

Balloons to Share

Jake has 15 balloons and 4 friends. If Jake wants to share the balloons with his 4 friends and himself, how many balloons will each person get?

Balloons to Share

Suggested Grade Span

Pre K–2

Grade(s) in Which Task was Piloted

Grade K

Task

Jake has 15 balloons and 4 friends. If Jake wants to share the balloons with his 4 friends and himself, how many balloons will each person get?

Alternative Versions of Task

More Accessible Version:

Jake has 4 friends. If Jake wants to give each friend 2 balloons, how many balloons will he need?

More Challenging Version:

The original version, and...

Jake decides to tie a string to each balloon. He would like 2 feet of string for each balloon. How much string does he need in all?

NCTM Content Standards and Evidence

Number and Operation Standard for Grades Pre K–2

Instructional programs from pre–kindergarten through grade 12 should enable all students to —

- Understand meanings of operations and how they relate to one another
 - *NCTM Evidence:* Understand situations that entail multiplication and division, such as equal groupings of objects and sharing equally
 - *Exemplars Task Specific Evidence:* This task requires students to understand that division is needed to determine the number of balloons each person gets.

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

This is a short to medium length task.

Links

This task could link to discussions about sharing, or could be timely if an upcoming party is scheduled.

Common Strategies Used to Solve This Task

Most students started by drawing five people and then drew one balloon at a time on each person until all 15 balloons were drawn.

Possible Solutions

Original Version:

$15 \div 5 = 3$ balloons each

More Accessible Version:

$4 \times 2 = 8$ balloons

More Challenging Version:

See the solution to the original version, and...

$15 \text{ balloons} \times 2 \text{ feet of string} = 30 \text{ feet of string}$, or 360 inches, or 10 yards

Task Specific Assessment Notes

General Notes

Students need to understand the kind of sharing that includes the person sharing.

Novice

The Novice may have a rudimentary understanding of the task, but it will not lead to a solution. There is no correct reasoning or justification of strategy to solve the task.

Apprentice

The Apprentice will have a partially correct solution, but certain omissions will lead to an incorrect or incomplete solution. The Apprentice may share the 15 balloons correctly with only the four friends or make an error in sharing the 15 balloons. The Apprentice will use some correct math language and show some correct reasoning. There will be some attempt at using math representations to communicate the solution and assist with understanding.

Practitioner

The Practitioner will achieve a correct solution with a systematic approach that shows correct reasoning. The Practitioner will communicate the approach through a methodical, organized, coherent, sequenced and labeled response. The Practitioner will use math language to communicate the solution and mathematically relevant observations will be made.

Expert

The Expert's work will have all that the Practitioner has along with evidence of analyzing the situation in mathematical terms and extending prior knowledge. Abstract or symbolic mathematical representations are constructed to analyze relationships, extend thinking and clarify or interpret phenomenon.

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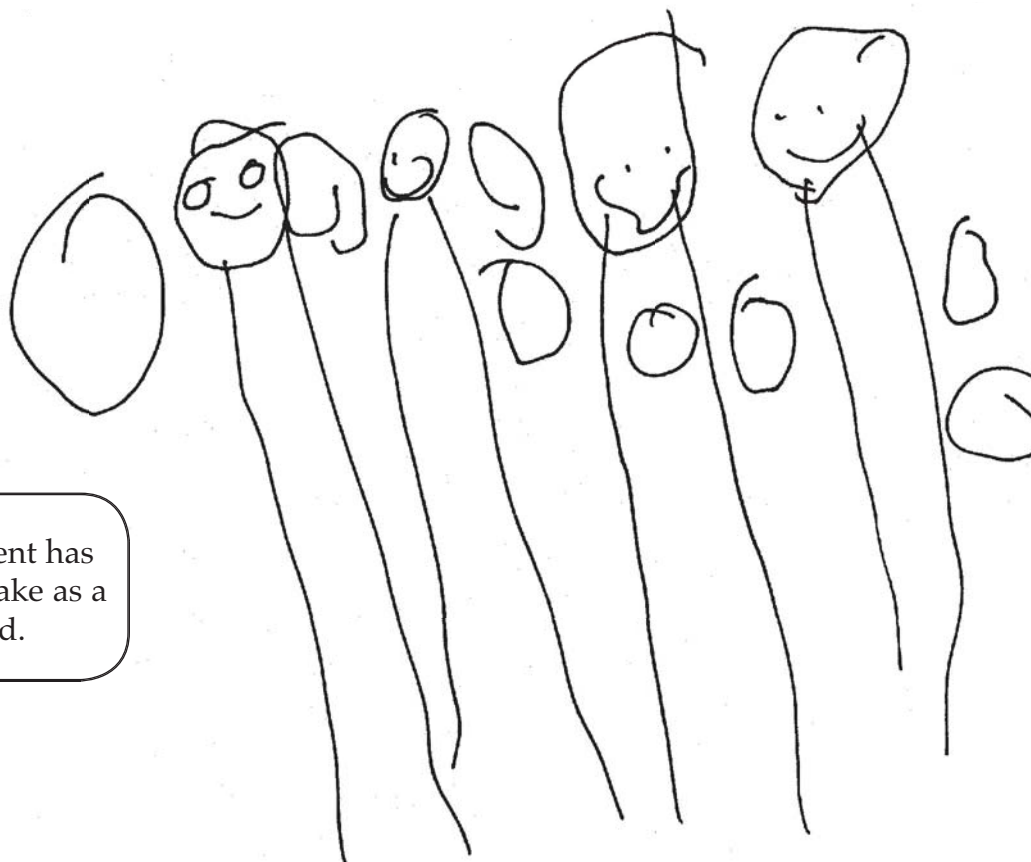
Novice

Not all 15 balloons are shared.

This strategy will not lead to a correct solution.

öJ gtg'ctg'yj g'htkpf u#: /Uetkdgf "d{ "vgcej gt

öVj cv'ku'LcngØ: /Uetkdgf "d{ "vgcej gt



The student has included Jake as a friend.

öKi cxg'yj go "gki j v'dcmqpuØ:
 *Uwf gpv'eqwpygf 'htqo "qpg'vq'gki j v'eqtgewfØ-
 F q' {qw'j cxg'cm'j ku'htkpf u^
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Apprentice

The diagram is not labeled and not accurate.

The student is confused about what the task is asking as a solution.

"Jake is one and he has four friends, so I made them."
- Scribed by teacher



A partially correct strategy is chosen.



How many do they each get?
"Fifteen."
Look at your drawing.
"I think 15."
- Scribed by teacher

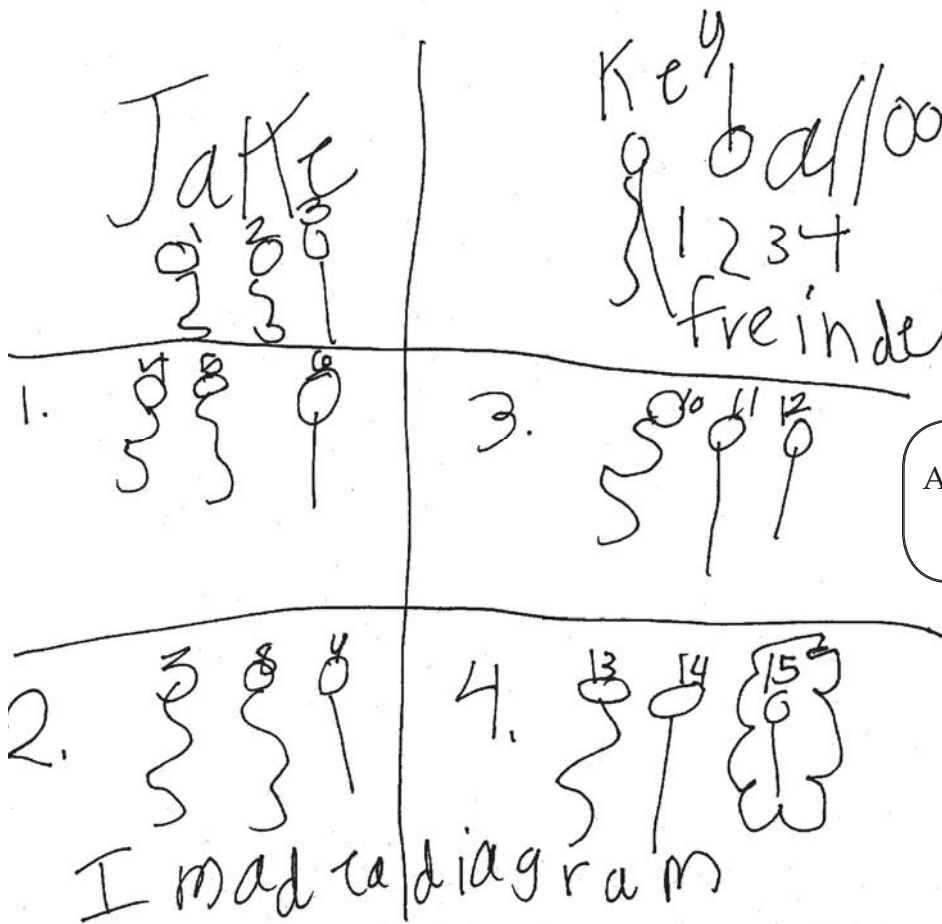
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Practitioner

An observation is made about the pattern.

The student's strategy is shown by counting each balloon.

The representation is labeled.



A correct solution is achieved.

"I see a pattern you always count by three. Like 3, 6, 9, 12, 15 - 15 balloons!"
- Scribed by Teacher

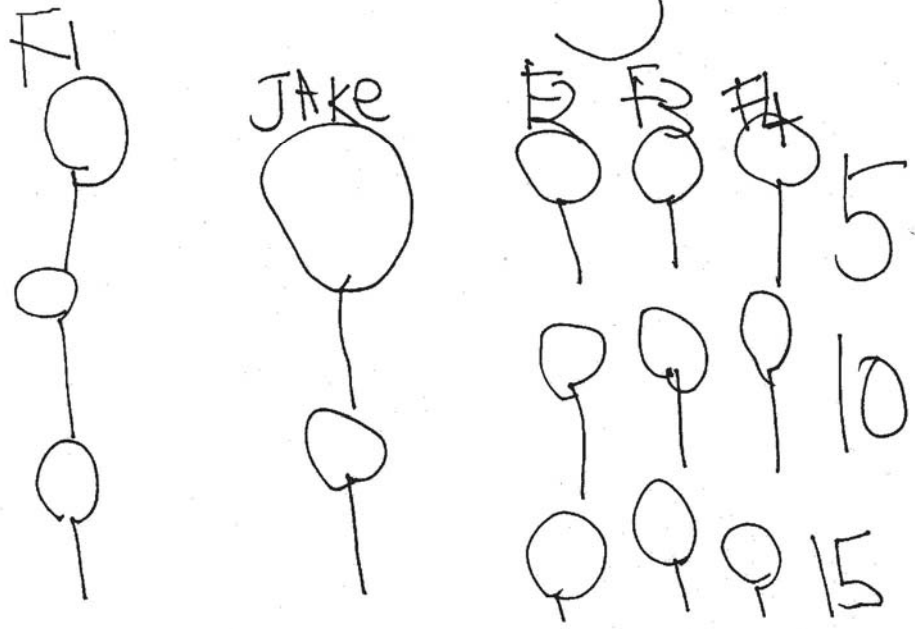
Expert

"Jake and four is five. I did a diagram. I made Jake and did F1, F2, F3, F4 for his friends because friends starts with F and I don't know their names."
- Scribed by teacher

Key
balon

Representation is labeled.

"Five, 10, 15 is a pattern. You can repeat it more."
- Scribed by Teacher



An observation is made about the pattern counting by fives.

Expert cont.

A table is a more abstract representation.

"Can you write person here." (pointed)
 "Can you write balloon here?" (pointed)
 - Scribed by Teacher

Person	balloon
JAKE	3
F1	3
f2	3
F3	3
F4	3

"I got 15 this way. It is called a table."
 - Scribed by Teacher

This second strategy (counting threes) verifies the first solution.

"I made dots to count the threes."
 - Scribed by Teacher

15

