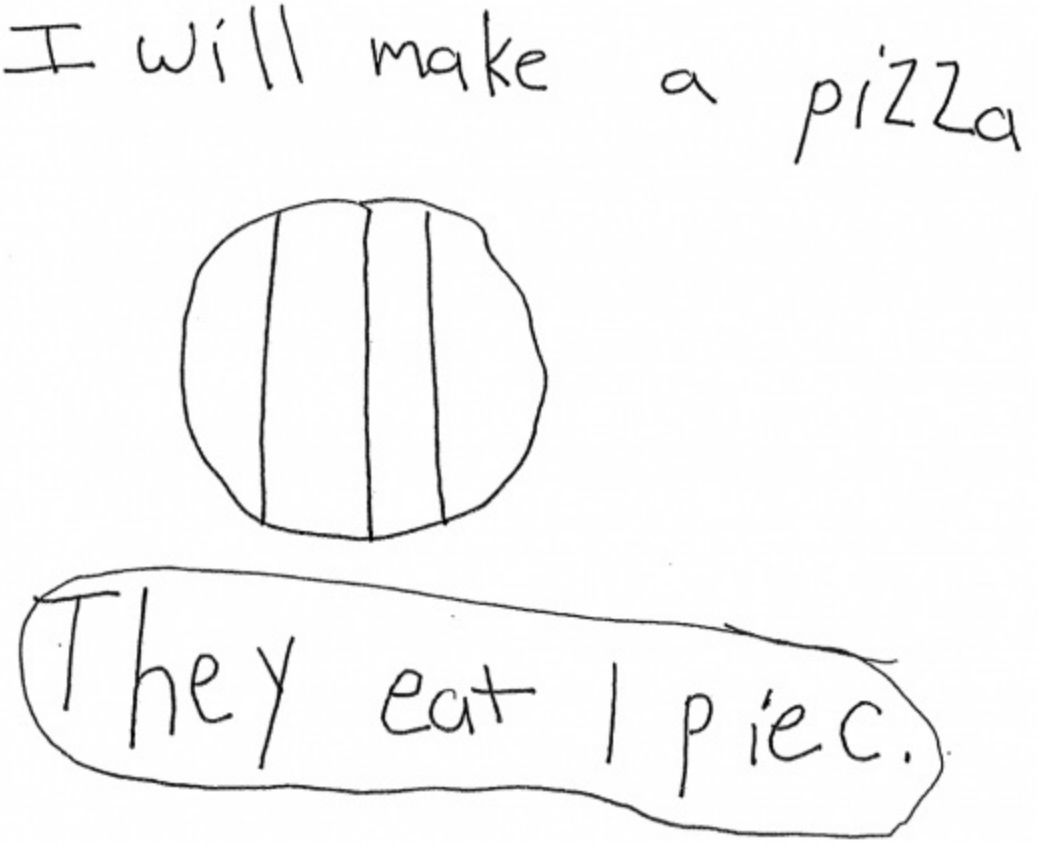
Title: Friends and Pizza

Achievement Level: Novice 1

Criteria and Performance Level	Rationales
Problem Solving *Novice*	The student's strategy of diagramming a circle and partitioning it with parallel lines into four pieces would not work to solve the task. The student's answer, "They eat 1 piec," is not correct.
Reasoning & Proof *Novice*	The student does not show correct reasoning of the underlying concepts of the task. The student is not able to partition a rectangle into four equal shares and describe each share as a fourth of the whole.
Communication *Novice*	The student does not use any mathematical language to communicate their reasoning and proof.
Connections *Novice*	The student does not make a mathematically relevant observation about their solution.
Representation *Apprentice*	The student attempts to make a diagram, but it is not accurate. The student diagrams a circle instead of a rectangle and does not partition the circle correctly into fourths.

Achievement Level: Novice 1

P/S	R/P	Com	Con	Rep	A/Level
N	N	N	N	A	N



(reread problem)
"4 friends so 4 pieces of pizza so I did it right."

AZ

Title: Friends and Pizza

Achievement Level: Apprentice 1

Criteria and Performance Level	Rationales
Problem Solving *Practitioner*	The student's strategy of diagramming a rectangle and partitioning it into four equal shares for four friends works to solve the task. The student's answer, "They each get one piece," is correct.
Reasoning & Proof *Practitioner*	The student demonstrates correct reasoning of the underlying concepts of the task. The student diagrams a rectangle into four equal shares and understands that each friend will have one "piece" of the pizza.
Communication *Apprentice*	The student correctly uses the mathematical term *diagram*.
Connections *Novice*	The student does not make a mathematically relevant observation about their solution.
Representation *Apprentice*	The student's diagram is appropriate to the task but not accurate. The student does not define the pizza with a label or in their text.

Note:

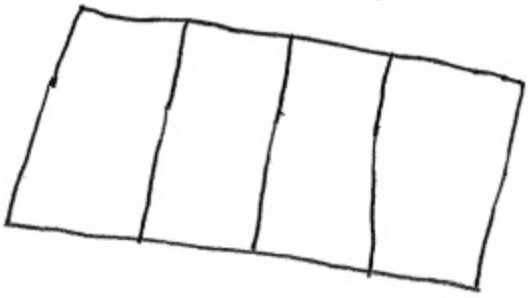
The overall achievement level for this piece of student work falls under Exemplars exception to the rule category. If a student has all Apprentice scores or above, but a Novice in "Connections," the student may still receive an achievement level score of Apprentice. To learn more about Exemplars scoring, please see the "Classroom

Resources" section.

Achievement Level: Apprentice 1

P/S	R/P	Com	Con	Rep	A/Level
P	P	A	N	A	A

Make the same
for 4 kids.
I will make a diagram.



"They each get 1 piece."
[Anything else you want to tell about your diagram?]
"No I made a good one."

AZ

Title: Friends and Pizza

Achievement Level: Apprentice 2

Criteria and Performance Level	Rationales
Problem Solving *Practitioner*	The student's strategy of diagramming a rectangular pizza and partitioning it into four equal shares works to solve the task. The student's answer, "Each of the friends gets to eat one-fourth piece of pizza," is correct.
Reasoning & Proof *Practitioner*	The student demonstrates correct reasoning of the underlying concepts of the task. The student diagrams a rectangle into four equal shares and understands that each friend will have one-fourth of the whole pizza.
Communication *Practitioner*	The student correctly uses the mathematical terms *diagram*, *key*, *amount*, *fourths*, *equal*, *one-fourth*.
Connections *Novice*	The student does not make a mathematically relevant observation about their solution.
Representation *Practitioner*	The student's diagram is appropriate and accurate. The student defines the pizza and the four equal shares in the scribing.

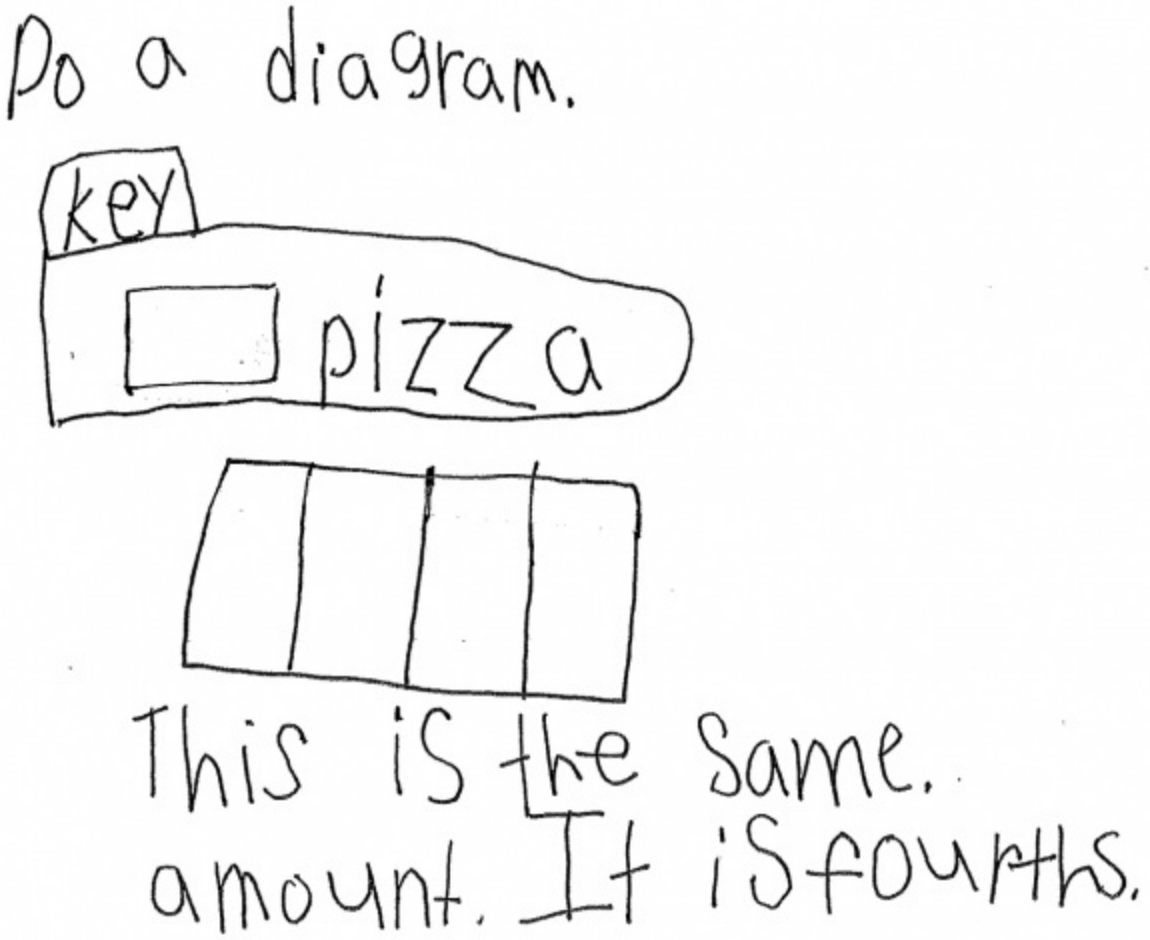
Note:

The overall achievement level for this piece of student work falls under Exemplars exception to the rule category. If a student has all Apprentice scores or above, but a Novice in "Connections," the student may still receive an achievement level score of Apprentice. To learn more about Exemplars scoring, please see the "Classroom

Resources" section.

Achievement Level: Apprentice 2

P/S	R/P	Com	Con	Rep	A/Level
P	P	P	N	P	A



"I made a pizza. I made 4 equal parts. Each of the friends get to get one fourth piece of pizza. I got all my words spelled right because I see them on the word wall. That helps me."

AZ

Title: Friends and Pizza

Achievement Level: Practitioner 1

Criteria and Performance Level	Rationales
Problem Solving *Practitioner*	The student's strategy of diagramming four friends and a rectangular pizza works to solve the task. The student partitions the rectangle into four equal shares and assigns one-fourth pizza to each friend. The student's answer, "They got one-fourth pizza each," is correct.
Reasoning & Proof *Practitioner*	The student demonstrates correct reasoning of the underlying concepts of the task. The student diagrams a rectangle into four equal shares and understands that each friend will have one-fourth of the whole.
Communication *Expert*	The student correctly uses the mathematical term *rectangle* from the task. The student also correctly uses the terms *diagram*, *fourths*, *one-fourth*, *thirds*, *equal*.
Connections *Practitioner*	The student makes the mathematically relevant observation, "If you have three friends you cut the pizza in thirds. That is three equal pieces."
Representation *Practitioner*	The student's diagram of four friends is appropriate to the task and accurate. The student defines the friends in the scribing. The student's rectangular pizza is also appropriate, accurate and defined in the scribing.

Achievement Level: Practitioner 1

P/S	R/P	Com	Con	Rep	A/Level
P	P	E	P	P	P

"I made a pizza. I made 4 equal parts. Each of the friends get to get one fourth piece of pizza. I got all my words spelled right because I see them on the word wall. That helps me."

AZ

Title: Friends and Pizza

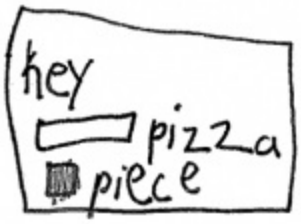
Achievement Level: Practitioner 2

Criteria and Performance Level	Rationales
Problem Solving *Practitioner*	The student's strategy of diagramming a rectangular pizza, partitioning the rectangle into four equal shares, and assigning one-fourth pizza to each friend works to solve the task. The student's answer, "They eat one fourth each," is correct.
Reasoning & Proof *Practitioner*	The student demonstrates correct reasoning of the underlying concepts of the task. The student diagrams a rectangle into four equal shares and understands that each friend will have one-fourth of the whole.
Communication *Practitioner*	The student correctly uses the mathematical terms *diagram*, *key*, *one fourth*, *one half*, *fourths*.
Connections *Practitioner*	The student diagrams a new rectangular pizza and states, "2 friends can eat one half eache." The student diagrams another rectangular pizza and partitions it into fourths a different way.
Representation *Practitioner*	The student's diagrams are all appropriate to the task and accurate. A key defines the pizza and pieces. The student's text also correctly defines the pizzas and the equal shares.

Achievement Level: Practitioner 2

P/S	R/P	Com	Con	Rep	A/Level
P	P	P	P	P	P

How can they eat the same share of pizza? Make a diagram.



4 friends

they eat one fourth each

2 friends can eat one half eache.

a new way for fourths

Title: Friends and Pizza

Achievement Level: Practitioner 3

Criteria and Performance Level	Rationales
Problem Solving *Practitioner*	The student's strategy of diagramming a rectangular pizza, partitioning the rectangle into four equal shares, and assigning, one-fourth pizza to each friend works to solve the task. The student's answer, "they get 1 fourth to eat each," is correct.
Reasoning & Proof *Practitioner*	The student demonstrates correct reasoning of the underlying concepts of the task. The student diagrams a rectangle into four equal shares and understands that each friend will have one-fourth of the whole.
Communication *Expert*	The student correctly uses the mathematical terms *diagram*, *key*, *1 fourth*, *thirds*, *equal*.
Connections *Practitioner*	The student diagrams a new rectangular pizza partitioned in thirds. The student states, "this is for 3 friends," and, "that is equal."
Representation *Practitioner*	The student's diagrams are appropriate to the task and accurate. A key defines the pizza and the student's text defines the equal shares.

Achievement Level: Practitioner 3

P/S	R/P	Com	Con	Rep	A/Level
P	P	E	P	P	P

Title: Friends and Pizza

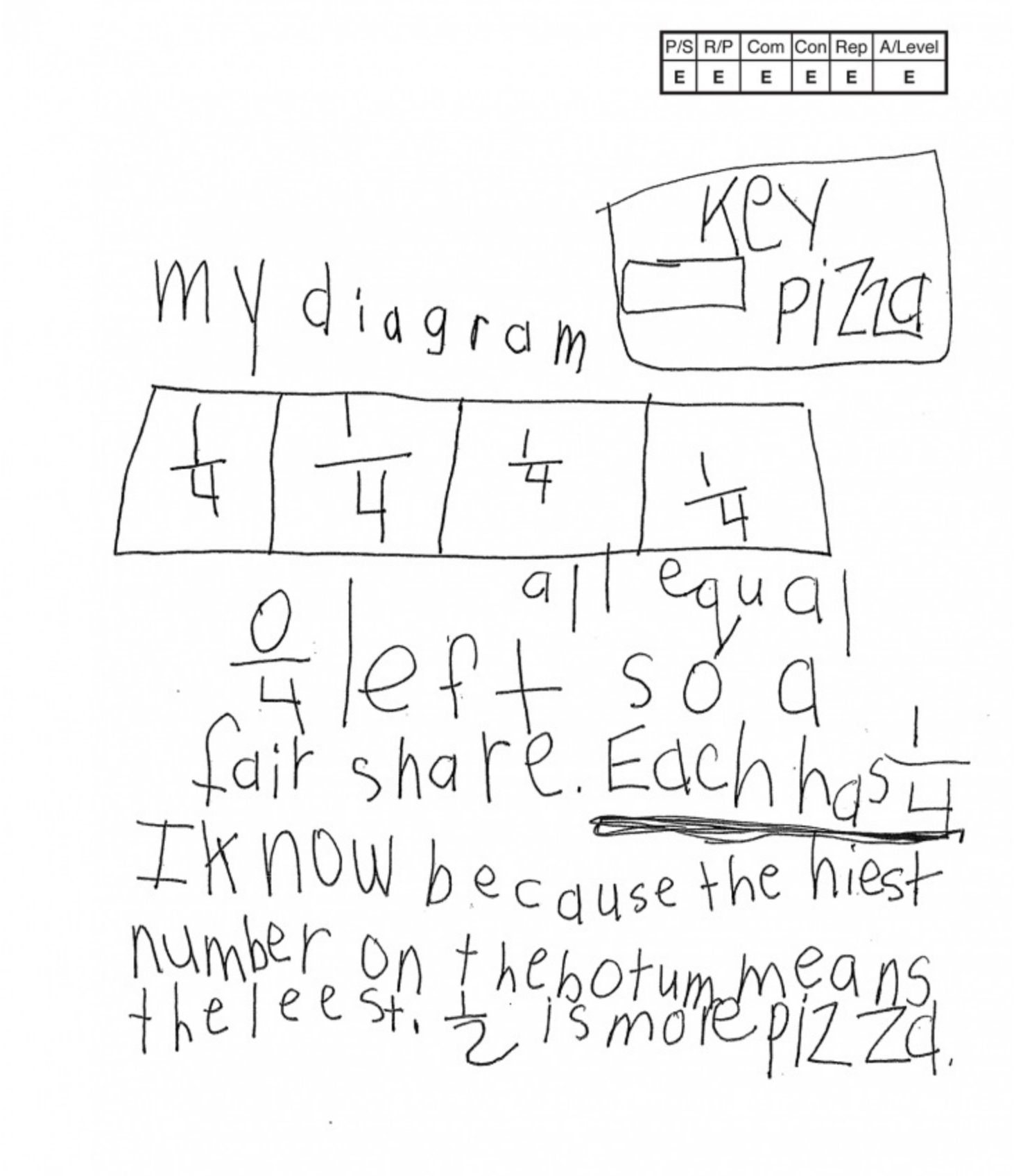
Achievement Level: Expert 1

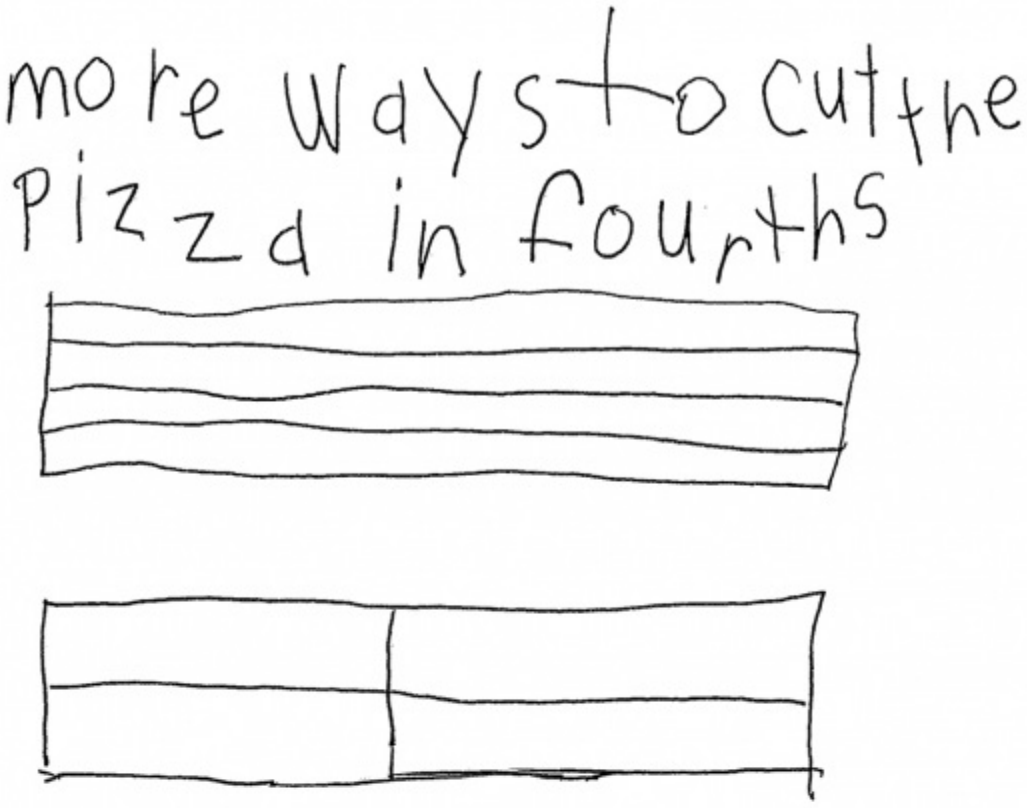
Criteria and Performance Level	Rationales
Problem Solving *Expert*	The student's strategy of diagramming a rectangular pizza, partitioning the rectangle into four equal shares/fair shares, and assigning one-fourth pizza to each friend works to solve the task. The student's answer, "Each has 1/4," is correct. The student brings prior knowledge of fraction notation and the meaning of the denominator to the task, as well as rotation of the whole. The student also links one-half to money.
Reasoning & Proof *Expert*	The student demonstrates correct reasoning of the underlying concepts of the task. The student diagrams a rectangle into four equal shares and understands that each friend will have one-fourth of the whole. The student also explores how to use different partitions of equal shares as well as finding halves of a pizza. The student shows understanding that rotating the rectangular pizza does not change the equal shares for each friend. The student shows correct reasoning in comparing one-half to a dime and a nickel.
Communication *Expert*	The student correctly uses the mathematical terms *shape* and *rectangle* from the task. The student also correctly uses the terms *diagram*, *key*, *equal*, *number*, "leest," *more*, *fourths*, *one-half*, *bigger*, *whole*, *most*, *half*, *dime*, *nickel*. The student correctly uses the fractional notation *1/4*, *0/4*, *1/2*. Note: In the Common Core Standards students are not expected to use fractional notation until grade three. Applying fractional notation is considered use of Expert communication in first grade.

Connections *Expert*	The student makes the Practitioner connection of showing two different partitions for fourths of a whole. The student makes Expert connections. The student states, "0/4 left so a fair share," "I know because the hiest number on the botum means the leest," and "1/2 is more pizza." The student brings the concept of rotation to their solution. "This pizza in fourth is same as this one. If you turn the rectangle it doesn't change the fair share of pieces." The student makes the Practitioner connection of diagramming a rectangle in half and uses Expert communication to notate 1/2 on each equal share. The student states, "I did the same shape but this is one-half and one-half so you can see the pizza pieces are bigger than one-fourth pizzas. But I can eat a whole pizza. That is the most to eat but you could not share." The student extends their fractional thinking to the value of coins and states, "I know half of a dime is a nickel."
Representation *Expert*	The student's first three diagrams are appropriate and accurate. A key defines the pizza and the student's text defines the equal shares. The student correctly diagrams a fourth rectangle to support their understanding that rotating a rectangle does not change the equal shares. The student correctly diagrams a fifth rectangle in two equal shares to support their understanding that one-half a piece of pizza is greater than one-fourth a piece of pizza.

Achievement Level: Expert 1

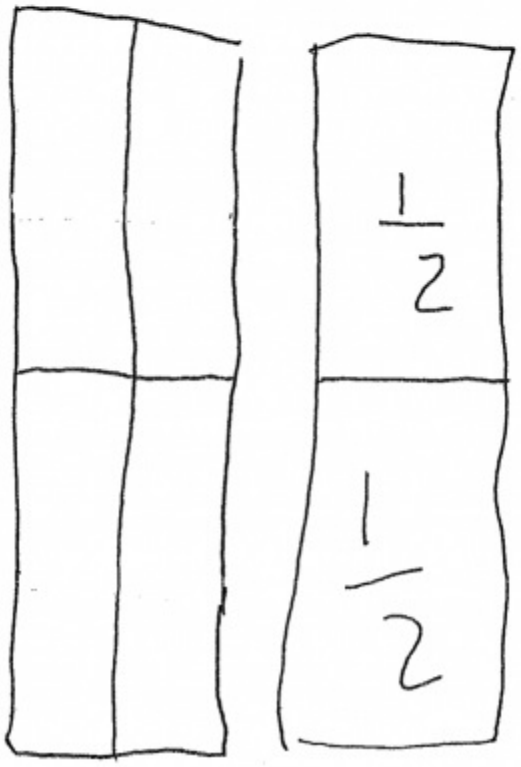
P/S	R/P	Com	Con	Rep	A/Level
E	E	E	E	E	E





"This pizza in fourths is same as this one. If you turn the rectangle it doesn't change the fair shares of pieces."

AZ



"I did the same shape but this is one-half and one-half so you can see the pizza pieces are bigger ¼ pieces. But I can eat a whole pizza. That is the most to eat but you could not share if I eat a whole pizza. I know half of a dime is a nickel. Do you know that?"

AZ