

## ACTIVITY IA5.2: CPV Egg Contextual Investigation

**Intended learning:** To learn to flexibly compose and decompose groups of ten.

**Instructional mode:** Longer, inquiry mode for individuals or groups.

⑥ **Materials:** Linking cubes, chart paper or record sheet and pens.

**Description:** This activity focuses on the base-ten system of numeration. Students propose to the egg producers' association that eggs should be packaged by the ten rather than by the dozen. (This investigation could be integrated with a task of writing a persuasive letter.)

Conduct a whole-class discussion about how eggs are packaged. In some countries, eggs are packaged by the dozens (twelves). In other countries, they are packaged by tens. Facilitate a discussion evaluating the level of customer ease in calculating the number of eggs in several cartons depending on packaging.

Have students work in pairs to create charts that show the total number of eggs in several different numbers of cartons for the two styles of packaging (see Figure 5.3). Students may use linking cubes to support their calculations of the totals if needed. Discuss the advantages and disadvantages of each type of packaging. Consider the relative ease of calculating other amounts of cartons not on the chart depending on packaging. *What is the calculation advantage of packaging the eggs in cartons of ten?*

Number of Cartons	Total Eggs in Cartons of Ten	Total Eggs in Cartons of a Dozen
1	10	12
2		
3		
4		
5		

Figures 5.3 Comparing cartons of ten with cartons of a dozen

Number of Eggs	Number of ten-egg cartons	Left over eggs
17	1	7

Figures 5.4 Packaging a number of eggs in ten-egg cartons

Once students have established that cartons of ten would be easier to calculate because it is easier to count by tens, determine the number of eggs that would be in various numbers of cartons focusing on ten-egg cartons only. Determine the number of ten-egg cartons and left over eggs that can be packaged out of various numbers of eggs (see Figure 5.4). Students can use linking cubes to check their conjectures.

**Responses, variations and extensions:**

- This task is designed to enable students to explore an application of units of ten. Many students lack the language to distinguish between the number of groups and the number in each group. By using the egg context, students can picture the difference between an egg and an egg carton.
- Initially students may need materials to support their thinking about the cartons of tens. Linking cubes work well for this since students can make trains of ten cubes to represent each carton.
- Careful discussion may be needed before students notice the relationship between the number of eggs and the number of cartons and leftover eggs. Lead the discussion in such a way that students notice this relationship.
- Repeat the process with hundreds by exploring the notion of egg cartons being packaged into boxes with ten cartons (100 eggs in each box).
- Repeat the process with thousands by exploring the notion of egg boxes being packaged into crates with ten boxes of eggs (1000 eggs in each crate).
- This egg context can be extended to explore additive situations. *What if we had 47 white eggs and two ten-egg cartons of brown eggs? How many eggs would we have altogether? How would we notate this on the empty number line?*
- This egg context can be extended to explore subtractive situations. *What if the farmer had 69 eggs and then sold two cartons of eggs? How many eggs would the farmer have then? What if the farmer had four cartons but 6 eggs were broken when a carton was dropped?*
- Students can use arrow cards or chips on a hundred chart to track the egg inventory.
- The context could be any item that could be packaged by tens, hundreds and thousands.

**Acknowledgement:** Modified from Cobb et al. (1997).