

Apples and Bananas

The kindergarten teacher had a big bowl of apples and bananas. Each student was allowed to pick one piece of fruit for snack. The first student picked an apple. The second student picked a banana. The third student picked an apple. The fourth student picked a banana. If this pattern continues, what will the tenth student pick for a snack? Show your math thinking.

Apples and Bananas

Suggested Grade Span

Grades Pre K–2

Grade(s) in Which Task Was Piloted

Grade K

Task

The kindergarten teacher had a big bowl of apples and bananas. Each student was allowed to pick one piece of fruit for snack. The first student picked an apple. The second student picked a banana. The third student picked an apple. The fourth student picked a banana. If this pattern continues, what will the tenth student pick for a snack? Show your math thinking.

Alternative Versions of Task

More Accessible Version:

The kindergarten teacher had a big bowl of apples and bananas. Each student was allowed to pick one piece of fruit for snack. The first student picked an apple. The second student picked a banana. The third student picked an apple. The fourth student picked a banana. If this pattern continues, what will the fifth student pick for a snack? What will the sixth student pick for a snack? What will the seventh student pick for a snack? What will the tenth student pick for snack? Show your math thinking.

More Challenging Version:

The kindergarten teacher had a big bowl of apples and bananas. Each student was allowed to pick one piece of fruit for snack. The first student picked an apple. The second student picked a banana. The third student picked an apple. The fourth student picked a banana. If this pattern continues, what will the tenth student pick for a snack? If there are 19 students in the class, how many apples and bananas should the teacher buy for snack? Show your math thinking.

NCTM Content Standards and Evidence

Algebra Standard for Grades Pre K–2

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

- Understand patterns, relations, and functions.
 - *NCTM Evidence:* Recognize, describe, and extend patterns such as sequences of sounds and shapes or simple numeric patterns and translate from one representation to another.

- **Exemplars Tasks Specific Evidence:** This task requires students to identify the apple-banana-apple-banana pattern, and to continue that pattern.

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

This is a short to medium length task. Students will be motivated to solve the task if actual bananas and apples are brought in for snack. The apples and bananas can also be used for scientific investigations, lessons on fractions, etc.

Links

Many students study apples in the fall, so this task would work well during this unit. It could also accompany a unit on nutrition.

Common Strategies Used to Solve This Task

Most students will draw the apples and bananas to find a solution. Some students represent apples with A and bananas with B to find a solution.

Possible Solutions

Original Version:

Student	Choice of Fruit
1	apple
2	banana
3	apple
4	banana
5	apple
6	banana
7	apple
8	banana
9	apple
10	banana

More Accessible Version:

see above

More Challenging Version:

see above.

Even numbered students choose bananas.

Odd numbered students choose apples.

9 apples need to be bought

10 bananas need to be bought

Task Specific Assessment Notes

General Notes: This task assesses students' ability to identify and extend patterns using a problem solving approach.

Novice: The novice will demonstrate little or no understanding of the task. No reference to 10 students will be made, and the students will not utilize information presented in the task about the first 4 picks.

Apprentice: The apprentice will have a partially correct solution or a strategy that will work for solving only part of the task. The apprentice will identify and correctly extend the pattern, but may not do so for 10 students. Or the student may find for 10 students with an incorrectly extended pattern.

Practitioner: The practitioner will achieve a correct solution to the task with supporting work. 10 students will be referred to with a correct extension of the pattern.

Expert: The expert will not only achieve a correct solution, but will also utilize other good problem solving strategies such as creating a rule to solve the task, verifying the solution, or going above and beyond the task requirements such as finding for a number of students higher than 10, explaining the pattern, or changing the pattern and solving again.

Author

This task was written by **Deb Armitage**, Pre K–8 Mathematics Assessment Consultant at the Vermont Department of Education. The task was piloted by teachers and students in Vermont.



Ten picks are not referred to.
No math language is used.
Communication is unclear.

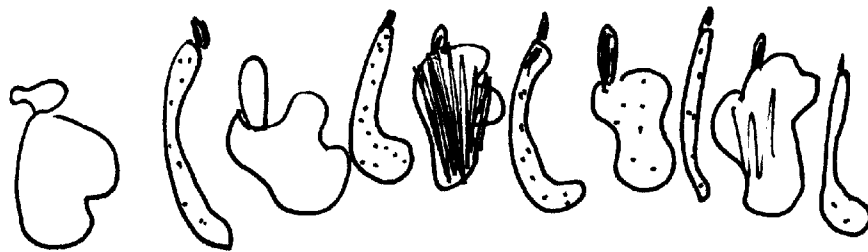
No understanding of the
apple and banana pattern is
demonstrated.

Apprentice



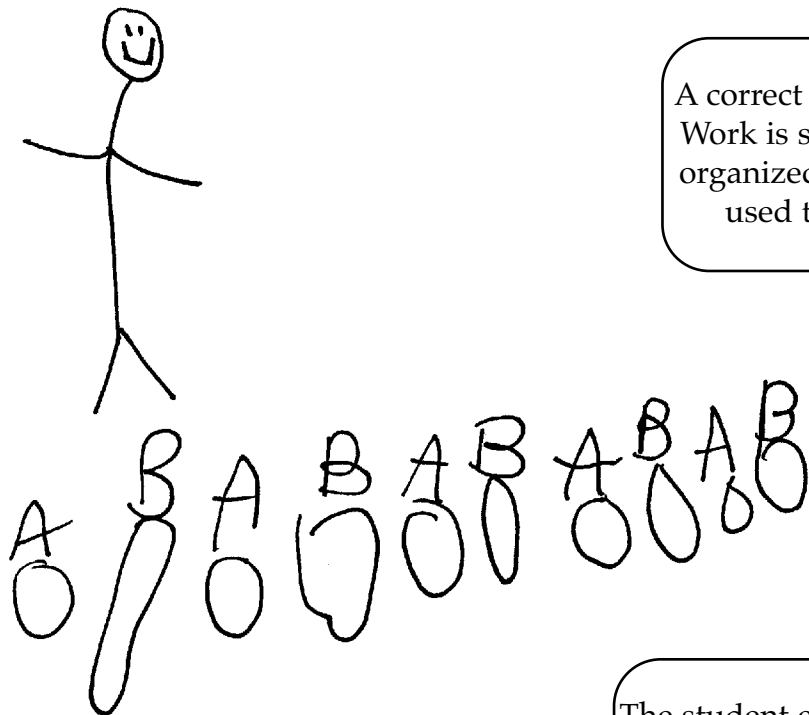
A partial solution is achieved. The student correctly identifies and extends the pattern, but no reference or attempt is made to identify the pick of the 10th student.

Practitioner



The student correctly identifies and extends the pattern to the 10th student and indicates the solution.

Drawings are clear and need no labels to identify apple and bananas.



A correct answer is achieved. Work is shown, labeled, and organized. Math language is used to communicate.

The student extends the solution beyond the task requirements.

KEY
A APPLES
B BANANAS

11A
12B

18B
19A