who is the manufacturer?
3. How long is the warranty?
4. Is it a limited or full warranty?
5. What does it cover?
6. Would you consider buying another product from this manufacturer?



Once you swallow

Introduction

Healthy substitutions

Ingredient	Substitution
¼ cup butter or oil	¼ cup unsweetened applesauce
3 eggs	1 egg and 4 egg whites
1 oz. baking chocolate	3 Tablespoons unsweetened cocoa
½ cup heavy cream	½ cup evaporated fat-free milk
¼ cup homemade whipped cream	¼ cup aerosol whipped cream
8 oz. cream cheese	8 oz. fat-free cream cheese
1 cup sour cream	1 cup fat-free sour cream
½ cup mayonnaise	½ cup reduced-calorie mayonnaise
5 Tablespoons shredded cheese	4 Tablespoons shredded low-fat cheese
1 cup white sugar	1 cup sucralose sugar substitute
1 Tablespoon butter/margarine/oil	canola oil cooking spray

Your favorite recipe may need a low-fat or healthy makeover. The key change to making healthier meals is cutting fat, and there are many ways to do that. Some recipe substitutions also will reduce the calories. For diabetics and people with high blood pressure, it may be important to replace the sugar or reduce the salt. It is important to remember that recipes are a delicate balance of ingredients, so you want to focus on changing just one or two ingredients at a time until you have a healthier dish that still tastes delicious.

- Start by cutting one-quarter of the fat or oil in a recipe. If you like the result, next time reduce the fat by a third from the original recipe. Reduce fat until you find the smallest amount that can be used to still have a good-tasting dish.
- Add flavor and fiber to biscuits, muffins, breads, and coffee cakes with whole-wheat flour. Use in place of half of the all-purpose flour.
- Use a low-fat or nonfat version of dairy products.
- Substitute applesauce for half or all of the fat in muffins, cookies, and quick breads.
- Reduce or eliminate salt in baked recipes, except for yeast breads. In yeast breads, salt prevents excessive rising.
- Use egg whites in place of whole eggs: 2 egg whites for 1 whole egg; 3 egg whites for 2 whole eggs; and 5 egg whites in place of 3 whole eggs. (In a large egg, the egg white contains 15 calories. The yolk contains 5 grams of total fat, 2 grams of saturated fatty acids, 60 calories, and 213 milligrams of cholesterol – more than two-thirds of the recommended daily limit of 300 mg.)

Substituting artificial sweeteners for sugar

You can reduce the calories in a recipe by substituting artificial sweeteners for sugar. But not all artificial sweeteners can be used in baking, so read the label carefully. Also, not all sugar substitutes are zero calories, and some contain carbohydrate. If you are cooking for a diabetic, read the label carefully.

Sugar	Saccharin packets	Granulated saccharin	Aspartame packets (granulated)	NutraSweet spoonfuls (bulk)	Equal measure	Sucralose packets	Sucralose granular
2 teaspoons	1	2 teaspoons	1	2 teaspoons	¼ teaspoon	1	2 teaspoons
¼ cup	6	¼ cup	6	¼ cup	1¾ teaspoons	6	¼ cup
⅓ cup	8	⅓ cup	8	⅓ cup	2½ teaspoons	8	⅓ cup
½ cup	12	½ cup	12	½ cup	3½ teaspoons	12	½ cup
¾ cup	18	¾ cup	18	¾ cup	5½ teaspoons	18	¾ cup
1 cup	24	1 cup	24	1 cup	7¾	24	1 cup

- Brands of saccharin packets – Sweet’N Low, Sugar Twin, Sweet Thing, Weight Watchers, Kroger Calorie Free
- Brands of granulated saccharin – Sugar Twin, Sprinkle Sweet
- Brands of aspartame packets – Equal, NutraSweet, Kroger Sweet Servings, Sweet Think
- Brand of sucralose – Splenda

NOTE:

In baked goods, do not substitute more than ½ cup of sugar.

2a. Chocolate cake

Project skill
Baking a cake

Life skill
Making healthy lifestyle choices

The Dietary Guidelines for Americans recommend that we limit our consumption of oils, which are usually high in fat, so this recipe substitutes applesauce for oil. To make the recipe even more heart healthy, it uses egg substitutes for eggs, thus reducing the amount of saturated fat and cholesterol.

1. Line the bottom of 8-inch round glass cake pan with waxed paper.
2. In a microwave-safe bowl, combine cocoa and $\frac{1}{3}$ cup water.
3. Microwave, uncovered, on High (100%) for 20 seconds, stir, then microwave 20 more seconds.
4. Add egg, oil, vanilla, and remaining water.
5. In a mixing bowl, combine dry ingredients.
6. Add egg mixture to dry ingredients and mix well.
7. Pour into prepared dish.
8. Cook, uncovered, at Medium-High (70%) 6 to 7 minutes until a moist area about $1\frac{1}{2}$ inches in diameter remains.
9. Cool on a wire rack for 10 to 12 minutes.
10. Invert onto a serving plate. Discard waxed paper. Cool completely.

Chocolate cake ingredients

- $\frac{1}{4}$ cup baking cocoa
- $\frac{2}{3}$ cup water, divided
- $\frac{1}{4}$ cup egg substitute vs. 1 egg
- $\frac{1}{3}$ cup applesauce vs. $\frac{1}{3}$ cup oil
- 2 teaspoons vanilla extract
- $\frac{3}{4}$ cup + 2 Tablespoons all-purpose flour
- 1 cup sugar
- $\frac{1}{2}$ teaspoon baking soda
- $\frac{1}{4}$ teaspoon baking powder
- $\frac{1}{4}$ teaspoon salt

Supplies

- 8" round glass cake pan
- wax paper
- medium microwave-safe bowl
- measuring cups & spoons
- spoon
- large mixing bowl
- wire cooling race
- serving plate



Micro Talk

1. From gathering ingredients to finishing the cake, how long did it take you to make this chocolate cake in the microwave oven?

2. How does the cooking time in the microwave oven compare to baking this same type of recipe in a conventional oven?

3. From the way the cake looks and tastes, what have you learned about healthy substitutions?

4. Describe other recipes that you will try using these healthier substitutes.

Cake Tips

- Baking dishes – Round and ring-shaped baking dishes bake most evenly, square ones are good, and rectangular dishes are the least recommended.
- Dish preparation – No preparation is needed if the cake is to be served from the dish. If the cake is to be removed from the dish, line the bottom of the dish with a piece of wax paper cut to fit the bottom.
- Rising – Microwave cakes rise higher, so fill the dishes no more than half full.
- Test for doneness – Cakes are done when a toothpick inserted near the center comes out clean or when the top springs back when lightly pressed with a finger. The cake will usually start to come away from the edge of the dish.

NOTE: Microwave cakes will appear slightly moist on top near the center. This moisture will dry during standing time.



Try using egg substitutes in other recipes. This easy omelet is ready in less than 10 minutes, and it's so puffy you can cook and serve it in a mug. In a microwave-safe mug coated with nonstick cooking spray, combine $\frac{1}{2}$ cup egg substitutes, 2 tablespoons of shredded cheddar cheese, 2 tablespoons of diced fully cooked ham, and 1 tablespoon of diced green pepper. Microwave, uncovered, on High (100%) for 1 minute. Stir. Cook 1 to 1½ minutes longer or until eggs are completely set.



2b. Sugarless carrot cake

Project skill
Replacing sugar in a recipe

Life skill
Making healthy lifestyle choices

People who are diabetic must limit the amount of sugar they consume, and people who are trying to lose weight may also decide to restrict their sugar intake. This carrot cake recipe uses Splenda®, the brand name for sucralose, instead of sugar. Sucralose resembles table sugar in taste, easily dissolves in water, and is very stable at high temperatures, which makes it the best sugar substitute for baking. Sucralose does not increase blood sugar levels or add calories to consumed food, because it is not absorbed from the digestive tract.

Carrot cake ingredients

- 1 cup all-purpose flour
- 1 cup sugar substitute (Splenda®)
- 1 teaspoon baking soda
- 1 teaspoon baking powder
- ½ teaspoon salt
- 1¼ teaspoon ground cinnamon
- ¼ teaspoon ground ginger
- ½ cup vegetable oil
- 2 eggs or ½ cup egg substitute
- 1½ cup grated carrots
- 8 oz. can crushed pineapple, well drained
- ¾ cup chopped pecans

Supplies

- 8" round glass cake pan
- wax paper
- large mixing bowl
- measuring cups & spoons
- spoon
- wire cooling rack
- serving plate

1. Line the bottom of 8-inch round glass cake pan with waxed paper.
2. In large mixing bowl, combine the dry ingredients (first seven).
3. Add oil and eggs. Stir together.
4. Add carrots, pineapple, and pecans.
5. Pour into prepared dish.
6. Cook, uncovered, at Medium-High (70%) 8 to 10 minutes until a moist area about 1½ inches in diameter remains.
7. Cool on a wire rack for 10 to 12 minutes.
8. Invert onto a serving plate. Discard waxed paper. Cool completely.
9. Store in the refrigerator.



Micro Talk

1. Can you use any sugar substitute in baked goods? Why or why not?

2. How did you test your cake for doneness?

3. What have you learned about a sugar substitute that will help you with other recipes?

4. What are some other foods that you might sweeten with a sugar substitute?



Are there other recipes requiring sugar where you could use a sugar substitute? What are they? Would you try them?

Cream cheese frosting

Ingredients

- 4 oz. low-fat cream cheese
- 1 Tablespoon milk
- ½ cup confectioner sugar
- ½ cup sugar substitute (Splenda®)

Supplies

- mixing bowl
- measuring spoons & cups
- electric mixer
- spatula

1. Place cream cheese and milk into mixing bowl. *Mix* on low speed until thoroughly blended.
2. Add sugar and sugar substitute. Mix on low speed until thoroughly blended.
3. Spread on cooled carrot cake.
4. Refrigerate.

magazine

2c. Make it your own

Project skill
Adapting recipes

Life skill
Processing information

Supplies:

- favorite family recipe
- cookbook
- microwave cookbook

Favorite family recipes can be converted to microwavable meals and treats very easily. With some experimentation and a little thought, almost all recipes can be converted to a microwavable version.

1. In a microwave cookbook, look for a recipe similar to the family favorite you have picked out. It is best to try to find a recipe with the same amount and type of the main ingredient. For example, if the family recipe calls for frozen ground beef, make sure the microwave recipe does also.
2. Now compare the other ingredients, such as pasta and vegetables. The microwave recipe will most likely call for less liquid than the family recipe.
3. Record the similarities and differences between the family recipe and the microwave recipe below.

Similarities	Differences

4. Now it's time to convert!
 - a. If the family recipe is oven prepared:
 - Reduce the amount of liquid to three-fourths of what is called for.
 - Use slightly less seasoning.
 - Reduce the cooking time to one-third or one-fourth of what the family recipe calls for.
 - b. If the family recipe is prepared on the stovetop:
 - Reduce the liquid by one-fourth.
 - Cook slightly less than the recommended time. Check the food. Add another 15 to 30 seconds if needed and check again.
5. If you can't find a microwavable recipe that is similar to the family recipe, then find a microwavable recipe in the same category as the family recipe, such as meat casserole, vegetable casserole, or baked item. Look over several recipes and write the procedure that you think will work the best. Make the adjustments listed above and then try the procedure.

MICROWAVE

Micro Talk

1. Was it easy to find a similar recipe to your family recipe?

2. What was the hardest part about converting the recipes?

3. What did you learn from converting this recipe?

4. What other recipes would you try to convert?



Try making both of the recipes, family and converted. Afterwards, have the family do a taste test to find out if there is a difference.

Tips for selecting foods to microwave

- Conventional recipes that call for steaming, moist cooking, covering, and stirring will be good microwave recipes.
- Naturally moist foods – such as chicken, vegetables, and fruits – microwave well. These foods will need less moisture added when microwaving.
- Most main dishes cooked in a sauce will easily adapt to microwaving. They will have the same flavor and texture as when prepared conventionally.
- Rich foods such as candies, bar cookies, and moist coffee cakes microwave well because of their high fat or sugar content.
- Some conventional recipes should not be converted to microwave recipes.
 - ◆ Fried, crispy foods tend to be soggy.
 - ◆ Never try to deep fat fry in a microwave oven.
 - ◆ Crusty foods such as pizza and pancakes become soggy on the bottom.
 - ◆ Yeast breads.



Kitchen magic

Introduction Benefits of microwave cooking

The benefits of microwaving include faster cooking, better quality food with more flavor, energy efficiency, fat reduction, and easy reheating and defrosting.

- **Cooks faster** – Up to 80 percent of the foods you normally prepare may be prepared in a microwave in much less time (sometimes in one-fifth the time) than it would take to cook the same foods conventionally.

Food	Conventional Cooking	Microwave Cooking
Meatloaf	1¼ to 1½ hours	8 to 18 minutes
Ham and scalloped potatoes	1½ to 1¾ hours	38 to 53 minutes
Baked chicken, 2 or 3 lbs	1 to 1¾ hours	12 to 24 minutes
Baked potatoes (4)	1 hour	12 to 16 minutes
Chocolate cake	30 to 45 minutes	6 to 7 minutes

- **Food quality is better** – When cooked in a microwave oven, food retains more color, flavor, and nutritional value because you use little or no water and cook the food a very short time.
- **Energy efficiency** – Because food cooks for a shorter time and all the microwave energy is used for cooking rather than heating up containers or oven shelves, the microwave usually is more energy efficient than a conventional oven.

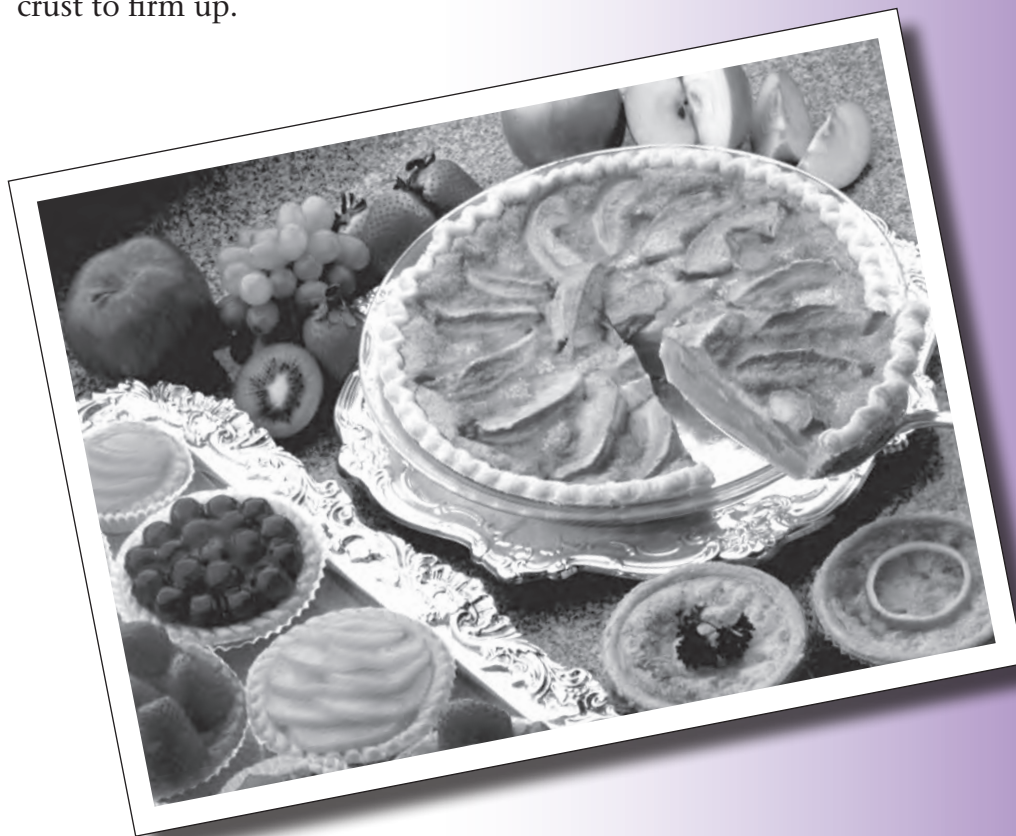
- **Fat reduction** – Because the microwave cooks food in its own moisture, no added fat, such as butter or oil, is needed.
- **Reheating** – *Reheating* in a microwave is easy and quick, allowing you to plan *leftovers* in advance, thus helping to stretch food dollars.
- **Defrosting** – Microwaving allows *defrosting* in a matter of minutes and is a unique benefit that no other appliance can provide.

Quality of cakes and pies

Rich moist cakes are excellent in the microwave. Microwave cakes tend to rise higher than conventionally baked cakes. The top and sides may be slightly moist when done, but the moisture will evaporate during standing time.

Microwaved pastry is tender, flaky, and puffy, but it does not brown. To make a pastry more eye-appealing, add a few drops of yellow food coloring to your liquid.

Graham cracker crumb crusts take only a few minutes to prepare in the microwave. Just cook them long enough for the crust to firm up.



MAGIC

3a. Microwavable cake

Project skill
Making a layer cake

Life skill
Practicing creativity

Applesauce layer cake ingredients

- 1 cup all-purpose flour
- $\frac{2}{3}$ cup sugar
- 1 teaspoon soda
- $\frac{1}{2}$ teaspoon salt
- $\frac{1}{2}$ teaspoon cinnamon
- $\frac{1}{4}$ teaspoon nutmeg
- $\frac{1}{4}$ teaspoon cloves
- $\frac{1}{3}$ cup shortening
- $\frac{1}{2}$ cup applesauce
- 2 eggs
- 3 Tablespoons milk
- $\frac{1}{4}$ cup chopped nuts or raisins

Supplies

- large mixing bowl
- measuring cups & spoons
- spoon
- electric mixer
- 9" round glass cake pan
- wire cooling rack
- serving plate

By now you have made many different things in the microwave. But now it is time to make another yummy cake. Let's use your creative side to decorate it after your cake is done!

1. Place all ingredients in mixing bowl. Blend at low speed using an electric mixer. Then, beat at medium speed 2 minutes.
2. Spread batter into a 9" round baking dish (dish should be no more than half full). Microwave on Medium (50%) for 6 minutes. *Rotate* the dish a quarter turn every 3 minutes.
3. Increase power to High (100%). Microwave for 2 to 5 minutes or until done.
4. Let stand directly on countertop 5 to 10 minutes.

Tips for cakes and cupcakes

If you use a cake mix, one package of cake mix makes:

- Two 8-in. (1-qt.) round layers, plus six cupcakes
- Two 9-in. (1 $\frac{1}{2}$ -qt.) round layers
- One bundt cake
- 30 to 36 cupcakes

Cooking times		
	Stage 1	Stage 2
Layer cake (one layer at a time)	6 minutes on Medium (50%) power	2 to 5 minutes on High (100%)
6 cupcakes	2 to 3 minutes on High (100%): rotate and rearrange after half the time	
Bundt cake (14 cup)	12 minutes on Medium (50%)	4 to 7 minutes on High (100%)



Micro Talk

1. How did your microwavable cake compare to an oven-baked cake?

2. What was the most difficult part of baking a microwavable cake?

3. Why did you only fill the cake pan half full?

4. What will you do differently the next time you make a microwavable cake?



Try adding a yummy frosting to your cake! You could even decorate it with sprinkles, or nuts, or colored coconut, or fruit! Be creative! For a frosting recipe, see page 19.

Toasting nuts

Here's a quick and cool way (with minimal cleanup) to toast a small amount of nuts to sprinkle on your frosted cake. This method works well for amounts ranging from a tablespoon to $\frac{1}{2}$ cup.

1. In a flat, microwave-safe dish, such as a 9-inch pie plate, melt about $\frac{1}{2}$ teaspoon butter or margarine per $\frac{1}{2}$ cup of nuts. This small amount of fat helps with browning and speeds up the toasting process.
2. Add the nuts to the dish, stir them to thinly coat with butter, then spread the nuts evenly in a single layer.
3. Microwave on High (100%) for 1 minute.
4. Stir and microwave for another minute.
5. Check to see how the toasting is proceeding. Add more microwave cooking time one minute at a time, because nuts can burn quickly. Stir after each addition of time. Small amounts of thin nuts (sliced almonds) could be finished at 2 minutes. Larger amounts of thicker nuts, such as whole almonds, walnuts or pecans, will take an additional minute or two of microwaving to become lightly browned and smell fragrant.
6. Store any extra toasted nuts in an airtight container in the refrigerator for 1 to 2 weeks or freeze them in an airtight freezer container for 1 to 3 months.

3b. Jellies and jams

Project skill
Making grape jelly

Life skill
Completing a task

Grape jelly ingredients

- 1 can (6 oz.) frozen concentrated grape juice
- 3 cans water (total water is 18 oz.)
- 1 package (1¾ oz.) powdered pectin
- 3½ cups sugar

Supplies

- 4 clean 8-oz. jars, free of chips, ridges, or other imperfections
- 4 rings and lids to fit your 8-oz. jars
- large microwavable bowl with cover
- measuring cups
- large wooden spoon
- tongs or jar lifter
- jar funnel
- ladle
- wash cloth

Have you ever wondered about the difference between a jelly and jam? The difference is that jams have fruit chunks while jellies just have fruit juice. Making jam or jelly in the microwave can be fun and easy.

- When making jams and jellies, use a large (3- or 4-quart) glass or other microwave-safe bowl.
- Use only the pectin – powdered or liquid – called for in the recipe. Do not substitute.
- Use potholders when removing all bowls from the microwave oven. Sugar mixtures get especially hot. Stir food frequently to distribute heat.
- Testing jelly for the jelling point can be done in three ways.
 - Sheet test – Dip a cool metal spoon into the boiling jelly. Lift out a spoonful of the mixture. Tip the spoon over a dish so the jelly will drop off. The jelling point has been reached when the jelly sheets off the spoon.
 - Plate test – Place a small amount of the spread on a chilled plate. Set the plate in the freezer until the spread is cooled to room temperature. If the mixture is set, it is ready to can.
 - Thermometer – Use a candy/jelly thermometer to determine the boiling point of water. Add 8°F. for the jelling point. Do not leave the thermometer in microwave oven.
- The times given in the recipes are a guide. More or less cooking time may be needed depending on individual differences in microwave ovens. Use the highest setting or full power.
- To prepare your jars, check jars and sealing surface for nicks, cracks, and sharp edges. Wash and rinse jars. Keep jars warm in dishwasher or hot water until ready to fill. Do not use the microwave or conventional oven for heating the jars.
- After you fill a jar, wipe the jar rim clean, place the dome lid on the jar, then screw the band down evenly and firmly. Do not use excessive force.

Grape Jelly

1. Prepare home canning jars and lids according to manufacturer's instructions.
2. Jars should be covered with water and boiled 10 to 15 minutes on a stovetop to sterilize.
3. Combine grape juice, water, and pectin in a large microwave-safe bowl.
4. Cook uncovered in microwave on High (100%) until mixture boils, about 8 to 9 minutes. Stir twice.

5. Remove from microwave and add sugar. Stir well.
6. Return to microwave, and continue cooking until mixture returns to a full, rolling boil, about 7 to 9 minutes. Stir occasionally. Boil hard for 1 minute.
7. Remove from microwave, and skim foam. Carefully ladle into hot sterilized jars, leaving $\frac{1}{4}$ " headspace. Wipe the top of the jar to remove any jelly residue. Place hot lids on jars and screw bands on firmly.
8. Process in a boiling water canner for 10 minutes. The jars will be extremely hot. Proceed with caution.
9. Label and date the jars, then store them in a cool, dark place.

Yield: Four 8-oz. jars

Micro Talk

1. How does your jelly taste?

2. How much room did you leave in the jars for headspace?

3. What new information did you learn from making jelly?

4. What might you do differently the next time you make jelly?



Jelly can be used in many different ways for many different meals. What are some yummy ways to use your jelly?

Strawberry jam

Let's try making strawberry jam!

Ingredients

- 4 cups crushed strawberries
- $\frac{1}{2}$ pkg. of powdered pectin
- 2 Tablespoons lemon juice
- $3\frac{1}{2}$ cups sugar

Supplies

- 4 clean 8-oz. jars, free of chips, ridges, or other imperfections
- 4 rings and lids to fit your 8-oz. jars
- large microwavable bowl with cover
- plastic wrap or wax paper
- measuring cups
- large wooden spoon
- tongs or jar lifter
- jar funnel
- ladle
- wash cloth

1. Combine strawberries, pectin, and lemon juice in microwave-safe bowl.
2. Cover with plastic wrap or waxed paper, and bring to a boil in microwave on High setting (about 10 minutes), stirring once. Remove from microwave.
3. Add sugar, stirring until dissolved.
4. Return uncovered mixture to microwave. Cook jam to jelling point (about 1 minute). Remove from microwave.
5. Skim foam if necessary. Ladle hot jam into jars, leaving $\frac{1}{4}$ " headspace. Adjust two-piece lids.
6. Process in a boiling water canner for 10 minutes. Do not attempt to process in the microwave.

3c. Making a cherry pie

Project skill
Making a pie

Life skill
Processing information

Cherry pie ingredients

Crust

- ⅓ cup shortening
- 2 Tablespoons, butter, softened
- 1 cup all-purpose flour
- ½ teaspoon salt
- 3 Tablespoons cold water
- 3 or 4 drops of yellow food coloring

Pastry cut-outs

- Leftover pie crust
- 1 teaspoon sugar
- ⅛ teaspoon cinnamon

Filling

- 1 cup sugar
- ¼ cup cornstarch
- ⅛ teaspoon salt
- 2 cans (16 oz.) pitted tart red cherries, drained
- ½ teaspoon almond extract

Supplies

- mixing bowls
- measuring cups & spoons
- pastry blender
- fork
- rolling pin
- wax paper
- 9" glass pie pan
- can opener
- cookie cutter – small

Microwaved pastry is exceptionally tender, flaky, and puffy. However, it does not brown. Below are some tips for making pies in the microwave.

- For a golden crust, add a few drops of yellow food coloring to the liquid in the crust. Or, you can brush the crust with egg yolk before microwaving.
- Pie shells should be microwaved before adding filling or the shell may be undercooked.
- Prick the crust with a fork continuously at the bend of dish, bottom, and sides.
- Check for doneness by looking through the bottom of the glass dish. Crust will be done when it appears dry and opaque.

Let's make a cherry pie.

Crust

1. In mixing bowl, cut shortening and butter into flour and salt with a pastry blender until particles resemble coarse crumbs.
2. Combine water and food coloring. Sprinkle over pastry while stirring with fork, until dough is just moist enough to hold together. (Handle as little as possible.)
3. Wet countertop (so wax paper won't slip) and add a sheet of wax paper. Put dough on wax paper. Add a second piece of wax paper on top. Roll out pie crust until it is about ⅛ inch thick and at least 1" larger than upside-down pie pan. Peel off top wax paper and invert crust into the pie pan.
4. Fit the crust to the pie pan loosely. Press pastry firmly against bottom and side. Trim overhang. (Save extra for pastry cut-outs.) Flute edges. Prick the crust on the bottom at ⅛-inch intervals around the bend of the dish. Prick the bottom and sides of dish about every half inch.
5. Cover with wax paper. Microwave on High (100%) for 3 to 4 minutes until the crust is no longer moist. Cool while making the filling.

Pastry cut-outs

1. Make pastry cut-outs by using leftover pie crust that is rolled out to ⅛-inch thick. Cut 5 or 6 cut-outs with a small cookie cutter.
2. Combine cinnamon and sugar in a small bowl. Sprinkle cut-outs with cinnamon sugar.
3. Place cut-outs on wax paper in microwave. Microwave on Medium (50%) for 1 to 3 minutes until dry and puffy, rotating after half of the time.

Filling

1. Blend sugar, cornstarch, and salt in medium bowl. Stir in cherries.
2. Microwave on High (100%) until translucent, 8 to 11 minutes, stirring one or twice during cooking.
3. Stir in almond extract. Pour into pie shell.
4. Decorate with pastry cut-outs



Micro Talk

1. How does your pie taste?

2. What was the hardest part about making your pie?

3. Describe the appearance of the crust and filling of your microwave pie vs. baking the same type of pie in a conventional oven.

4. How will you apply what you learned the next time you make a pie?



To reheat a pie slice, place the slice on a microwave-safe plate. Wrap with a paper towel. Reheat very carefully, checking often. Sugary fillings get hot quickly, while the crust may still be cool.

Pecan pie Ingredients

Crust

See supply list and directions on page 28.

Filling

- 2 Tablespoons margarine, melted
- 3 eggs, beaten
- ½ teaspoon vanilla
- 2 Tablespoons flour
- ⅓ cup brown sugar, packed
- ⅛ teaspoon salt
- ⅓ cup light corn syrup
- ⅔ cup dark corn syrup
- 1 cup pecans, halves or pieces

Supplies

- large mixing bowl
- measuring cups & spoons
- spoon

For filling:

1. In a large mixing bowl, combine margarine, eggs, vanilla, flour, sugar, and salt. Stir.
2. Blend in corn syrups and pecans.
3. Pour into baked pie shell.
4. Microwave on a Medium (50%) for 12 to 15 minutes, until knife inserted near center comes out clean. Rotate once during cooking.
5. Remove and let cool. Serves 6 to 8 people.

Magnificent meals

Introduction Planning a menu

When planning menus, you should consider the nutritional aspect of the foods, the appetite appeal, and the timing of the various dishes. Your meals should include foods from the different food groups so that you have protein; vegetables and fruits; bread, cereals, or a starchy vegetable; and dairy products.

Appetite appeal refers to foods that look and taste good together. You will want a variety of colors, textures, shapes, and tastes in your menu. A menu with foods that are all bland, soft, or the same color – especially whites and tans – may be nutritious but will be very boring.

Here are some tips for planning your timing so that all foods are ready at the mealtime.

1. Start by microwaving foods that need to be chilled. Often you can make the dessert earlier in the day or the night before.
2. Prepare in advance any food that you plan to reheat before serving. For instance, you can bake potatoes early if you plan to make twice-baked potatoes or a cheesy potato dish.
3. Microwave meats, main dishes, or vegetables with long standing times. While this dish is in the microwave, you can prepare the next dish.
4. Let the first food stand. Most foods with a long standing time will have a holding time of 20 to 45 minutes. (**NOTE:** Standing time and holding time were discussed on page 7.)
5. Reheat any foods prepared in advance or those with short standing times.
6. During the meal or while you are clearing the table, you can reheat your dessert.



Sample Menu and Schedule

Lemon herb chicken – page 10

Baked potatoes

Frozen green beans

Cherry pie – page 28

1. You can make the cherry pie the night before.
2. Prepare the lemon herb chicken. It has a standing time of 10 minutes and a holding time of 10 to 20 minutes. Cover with a foil tent.
3. Cook potatoes (10 to 12½ minutes for four). If wrapped in foil to hold, the holding time is 20 to 45 minutes.
4. Cook green beans.
5. Reheat pie while clearing the table.

Microwave cleaning basics

Keeping your microwave clean can be a hassle. However, with proper care and routine maintenance you will not only enjoy your microwave more, but it will also last longer. The following are methods to both clean the microwave and eliminate odors. In addition to these methods you should also follow all of the instructions for cleaning your microwave oven that are given in the manufacturer's instruction manual.

Cleanliness:

To keep your oven nice and clean, wipe it with a paper towel or clean it with a mild detergent in warm water and a soft sponge or cloth. You should wipe frequently around the door seals of the microwave oven with a soft cloth or sponge to remove any food particles. Grease around the door seal can allow excessive radiation leakage.

Odors:

Odors can be removed by boiling one part lemon juice to three parts water in a measuring cup in the oven, or placing a small dish of baking soda in the oven and leaving the oven door ajar.

4a. Breakfast time

Project skill
Making breakfast quiche

Life skill
Making healthy lifestyle choices

Quiche ingredients

Crust

- ⅓ cup shortening
- 2 Tablespoons, butter, softened
- 1 cup all-purpose flour
- ½ teaspoon salt
- 3 Tablespoons cold water
- 3 or 4 drops of yellow food coloring

Filling

- 4 slices of bacon
- 3 eggs
- 1 cup half and half
- ½ teaspoon salt
- ⅛ teaspoon black pepper
- ⅛ teaspoon cayenne pepper
- 4 oz. shredded mozzarella cheese
- 4 oz. shredded sharp cheddar cheese

Supplies

- mixing bowls
- measuring cups & spoons
- pastry blender
- fork
- rolling pin
- wax paper
- 9" glass pie pan
- paper towels
- whisk

Have you ever skipped breakfast? Or maybe had junk food for breakfast? Skipping breakfast is not good for your body. When you eat breakfast, it starts your day the right way and gives you energy to get through your day. We are going to make a yummy breakfast quiche.

Crust

1. In mixing bowl, cut shortening and butter into flour and salt with a pastry blender until particles resemble coarse crumbs.
2. Combine water and food coloring. Sprinkle over pastry while stirring with fork, until dough is just moist enough to hold together. (Handle as little as possible.)
3. Wet countertop (so wax paper won't slip) and add a sheet of wax paper. Put dough on wax paper. Add a second piece of wax paper on top. Roll out pie crust until it is about ⅛ inch thick and at least 1" larger than upside-down pie pan. Peel off top wax paper and invert crust into the pie pan.
4. Fit the crust to the pie pan loosely. Press pastry firmly against bottom and side. Trim overhang. Flute edges. Prick the crust on the bottom at ⅛-inch intervals around the bend of the dish. Prick the bottom and sides of dish about every half inch.
5. Cover with wax paper. Microwave on High (100%) for 3 to 4 minutes until the crust is no longer moist. Cool while making the filling.

Quiche filling

1. Place bacon slices on 2 layers of paper towel. Cover with a paper towel. Microwave on High (100%) for 3 to 4 minutes. Place on a paper towel to absorb the fat. Set aside.
2. In a medium bowl, beat the eggs. Blend in half and half and seasonings. Add cheese and mix well.
3. Crumble bacon and add to the egg mixture. Stir together. Pour into pie shell.
4. Microwave on Medium (50%) for 16 to 18 minutes or until the center is set but not dry. Rotate the quiche every 2 or 3 minutes.
5. Let stand 5 minutes.

Micro Talk

1. How did the breakfast quiche taste?

2. Was there a difference in microwave bacon compared to fried bacon?

3. Why is it important to eat breakfast?

4. How would you make this breakfast healthier?



It is important to have three balanced meals a day. A balanced meal is a part of all food groups on the MyPyramid. What would you add to make this a balanced meal?

Quick and easy breakfast ideas

Scrambled eggs with cheese

- 4 eggs
- salt, to taste
- pepper, to taste
- ¼ cup cheese
- microwave-safe bowl
- fork

1. In medium bowl, blend 4 eggs with salt and pepper.
2. Microwave on high power for 2½ to 3 minutes or until soft set, stirring 2 or 3 times during cooking. Remove eggs from the microwave while they are still soft and moist. The eggs will continue to cook during the standing time.

NOTE: Overcooked microwave eggs are rubbery.

3. Stir in ¼ cup cheese, cover, and let stand 1 to 4 minutes.

Oatmeal

- ½ cup rolled oats
- ¾ cup hot water
- 1-quart microwavable dish
- add-ins, such as fruit, maple syrup, brown sugar, etc.

1. In a 1-quart dish, combine ½ cup rolled oats and ¾ cup hot water. Microwave on high for 4 to 6 minutes, or until oatmeal thickens.
2. To pep up the taste, try adding fruit, maple syrup, or brown sugar.

4b. Lunch Time

Project skill
Making tuna noodle casserole

Life skill
Completing a task

Tuna noodle casserole ingredients

- 1 pkg. (7 oz.) elbow macaroni, cooked and drained
- 1 pkg. (10 oz.) frozen peas
- 1 can (12½ oz.) tuna
- 1 can (10¾ oz) condensed cream of onion soup
- 1 can (5¼ oz) evaporated milk
- 2 teaspoons brown mustard
- ¼ cup Parmesan cheese or 1 can (3 oz.) french-fried onions

Supplies

- 3-qt. casserole dish
- can opener
- measuring spoon
- spoon

Have you ever had a casserole before? Casseroles come in many different shapes and sizes. They are popular because you can throw everything together and cook. They are tasty and easy. Let's make a tuna casserole for lunch!

1. Prepare macaroni according to the package directions.
2. Place peas in microwave-safe casserole dish. Cover and microwave on High (100%) for 3 to 5 minutes, or until defrosted, stirring once to break apart. Drain.
3. Combine all the ingredients, except the Parmesan cheese or the french-fried onions, in the casserole dish.
4. Microwave on High for 6 to 8 minutes. Stir occasionally from outside to center of casserole to equalize the heat.
5. Sprinkle with Parmesan cheese or french-fried onions. Microwave on High for 2 or 3 minutes until center is hot.

You could modify the above recipe by using a basic white sauce or a cheese sauce in place of the soup.

White sauce ingredients

- 2 Tablespoons butter or margarine
- 2 Tablespoons flour
- ¼ teaspoon salt
- ⅛ teaspoon pepper
- 1 cup milk

Supplies

- 4-cup glass measure
- measuring spoons & cups
- spoon

1. Melt butter in a 4-cup measurer on High (100%) for 30 to 50 seconds.
2. Stir in flour and seasonings until smooth. Blend milk into flour/butter mixture.
3. Microwave on Medium-High (70%) for 3 to 5 minutes, until thickened, stirring every minute.
4. For a cheese sauce, add ½ cup shredded cheese to thick white sauce and stir.

Micro Talk

1. How did your casserole taste?

2. How long did it take to make this meal?

3. What did you learn about making a microwaved casserole?

4. What would you do differently the next time you make a dinner casserole?



Many people prefer chicken instead of tuna. Try using canned chicken in place of canned tuna. Also try substituting frozen broccoli for frozen peas. You will have two totally different tasting casseroles.

Blueberry tart

Let's make a yummy dessert to serve with the tuna casserole, which has foods from three food groups: meat – tuna; grain – noodles; vegetable – peas. If we top our blueberry tart with ice cream, we will have added foods from the fruit and milk groups to our meal.

Ingredients

Crust

- 1 Tablespoon margarine or butter
- $\frac{1}{4}$ cup graham cracker crumbs

Filling

- 2 cups frozen blueberries
- $\frac{3}{4}$ teaspoon lemon juice
- $\frac{1}{3}$ cup sugar
- 2 teaspoons cornstarch

Supplies

- small microwavable bowl
- measuring cups & spoons
- 6 glass custard cups
- small bowl

1. Melt margarine in a small bowl on High (100%) for 1 to $1\frac{1}{2}$ minutes. Add crumbs and toss. Pat crumb mixture evenly into bottoms of 6 custard cups.
2. Arrange cups in circle in microwave. Microwave on High $1\frac{1}{2}$ minutes, or until set. Set aside.
3. Microwave blueberries at Medium-High (70%) until completely thawed, 4 to $5\frac{1}{2}$ minutes. Let stand 5 minutes.
4. Drain the blueberries well and reserve the juice.
5. Mash $\frac{1}{3}$ cup of the blueberries in a small bowl. Add reserved juice and lemon juice. Blend in sugar and cornstarch.
6. Microwave at High until thick and bubbly, 45 seconds to $1\frac{1}{2}$ minutes. Let stand until cool.
7. Spoon 3 Tablespoons of thickened blueberry mixture into each prepared crust in custard cups.
8. Top with ice cream or whipped topping if desired.

4c. Dinner is served

Project skill
Cooking an entire dinner in the microwave

Life skill
Planning and organizing

Ingredients

Beef teriyaki

- 3 Tablespoons teriyaki sauce
- 1 Tablespoon lemon juice
- 2 teaspoons cornstarch
- ½ lb. sirloin steak cut into strips ¼ inch thick and 1 inch long

Parmesan veggies

- ½ lb. cauliflower, broken into florets
- ½ lb. broccoli, cut into florets
- 1 red pepper, cut into strips ¼ inch thick and 1 inch long
- ¼ cup water
- 4 Tablespoons butter
- ½ teaspoon dried thyme
- ½ teaspoon dried parsley
- ¼ teaspoon onion salt
- ¼ cup Parmesan cheese, grated

Long-grain rice

- 1 cup instant long-grain rice
- 1 cup water
- ¼ teaspoon salt
- 1 Tablespoon butter

Supplies

- cutting board and knife
- 8-inch-square glass dish for beef
- measuring spoons and cups
- plastic wrap
- 2-qt. microwave casserole dish with lid
- small microwavable bowl
- microwavable dish for rice

Let's prepare a delicious dinner, with all of the dishes cooked in the microwave. The menu is:

- Beef teriyaki
- Long-grain rice
- Parmesan veggies
- Glazed peaches with raspberry sauce

To serve all of the dishes hot, you will need to plan your time, work on more than one recipe at a time, and use holding techniques. To begin, read all of the directions and make a time schedule. Here are the tasks you will have to complete.

1. Beef – cut and marinate.
2. Wash cutting board and knife.
3. Vegetables – cut.
4. Cook vegetables. Hold by covering with casserole lid.
5. Cook beef. Hold by covering dish.
6. Cook rice.
7. Serve dinner.
8. Cook fruit dessert during clean-up.

To make the beef teriyaki:

1. Partially freeze steak to firm. Slice steak, diagonally, across the grain into quarter-inch strips. (**NOTE:** To avoid *cross contamination*, don't forget to wash your knife and cutting board between cutting raw meat and cutting vegetables.)
2. Mix teriyaki sauce, lemon juice, and cornstarch in 8-inch-square glass dish. Add beef strips. Stir to coat. Cover with plastic wrap and refrigerate for at least 30 minutes.
3. Microwave 2 to 4 minutes on High (100%). Stir. Microwave another 1 to 2 minutes on High until beef is slightly pink.
4. Let stand 5 minutes to finish cooking.

To make the Parmesan veggies:

1. Cut up vegetables while meat is marinating. Place in a 2-quart casserole dish. Add water. Cover.
2. Microwave on High (100%) for 6 to 7 minutes or until tender crisp. Drain.
3. In a small microwavable dish, combine the butter, thyme, parsley flakes, and onion salt. Cover with plastic wrap. Microwave on Medium (50%) for 1½ minutes until the butter is melted.
4. Sprinkle butter mixture over vegetables. Top with Parmesan cheese. Cook, uncovered on High for 1 to 2 minutes until heated through.
5. Cover with casserole lid to hold in heat until the rice is ready.

To make the rice

1. Combine rice and water in a microwavable dish. Add salt and butter. Cover.
2. Cook on High (100%) for 5 to 6 minutes. Let stand covered for 5 minutes or until water is absorbed. Fluff with fork.

Micro Talk

1. How long did the food preparation take from start to finish?

2. What food items could be prepared in advance?

3. What did you learn about planning and organizing when preparing an entire meal in the microwave?

4. How will you apply what you learned to preparing other entire meals in the microwave?



It is important to eat a variety of vegetables each day. Other colorful combinations include: zucchini and tomatoes; cauliflower and carrots; corn and peppers. What other combinations might you try at another time?

Peaches with blueberry sauce

Ingredients

- 1 package (10 oz.) frozen blueberries
- 4 peaches, peeled and cut into halves, or 8 canned peach halves
- 2 teaspoons cornstarch
- ½ teaspoon grated lemon peel
- Whipped cream or vanilla ice cream (optional)

Supplies

- 1-qt. microwavable dish
 - fork
 - large casserole dish
 - measuring spoons
1. Remove blueberries from package and place in 1-quart microwavable dish. Microwave on Medium-Low (30%) until blueberries are thawed, about 3 to 5 minutes. Turn over every minute and gently break apart as soon as possible.
 2. Place fresh peach halves in large casserole dish. Cover with plastic wrap. Microwave on High (100%) until peaches are heated through, 2 to 6 minutes. Rearrange peaches once or twice during cooking. **NOTE:** If using canned peaches, omit cooking the peaches.
 3. Drain blueberry juice in small bowl. Blend in cornstarch and lemon peel. Microwave at Medium-High (70%) until thick and bubbly, 2 to 4 minutes. Stir one or twice during cooking. Add blueberries.
 4. Serve by placing peach halves in individual serving bowls. Top each peach half with blueberry mixture. Add whipped cream or vanilla ice cream, if desired.

Glossary

Cover – to cover food with a lid, plastic food wrap, paper towel, or waxed paper while it microwaves or stands

Cross contamination – when food touches surfaces or other food, allowing bacteria to transfer

Defrosting – heating frozen food until it is thawed

Doneness – extent to which food item has been cooked

High – full power or 100% setting on a microwave

Holding time – amount of time that is appropriate for food to be left out covered

Jelling point – the temperature (220°F at sea level) to which a mixture of fruit, sugar, pectin, and acid must be heated so that it will form a gel when it cools

Leftovers – food not eaten immediately after it is prepared

Low – slowest power setting or 10% on a microwave oven that can be used for cooking

Medium – half or 50% power

Medium-High – moderately high microwave power or 70%

Medium-Low – moderately low microwave power level or 30%

Microwavable – containers, coverings, and accessories that are safe for microwave use

Mix – to combine ingredients to distribute them evenly

Pectin – a carbohydrate found in ripe fruit and some vegetables that dissolves in hot liquids and gels on cooling

Reheat – heating a food after it has been prepared and cooled

Rotate – to turn a dish for one-quarter turn or one-half turn for more uniform cooking

Tent – when extra aluminum foil is loosely folded around a food

Unmold – to make a food item come out of a pan or mold clean and easy

Warranty – a manufacturer's promise to help repair or replace broken or damaged products

Yield – the quantity a recipe makes

The 4-H Pledge

I pledge
my Head to clearer thinking,
my Heart to greater loyalty,
my Hands to larger service, and
my Health to better living,
for my club, my community,
my country, and my world.



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