K-2 IMPACT
Investigating Mathematical Practices
and Classroom Teaching

Activity Counting & Comparing Handfuls of Peanuts

Name of Lesson: Counting & Comparing Handfuls of Peanuts

Mathematics: estimating, counting, comparing, number relationships

Grades: K-2

Standards for Mathematical Practices
- Making sense of problems and persevere in solving them
- Reason abstractly and quantitatively
- Construct viable arguments and critique the reasoning of others
- Model with mathematics
- Use appropriate tools strategically
- Attend to precision
- Look for and make use of structure
- Look for and express regularity in repeated reasoning

Time Needed 60 minutes
The learning in this lesson is intended to extend across multiple days. Therefore, some of the parts may take longer than others

Materials Needed
Styrofoam peanuts
Linking chains (or large paperclips)
Hole punch
Half sheets of cardstock
Sticky notes
Number path 1-20

Vocabulary / Visual Models
Vocabulary is critical*. Students need to be able to understand, use, and apply academic language in meaningful and purposeful ways. During our instruction, we can utilize vocabulary words while supporting and expecting students to correctly use them in both oral and written communication. You may want to create a "vocabulary splash" where you and/or your students add new words as they are introduced or used. Students can have ownership over this instructional tool. This can be added to a chart or in their math journals on a bookmark.*
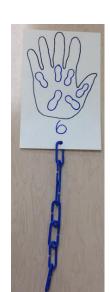

Figure 1

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Vocabulary: largest, smaller, more, less, fewer, compare, count, represent, equal, same

Visual Models: picture bar graph, number path, five or ten frames

Procedures:
Launching The Lesson*:*
*When **launching the lesson**, you are trying to get students engaged and excited about the activity they will be doing. During this time, you are setting up the investigation through purposeful questioning and modeling.*

1. Show the students the container of Styrofoam peanuts and make a prediction about how many peanuts you think you can grab with one hand. Write your prediction on a sticky note.
2. Trace one of your hands on cardstock paper and punch a hole in the middle at the bottom of the sheet. (See Figure 1)

3. Conduct an interactive think aloud for the students to create opportunities for students to access the learning.
   *An **interactive think a loud** is when you are asking questions to the participants/students and they are providing you with ideas about modeling, representing, and/or strategies to try.*

    You are not providing them with direct instruction. *An interactive think aloud requires well-planned open-ended questions. During an interactive think aloud students are communicating their mathematical thinking and ideas orally, they may also critique others thinking.*

4. You can conduct an interactive think aloud through the following questions:
   * **How many peanuts do you think I can grab?** As students respond with a numerical response or quantity. Ask: **Why do you think that? or Why does that make sense to you?** (Estimate the number of peanuts of you can grab. Grab a handful of peanuts, place them on your handprint and trace them.

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- **How can we find out how many peanuts were grabbed? How many?** As students share out "count them" be sure to continue to conversation by asking, **How can I count? What can I do to know that I counted them all?**

- **How can we make a model using linking chains to show the number of peanuts grabbed?** As students share some responses may be; count the same number of links that there are peanuts, match the peanuts to the links, put a link on each drawn peanut on the handprint, double check using ten frames, etc. Represent that number by making a linking chain and attaching the chain to the hole at the bottom of your handprint.

- **How can we represent our count with numbers?** Write the symbol connecting it to the number word and quantity. The relationship between word, quantity, and symbol is critical to student's development.

- Display your hand in the middle column of a three-column chart in the category labeled- same as the teacher. The chart can be displayed in the classroom, on the floor, in the hallway. The chart or defined space will be used for multiple lessons, across multiple days.
  The chart does not have to be linear, it can be a cluster that is defined or sorted by these categories.

Figure 2

Less than the Teacher	Same as the Teacher	More than the Teacher

5. Explain to the students they will be investigating how many peanuts they can grab and represent their own handful. Students will also be working with partner for the activity (see exploring the problem).

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Guiding Questions:
- How was the number of peanuts I grabbed represented or recorded? How did I record what number I counted?
- How was my number shown in different ways?
- How can you know an amount without counting each object?
- What is another way I could have represented my peanuts?
- What are other visual models I could have used? How would these have helped me?

Exploring the Problem
1. Working with a partner, each student grabs a handful of peanuts.

2. Students place their peanuts on their handprint and trace around each one to record the number of peanuts grabbed.

3. Students can practice counting the number grabbed and record the number under the handprint. Notice each child's personal number count. Students may also use a five or ten frame to double check their count for accuracy.

4. Using linking chains (or large paperclips) students can make a model of the number of peanuts they grabbed. Connect the idea that one chain (or clip) represents one peanut. Secure the linking chain at the bottom of the paper using the punched hole. (See Figure 1)

5. Students write their names on the top of the paper.

6. Students then compare their handful count to a partner's handful count/representation.
   - Which hand collected the largest number of peanuts? How many?
   - Which hand grabbed the smallest amount of peanuts? How many?
   - Who has more? How many more?
   - Who has fewer or less? How many fewer or less?

Help the student to think about how many more (or "extra links") the longer chain is or how many less the shorter chain is. Connect the number of links to the number of peanuts to determine more, less or if appropriate the same.

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Summarizing the Learning

"Summarizing the Learning" is an important part of the learning process and oral and/or written mathematical communication. It allows students to have the opportunity to make connections share their reasoning, construct viable arguments, and critique the reasoning of others.

1. Have the students place their hands on the three-column chart comparing their handprint count to the teacher's count. This chart was created at the beginning of the lesson.

- Using the guiding questions below facilitate a discussion with students in partners or small groups. Have students share their ideas aloud for others to hear. You may also choose to include a journal activity for students to respond to the questions prior to sharing.

Guiding Questions:

- How many hands collected more peanuts than the teacher?
- How many hands collected less or fewer peanuts than the teacher?
- How many hands collected the same number of peanuts as the teacher?
- How do you know if a number is more or less than another number?
- How can you use your linking chain to show your thinking?
- What does each of the links represent or stand for?
- What types of questions should you ask yourself or your partner when comparing your peanut counts?

As noted above, this lesson is intended to span over multiple days of learning.   The lesson provides rich learning opportunities for students to make connections, communicate their thinking, ask questions, and build a deep understanding of many concepts. In order to do so, students

need to continue to revisit their thinking and learning, while building new ideas. The" launch, explore and summarize" portions of this lesson may be a continuation of learning during another day. For example:

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Launching the Problem
1. Have the students retrieve their handprint from the three-column chart. Ask students to describe what they did to make the handprint from the previous day's lesson. Tell the students that they will be investigating a different kind of representation called the number path.

2. Share the display of a giant sized number path from 0-20 made from half sheets of copy paper. Based on the numbers of which you are working with your students, you can increase or decrease the number path. The number path should be on two different colors. The colors should alternate in sequential order. (For example 0 is yellow, 1 is blue, 2 is yellow, 3 is blue). Alternating colors provides each number with a defined space.

3. Ask the students to describe the path and share what they notice about the numbers.

Exploring the Problem
1. Have the students bring their handprints to the front of the group and orally complete this sentence frame:
   _____ grabbed _____peanuts.
2. Ask the students to find their numbers on the giant number path and then help them place the print above (or below) that number grabbed on the number path.

Summarizing the Learning
1. As a class, compare any two handprint amounts using the numbers on the number path. The following questions can help to facilitate the learning during this part of the lesson.
   - Which hand(s) grabbed the largest number of peanuts? How many?
   - Which hand(s) grabbed the smallest number of peanuts? How many?
   - Which hand(s) collected the same number of peanuts? How many?
   - Which handprint shows more and which shows less or fewer? Why do you think that? How can you find out how many more or how many less?
   - How can a number path help us count and compare numbers?

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2. To reflect on the concepts from the Handful of Peanuts lesson, ask the students the following guided questions:

Guiding Questions:
- What is the difference between more, less and the same?
- How do we use numbers, counting, and/or comparing in our everyday life?
- Why are numbers important?
- Why do we need to be able to count forwards and backwards?
- Why do we need to be able to count objects?

Extending the Learning

When extending the learning, you are providing activities for students to deepen their understanding of the concepts taught. These can be a continuation of the lessons/investigations that you have implemented.

1. Repeat the investigation using different counting objects.

2. Observe and discuss how the size of the item is related to how much a hand can hold. This will extend the investigation to larger numbers, longer number paths, representing larger numbers into like groups that can be counted with skip counting, and comparing the magnitude of larger numbers possibly with open number lines.

3. Instead of a "handful", try...a scoop, a pinch, a spoonful, a set of tongs, a spatula, etc.

4. Ask each student to grab two handfuls of peanuts or another type of counter. The students then combine his/her handfuls into one collection and count them. The students then draw and record the quantity on a student-recording sheet or handprint.

5. Together student partners complete the sentence frame below, stating how many each person had and if they have more or less than their partner.

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I have ___ counters. I have more than my partner.

My partner has ___ counters.

I have ____ more counters that he or she does.

The work below shows how I know.

Students should have a pictorial representation of the collection of counters as well as a completed sentence frame showing their thinking, such as; "I have 9 counters. I have more than my partner. My partner has 7 counters. I have 2 more counters than my partner."

Scaffolding Suggestions for Differentiation of Content, Product, and/or

Content:

When students are first learning to count, choose sets of objects with smaller numbers; as they gain more skill, choose sets of objects with larger numbers

When varying the type of counters used, have the students' progress to grabbing one handful each of two different types of counters in order to ensure they can combine unlike groups into a single collection. Begin with larger types of manipulatives such as counting bears, cubes, etc. so that the handfuls do not contain as many items. Have students grab two handfuls from the same type of counters and then vary it so that they grab one handful each from two different types of counters. Progress to smaller counters like paperclips, buttons or two color counters to increase the quantity that they are dealing with because students will be able to grab larger amounts.

If students are having a hard time with the quantity generated from two handfuls have them only grab one handful of counters to start with.

Students can practice counting objects accurately or double-check by using a five or ten frame to help with the accuracy of counting.

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Product:

Allow students to experiment and discover ways to represent their thinking and record quantities and numerals in their journals. Examining and discussing student organizational strategies at sharing time is a good discussion to have with the whole class.

Process:

Watch the student's counting strategies. Students should have an organized method for keeping track of items they have already counted. They may use a "pull-off" strategy, moving items from one side of the table to the other, or line them up in a straight line. If students are struggling give them a large paper plate and have them count the items by moving them onto the plate and check it by moving them off the plate.

Students can work in pairs to scaffold their counting, and teachers should take care that at least one student in each pair is a confident counter and at least one student is a confident writer. Students can be provided with a number line to aid in writing the numbers. If the teacher is concerned that students cannot write the numbers independently s/he can write the quantities on post-it notes ahead of time and let the students choose the post it note that goes with their count.

Assessment of the Focused Standards

The student should be able to demonstrate the following skills through 1-1 interviews, teacher observations/anecdotal notes, and journal entries
- Subitize quantities up to 5
- Count objects to 20 (or higher)
- Understand one-to-one correspondence
- Identify a number quantity for numerals and words
- Represent a number with numerals, pictures, and words
- Understand numbers and the relationships between quantities
- Understand the concept of more and less

Note: There is a formative assessment observational checklist in your binder to help you gather data on your students and plan next steps.

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Teacher Reflection:

- What went well? What didn't go well?
- What changes or adaptations would you make to this lesson?
- What surprises or "ahs did you have? Explain.
- What misconceptions did your students have?
- What connections did you and your students make?
- What Mathematical Practices were best represented? Processes?
- How will you assess understanding of the concepts in this lesson?

| Student Names | Students are able to… | | | | | Observations: |
	Subitize quantities to 5 2, 3, 4, 5	Count objects to 20 L-less than M-more than	Understand 1-1 correspondence T-tagging M-moving C-Cardinality	Represents a Number N-numerals P-Picture W-Words	Understand Concepts of More and Less	*Identifying number quantities for numerals and words. *Understand number relationships between quantities.

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