

How Many Apples?

Mr. Baker wants to give each student in his class $\frac{1}{2}$ an apple to eat for a snack. There are 12 students in his class. How many apples does he need to bring to school for snack time?

How Many Apples?

Suggested Grade Span

Grades Pre–K–2

Grade(s) in Which the Task Was Piloted

Grade 1

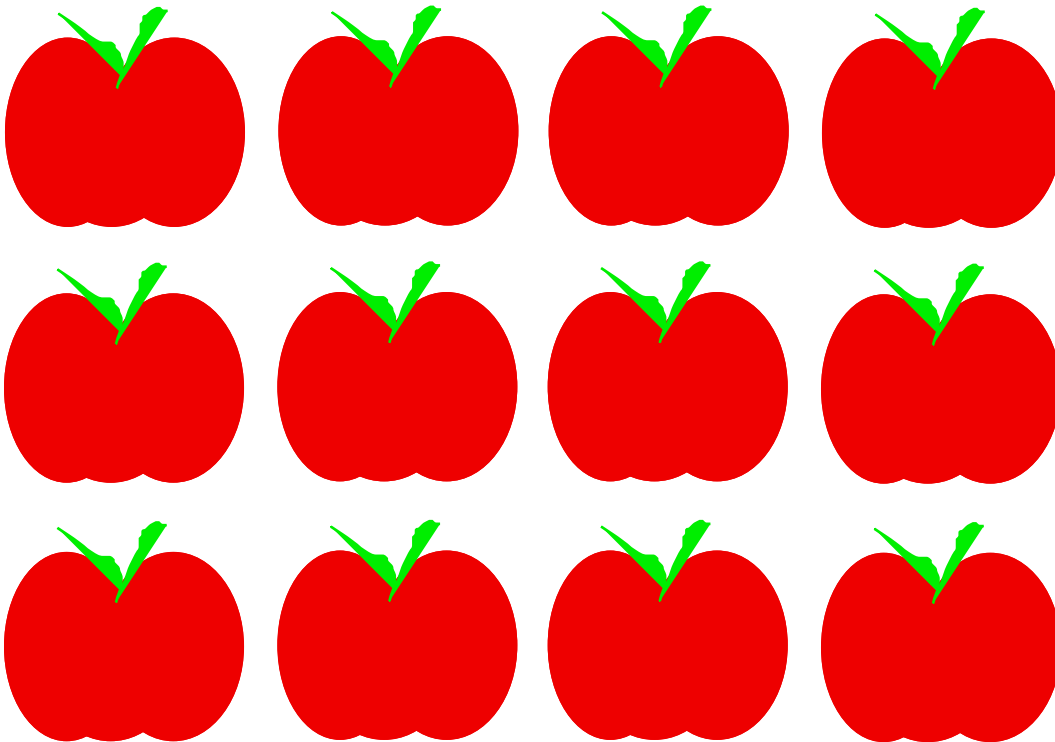
Task

Mr. Baker wants to give each student in his class $\frac{1}{2}$ an apple to eat for a snack. There are 12 students in his class. How many apples does he need to bring to school for snack time?

Alternative Versions of the Task

More Accessible Version:

Mr. Baker wants to give each student in his class 1 apple to eat for a snack. The apples he needs are shown below. How many students are in his class?



More Challenging Version:

Mr. Baker wants to give each student in his class apples to eat for a snack. There are 12 students in his class. $\frac{1}{2}$ of the students wanted a $\frac{1}{2}$ of an apple to eat. $\frac{1}{2}$ of the students that were left wanted a whole apple to eat. The remaining students wanted a $\frac{1}{3}$ of an apple to eat. How many apples does he need to bring to school for snack time?

NCTM Content Standards and Evidence

Number and Operation Standard for Grades Pre–K–2

Instructional programs from Pre–Kindergarten through grade 12 should enable students to...

- Understand numbers, ways of representing numbers, relationships among numbers and number systems.
 - **NCTM Evidence:** Understand and represent commonly used fractions, such as $\frac{1}{4}$, $\frac{1}{3}$ and $\frac{1}{2}$.
 - **Exemplars Tasks Specific Evidence:** This task requires students to apply the fact that two halves equal a whole.

Time/Context/Qualifiers/Tip(s) from Piloting Teacher

This task is considered a medium length task in that it took my students one class period in which to complete it.

Links

This task may complement fall activities during a study of apples. Children’s literature that would complement this task includes *Give Me Half!*, by Stuart J. Murphy, part of the *Mathstart Series*.

Common Strategies Used to Solve This Task

Most students will draw diagrams of apples in halves to solve the task.

Possible Solutions

Original Version:

$12 \times \frac{1}{2} = 6$ apples are needed.

More Accessible Version:

12 apples are needed.

More Challenging Version:

6 students \times $\frac{1}{2}$ apple = 3 apples

Half of 6 is 3×1 whole apple = 3 apples

$3 \times \frac{1}{3}$ apple = 1 apple

Total apples needed = 7

Task Specific Assessment Notes

General Notes: This task encourages the use of diagrams to solve the task. It may not, however, elicit much mathematical language or notation.

Novice: The Novice will not be able to address the 12 students and the half of an apple each student ate. No math language will be used, and diagrams created will not lead toward a solution.

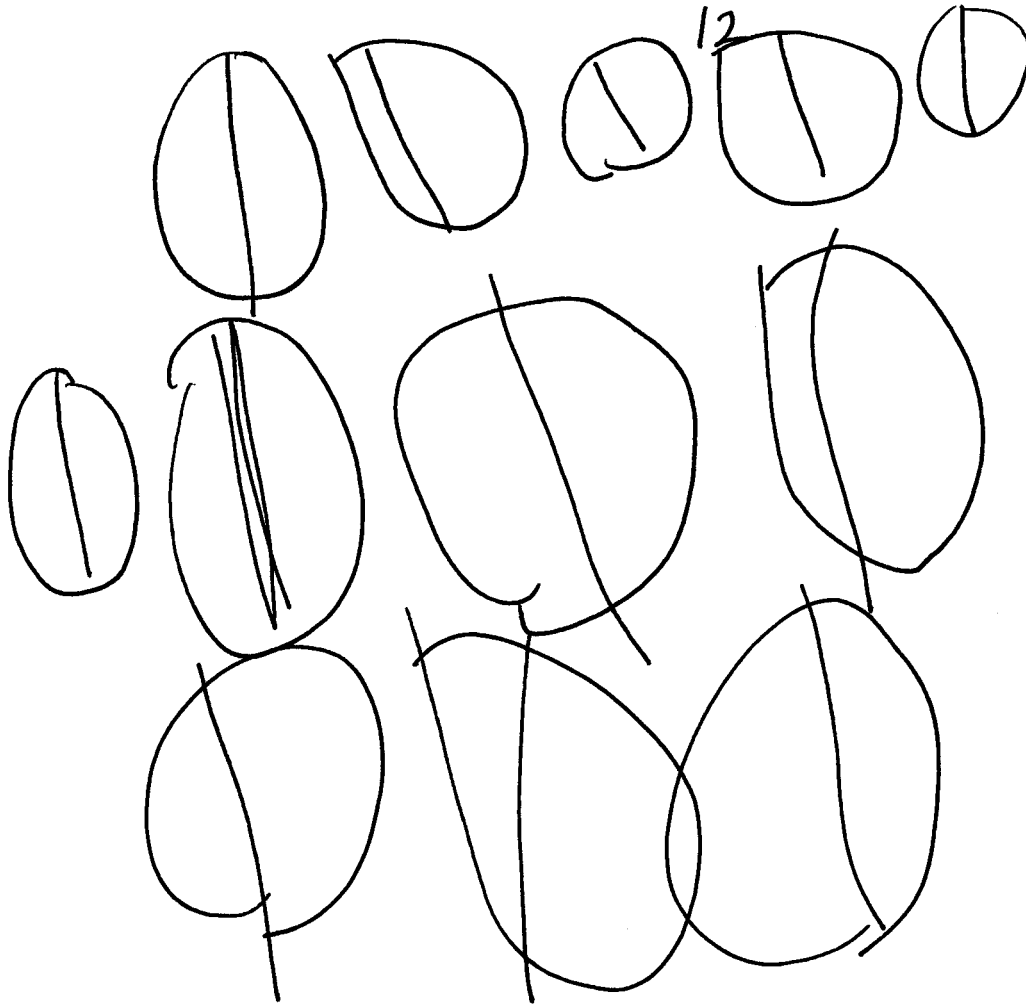
Apprentice: The Apprentice will have a partially correct solution. The Apprentice may be able to show evidence of the 12 students and some or all of the apples eaten. An incorrect answer will be achieved either due to computation, reasoning or omission errors. Some math language will be used to communicate.

Practitioner: The Practitioner will have a correct solution. The Practitioner will demonstrate understanding of 12 students and the apples they ate. A correct conclusion will be achieved. All work will be shown and labeled. A sense of audience will be demonstrated. Mathematically relevant observations will be made, but they will not further the solution.

Expert: The Expert will have an efficient approach. Accurate and appropriate math language will be used. Mathematically relevant observations will help further the solution.

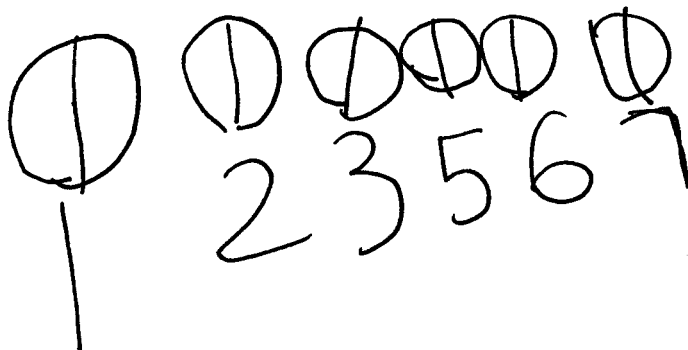
Author

Deb Armitage, Pre–K–8 Mathematics Assessment Consultant at the Vermont Department of Education, wrote this task. Teachers and students in Vermont piloted the task.



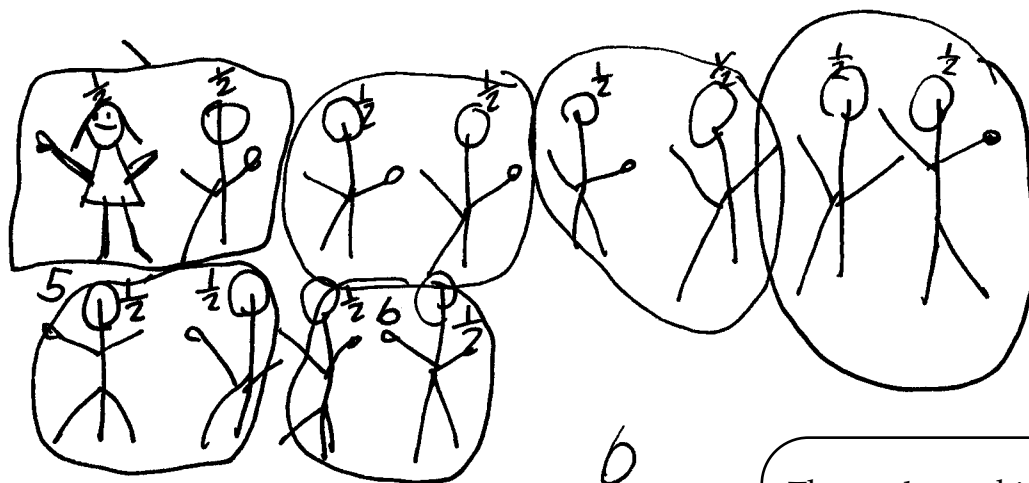
The student shows some understanding of "12" and of "half", but cannot put the two concepts together to solve the task.

Apprentice



The student is able to use diagrams to achieve a correct solution, but when labeling the diagram with numbers made an error that led to an incorrect answer.

Practitioner

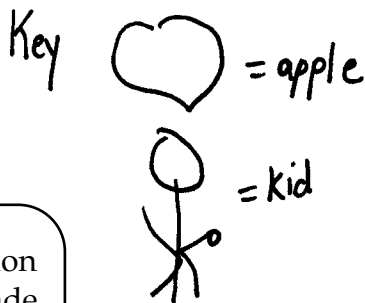


$$\frac{1}{2} + \frac{1}{2} = 1$$

The student achieved a correct solution with supporting work.

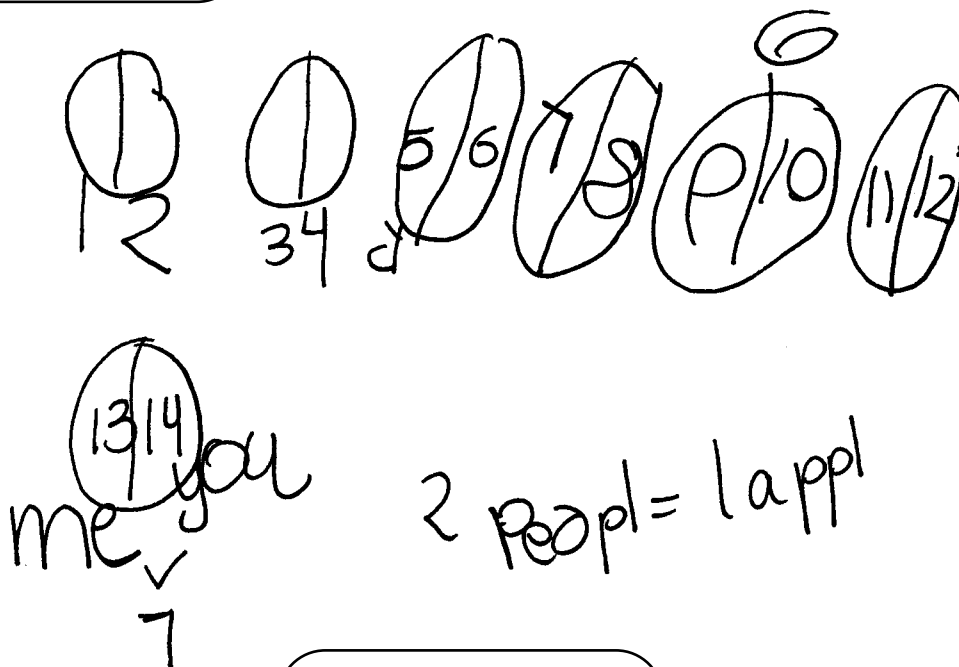
Some math language is used to communicate.

A relevant observation about fractions is made.



Expert

A correct answer is achieved. Work is shown and labeled.



The student extends the solution to show the number of apples needed for 14 people.