

# SCENT BOXES

## MIDDLE SCHOOL LEVEL 1

Our nose plays a huge part in appetite, sensing danger, and is something that plays into every aspect of our lives. Let's experiment with our sense of smell with this project: Smell Boxes. The sensory neurons in our noses alert us when the molecules of a potent smell, like coffee or mint, is present. Those receptors send a message to the brain telling us what it is we are smelling.

### EDUCATIONAL STANDARDS:

#### NGSS CONNECTION:

**MS-LS1-8.** Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.

#### COMMON CORE CONNECTION: ELA/Literacy

**WHST.6-8.8** Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

#### DOK:

Level 1: Recall

Level 2: Concept

### MATERIALS NEEDED:

- ☐ Small boxes or jars
- ☐ Items with strong smells (eucalyptus, mint, cinnamon, orange peel, etc)

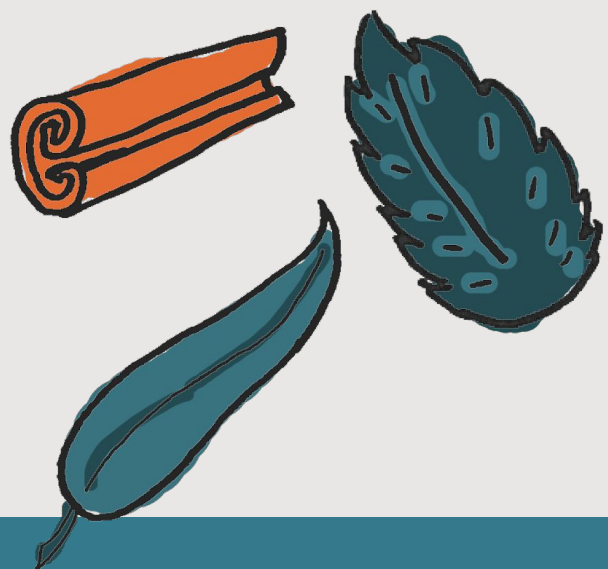
### DIRECTIONS:

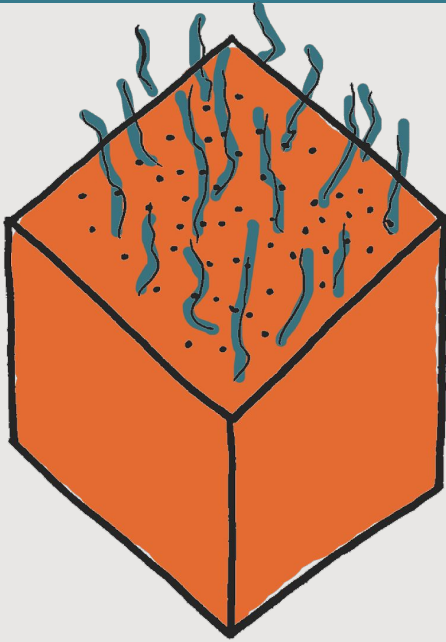
1. Fill the jars with different strong-smelling items and cap them.
2. Blindfold your students and have them smell different jars in an effort to identify the contents.

Simple right? Let's expand on this and make it more engaging for the students. Try splitting them into teams and have a prize ready for the winners, how about first choice of materials in the makerspace? Have one student blindfolded, and the others watching them guess, then switch students so everyone has a turn.

How about themes?

A fruit competition, followed by seasoning and spices, how about essential oils on a cotton ball?





### **OBJECTIVE:**

Students will be able to gather information about senses and their stimuli from various animals to interpret and synthesize that they send signals to the brain.

### **ESSENTIAL QUESTION:**

- How might different animals use their senses to gather and process their surroundings?



## **FUN FACTS**

- A. Did you know humans can smell at least one trillion distinct scents?**
- B. The largest perfume collector holds 900 bottles in his collection.**
- C. Perfumers, also known as Noses, have to successfully identify at least 250 different scents as part of their induction test to become fully-fledged perfumers.**

## ENGAGE / EXPLORE

### Engage:

1. Show students a video from PBS Deep Look
  - a. If your hands could smell, you'd be an octopus
2. Ask students questions
  - a. What are the purposes of the suckers on an octopus?
    - i. Grip
    - ii. Smell
    - iii. Taste
  - b. How are the suckers used for senses?
  - c. Where is the information gathered by the suckers processed? Why?

### Explore:

1. Perform the scent box activity with students
  - a. Have students smell a variety of objects and record their observations of the smells
    - i. They should record what their physical reaction (did they pull away? Did they move close? Did they say yuck?)
  - b. Have students share their reactions with their peers
    - i. Were the reactions similar? Different?
    - ii. How? Why?
  - c. Students try to synthesize the information
    - i. Why did I respond the way I did?
    - ii. What occurred in me as I smelled the object?
2. Evaluate
  - a. Synthesis of information of relation of senses to brain
  - b. Information is credible, accurate
  - c. Does provided evidence support the claim?
  - d. Is the evidence sufficient?

## EXPLAIN:

1. Teacher may read books to their students
  - a. The Five Senses (ISBN-13: 978-1433336768)
2. Students conduct research on senses online
3. Students should synthesize all the information to produce an explanation of the connection between an animal's senses and their brain.
4. Evaluate
  - a. Synthesis of information of relation of senses to brain
  - b. Information is credible, accurate
  - c. Does provided evidence support the claim
  - d. Is the evidence sufficient.

## ELABORATE:

1. Students should use their synthesized information to invoke a purposeful response for a carnival attraction.
  - a. The response could be of their choice
    - i. Maybe it's for a scary ride so they want to invoke suspense
    - ii. Or maybe excitement, happiness etc.
  - b. Students design and explain their carnival attraction
    - i. Explain intended purpose
    - ii. Explain what they will use to trigger or invoke a response from human senses
    - iii. Provide information and explanation on how their planned attraction will elicit the response of the human senses
    - iv. It may focus on any or all of the 5 senses
2. Depending on time of year students may use these plans for school events such as haunted house, spring carnivals, etc.
3. Evaluate
  - a. Synthesis of information of relation of senses to brain
  - b. Information is credible, accurate
  - c. Does provided evidence support the claim
  - d. Is the evidence sufficient.