

Grade 3: Place Value Unit Instructional Math Task

Insects in Jars

Ben and Sara have four glass jars. Ben and Sara have one hour and fifteen minutes to collect four different types of insects. Ben and Sara will put each type of insect in a glass jar. Ben and Sara will round the number of each type of insect collected to the nearest ten and let any extra insects go. Ben and Sara start collecting insects at one o'clock in the afternoon. They collect 23 ants, 12 butterflies, 10 beetles and 14 grasshoppers. What time do Ben and Sara stop catching insects? How many insects do Ben and Sara let go from each jar? Show all your mathematical thinking.

Insects in Jars

Place Value Unit Mathematical Processes: 3.1A, 3.1B, 3.1E, 3.1G

Task

Exemplars[®] K-

Ben and Sara have four glass jars. Ben and Sara have one hour and fifteen minutes to collect four different types of insects. Ben and Sara will put each type of insect in a glass jar. Ben and Sara will round the number of each type of insect collected to the nearest ten and let any extra insects go. Ben and Sara start collecting insects at one o'clock in the afternoon. They collect 23 ants, 12 butterflies, 10 beetles and 14 grasshoppers. What time do Ben and Sara stop catching insects? How many insects do Ben and Sara let go from each jar? Show all your mathematical thinking.

Alternative Versions of the Task

More Accessible Version:

Ben and Sara have four glass jars. Ben and Sara will collect four different types of insects. Ben and Sara will put each type of insect in a glass jar. Ben and Sara will round the number of each type of insect collected to the nearest ten and let any extra insects go. They collect 23 ants, 12 butterflies, 10 beetles and 14 grasshoppers. How many insects do Ben and Sara let go from each jar? Show all your mathematical thinking.

More Challenging Version:

Ben and Sara have four glass jars. Ben and Sara have one hour and fifteen minutes to collect four different types of insects. Ben and Sara will put each type of insect in a glass jar. Ben and Sara will round the number of each type of insect collected to the nearest ten and let any extra insects go. Ben and Sara start collecting insects at one o'clock in the afternoon. They collect 123 ants, 212 butterflies, 100 beetles and 314 grasshoppers. What time do Ben and Sara stop catching insects? How many insects do Ben and Sara let go from each jar? Show all your mathematical thinking.

TEKS Unit of Study and Evidence

Place Value Unit

The Place Value Unit involves understanding the relative position, magnitude and relationships within the numeration system in order to answer questions such as:

- How could you use base-10 blocks to show what the numerals in this number mean?
- How can you use the additive property of place value to decompose this number?
- What other way(s) can you use thousands, hundreds, tens, and ones to show this number without changing its value?



Exemplars Task-Specific Evidence

This task requires students to use place value to round whole numbers to the nearest 10. The students are also expected to find the difference between rounded numbers and given numbers.

Underlying Mathematical Concepts

- Rounding whole numbers to the nearest 10
- Addition/Subtraction
- Number sense to 23
- Time notation

Possible Problem-Solving Strategies

- Model (manipulatives)
- Diagram/Key
- Table
- Chart
- Number line

Possible Mathematical Vocabulary/Symbolic Representation

- Model
- Diagram/Key
- Table
- Chart
- Number line
- Total/Sum
- Difference
- Fraction
- 1/4
- Hour, minute
- Most/Least
- Odd/Even
- Dozen
- Greater than (>)/Less than (<)
- Equivalent/Equal to
- Time notation
- 2:15 p.m.
- Ones, tens
- Place value



Possible Solutions Original Version:

Ben and Sara stop collecting insects at 2:15 p.m. They let 3 ants, 2 butterflies, 0 beetles and 4 grasshoppers go from the glass jars.



More Accessible Version:

Ben and Sara let 3 ants, 2 butterflies, and 4 grasshoppers go from the glass jars.

More Challenging Version:

Ben and Sara stop collecting insects at 2:15 p.m. They let 3 ants, 2 butterflies and 4 grasshoppers go from the glass jars.

Possible Connections

Below are some examples of mathematical connections. Your students may discover some that are not on this list.

- Ben and Sara caught 59 total insects.
- A total of 9 insects were let go.
- 15 minutes is 1/4 of an hour.
- They caught insects for 75 minutes.
- They caught the most ants and the least beetles.
- They caught an odd number of ants.
- They caught an even number of butterflies, beetles and grasshoppers.
- They caught a dozen butterflies.
- If they caught 1 more ant they would have 2 dozen.
- Relate to a similar task and state a math link.
- Solve more than one way to verify the answer.
- They caught 11 more ants than butterflies.
- The total number of insect legs are found, $6 \cdot 40 = 240$ insect legs.