

Practice & Consolidation:

ONE HUNDRED HUNGRY ANTS

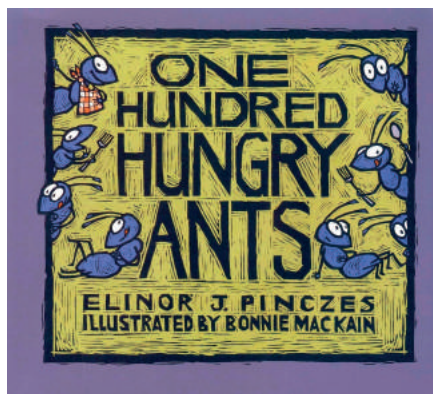
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OBJECTIVITIES AND STANDARDS

Understand the relationship between multiplication and division; partitioning (sharing).

YOU NEED

- Picture Book: *One Hundred Hungry Ants* by Elinor J. Pinczes.
- Counters or Interlocking cubes



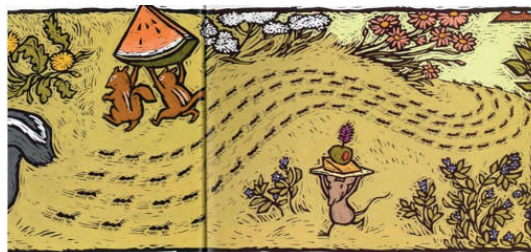
CULTURAL/LANGUAGE CONSIDERATIONS

Word problems often introduce new sentence structures that are challenging. Teachers should provide visual supports and models of the instructional sentences used. The sentence structure of multiplication tables is different in English and Chinese. For example, 3 times 4, 3 fours. And the position of the two numbers in the multiplication sentence can be confusing. Teachers should provide consistency by selecting the expression based on the language of instruction. For example, 3×4 is 3 iterations of the same item; 4 nouns. It is a standard English practice of placing adjectives in front of a noun.

In addition, Kersaint, Thompson and Petkova (2012) suggest that language learners in classes where the teacher focuses on keywords may see the word “by” and assume that there is a need to multiply, but it may represent a perimeter, 3-by-4. Therefore, memorising vocabulary or keywords is not sufficient for students to make meaning because the meaning of words in mathematics is often determined by context.

DIRECTIONS

Read the story. The context lends itself to students modelling multiplicative situations as arrays with the aid of objects or by means of drawings. Explore some array models. Stop at each place where the ants are shown in their marching order.

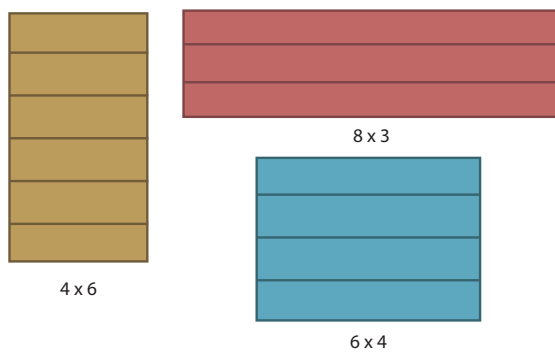


Questions for Students

- How did the ants arrange themselves?
- How should we arrange the blocks to look like the *ants*?
 - With 2 lines of 50
 - With 4 lines of 25
 - With 5 lines of 20
 - With 10 lines of 10
- Are there any other arrangements?

Provide blocks (apps) to each group (2-4 students) so that they can explore different arrangements of the blocks in lines. Allow a bit of time for sharing strategies. Ask students to translate their thinking into number sentences. The purpose of this activity is to provide a meaningful experience for students to use both pictorial and concrete representations to express their understanding of multiplication while developing their language skills and the ability to think and communicate mathematically.

Use arrays to model mathematical structure to develop students' understanding of multiplication. Work on calculations like: 4×6 ; 8×3 ; 6×4



Suppose that the number of ants going to picnic is changed to 24, 36, 48, etc. (Adjust the numbers to meet students' abilities, use numbers that have many factors.)

Questions for Students

- How many different ways could the ants arrange themselves in equal rows?

Ask students to use blocks/drawings to show their thinking. Record by writing the number sentence/equation of each new arrangement. Observe the strategies that students use to solve problems, and use their understanding to advance their mathematical thinking. Explore rules such as:

Commutative rule: $a \times b = b \times a$

Associative rule: $a \times (b \times c) = (a \times b) \times c$



SIMPLE IDEAS WORKING TOGETHER IN COMPLEX WAYS

This story supports students to make connection between mathematical ideas. Students start to think of patterns and possibilities by asking themselves "what if" questions. What if different numbers in each row? We can play with the story to promote other connections: What if we have a smaller number of ants? What if we have 8 or 16 ants? By changing the story, we open up other mathematical opportunities for explorations which extend students' knowledge.

REFERENCE

Kersaint G., Thompson, D. R., & Petkova, M. (2012). *Teaching mathematics to English language learners (2nd ed.)*. Routledge.