

# Our Book of the Senses

## A Research Center

The purpose of this center is to give students an experiential base as they discover the intricacies of their own senses. They will use their scientific skills on themselves as they “study the studiers.” The result of the study will be a book about the senses prepared by each of the cooperative groups.

Prepare a research center in the classroom. Be sure to include a wealth of reading materials on the body and the senses. Give your students homework credit or some other reinforcement if they bring in books from the library. Make sure there is a wide range in the reading levels.

The center should contain copies of the following pages which are needed in the preparation of each group’s book about the senses.

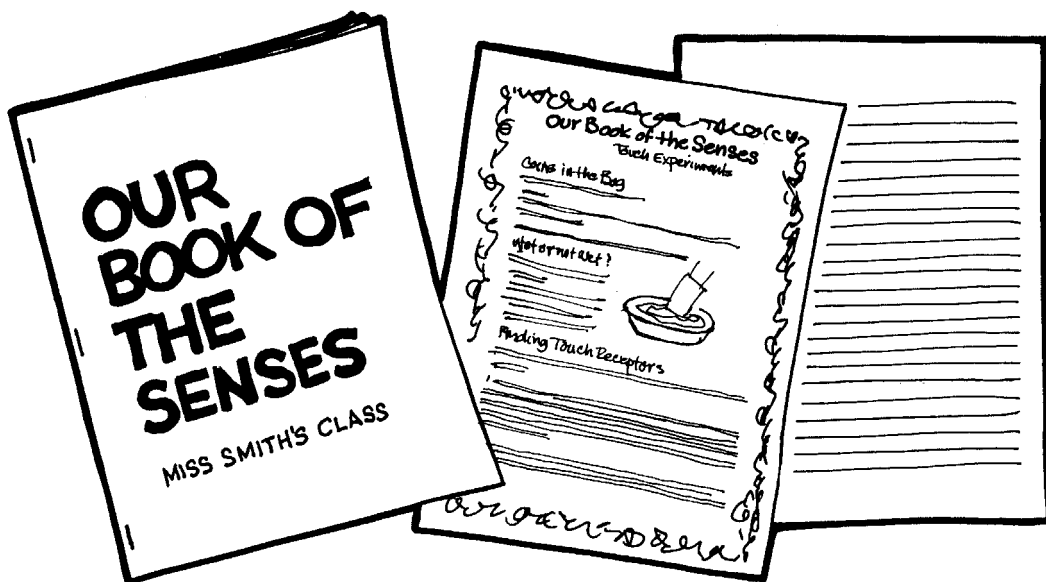
## Group Activities for Our Book of the Senses

The activities on the following pages provide students with a variety of experiences involving the senses. Students should work in small groups, with each group member accepting responsibility for a task (supplier, recorder, reporter, etc.).

Reproduce enough copies of the following pages to provide each group with a set. Provide each group with folders or large envelopes in which to keep activity sheets and research material.

Set up materials needed for the experiments in a specific area of the classroom. This could be a science center or a group of experiment stations. The experiments call for some materials not supplied by the research center. Make procuring these materials the responsibility of the students.

When all activities from the following pages have been completed by a group, have the members compile the materials and information into a book, titled *Our Book of the Senses*. Ask groups to share their experiences with the class. You may wish to invite other classes or parents to a presentation of some of the activities in this unit.



# Our Book of the Senses

## How to Make Your Book

1. Complete all three experiments and experiment report for one sense. (You may choose which one.)
2. Complete at least one experiment and experiment report sheet for the other four senses. (You may do more than one if you choose.)
3. Complete a Sensory Research sheet for each sense. Research and complete the organ research cards for the sense you choose to concentrate on.
4. Devote one whole page to the senses and their jobs.
5. Devote one page to the fun you have with the senses. Each member of the group should write and/or draw to contribute to the page.
6. Organize the book on pages the teacher will provide and present the book to the class when it is done.

## Materials You Will Need

- items listed in the “What You Need” sections
- markers and crayons
- research books on the senses
- copies of experiments (You will need multiple copies of some record keeping pages.)
- a method of binding your book (stapler, brads, book binder)
- tape and glue
- a folder to store your work

Each experiment contains a description of any additional materials you will need to perform it.

# Our Book of the Senses *(cont.)*

## Sight Experiments

### Making a Thaumatrope

**What you need:** thaumatrope paper pattern (last page of this packet), tagboard, marker, pencil with eraser, pushpin

**What to do:**

1. Trace the thaumatrope pattern on a piece of tagboard. Cut out the square on the tagboard.
2. Turn the square so that a corner points toward you. Draw a bottle in the center.
3. Turn the square over. In the center, draw a ship.
4. Using a pushpin, attach the corner below the ship to the side of the eraser. Put the pencil between your hands and rub your hands back and forth so that the square spins. Do you see the ship in the bottle?

### Your Dominant Eye

Did you know that one of your eyes is stronger than the other? Here is how to test your own eye dominance.



**What to do:**

1. With both eyes open, focus on some object about 20 feet (6 meters) away. Put your index finger up so that it covers the object.
2. Next, close your left eye. Did your finger seem to move? If it did, then your left eye is dominant.
3. Now open your left eye and close your right eye. Did your finger seem to move? If it did, then your right eye is dominant. (The dominant eye does most of the work when you are looking at something. More information goes to your brain through that eye.)

### Internet Extenders

#### Blind Spot

<http://serendip.brynmawr.edu/bb/blindspot1.html>

**Activity Summary:** After they complete the activities on this page, have students visit this Web site to learn about the blind spot in the eye. Let them read about the blind spot and then use the “test” to find where it is located and how big it is.

#### How to Dissect a Cow’s Eye

[http://www.exploratorium.edu/learning\\_studio/cow\\_eye/index.html](http://www.exploratorium.edu/learning_studio/cow_eye/index.html)

**Activity Summary:** The teacher should follow these step-by-step directions from the Exploratorium for dissecting a cow’s eye for the students. Show them the optic nerve, and point out where the blind spot would occur (at the junction of the optic nerve inside the eyeball).

# Our Book of the Senses *(cont.)*

## Hearing Experiments

### Which Direction?

What you need: blindfold, chair, meter stick, objects that make a variety of sounds (bell, wood, metal)

#### What to do:

1. Have one person sit blindfolded in the chair. Ask someone else to make sounds all around the person at various distances and volumes. Record how far away you were and where you were. (Think of the area around the person as a clock. Twelve o'clock is right in front of him/her, 3 o'clock is directly to the person's right, etc.) Have the person try to tell what object you used, what your position was, and how far away you were from him/her.
2. Have two people simultaneously make two different sounds in two different directions. Can the person identify both the object and the direction?

### Two Ears Are Better Than One

For this experiment you will need the same material as above plus ear plugs or cotton balls.

#### What to do:

1. This time have the blindfolded person plug one of his/her ears. Repeat the procedure as in the first experiment. How does having one ear plugged affect the person's ability to hear?
2. Move the plug to the other ear. Is one ear stronger? Note: Discard the cotton ball when one person has used it. Clean the ear plugs between uses.

### Traveling through the Bones

What you need: large metal serving fork, metal saucepan

#### What to do:

1. Strike the fork against the saucepan and hold it against your ear.
2. When the sound has almost gone, put the handle of the fork between your teeth and gently bite down. What happens?



# Our Book of the Senses *(cont.)*

## Touch Experiments

### Coins in the Bag

**What you need:** 20 pennies, one dime, paper bag

**What to do:**

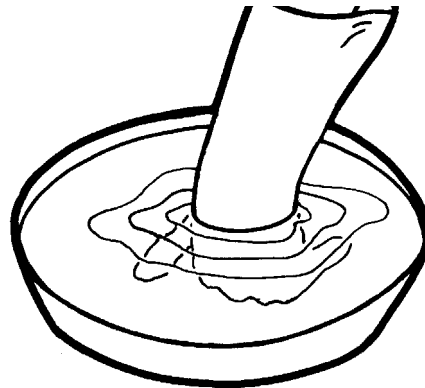
1. Put the dime and pennies in the bag. Give the bag to a member of the group. Give him/her thirty seconds to find the dime without looking in the bag.
2. Pass the bag around and have other group members do the same. Record results.

### Wet or Not Wet?

**What you need:** rubber gloves, bowl of ice water, bowl of warm water

**What to do:**

1. Put on the gloves. Now put your hand in the warm water. Do your hands feel wet?
2. Put your hands in the cold water. Do your hands feel wet?



### Finding Touch Receptors

**What you need:** Touch-O-Meter pattern (last page) cut out and pasted on tag board, two toothpicks, blindfold

**What to do:**

1. Stick one toothpick through the Touch-O-Meter at the 1 centimeter mark and the other toothpick at the 5 centimeter mark. Blindfold a friend. Place the Touch-O-Meter with toothpicks attached near the skin and GENTLY press the toothpicks simultaneously against his or her skin at the palm, back of hand, leg, and shoulder. Do not go near the eyes, nose, or ears. Does the person feel one or two pricks? If he/she feels one, it means that the touch receptors in that place in the body are farther apart. If he/she feels two, the touch receptors are closer together.
2. Try the activity with everyone in the group. Where are the most sensitive places? Move one toothpick so that the toothpicks are 4 centimeters apart. Which areas seemed to be the most sensitive? See if you can feel the pricks at only 1 centimeter apart.

# Our Book of the Senses *(cont.)*

## Taste Experiments

### Mapping the Tongue

What you need: tongue pattern from the last page, four small dishes, sugar, vinegar, salt, unsweetened grapefruit juice, cotton swab sticks, four colors of markers, water

#### What to do:

1. Dilute the sugar, vinegar, unsweetened grapefruit juice, and salt with water. Use the swab sticks to dab the liquids on different parts of your tongue. When someone tastes one of the basic tastes, use a marker to mark the place on the tongue pattern. Use all four tastes to find out where on the tongue you taste sour, sweet, salty, and bitter, in that order. Map everyone's tongue. Did the results turn out the same?

Note: Do not use the same swab for more than one taste or for more than one person. Rinse out your mouth between tastes.

### Mixing Toothpaste

What you need: orange juice, toothpaste, toothbrushes from home

#### What to do:

1. Brush your teeth for a minute and then quickly rinse out your mouth.
2. Now take a drink of orange juice. What do you notice?

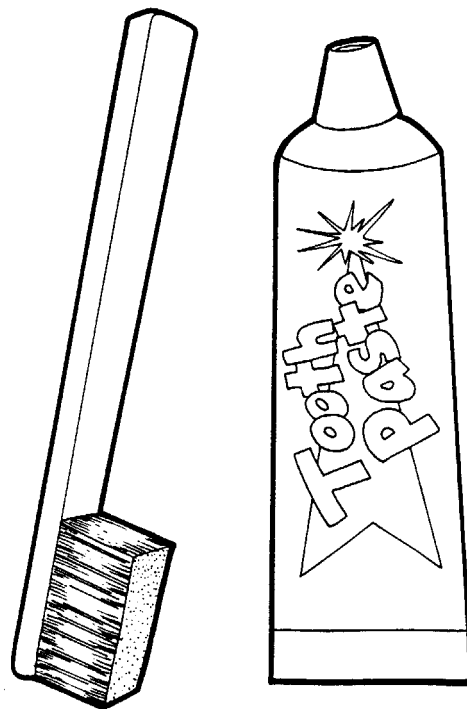
Note: Do NOT share toothbrushes.

### Water and Taste

What you need: paper towel, sugar

#### What to do:

1. Open your mouth and thoroughly dry out your tongue. Without putting your tongue back in your mouth, have someone sprinkle some sugar on your sweet spot. Do you taste it right away?
2. Now put your tongue back in your mouth and let your tongue get wet. Have someone sprinkle sugar on your sweet spot again. Do you taste it right away?



# Our Book of the Senses *(cont.)*

## Smell Experiments

### What's That Smell?

**What you need:** small containers, various items, each with a definite odor (cloves, garlic, flower petals, etc.), blindfold

**What to do:**

1. Collect 5 things to put in the containers. (An old photo film container would be big enough.)
2. Blindfold a member of another group and allow him/her to smell the container. Have him/her guess what it is. Identify which items were easy to identify and which were difficult. Record your results on the Experiment Report page.

### Smell and Taste

**What you need:** blindfold, potato slices, apple slices, nose clips (swimmers' nose clips would work the best)

**What to do:**

1. Blindfold and put nose clips on a member of the group. Feed him/her a slice of potato and a slice of apple. Can the person tell the difference?
2. As a variation, feed a member either two potato slices, one of each, or two apple slices. See if the member can identify what was given to him/her.



### Strong Smell/Weak Smell

**What you need:** containers as in first experiment, more items with definite odors.

**What to do:**

1. Divide the items into two unequal portions. Put the one portion in one container and the second in another.
2. Blindfold a member of the group. Have him/her smell the two containers. Can he or she tell which container has more of the item?

Group Members \_\_\_\_\_

# Experiment Report

**Directions:** As a group, record information about the experiments you completed. Use the box to illustrate some part of your experiment. Be prepared to discuss your results with the class.

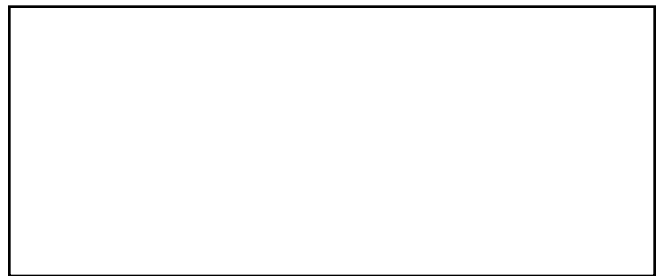
**Experiment title:** \_\_\_\_\_

**What we did:** \_\_\_\_\_

\_\_\_\_\_

**Conclusion:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



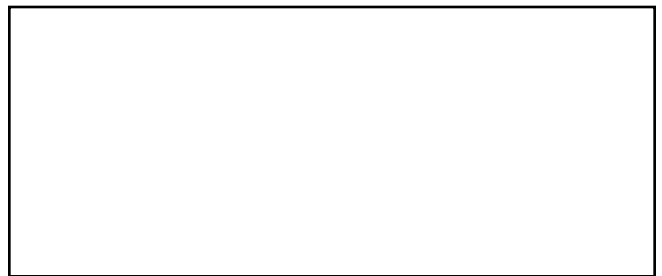
**Experiment title:** \_\_\_\_\_

**What we did:** \_\_\_\_\_

\_\_\_\_\_

**Conclusion:**

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\_\_\_\_\_  
\_\_\_\_\_



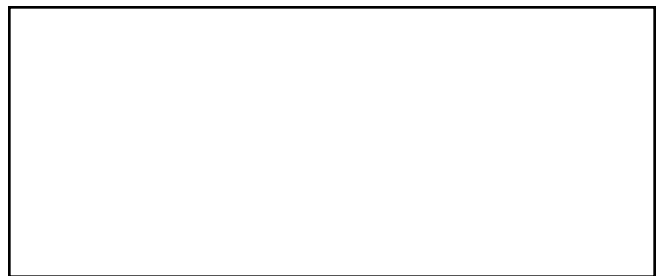
**Experiment title:** \_\_\_\_\_

**What we did:** \_\_\_\_\_

\_\_\_\_\_

**Conclusion:**

\_\_\_\_\_  
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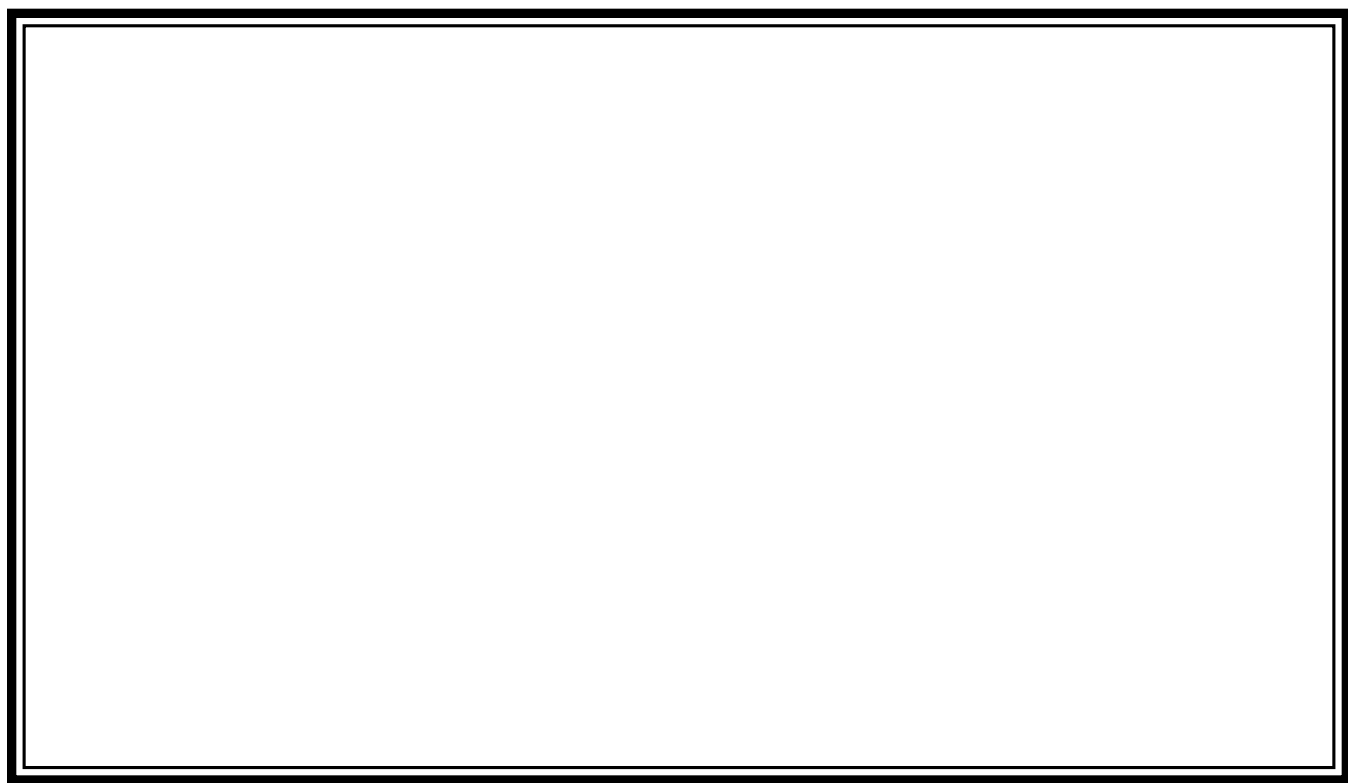


Group Members \_\_\_\_\_

# Sensory Research Sheet

Name of Sense: \_\_\_\_\_

Find a diagram of the main organs that help this sense do work. Draw a picture of the organs involved. Be sure to label the organs.



Write a brief description of how this sense works.

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Use the Organ Description activity page to write a description for each organ involved with the sense you have chosen.

Group Members \_\_\_\_\_

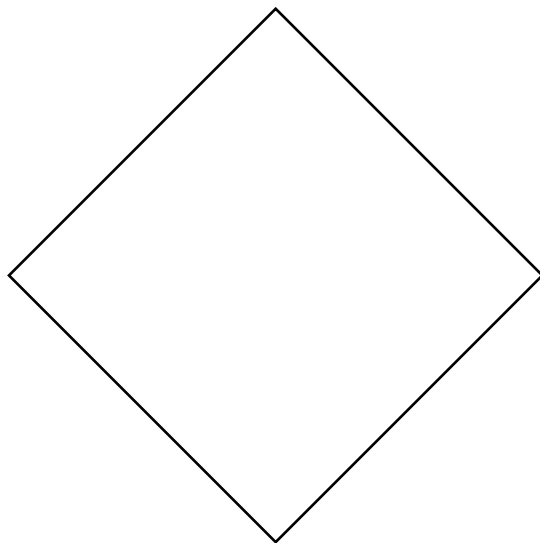
# Organ Description

Name of organ: _____ Location: _____ _____ Function(s) of organ: _____ _____ _____	Name of organ: _____ Location: _____ _____ Function(s) of organ: _____ _____ _____
Name of organ: _____ Location: _____ _____ Function(s) of organ: _____ _____ _____	Name of organ: _____ Location: _____ _____ Function(s) of organ: _____ _____ _____
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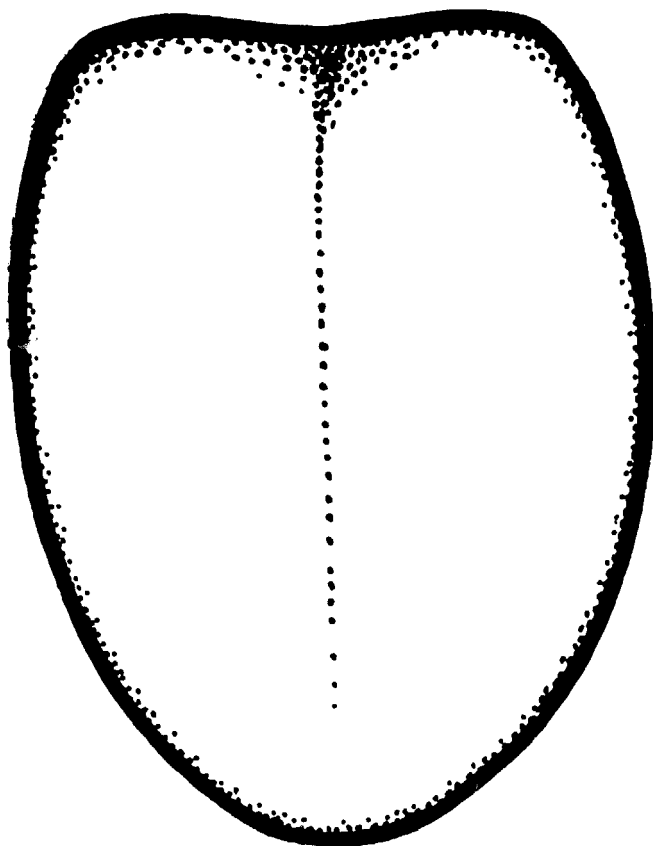
# Patterns for Group Experiments

Reproduce enough copies of the patterns for each group to use as they perform the experiments on the following pages.

## Thaumatrope Paper



## Tongue Pattern



## Touch-O-Meter

