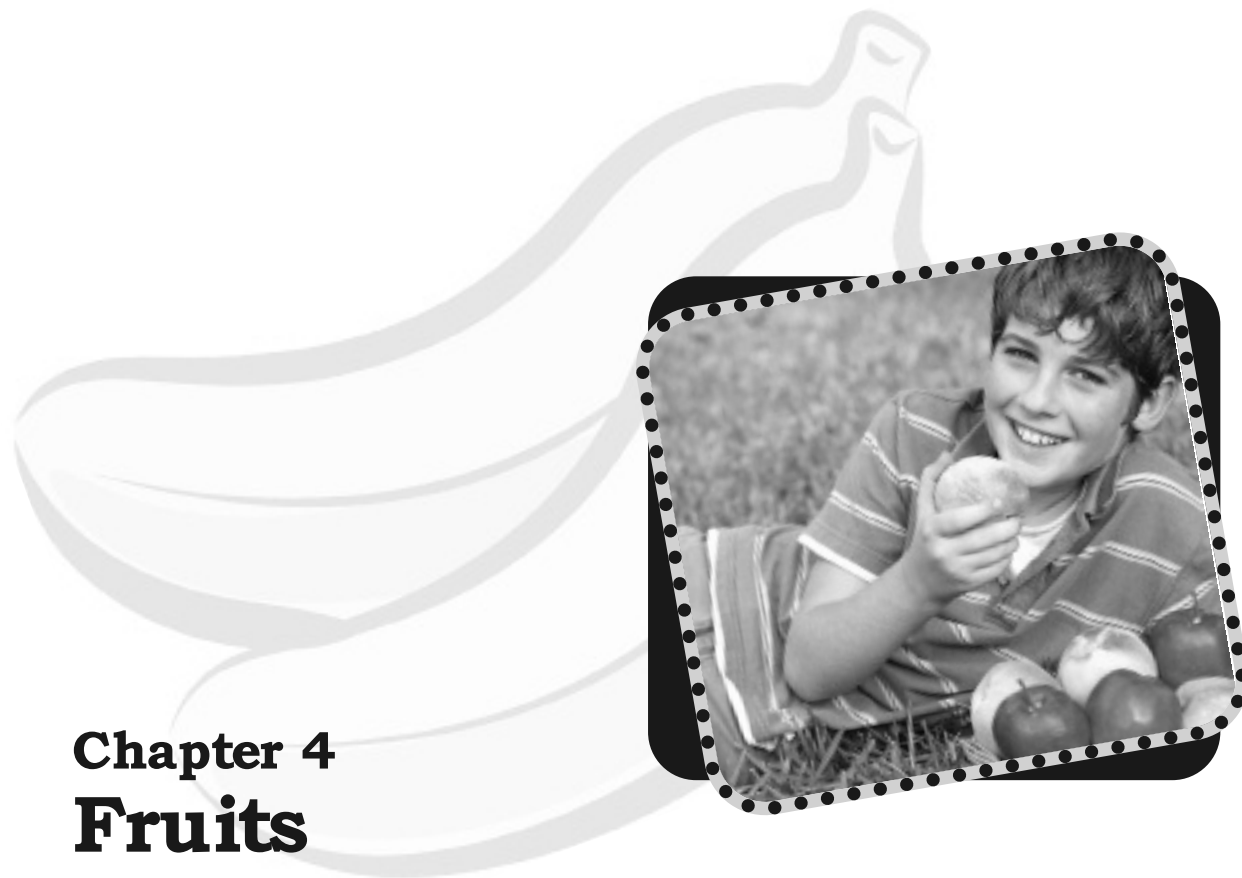




Chapter 4

Fruits

Fruits are sweet plant parts that we eat. There are many different groups of fruit. There are pomes, drupes, berries, melons and citrus fruits. Most Americans do not eat the variety or amount of fruits that they need for healthy living. For this reason, it is important to learn about the nutrition and science of fruits.

Enjoy the fruit follies!

Hands-On Lessons:

Fruit Groups 34

Pomes, Drupes, Berries, Melons and Citrus Fruit 35

Try this at Home: Fruity-licious Pops 37

Fruit Reactions 38

Browning 39

Fruit Salad 41

Try this at Home: Fruity Fusion 42

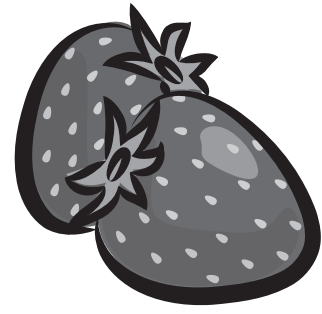
Perfect Prune 43

Plump Plums and Pit-less Prunes 44

Try this at Home: Prune-tastic Trail Mix 46

Proficiency Questions 47

Fruit Groups



Did you know there are many different types or groups of fruits?

Pomes, drupes, berries, melons and citrus fruits are all types or groups of fruits. All **pomes** hold their seeds in a little paper-like core. Apples and pears are both pomes. **Drupes** are fruits with a single seed inside a hard pit. Did you know when you eat apricots, cherries and coconuts you're eating drupes?

Berries are small fruits with lots of seeds. The seeds can be on the inside or outside of the fruit. Strawberry seeds cling to the outside, while blueberry seeds sit inside the fruit. Blueberries seeds are so tiny you might not even see or feel them. **Melons** like berries have many seeds, but their seeds are always on the inside. Melons are much bigger than berries. They have a tough outside layer called a rind. Watermelon and honeydew are both melons.

Have you ever seen a lemon tree? **Citrus fruits** like lemons and limes grow on trees. They have many sections inside a peel. You may find seeds in some or all of the sections. Other fruits, like tropical fruits don't seem to fit into any of these groups. Bananas, papayas, mangos and pineapples grow near the equator where it's hot and are called tropical fruits.

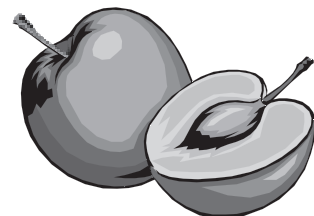
DOODLE BUGS

In the reading, underline the sentence that lists the different types of fruits.

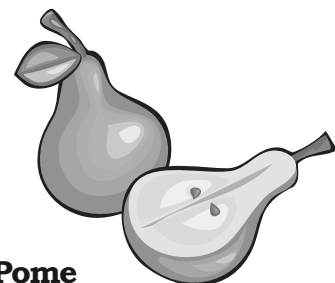
Circle an example of a drupe.

Draw a square around a berry.

Draw a melon below. (Show the seeds by drawing the melon cut in half.)



Drupe



Pome

SCIENTIFIC INQUIRY:

Pomes, Drupes, Berries, Melons & Citrus Fruit

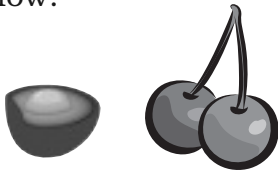
Your group will need:

- | | |
|---|--|
| 1 tray (cafeteria style) | 1 slice of cantaloupe (with rind & seeds) |
| 3-4 hand lenses | 1 clementine (cut in half or partially peeled) |
| 1 package of colored pencils | 1 peach cut in half (with pit) |
| 1 apple cut in half (with core & seeds) | 1 strawberry cut in half |

Start by matching the fruit group with its definition. In the blank, beside each fruit group, write the letter of the definition that best matches.

- | | |
|-----------------------------|--|
| 1. ____ Drupe | A. Fruit with a paper-like core with seeds |
| 2. ____ Pome | B. Large fruit with lots of seeds and a rind |
| 3. ____ Berry | C. Fruit with many sections inside a peel |
| 4. ____ Melon | D. Fruit with a single pit |
| 5. ____ Citrus Fruit | E. Small fruit with lots of seeds |

Use the hand lenses to study your five fruits. Then draw a detailed picture of each fruit in the squares below. Be sure to show the seeds and both the inside and outside of the fruit. See the example for Cherry below.



Example: Cherry

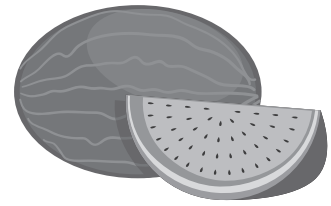
Apple

Cantaloupe

Clementine

Peach

Strawberry



SCIENTIFIC INQUIRY:

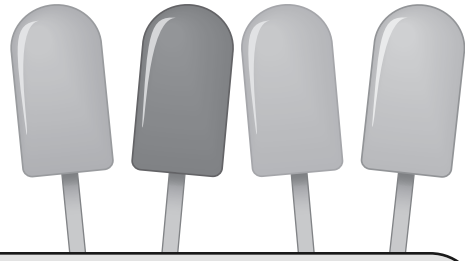
Pomes, Drupes, Berries, Melons & Citrus Fruit

In the table below, state the facts about fruits such as the number and location of seeds and outside and inside color. Then decide if the fruit is a pome, drupe, berry, melon or citrus fruit. See the example for cherry.

Fruit Facts

Fruit	# of Seeds/Pits & Location	Color of Fruit on the Inside & Outside	Group Name (pome, drupe, berry berry, melon, citrus fruit)
Cherry	1 pit in the center of the fruit	Outside: bright red Inside: greenish	Drupe
Apple		Outside: Inside:	
Cantaloupe		Outside: Inside:	
Clementine		Outside: Inside:	
Peach		Outside: Inside:	
Strawberry		Outside: Inside:	

TRY THIS AT HOME: **Fruity-licious Pops**



You will need:

PREP TIME: 15 minutes

12-ounce can frozen orange juice concentrate, thawed
15-ounce can peach slices, un-drained (canned in 100% fruit juice)
8-ounce can crushed pineapple, un-drained (canned in 100% fruit juice)
15-ounce can pear slices, drained (Lite or canned in 100% fruit juice)
1 banana, cut into chunks
1 cup raspberries or strawberries
Help from an adult

Have fun making this fruity frozen treat!

1. Pour orange juice concentrate, peach slices and pineapple into your blender.
2. Add drained pear slices, banana chunks and berries.
3. Blend until large fruit chunks disappear.
4. Spoon into freezer pops or into disposable 6-ounce cups. Fill almost to the top.
5. If using freezer pops, insert stick and seal lid. If using cups, place a wooden popsicle stick in the middle of the cup.
6. Place cups on a cookie tray and freeze overnight.
7. Let thaw 5 minutes then remove pops from freezer pops or cups.
8. Serve and enjoy!

SERVING SIZE: 6 ounces

Fun Fact

When buying canned fruit, choose fruit canned in 100% fruit juice or water rather than heavy syrup. You'll get the same amount of nutrients with fewer calories. If you already have fruit packed in syrup, rinse it with water before eating. To be healthy, eat 1 1/2 cups of fruit every day.

Fruit Reactions

Did you know some fruits will quickly turn brown when they are cut open?

Some fruits quickly turn brown after they are cut. Apples seem to turn brown almost as soon as they are cut. The cut tissue or inside of the apple turns brown because of oxygen in the air. Before an apple is cut oxygen can't get inside the fruit. Once the apple's skin is cut and air gets inside, a chemical reaction begins. A substance in the apple's tissue called ***phenolase*** mixes with oxygen in the air. Together, the phenolase and oxygen make the apple's tissue turn brown. Bananas, peaches and pears also quickly turn brown after they are cut.

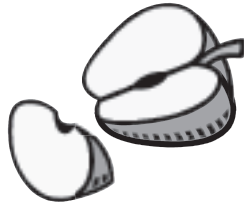
Phenolase

+

Oxygen

=

Browning



Nobody likes to eat brown fruit. Luckily, there are a few ways to keep cut apples, bananas, peaches and other fruits from turning brown. Today, you will learn some easy ways to keep your cut fruit looking fresh.

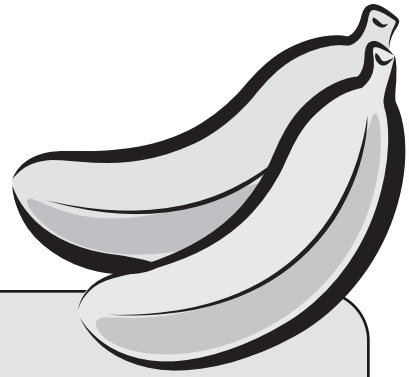
DOODLE BUGS

In the reading, circle two substances that mix to turn fruit brown.

Draw a picture below of the chemical reaction that happens when you peel a banana.

How can you stop fruit from turning brown after it has been cut open? Explain your idea.

SCIENTIFIC INQUIRY: **Browning**



Your group will need:

- | | |
|--|-------------------------------|
| 1 cutting board or tray | 1 set measuring spoons |
| 1 table knife | 1 spoon |
| 1 small plate | 1 plate for each group member |
| Group B: 1 tablespoon sugar | 1 banana |
| Group C: 1 tablespoon lemon juice | |
| Group D: 1/2 teaspoon cream of tartar & 1 teaspoon water | |

Group A: Plain

1. Peel your banana. Place the banana on your cutting board or tray.
2. Use a table knife to slice your banana into 12-14 pieces. Then cut each slice in half.
3. Put all of the pieces on a small plate. Leave the plate uncovered.
4. Wait 15 minutes.

Group B: Sugar

1. Peel your banana. Place the banana on your cutting board or tray.
2. Use a table knife to slice your banana into 12-14 pieces. Then cut each slice in half.
3. Put all of the pieces on a small plate. Use a spoon to sprinkle the banana pieces with sugar. Gently stir.
4. Wait 15 minutes.

Group C: Lemon juice

1. Peel your banana. Place the banana on your cutting board or tray.
2. Use a table knife to slice your banana into 12-14 pieces. Then cut each slice in half.
3. Put all of the pieces on a small plate.
4. Squirt each banana piece with lemon juice.
5. Wait 15 minutes.

Group D: Cream of tartar

1. Put 1/2 teaspoon of cream of tartar and 1 teaspoon of water on a plate.
2. Use a spoon to mix the cream of tartar and water.
3. Peel your banana. Place the banana on your cutting board or tray.

SCIENTIFIC INQUIRY:

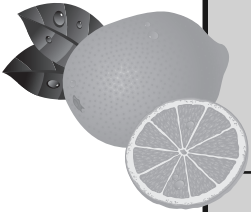
Browning (continued)

4. Use a table knife to slice your banana into 12-14 pieces. Then cut each slice in half.
5. Put all of the pieces on the plate.
6. Use a spoon to gently stir the bananas and cream of tartar mixture.
7. Wait 15 minutes.

After 15 minutes, your teacher will put a piece of each group's banana on your plate. Study the color of each piece. Then taste all four pieces. Share what you learned by filling in the table below. Circle the face that matches how well you liked the appearance and taste.

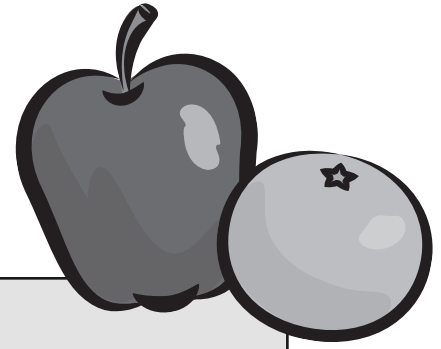
Browning Reactions

Group	Appearance (list the color)	Taste (sour, sweet or bitter)	Was browning stopped? Circle yes or no, and explain.
Plain: Group A	  	  	Yes No Why:
Sugar: Group B	  	  	Yes No Why:
Lemon juice: Group C	  	  	Yes No Why:
Cream of tartar: Group D	  	  	Yes No Why:



What is the best way to keep your bananas from turning brown?
(Explain why.)

WHILE YOU WAIT: **Fruit Salad**



Your class will need:

Large bowl	15-ounce can of pineapples (un-drained)
Pairing knife	2 clementines peeled & sectioned
Large spoon	1 1/4 cups red seedless grapes
1 set dry measuring cups	1 apple, cored & diced
24 small bowls or cups	1 banana, peeled & sliced

Have you ever seen an orange turn brown? Unlike apples and bananas, citrus fruits and pineapple do not turn brown when cut. Oranges, lemons and pineapples are so acidic they stop the chemical reaction. Oxygen from air cannot mix with the phenolase. You can add citrus fruits to fruit salad to keep apples and bananas looking fresh. Let's try making fruit salad!

Directions:

1. Pour the pineapples into a large bowl.
2. Wash the fresh fruit.
3. Peel and section the clementines and add to the large bowl.
4. Measure the grapes. Add them to the large bowl and stir with a large spoon.
5. Cut the apples and bananas. Add them to the large bowl and stir.

Serve fruit in small bowls or cups. Enjoy eating the fruit salad!

1. Did your banana and apple pieces brown? Yes No
Why or why not?

2. Which ingredients are kitchen acids?

TRY THIS AT HOME:

Fruity Fusion

You will need:

PREP TIME: 10 minutes

21-ounce can instant peach pie filling

16-ounce can fruit cocktail, drained (canned in 100% fruit juice)

20-ounce can pineapple tidbits, drained (canned in 100% fruit juice)

11-ounce can mandarin oranges, drained (canned in 100% fruit juice)

1 cup apples, chopped

1 medium banana, sliced

3/4 cup seedless grapes
(may cut in half)

1/2 cup miniature marshmallows
Help from an adult

What's your favorite fruit?

1. Pour peach pie filling, fruit cocktail, pineapple tidbits and mandarin oranges into a large bowl.
2. Stir in chopped apples and grapes.
3. Sir bananas and marshmallows in just before serving.
4. Enjoy!

SERVING SIZE: 1/2 cup (serves 24)

Fun Fact

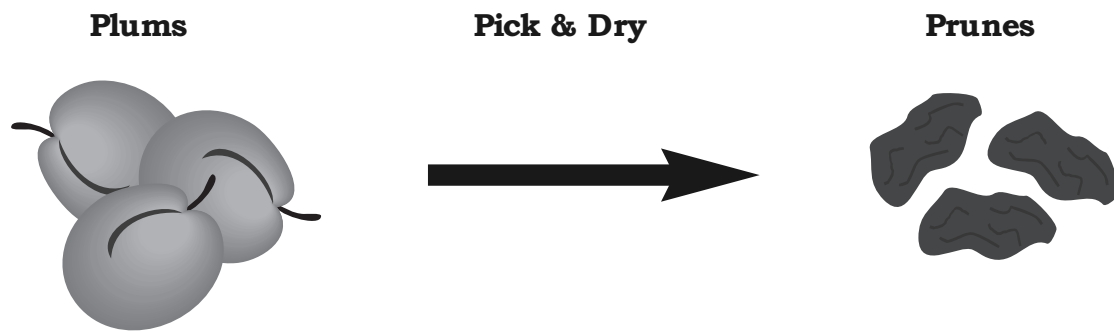
When making fruit salad, mix apples and bananas with citrus fruits like oranges. The acidic citrus fruits will keep the apples and bananas from turning dark. In addition, you'll get extra nutrients like vitamin C from the citrus fruits. Adding lemon juice is another way to keep the apples and bananas from turning brown.



Perfect Prune

Did you know prunes are dried plums?

Prunes are really dried plums just like raisins are dried grapes. Farmers pick juicy purple plums from plum trees in the late summer. The plums are placed on huge racks to dry. As the plums dry, they wrinkle up. When completely dry, they look and taste like big black raisins. These wrinkled dry plums are called prunes or “dried plums.”



California is the world’s largest producer of prunes. No other place grows so many plums to dry and sell as prunes. In fact, 70% or 7 out of 10 packages of prunes in the world are filled with prunes produced in California. Most prunes are sold with their pits removed. This makes them easy to eat. Not only do prunes taste good, but they are really good for you. Prunes are full of healthy nutrients like potassium, vitamin A, magnesium and iron. Prunes are also high in fiber, which helps keep your intestines clean and healthy.

DOODLE BUGS

In the reading, circle the name of another dried fruit that looks and tastes like a little prune.

Tell how a plum becomes a prune.

Underline the state that is the largest producer of prunes in the world.

Draw a box around four important nutrients found in prunes.

SCIENTIFIC INQUIRY:

Plump Plums and Pit-less Prunes

You will need:

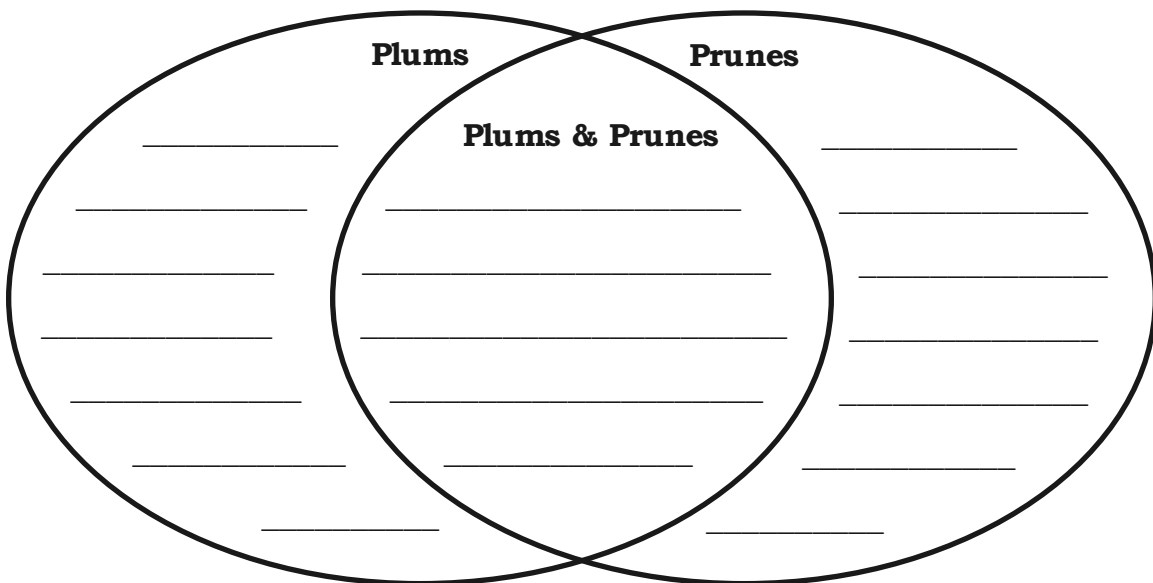
1 plate
1 napkin
1 hand lens

1 prune
1 plum piece

Use your hand lens to study the inside and outside of your prune and plum piece. Compare the color, look, texture (feel) and taste.

Venn Diagram

Write details that tell how the prune and plum are alike where the circles overlap. Write details that tell how the prune and plum are different in the outer circles. Use descriptive words like red, shiny, smooth, hard and tart.



Circle your answer:

1. Which did you like best?

Plum

Prune

Why?

2. Would you eat a prune again?

Yes

No

Why or why not?

3. Which fruit group does the plum belong in?

Clue: Prunes are dried plums and plums have pits.

Pome

Drupe

Berry

Melon

Citrus Fruit

Human Graph:

The two different names for prunes are “Prunes” and “Dried Plums.” Line up behind the name that you like best. Line up behind the “Not Sure” sign if you can’t decide which name you like best. Then color in the chart below to show what your class thinks.

Students’ Favorite Name for Prunes



TRY THIS AT HOME:

Prune-tastic Trail Mix

You will need:

PREP TIME: 10 minutes

- 1/2 cup prunes (dried plums)
- 1/2 cup dried apricots or dried apple slices
- 1/4 cup raisins
- 1 1/2 cups sunflower seeds
- 1 cup almonds or unsalted dry roasted peanuts
- Help from an adult

Want an easy snack for your next hike or bike ride?

1. Chop prunes and dried apricots or dried apple slices into smaller pieces with help from an adult.
2. Add prunes, apricots or dried apples, raisins, sunflower seeds and almonds to a medium bowl.
3. Mix and serve.

SERVING SIZE: 1/2 cup

Fun Fact

Dried fruit like prunes, apricots, apple slices, banana chips, raisins and cranberries are easy to pack for a handy snack. Dried fruit is full of nutrients and fiber. In fact, 1/2 cup of dried fruit counts as 1 whole cup of fruit on your way to 1 1/2 cups of fruit a day.



Proficiency Questions

Circle the best answer:

- 1. Which kind of fruit has a pit?**
 - a. pome
 - b. drupe
 - c. berry
 - d. citrus fruit

- 2. Which fruit belongs in the melon group?**
 - a. an apple
 - b. a peach
 - c. a blueberry
 - d. a cantaloupe

- 3. What makes apples and bananas brown when they are cut?**
 - a. chemical reaction
 - b. chemical connection
 - c. chain connection
 - d. all of the above

- 4. What is the best way to keep cut banana slices from browning?**
 - a. leave them uncovered on the counter
 - b. place them in the refrigerator
 - c. cook them in the oven
 - d. dip them in lemon juice

- 5. What is a dried plum called?**
 - a. a raisin
 - b. an apricot
 - c. a prune
 - d. a peach

- 6. What state is the largest producer of prunes?**
 - a. Ohio
 - b. Arizona
 - c. California
 - d. North Carolina