



# FOOD Fiestas

## "Sense" - Sational Food

### Leader Notes

#### Target Audience

- Third grade students
- Designed for use in the classroom or non-formal group settings

#### Skill Integration

- Science: biology
- Conceptual thinking

#### Physical Arrangements

- A table for food items
- Divide students into teams of two

#### Assistance

- Two adult volunteers

#### Material

- Three-ounce paper cups
- Blindfold or scarf for each team of two
- Napkins
- Orange juice
- Apple juice
- Grape juice
- White grape juice
- Cranberry juice
- Tray
- Sensational Food poster from Team Nutrition

### Objectives

Participants will learn to appreciate new foods by utilizing their senses of taste, smell and sight. Participants will understand the connection between the senses of taste and smell and how they work together.

### Background

Our five senses — sight, hearing, smell, taste and touch — are at work all day. They help us appreciate the sounds of our neighborhoods, the colors of the sky and the foods we eat. Food appeals to all our senses. Whether we enjoy a particular food depends on its taste as well as its aroma, its appearance, its temperature and even its texture and sound when we take a bite! All of these factors play an important role in helping us learn to appreciate foods that are new to us!

When we taste a food, we also smell it. This is due to the structure of the mouth and the nasal cavity behind the nose. "Taste buds" on the tongue are responsible for what we taste, while organs of smell are situated in the nasal cavity.

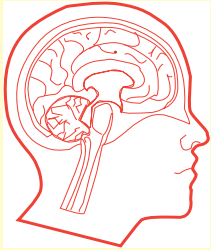
We detect smells in the air breathed in or sniffed by the nose. When we are eating, however, microscopic particles of food, or food substances that have been dissolved in the droplets of water vapor from the moist saliva, float in the air within the mouth and throat. This air, coupled with the flavor-producing particles it contains, rises from the mouth through the gap behind the soft palate and into the nasal cavity. There it stimulates the organs of smell. As the senses of taste and smell work together when we eat and drink, the brain registers a single sensation.





- Garbage can & bags
- Pencils for all participants
- Answer sheet A for all participants
- Answer sheet B for all participants
- “Tasty” Handout
- “Our Five Senses” WordSearch Handout

## Critical Thinking



Have you ever refused to taste a new food because you did not like the way it looks? Which food did you refuse to taste? Did you try it later? Did you like it?

Think of at least one food you have learned to like. How did you learn to like it?

When you smell certain foods, does it remind you of a special place or time? Why?

Can you remember how one of your favorite places “smells?”

## Additional Resources

### Internet

Neuroscience For Kids. The Senses:  
<http://faculty.washington.edu/chudler/chsense.html>

The Franklin Institute online  
<http://www.fi.edu/qa97/me11/me11.html>

Taste and smell are defined as primitive senses, which act on parts of the brain responsible for our most basic instincts — hunger, thirst and fear. Taste and smell can also have powerful emotional effects, awakening long-forgotten memories or even causing a change in mood.

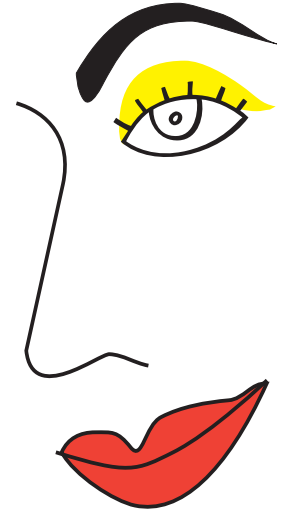
The sense of taste is better understood than the sense of smell. It is known that we can identify four basic tastes — sweet, sour, salty and bitter. All flavors are made up of some combination of these four.

Each taste is measured in different areas of the mouth. The taste buds on the tip of the tongue register sweet and salty. A sour taste is identified on the sides of the tongue, and bitterness is measured at the back of the tongue. This is the reason why we quickly taste sugar or salt when we put foods into our mouths, but get a bitter “aftertaste” only as we swallow.

Taste can be affected by other sensory properties of food and drink. The temperature of the food has a major impact on taste. Warm drinks taste sweeter than cool drinks, and bitterness is increased by coldness.

Each person has his/her own degree of sensitivity concerning taste. Some people can detect each individual ingredient in a recipe, while others detect only the overall blend of flavors. Also, what tastes appealing to one person may or may not appeal to someone else! This explains why one person may really like a certain food or recipe while another person does not care for it at all.

Using the senses to choose a variety of flavors, textures, smells and colors of food makes eating more fun and enjoyable for people of all ages. It also expands our appreciation for a wider variety of foods.



## Internet (continued)

Howard Hughes Medical Institute. Seeing, Hearing and Smelling the World. (Teacher Resource)  
[www.hhmi.org/senses/](http://www.hhmi.org/senses/)



## Books

*My Five Senses.* (Let's Read and Find Out Books). Illustrated by Aliki. Reading level: ages 4-8. Explains the senses in the simplest of terms and how we use them. August, 1990.

*Taste (The Five Senses).* Maria Rius, Jose Maria Parramon, and J.J. Puig. Text and illustrations present things that taste sweet, sour, salty, delicious and terrible. 1988.

*How Do I Know It's Yucky? And Other Questions About the Senses.* Sharon Cromwell, Richard Smolinski, Jr., Feb., 1998.

*Eating and Tasting.* Henry Pluckrose. Ages 4-8.

*Sense-Abilities: Fun Ways to Explore the Senses.* Michelle O'Brien-Palmer. Activities for children ages 4-8. Sept., 1998.

*How To Really Fool Yourself: Illusions For All Your Senses.* Vicki Cobb, Jessica Wolk-Stanley. Ages 9-12. May, 1999.

## What the Research Says...

Numerous research studies have been conducted to determine how the appearance of foods affects the perceived taste of food. These studies show the perceived

## Activity

One adult will be needed to pour juices out of sight of the students. The second adult will administer the test to the students.

One partner will be a part of Test Group A and test the first set of juices. The second partner will be a part of Test Group B and test the second set of juices.

Provide Test Group A with a blindfold; provide Test Group B with a pencil and the Test Group A answer sheet.

## Procedure

1. The first test involves taste only. Test Group A puts on blindfolds while Test Group B picks up the first juice sample. The tasters hold their noses closed, taste a small sip of juice and identify the juice (**orange juice**). The recorders write the responses on Test A answer sheet for #1.
2. The second test involves taste and smell, without using sight. The tasters leave the blindfolds on, but do not hold their noses closed. Using #2 juice (**cranberry**), the tasters sample a small amount of juice and the recorders write the taster's responses on Test A answer sheet for #2.
3. The third test focuses only on smell. The tasters keep on their blindfolds, and smell juice #3 (**apple**) and identify it. The recorder writes the responses on the Test A answer sheet for #3.
4. The fourth test utilizes only sight. The taster takes off his or her blindfold and looks at the juice (**white grape juice**) and identifies it. The recorder writes the responses on Test A answer Sheet for #4.
5. PARTNERS SWITCH ROLES
6. Do test one with Test Group B blindfolded and holding their noses. Taste juice (**purple grape juice**). Recorder writes responses on Test B answer sheet — #1.





flavor of food and drinks can be influenced by many factors, including the way it looks, smells and feels.

In a 1995 study (*Journal of Food Science* 60, 364-368, 1995) focusing on how consumer age affects response to sensory characteristics of flavored beverages, color was found to affect flavor intensity, especially in older consumers. Subjects reported that drinks with more red color tasted stronger. Color also affected the overall acceptability of the drink.

Younger subjects relied on the color of the drink more than older subjects to make a decision about its taste in a 1995 study (*Dev. Psychobiology*, 28, 239-246, 1995).

The ability of teens to identify raspberry and orange flavors correctly was reduced in uncolored and “odd-colored” drink samples in a research project conducted in 1993 (*Journal of Food Science*, 58, 810-812, 1993).

Why is it important to know that color may influence the taste of food? These studies are useful to scientists who are studying how vision interacts with taste and smell. It seems likely that people learn and become familiar with specific combinations of colors and tastes. These learned associations might alter our perceptions and create expectations about how food “should” smell and taste. The physical mechanisms that underlie these interactions are not known.

Of course, the food and beverage industry leads many research efforts in learning more about what makes a food or beverage more acceptable to the public. Their findings are put to the test every time a new food product hits the grocery shelves. One example of this is the recent marketing of “green” ketchup, perceived to be appealing to young children.

7. Complete test two with Test Group B. Tasters leave blindfolds on but do not hold their noses. Taste juice #2 (**apple juice**). Recorder writes response on Test B answer sheet — #2.

8. For the third test, tasters leave on their blindfolds and only smell the juice (**cranberry**). Recorder writes the responses on Test B answer sheet — #3.

9. The fourth test utilizes only sight. The B Test Group only looks at the juice (**white grape juice**). Recorder writes the response on Test B answer sheet — #4.

## Activity Summary

Each student will have his or her own answer sheet. The group leader provides the correct answers and students record it. Students check their own results.

## Discussion Question Follow-up

1. Which students were able to identify the juice when they were blindfolded and holding their nose?
2. Who could identify the juice by smell alone?
3. Who could identify the juice by sight alone?

## Follow-up Activities

Providing activities for follow-up lessons reinforce learning. Consider leaving the two activities below for use as teacher follow-up to this lesson.

- a. “Tasty” — focuses on the four basic tastes.
- b. “Our Five Senses” — word search (answers provided).

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# Tasty!

How many different words can you think of to describe how food tastes?

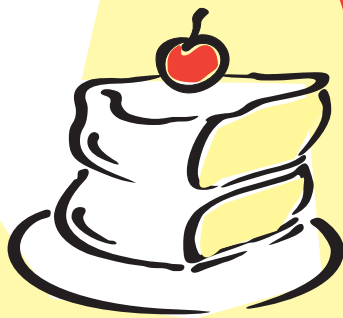
Examples: delicious, yummy, scrumptious, mouth-watering, delectable, wonderful, great, sweet, bland, yucky, terrible, stale, old, awful, sour, bitter, rotten

These are just a few of the words that can describe how foods taste! Many of the words can apply to smells as well as tastes! They can even describe smells! This is because smell and taste are often linked together and one definitely affects the other! There are four basic tastes: **SWEET, SOUR, SALTY AND BITTER.**

Match the correct taste with the each of the foods below:

\_\_\_\_\_

Like salt!



\_\_\_\_\_

Like a lemon!



\_\_\_\_\_

Like a piece of cake!



\_\_\_\_\_

Like a bad cup of coffee!





## Activity Sheet

# Tasty!

How many different words can you think of to describe how food tastes? List them here:

---

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Many of the words can apply to smells as well as tastes! They can even describe smells! This is because smell and taste are often linked together and one definitely affects the other!

There are four basic tastes: **SWEET, SOUR, SALTY AND BITTER.**

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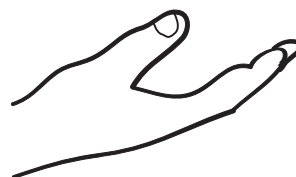
# Activity Sheet

## Our five Senses

Find and circle 10 words related to our senses. The first one is circled for you.

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | G | H | C | U | O | T | T | H | A | Q | G | E | I | V |
| I | N | B | T | W | T | Q | U | R | W | Y | F | N | F | I |
| U | I | Q | N | V | J | C | T | P | B | E | K | A | T | R |
| L | R | M | X | S | X | X | S | O | C | G | Z | Z | E | I |
| D | A | P | N | Y | N | Q | U | F | V | W | A | Z | B | T |
| C | E | Y | D | Z | H | S | S | E | N | S | E | S | E | L |
| S | H | F | U | Z | R | T | E | W | X | E | R | X | K | K |
| F | S | W | L | E | V | T | U | T | M | Y | T | R | J | R |
| L | I | N | G | S | A | D | S | O | O | E | T | S | F | L |
| R | G | N | F | S | I | R | U | U | M | Y | G | M | Q | M |
| D | I | B | T | I | A | G | H | H | B | G | I | E | D | Y |
| F | P | E | G | E | V | Z | H | K | G | S | A | L | S | P |
| A | A | Z | G | B | A | U | S | T | M | Y | V | L | C | T |
| A | F | R | F | C | Q | M | Z | S | J | A | J | T | A | S |
| I | A | Y | A | M | P | L | F | A | N | O | S | E | P | Q |

- EARS
- EYES
- FINGERS
- HEARING
- MOUTH
- NOSE
- SENSES
- SIGHT
- SMELL
- TASTE
- TOUCH





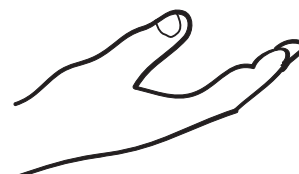
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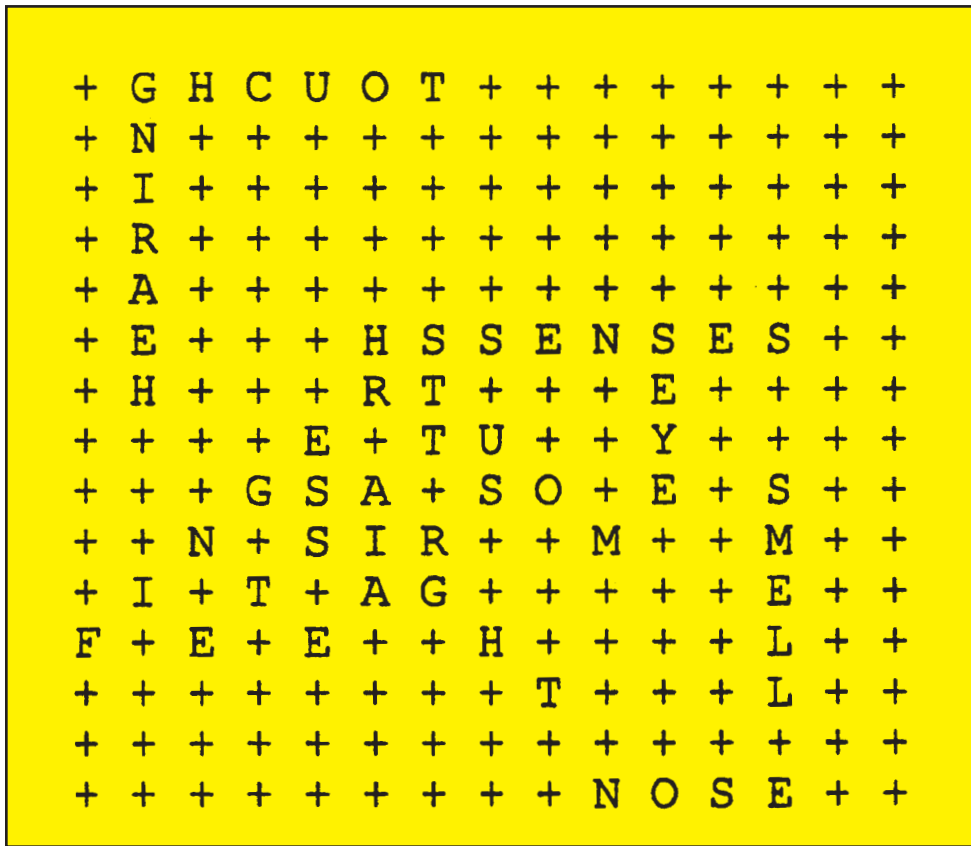
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | G | H | C | U | O | T | T | H | A | Q | G | E | I | V |
| I | N | B | T | W | T | Q | U | R | W | Y | F | N | F | I |
| U | I | Q | N | V | J | C | T | P | B | E | K | A | T | R |
| L | R | M | X | S | X | S | O | C | G | Z | Z | E | I |   |
| D | A | P | N | Y | N | Q | U | F | V | W | A | Z | B | T |
| C | E | Y | D | Z | H | S | S | E | N | S | E | S | E | L |
| S | H | F | U | Z | R | T | E | W | X | E | R | X | K | K |
| F | S | W | L | E | V | T | U | T | M | Y | T | R | J | R |
| L | I | N | G | S | A | D | S | O | O | E | T | S | F | L |
| R | G | N | F | S | I | R | U | U | M | Y | G | M | Q | M |
| D | I | B | T | I | A | G | H | H | B | G | I | E | D | Y |
| F | P | E | G | E | V | Z | H | K | G | S | A | L | S | P |
| A | A | Z | G | B | A | U | S | T | M | Y | V | L | C | T |
| A | F | R | F | C | Q | M | Z | S | J | A | J | T | A | S |
| I | A | Y | A | M | P | L | F | A | N | O | S | E | P | Q |

- EARS
- EYES
- FINGERS
- HEARING
- MOUTH
- NOSE
- SENSES
- SIGHT
- SMELL
- TASTE
- TOUCH





## Solution



(Over, down, direction)

EARS (5,12, NE)

EYES (11, 9, N)

FINGERS (1,12, NE)

HEARING (2, 7, N)

MOUTH (10, 10, NW)

NOSE (10, 15, E)

SENSES (8, 6, E)

SIGHT (5, 9, SE)

SMELL (13, 9, S)

TASTE (7, 8, SW)

TOUCH (7, 1, W)





# Activity Sheet

Food Fiesta  
Answers

## TEST A

| Sample Number      | Student Answer | Actual |
|--------------------|----------------|--------|
| Taste #1           |                |        |
| Taste and smell #2 |                |        |
| Smell only #3      |                |        |
| Sight only #4      |                |        |





# Activity Sheet

## Food Fiesta Answers

### TEST A

| Sample Number      | Student Answer | Actual |
|--------------------|----------------|--------|
| Taste #1           |                |        |
| Taste and smell #2 |                |        |
| Smell only #3      |                |        |
| Sight only #4      |                |        |



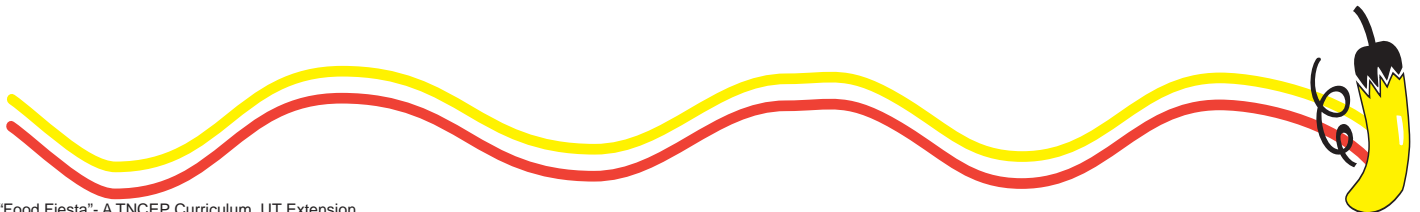


# Activity Sheet

Food Fiesta  
Answers

## TEST B

| Sample Number      | Student Answer | Actual |
|--------------------|----------------|--------|
| Taste #1           |                |        |
| Taste and smell #2 |                |        |
| Smell only #3      |                |        |
| Sight only #4      |                |        |





# Activity Sheet

Food Fiesta  
Answers

## TEST B

| Sample Number      | Student Answer | Actual |
|--------------------|----------------|--------|
| Taste #1           |                |        |
| Taste and smell #2 |                |        |
| Smell only #3      |                |        |
| Sight only #4      |                |        |

