

**Pre-K Math: Our Five Senses  
Task Administration Details**

# Our Five Senses

## Math - Operations and Algebraic Thinking

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### **GUIDELINES FOR ADMINISTERING THE TASK**

Young children begin to acquire informal knowledge of mathematics in the context of their everyday experiences early in life. In pre-k students use mathematical reasoning in typical activities such as setting the table for snack time, rotating blocks to build a structure, and exploring ways to equally share an apple with two friends. Pre-k teachers can help build on their students' implicit explorations and curiosities of the world around them by explicitly making them aware of their thinking about mathematics. To nurture pre-k students' individual mathematical growth and development, structure classroom environments with mathematical activities, tools, and language, and always model positive attitudes about math and multiple approaches to solving problems (Clements & Sarama, 2000).

The following task consists of an interactive word problem using addition and subtraction skills, ideas for preparing students, a tiered list of vocabulary words, formative assessment questions, and guidelines for collecting student work. Teachers are encouraged to adapt this activity to a different theme or unit of study.

### **IDEAS FOR PREPARING STUDENTS**

- Read books and encourage students to predict what will happen next. [My Five Senses](#) by Alikei will help bridge the literacy and mathematics for this task.
- Incorporate numbers and operations using the five senses in math activities with students:
- Create matching number cards. Write numerals 0-5 on index cards and include a pictorial representation of the corresponding quantity. Use these cards with students who will benefit from visual representations of numbers to practice one-to-one correspondence.
- Create a word problem with students using pictorial symbols for words. Visit [Storybird](http://storybird.com/) (at <http://storybird.com/>) to learn more about creating a visual story online.

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- Sing songs and finger chants that encourage students to count with their fingers. Try this chant about the five senses:

### ***Show Me One Finger!***

*Show me one finger,  
Show me two!*

*Show me two fingers,  
Show me three!*

*Show me three fingers,  
Show me four!*

*Show me four fingers,  
Show me five!*

*Show me five fingers,  
Show me four!*

*Show me four fingers,  
Show me three!*

*Show me three fingers,  
Show me two!*

*Show me two fingers,  
Show me one!*

*Show me one finger,  
Show me none!*

*(Hide hand behind back)*

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### DAY ONE: *Sorting and Categorizing Objects*

**Objective:** Students will explore classroom objects using their sense of touch, categorize if the object feels soft or hard, and graph on a chart.

**Estimated Time:** 5-10 minutes in centers and 5-10 minutes at morning meeting

#### Materials:

- Camera
- Chart Paper
- Two Colors of Post-its
- Drawing and Writing Materials
- Classroom Objects
- Large Bin



#### Set-up:

- Create a T-Chart with a column for “soft objects” and a column for “hard objects” for students to graph how many.
- At center-time or morning meeting, invite students to find one object that is either hard to the touch or soft and place in a large bin.
- Once they find the object, invite them to chart using a Post-it square whether the object is hard or soft.
- Encourage students to draw a picture of what they found on the Post-it, or write their names on the Post-its.
- In a small group or at morning meeting, ask your students to review the chart and reflect on what they found. Use some of the following questions as prompts:

- “Looking at the chart, did we find more hard objects or more soft objects?”
- “Did we find fewer soft or fewer hard objects?”
- “How do you know the answer?”
- “I notice this column is taller, what does that tell us?”
- “Let’s count our objects in the bin and see if we are correct.”
- “How many do we have all together?”



- To conclude the activity, write the numerals to represent the quantity.

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### **DAY TWO: *Exploring How Many with Touch***

**Objective:** Students will explore objects using their sense of touch, and categorize whether the objects feels soft or hard.

**Estimated Time:** 15-20 minutes

#### **Materials:**

- Chart Paper
- Two Different Colors of Post-its Drawing and Writing Materials
- One type of soft objects: i.e.) pom poms, feathers, small fabric squares
- One type of hard objects: i.e.) rocks, cubes, small plastic counters
- A Large Bin
- A Tray
- Writing and drawing tools
- Student Reflection Sheet
- Teacher Notes Template
- Camera

#### **Set-up:**

- Set-up as a center-time activity with a small group of students

#### **Math Words/Vocabulary**

Linguistic Access: In this performance-based assessment help students distinguish between the vocabulary words and the language functions (i.e. what it means to combine, take away, explain) to provide access to the mathematical content for all students. Introduce the most essential vocabulary and language functions first, with concrete models for students to grasp the meaning.

Tier 1: line, more, less, enough, fewer

Tier 2: all together, number

Tier 3: add, addition, subtract, subtraction, total, sum

Language Functions: combine, take away, and explain

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#### Directions to Facilitators:

The following are suggested prompts to explore addition and subtraction skills with a small group of students. Teachers are encouraged to create their own prompts or to try this activity one to one with some students. You may find that only a few prompts are sufficient enough to determine that a student understands the concept of the game, and, therefore, the student can choose how many to add and subtract.

- Invite 3-4 students to play a math game using their sense of touch. If you want to determine an individual student's performance in this standard, you can also play this game one to one with a student as well.
- Remind students that we touch/feel with our skin. For example, "We touch and feel with the skin on our hands, feet, legs, or cheeks to feel if something is soft or hard. For this activity, we will use the skin on our hands."

#### Suggested Prompts for Addition

1. Encourage a student to reach into the bin and find 1 hard object to add to the tray.  
[Teacher places one Post-it under "hard" on the chart paper.]
2. Next, encourage another student to find 2 objects that are soft and add them to the tray.  
[Teacher graphs 2 Post-its under soft.]
  - a. *How many items do we have all together on the tray?*
3. Next, encourage a different student to find 2 objects, either soft or hard, and to add to them to the tray. Let the student choose whether they want to add something soft or something hard.
  - a. *Did you add something soft or something hard? How many soft/hard did you add?*
4. Encourage the students to help you graph the two objects on the chart.
  - a. *Do they go under the column for hard or soft?*
  - b. *Now how many items do you have all together on the tray?* [Count 5 on tray]
  - c. *How many soft objects? How many hard objects?*

#### Suggested Prompts for Subtraction

5. Remind students that subtract means to take away or separate objects. Model what it means to subtract. "To subtract one object, I take away one object from the tray."  
Encourage a student to subtract.

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- a. *Can you subtract one object from the tray? How many objects are left?*
  - b. *Can you subtract one hard and one soft object from the tray? “How many soft/hard objects are left on the tray?”* [Continue to model removing the Post-its on the chart paper]
6. Next, encourage the students to count how many soft objects and how many hard objects are left on the tray. Help them separate and sort them on the tray.
- a. *We have \_\_\_ soft objects and \_\_\_ hard objects. But how many do we have all together?*
7. Repeat this process adding and subtracting within five objects on the tray.
8. Notate the students’ processes, responses, questions, and answers.

**Additional Supports for Students:** The following are additional ideas and resources to help you motivate your students to participate in this task and in other mathematical activities in your classroom.

### Mathematical Supports

- Offer a wide range of mathematical manipulatives such as counting chips, Unifix cubes, and interlocking links. Provide larger manipulatives for students who have difficulty grasping.
- Incorporate technology and computer games for students to practice and experience other functions for addition and subtraction. Visit the National Council for the Teachers of Mathematics’ [Illuminations](#) website.
- Partner students to work together, take turns, and explore different approaches to addition and subtraction. This works well for students who want to observe the process before fully engaging in the task on their own.
- Provide pictures, manipulatives, and writing materials to encourage students to show you how they got the answer in ways other than verbal communication. Verbally expressing thoughts about mathematics may be challenging for many pre-k students as their expressive and receptive language skills are still developing.

### Mathematical Extensions

- Quickly prompt a student to subtract one soft object. *How many do we have left?* Then quickly prompt the student to add one hard object. *How many do we have?*
- Challenge students to demonstrate different ways to sort objects. “We combined 2 soft and 3 hard objects. What are some other types of objects that we can find and categorize?”
- Invite students to explore other ways to combine/separate objects. State, we want 5 soft objects, but we have 3. How many more do we need? Why don’t you add one and I’ll add one:  $3+1+1$  is how many?

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- Introduces students to other functions of addition and subtraction, for example, by showing them addition and subtraction along the number line, through drawings, or on the computer.

#### References:

Campbell, P.F., & Langrall, C. (1993). Making equity a reality in classrooms. *The Arithmetic Teacher*; 41, 2; ProQuest Education Journals.

Sarama, J., & Clements, D.H. (2000). Standards for preschoolers. *Teaching Children Mathematics*, 7 (1), 38-41.

### Formative Assessment

**Questions for Students:** These questions have various Depth of Knowledge (DOK) levels in order to provide multiple entry points for students. Work alongside students to scaffold mathematical concepts and document what they can do and know about mathematics:

- Do we have more soft or hard objects?
- Do we have fewer soft or hard objects?
- How many all together?
- How would you describe that object? How would you categorize that object?
- Did you add/subtract the object?
- Did anyone find a different answer? Please explain.
- When we add/subtract objects do we end up with more or fewer?

**Questions for Teacher Reflection:** Use the following questions as a guideline for notating and assessing students' processes.

- Did the student add more objects when prompted?
- Did the student subtract objects when prompted?
- Did the student observe the teacher and/or peers before manipulating the materials?
- Did the student count each object to answer "how many?"
- Did the student call out the correct number without counting?
- Did the student count on from a number (i.e. 3, 4, 5), or start counting from number one to answer how many?
- Did the student count the same object multiple times, needing guidance to accurately count the seeds?

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### Guidelines for Collecting Student Work in Mathematics:

To document student performance in mathematics notate: 1) exactly what the student says in response to teacher prompts, 2) how the student physically manipulates the materials and, 3) how the student demonstrates the mathematical concept. Some methods for documenting and collecting student work are as follows:

- Draw and/or write how students combine and separate objects while playing the game.
- With media consent, take photos of students' processes and how they demonstrate steps with addition and subtraction.
- With media consent, video record students in the process of playing the game.
- Encourage students to draw, write, and describe the game.
- Ask students to articulate their thinking about math and dictate what they say. Prompt students with reminders and ask questions.

### References:

Campbell, P.F., & Langrall, C. (1993). Making equity a reality in classrooms. *The Arithmetic Teacher*; 41, 2; ProQuest Education Journals.

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**A: Scoring Rubric**

1	2		3
Not Yet	In Process		Proficient
<p>Student inconsistently explores concrete objects to demonstrate ways to combine and/or separate number sets, and does not answer “how many” questions.</p>	<p>Student inconsistently explores concrete objects to demonstrate ways to combine and/or separate number sets, but begins to answer “how many” questions.</p>	<p>Student consistently uses concrete objects to demonstrate ways to combine and/or separate number sets, but inaccurately answers “how many” questions.</p>	<p>Student consistently uses concrete objects to demonstrate ways to combine and separate number sets, and accurately answers “how many” questions by counting or calling out the answer.</p>

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**B: Teacher Notes Template**

Student Name & Date	Observation, Dictation & Evidence of Understanding	Rubric Rating & Rationale

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C: Student Reflection Sheet

# *Our Sense of Touch*

Name \_\_\_\_\_ Date: \_\_\_\_\_

*How did you use your sense of touch to add and subtract objects?*