What's For Lunch?
Lesson 1: Discover Phase

Australian Curriculum: Mathematics (Year 2)

ACMSP049: Collect, check and classify data.

- Recognising the usefulness of tally marks.
- Identifying categories of data and using them to sort data.

Lesson abstract

This lesson poses the inquiry question, '*How many [sandwiches] does our class eat at school in a year*?' Students examine what is in their lunch boxes on one day. With a focus on data, students list the items in their lunch box, compare their lists within a small group and categorise the items. Each group orders their items from most to least common and selects an item common in their group to be the focus of their inquiry for the unit.

Mathematical purpose (for students)

We are going to see which items are the most common in our lunch boxes.

Mathematical purpose (for teachers)

This lesson focus is on data collection and the need to categorise the data in order to make representation and interpretation purposeful.

At the end of the Discover phase, students will be able to:

- Make decisions on creating appropriate categories.
- Organise individual items into appropriate categories.
- Order the categories of items in the lunch boxes from most to least common.

Lesson Length 60 minutes

Vocabulary Encountered

- list
- categories, categorise
- data collection
- representation
- most/least common
- order

Lesson Materials

- Full lunch boxes
- Student workbooks

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

Mathematics by Inquiry is an initiative of, and funded by, the Australian Government Department of Education and Training

Australian Academy of Science

aamt

Exploring Lunch Boxes

*Inquiry Question: How many [**sandwiches**] does our class eat at school in a year?*

Explore lunch boxes

1. This step needs to be completed prior to the morning tea break. To promote engagement, have students, in groups of 3, open their lunch boxes at their desks and discuss and compare the contents. This can be facilitated by having the students ask others in their group if anyone has the same items in their lunch box.

   In their workbook, students make a list of the contents in their own lunch box. Assist students who are unsure of the names of their items. At this stage it is valuable for students to provide sufficient detail to create a need for the items to be categorised later in this lesson; for example, ham and cheese sandwich, rice ball with seaweed, apple, peach, tropical fruit popper, salt and vinegar chips. Students who have tuckshop lunch order can write down what they have ordered.

2. Have students compare their list with the lists of other students in their group and tick any items which they have in common with someone else. Allow them time to discuss how their items are similar or different. At this stage it is unlikely that students will think to categorise. Do not prompt them to do so as this will be addressed below.

3. Ask groups to report the items they had in common. The detail students have added will make it difficult to find common items. This provides the motivation to create categories. Grouping items into categories provides better mathematical opportunities for this inquiry.
   Focus on a group with few or no common items ticked.

   Teacher: *Why doesn't this group have any (many) common items? Are there any items that could be grouped together to create a category?*

4. Introduce the term **categories**. Discuss a category (for example, sandwiches of all different types). Encourage children to make large categories (e.g. sandwiches including rolls and wraps).

   Teacher: *Mary has ham and cheese roll. Jack has a vegemite sandwich. Louis has a salad wrap. Could we group them together to form a category? Could we call that category 'sandwiches'? Are there are any other items which could be groups as sandwiches?*

5. Groups discuss lists and lunch box items and write suggestions for categories. Have each group share their categories and discuss the reasons why they made their decisions.

   Possible student responses:

   - *We had salt and vinegar chips, burger rings and corn chips. We made a category called 'chips' so we could put them together.*

- *We made a 'junk food' category. We had a packet of chips, a chocolate, tim tams and popcorn.*
- *We had a nectarine, banana, pear, grapes and apple. We put them together to make a 'fruit' category.*

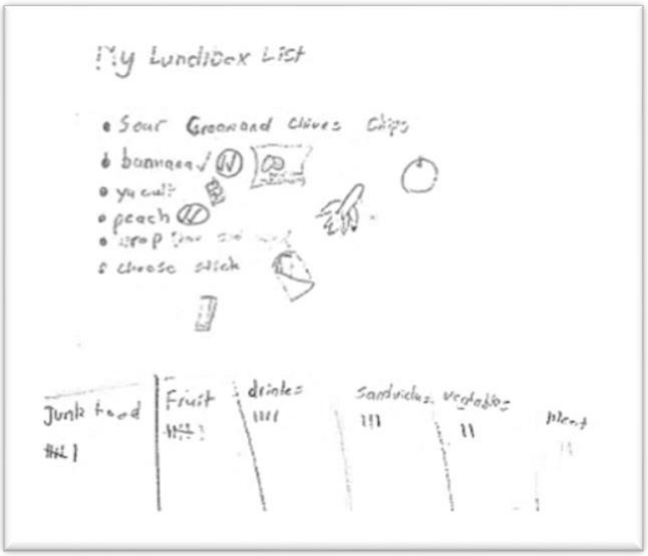
6. Have each student write down the all items in their own lunch box in the categories agreed on by the group, then compare their lists again to find the common items. Discuss their findings.

   Teacher: *Does having categories make it easier to decide if you have common items? Do you have more items in common now?*

   Student: *When I categorise, it is easier because our group had grapes, apples, nectarines and bananas but they weren't the same. Then when we made a category of fruit, we had something in common and could put them all in one group. We had 4 fruits in our group.*

   Teacher: *Are there any items which do not fit into a category? What category could it fit into and why? Who can suggest a category for this item?*

7. In their small groups, students refine the categories they will use, and find the total number of items in each category for their group. Then they use these totals to order the different items from the greatest number to the smallest number. They list the items in order down the page.



8. Have groups share their findings with the class. Highlight the similarities and differences in their most common items.

9. Select a group which had sandwiches (or any other category as desired) as their most common.

   Teacher: *If each person in your group had a [sandwich] in their lunch box every day, I'm wondering 'How many sandwiches would your group eat at school in a year?* Continue to give examples of relevant items e.g. fruit.

   For this inquiry, you will be investigating the question, '*How many [sandwiches] does our group eat at school in a year?'*

   It is worth noting that any answer to the inquiry question will be approximate. Students may recognise that public holidays, tuckshop days, excursions, absence from school, and variation of lunch box content will impact on the total. This discussion is worth having with students so that they recognise the limitations of any solutions.

Conclusion

10. Instruct groups to go back to their original lists and decide which food item they will use to answer the question. Each student writes the question, *'How many_____do we eat at school in a year?',* filling in the space with the item they have chosen to investigate. This will be used in the beginning of the Devise phase.

Note on Selecting Categories

It is important that groups select an item that is one of the most common in their lunch boxes. Therefore, each group may select a different item. Their Day 1 total for that item **needs** to be **between 2 and 10** to provide a suitable starting number for repeated addition and arrays.

Encourage some groups to choose items where the Day 1 number is odd (e.g. 3 or 7 sandwiches). This will provide greater opportunity for partitioning according to place value, as the weekly total will be 15 or 35 (rather than 20 or 30). This is an important learning outcome from the Checkpoints during the Devise and Develop stages.