

Grandma's Soup

Lesson 1: Discover Phase

Australian Curriculum: Mathematics (Year 1)

ACMNA013: Recognise, model, read, write and order numbers to at least 100.

ACMNA014: Count collections to 100 by partitioning numbers using place value.

Lesson abstract

Students hear the story of Grandma's Soup and discover that the problem with the recipe is the ambiguity of the term 'handful' as a unit of measurement. They investigate the numbers of pieces of macaroni in their own handfuls by grabbing a handful and counting the pieces. They each write the total on a cut-out tracing of their own hand and order them from smallest to largest.

Mathematical purpose (for students)

The number of macaroni pieces in a handful varies from person to person.

Mathematical purpose (for teachers)

A number of objects can be counted in various ways. Totals are recorded so they can be checked for accuracy. Numbers can be arranged from smallest to largest to show the differences between them. Mathematical language should be used when thinking is being explained.

Lesson Length: 60-90 minutes

Vocabulary Encountered

- handful
- compare
- same/similar
- order
- capacity
- smaller/larger

Lesson Materials

- 5 bags of small macaroni (e.g. 4mmx15mm to give enough pieces in a 'handful')
- student workbooks
- paper-(one sheet per student)
- scissors-(one pair per student)
- [Grandma's soup recipe](#) (to display and read to the class)

We value your feedback after these lessons via <https://www.surveymonkey.com/r/CV2TXTT>



How Much is a Handful?

Set the context and introduce the concept of ambiguity in a handful.

1. Introduce the context by telling the story of your experience making Grandma's soup recipe. For example:
My Grandma makes the best vegetable soup ever and she gave me her recipe. It has lots of vegetables and it's really thick and chunky. It has macaroni in it, so that's what makes it really chunky. Well, last night I made it for the first time but it was nothing like Grandma's soup. It was watery and ordinary and not at all chunky. I don't know what went wrong. I have the list of ingredients here.
2. Read the list of ingredients focusing on the **quantity** of each ingredient. *I put in 1 small carrot. I put in 2 sticks of chopped celery ... and (finally) I put in 1 handful of macaroni.*

Why was my soup so much less chunky than Grandma's when I followed her recipe exactly?

Acknowledge student responses:

Joh: *Your carrot was too little.*

Teacher: *Yes that could change the chunkiness of the soup. Are there any other ideas?*

Elicit responses until macaroni is suggested (or suggest it if not offered) and focus on the ambiguous nature of the term, 'handful.'

Anil: *You didn't have enough macaroni.*

Teacher: *I put in a handful just like the recipe said.*

Cristina: *Yes but was it a big handful or a little handful?*

Teacher: *I don't remember. I just grabbed a handful. Why would the size of the handful make a difference? I wonder if your handful would be different to my handful.*

3. Have students each grab a handful of macaroni and count the number of macaroni pieces in their handful. Ensure students record the amount in their workbook before **checking the count**.
4. When students are confident of their number of macaroni, have them trace around their hand and write the total and their name inside the hand before cutting it out.
5. Gather students together (with their cut-out hand displaying their total number of pieces of macaroni) to **compare** and **order** their numbers as described below.

Comparing and Ordering

Compare numbers

6. Ask the class: *Do you think we will all have the same number of macaroni pieces written on our paper hands? Why? Why not?* Have students form groups by finding others in the room who have a similar number of macaroni pieces. It is important to allow students to do this **unassisted** as this gives them the opportunity to justify their choices.
7. Ask each group to explain why they have grouped themselves together (why they think their numbers are similar). As students share, **record their numbers on the board** in their chosen groups. eg: *Tom and I both had 88 pieces of macaroni, Julie had 89 and Ben had 86. These are all near each other on the number board so we made a group.*
Be aware of students who have not joined a group and assist them to become part of an already formed group, if possible. Otherwise, use the opportunity to discuss why they may not fit into any of the groups. Use the numbers written on the board to facilitate discussion. eg: *Mary has 91 pieces of macaroni and has not found a group.*

Teacher: Why don't you fit into any group, Mary?

Mary: Because there is no-one with 91. (Mary hasn't made the connection between high 80s and low 90s being close to 91.)

Teacher: Does anyone think Mary would fit into their group? Why?

Tomas: Mary could fit into our group because 89 is close to 91.

Teacher: How do you know?

Tomas: Because when you count, you go, 86, 87, 88, 89, 90, 91 and they're all close.

8. The recommended group size is approximately 4 students. Look for opportunities to combine similar groups, if some groups are small, or to break up larger groups.

Order numbers

9. Find a space large enough to enable the whole class to be lined up in order. Ask students to select which group has the lowest numbers and have them stand up and move to what will become the front of the line. At this stage, do not have them order within their small group as this will be done next. Ask students to select the group with the next lowest numbers and they stand beside the first group. Continue in this way, allowing students to guide and make decisions about which group belongs where, until all groups have joined the line.
10. Starting at the beginning of the line, have students call out their number progressively to check the order. This should help them realise they still need to order within their small groups. Direct students to order themselves within their groups. Once students feel confident they have the correct order, have them all call out their numbers again to check.
11. Use the ordered students as a basis for creating a display of the hand cut-outs in order from smallest to largest **number** and retain for future reference in the Devise phase (stick onto a wall in one continuous line, like the display below). Have a brief class discussion about the display.



Teacher: Look at the hands and the numbers. What do you notice?

Kai: The hands are not all the same size.

Poh: The bigger hands have the big numbers.

Teacher: Are you sure? Do all the bigger hands have the biggest numbers? Let's check all the larger hands.

Ruby: The small hands are at the beginning of the line.

Teacher: Is this true for all the small hands? Why are they at the beginning of the line?

Esther: There are lots of numbers with a 9 at the start.

Teacher: What do you mean by 9 at the start? Why do you think there are lots of numbers in the 90s? What does that tell us about our class? (Lots of people have hands the same/similar size. Lots of people tried to grab a lot).

Conclusion

12. Summarise for the students what was noticed. For example:

We all had different sized hands and our handfuls were different. Our handful is like a container. Different sized containers have different capacities.

I wonder how many pieces of macaroni are in a handful? Maybe that's why my soup was different to Grandma's soup. My handful was probably different to her handful. I will have to ring her tonight to check.

Grandma's Soup Recipe

Ingredients:

- 1 teaspoon of oil
- 1 small onion
- 1 stick of celery
- 1 small carrot
- 1 medium zucchini
- 2 tomatoes
- 2 sprigs of parsley
- $\frac{1}{4}$ cup of peas
- 1 handful of macaroni
- 3 cups of water
- chopped basil



Method:

Step 1: Heat oil in a medium saucepan. Add onion, celery, carrot and zucchini. Stir for 5 minutes or until vegetables soften.

Step 2: Add chopped tomatoes, parsley and cold water. Bring to the boil. Simmer, covered, for 10 minutes or until vegetables are almost tender.

Step 3: Add macaroni. Return to the boil and simmer, covered, for 10 minutes or until pasta and vegetables are tender.

Step 4: Add peas. Cook for 2 minutes or until peas are heated through. Serve sprinkled with basil.