Bowls of Apples

There are 16 apples to put in bowls. Each bowl must have the same number of apples. Show how you could put the apples into bowls.

Grade Levels Pre-K-2

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Context

This is an open-response problem because there is more than one solution. It shows students' understanding of number sense and patterns. The problem allows students to investigate division and fractions.

What This Task Accomplishes

The problem offers a concrete assessment of students' understanding of fractions and division.

What the Student Will Do

By using diagrams and manipulatives as they solve this problem, students will be able to demonstrate their understanding of fractions. They will also show their ability to solve problems. Some students will find one solution and stop, while others will show several different solutions.

Time Required for Task

30 minutes

The time used solving this problem will vary. Some students will take longer to get started while others will pursue several solutions.

Interdisciplinary Links

This problem can be integrated with a discussion of sharing.

Teaching Tips

Students who do this problem should have some knowledge of the concept of sharing. It would be helpful if they had some concrete experience with a similar problem before the assessment. However, if their experience is more limited, it may demonstrate their problem-solving abilities and innate sense of fractions and division.

Suggested Materials

- Math manipulatives
- Paper
- Pencils
- Crayons
- Objects students can cut to paste into bowls

Possible Solutions

There are four possible solutions:

1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 = 16
(one apple in 16 bowls)
(1/16 in each bowl)

2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = 16
(two apples in eight bowls)
(2/16 or 1/8 in each bowl)

4 + 4 + 4 + 4 = 16
(four apples in four bowls)
(4/16 or 1/4 in each bowl)

8 + 8 = 16
(eight apples in two bowls)
(8/16 or 1/2 in each bowl)

Benchmark Descriptors

Novice
The Novice shows no apparent understanding of the problem or its solution.

Apprentice
The Apprentice manipulates figures, showing a developing sense of fractions, but confuses the data, or correctly draws a diagram, but only partially, or incorrectly explains the solution.

Practitioner
The Practitioner understands the problem and correctly computes a solution. S/he uses words or a mathematical equation to explain the process.

Expert
The Expert clearly shows an understanding of the problem by giving a detailed explanation in mathematical terms and/or number equations showing the steps involved in its solution.