

The Candy Machine

Jen loves the candy machines at the grocery store. If you put a dime in the coin slot of 1 machine and turn the handle, you get 3 big pieces of candy. If you put a nickel in the coin slot of a different machine and turn the handle, you get 2 small pieces of candy. When Jen was done, she counted what she got from the machines. She had 9 big pieces of candy and 10 small pieces of candy. How much money did Jen use in the candy machines?

If you had 25 cents in nickels and dimes to use in the machines, what would you buy?

The Candy Machine

Suggested Grade Span

Pre K–2

Grade(s) in Which Task was Piloted

Grade 1

Task

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If you had 25 cents in nickels and dimes to use in the machines, what would you buy?

Alternative Versions of Task

More Accessible Version:

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More Challenging Version:

Jen loves the candy machines at the grocery store. If you put a dime in the coin slot of one machine and turn the handle, you get 3 big pieces of candy. If you put a nickel in the coin slot of a different machine and turn the handle, you get 2 small pieces of candy. When Jen was done, she counted what she got from the machines. She had 9 big pieces of candy and 10 small pieces of candy. How much money did Jen use in the candy machines?

If you had 25 cents in nickels and dimes to use in the machines, what are all of the different combinations of candy you could buy?

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 —

- Compute fluently and make reasonable estimates
 - *NCTM Evidence:* Develop and use strategies for whole-number computations, with a focus on addition and subtraction

- **Exemplars Task Specific Evidence:** This task requires students to use repeated addition or subtraction to determine the amount of money spent in the machines.

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

This is a short to medium length task.

Links

A great follow-up discussion may look at the nutritional disadvantages of candy.

Common Strategies Used to Solve This Task

Most students used a diagram, grouping larger and smaller candies. Several students used a table to solve the problem.

Possible Solutions**Original Version:**

Part A:

$9 \div 3 = 3$ big candy purchases at 10 cents each = \$0.30

$10 \div 2 = 5$ small candy purchases at 5 cents each = \$0.25

Total = \$0.55

Part B:

Twenty-five cents could be made with five nickels as described in the task resulting in 10 small candies.

Twenty-five cents could be made with three nickels and one dime, resulting in six small candies, and three big pieces of candy.

Twenty-five cents could be made with one nickel and two dimes, resulting in two small candies, and six big pieces of candy.

More Accessible Version:

$9 \div 3 = 3$ big candy purchases at 10 cents each = \$0.30

$10 \div 2 = 5$ small candy purchases at 5 cents each = \$0.25

Total = \$0.55

More Challenging Version:

See the solution to the original version.

Task Specific Assessment Notes

General Notes

A very basic knowledge of money is needed for this task.

Novice

The Novice will choose a strategy that will not lead to a solution. No justification for reasoning will be present. Little or no communication of an approach is evident. No evidence of the purpose of the task is communicated.

Apprentice

The Apprentice will achieve a partially correct solution or a solution to only part of the task. Some communication of an approach is evident. An attempt is made to construct mathematical representation.

Practitioner

The Practitioner will achieve a correct solution to all parts of the task. Appropriate and accurate mathematical representations are constructed. A sense of audience or purpose is communicated. A mathematical observation is made.

Expert

The Expert arrives at a correct solution of all parts of task. The use of accurate and appropriate representation is present. Extending the solution to other cases is present.

No evidence of the purpose of the task is communicated.

No strategy is evident.

① ① ① ① ① ① ① ① ① ① 30¢
① ① ① ① ① 25¢

Little communication of reasoning.

9 Yrdlg

Apprentice

Some communication of the solution is confusing.

Representation lacks a key.

$\frac{10}{5}$

10¢ 10¢ 10¢ 15¢ 5¢ 5¢ 5¢ 5¢ 5¢

○ ○ ○ he gets 19 Candys in all ○ ○ ○ ○ ○

○ ○ ○

answer
155¢
19 Candys

he gets 19 Candys

55¢

Answer 55¢

Correct solution with some evidence of a strategy is present.

Second part of the task is not attempted.

9 Yrdlg

Practitioner

A systematic approach is present.

key
10 = big
5 = 2 small

Representation is accurate and labeled.

I will make a T chart.

candy	money	running total
1	10¢	3
2	5¢	5
3	10¢	8
2	5¢	10
3	10¢	13
2	5¢	16
2	5¢	17
2	5¢	19

A correct solution to both parts is achieved.

55¢

9 Yaddfg

Practitioner cont.

An observation of the number of candies with 25 cents is made.

10 small Peses 9 Big Peses

25¢ to Spend

10¢
03¢
04¢
05¢

01
02
03
04
05

I noticed with 25¢ you can get 8 candies

candy	money	running total
3	10¢	10¢
3	10¢	20¢
2	5¢	25¢

8 candies

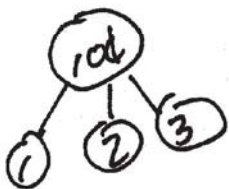
9 YdUg

Expert

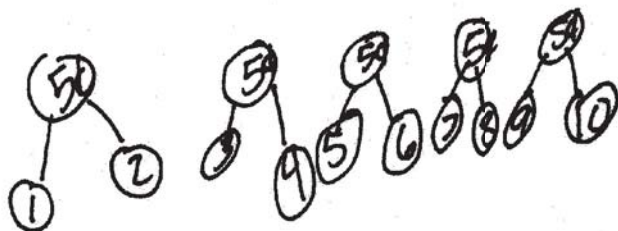
Appropriate and accurate representation is used.

9 big candies
10 small

10¢ 3 Big
5¢ 2 small



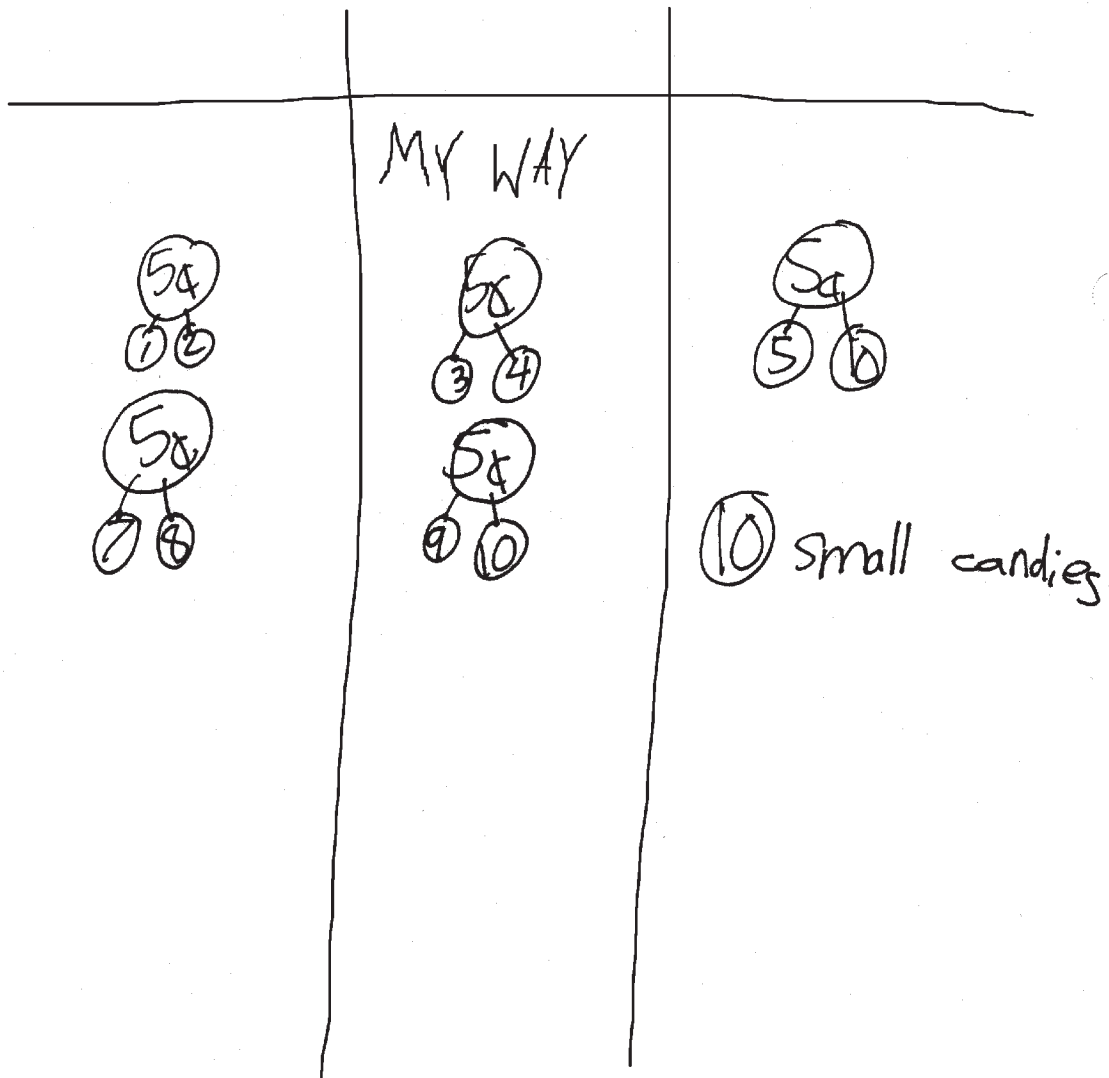
30¢



+ 25¢
55¢

9 Yaddfg

Expert cont.



9 Yādūg

Expert cont.

A correct solution to both parts of the task is achieved.

all ways candies

5¢	10¢	10¢	5¢	10¢	8
5¢	5¢	5¢	5¢	10¢	9
5¢	5¢	5¢	5¢	5¢	10

The student extends the solution to all possible combinations.