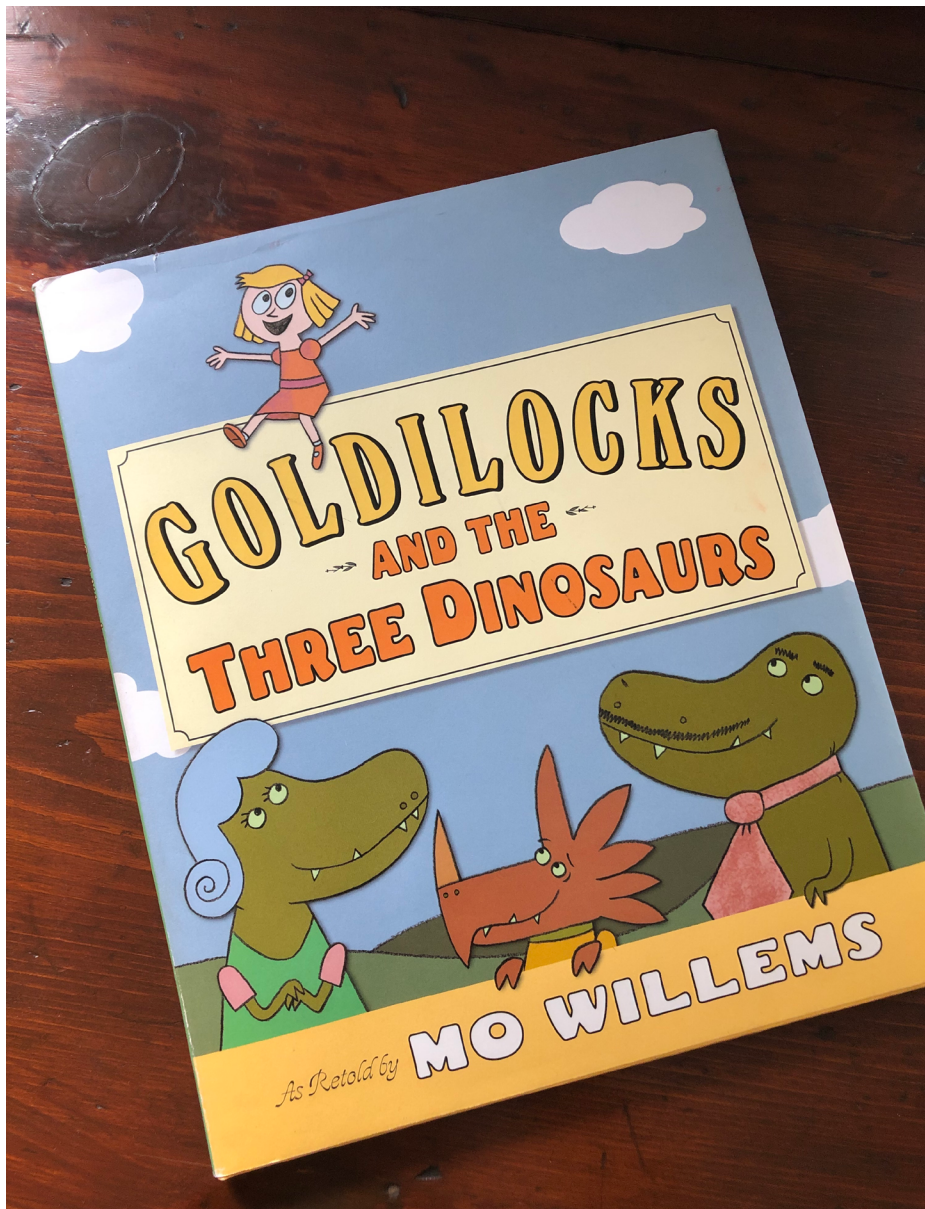


Engagement Image to Launch Task

Teachers use this resource to pique student curiosity.



Instructional

Dinosaur Books

Derek loves to collect books about dinosaurs. Derek has seven dinosaur books. Derek wants to have ten dinosaur books. Derek says he needs to collect two more dinosaur books. Is Derek correct? Show and tell how you know.

Dinosaur Books

Common Core Task Alignments

Mathematical Practices: 1, 3, 4, 5, 6,

Grade K Content Standards:
K.OA.A.4

Task

Derek loves to collect books about dinosaurs. Derek has seven dinosaur books. Derek wants to have ten dinosaur books. Derek says he needs to collect two more dinosaur books. Is Derek correct? Show and tell how you know.

Alternative Versions of the Task

More Accessible Version:

Derek loves to collect books about dinosaurs. Derek has two dinosaur books. Derek wants to have five dinosaur books. Derek says he needs to collect two more dinosaur books. Is Derek correct? Show and tell how you know.

More Challenging Version:

Derek loves to collect books about dinosaurs. Derek has seventeen dinosaur books. Derek wants to have twenty dinosaur books. Derek says he needs to collect two more dinosaur books. Is Derek correct? Show and tell how you know.

Common Core Content Standards and Evidence

K.OA Operations and Algebraic Thinking

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

4. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

Exemplars Task-Specific Evidence

This task requires students to find the number that makes 10 when added to seven. Students also need to compare two numbers.

Underlying Mathematical Concepts

- Number sense to 10
- Counting on/Addition
- Counting back/Subtraction
- Comparison

Possible Problem-Solving Strategies

- Model (manipulatives)
- Diagram/Key
- Tally chart
- Number line

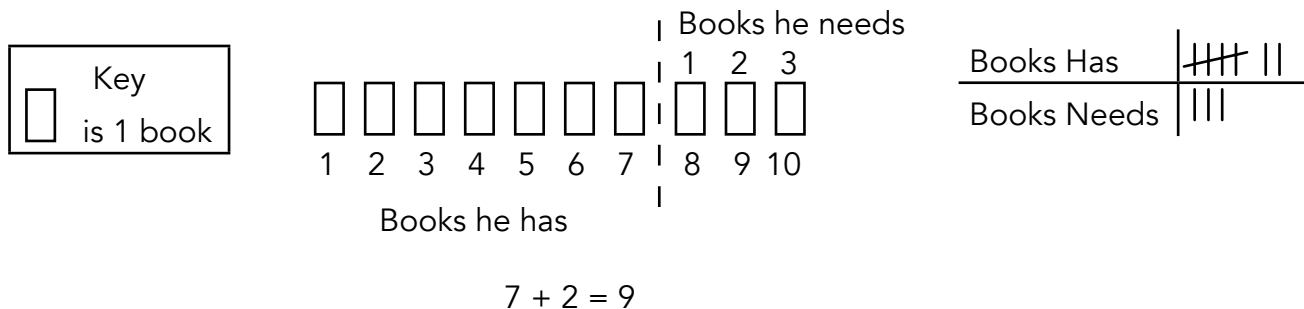
Possible Mathematical Vocabulary/Symbolic Representation

- Model
- Diagram/Key
- Tally chart
- Number line
- Total/Sum
- Odd/Even
- More than (>)/Greater than (>)/Less than (<)
- Equivalent/Equal to
- Equation

Possible Solutions

Original Version:

No, Derek is not correct.



More Accessible Version:

No, Derek is not correct.

More Challenging Version:

No, Derek is not correct.

Possible Connections

Below are some examples of mathematical connections. Your students may discover some that are not on this list.

- Derek needs to collect 1 more book to have 10.
- $7 + 2 = 9$, which is an odd number. 10 is an even number.
- Solve more than one way to verify the answer.
- Relate to a similar task and state a math link.
- Use subtraction to support addition.
- Derek has to collect less books than he already has.
- Equations: $10 - 7 = 3$ / $7 + ? = 10$.

Engagement Image to Launch Task

Teachers use this resource to pique student curiosity.



Drawing Animal Pictures

Ryan is drawing ten pictures of animals to put on his bedroom door. Ryan has finished drawing five animal pictures. How many more animal pictures does Ryan have to draw? Show and tell how you know.

Drawing Animal Pictures

Common Core Task Alignments

Mathematical Practices: 1, 3, 4, 5, 6,

Grade K Content Standards:

K.OA.A.4

Task

Ryan is drawing ten pictures of animals to put on his bedroom door. Ryan has finished drawing five animal pictures. How many more animal pictures does Ryan have to draw? Show and tell how you know.

Common Core Content Standards and Evidence

K.OA Operations and Algebraic Thinking

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

4. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

Exemplars Task-Specific Evidence

This task requires students to find the number that makes 10 when added to five.

Underlying Mathematical Concepts

- Counting on/Addition
- Number sense to 10
- Counting back/Subtraction

Possible Problem-Solving Strategies

- Model (manipulatives)
- Diagram/Key
- Tally chart
- Number line

Possible Mathematical Vocabulary/Symbolic Representation

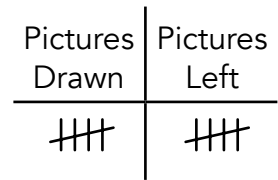
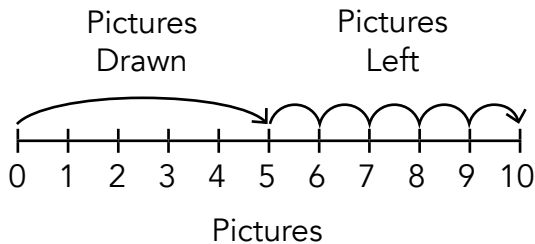
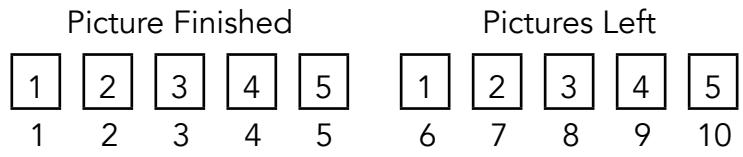
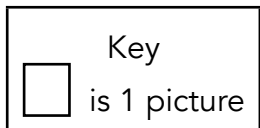
- Model
- Diagram/Key
- Tally chart
- Number line
- Total/Sum
- Odd/Even
- More than (>)/Greater than (>)/Less than (<)

Possible Mathematical Vocabulary/Symbolic Representation (cont.)

- Equivalent/Equal to
- Equation
- Equal shares
- Double

Possible Solutions

Ryan has 5 more animal pictures to draw.



$$5 + \square = 10$$

$$10 - 5 = 5$$

Possible Connections

Below are some examples of mathematical connections. Your students may discover some that are not on this list.

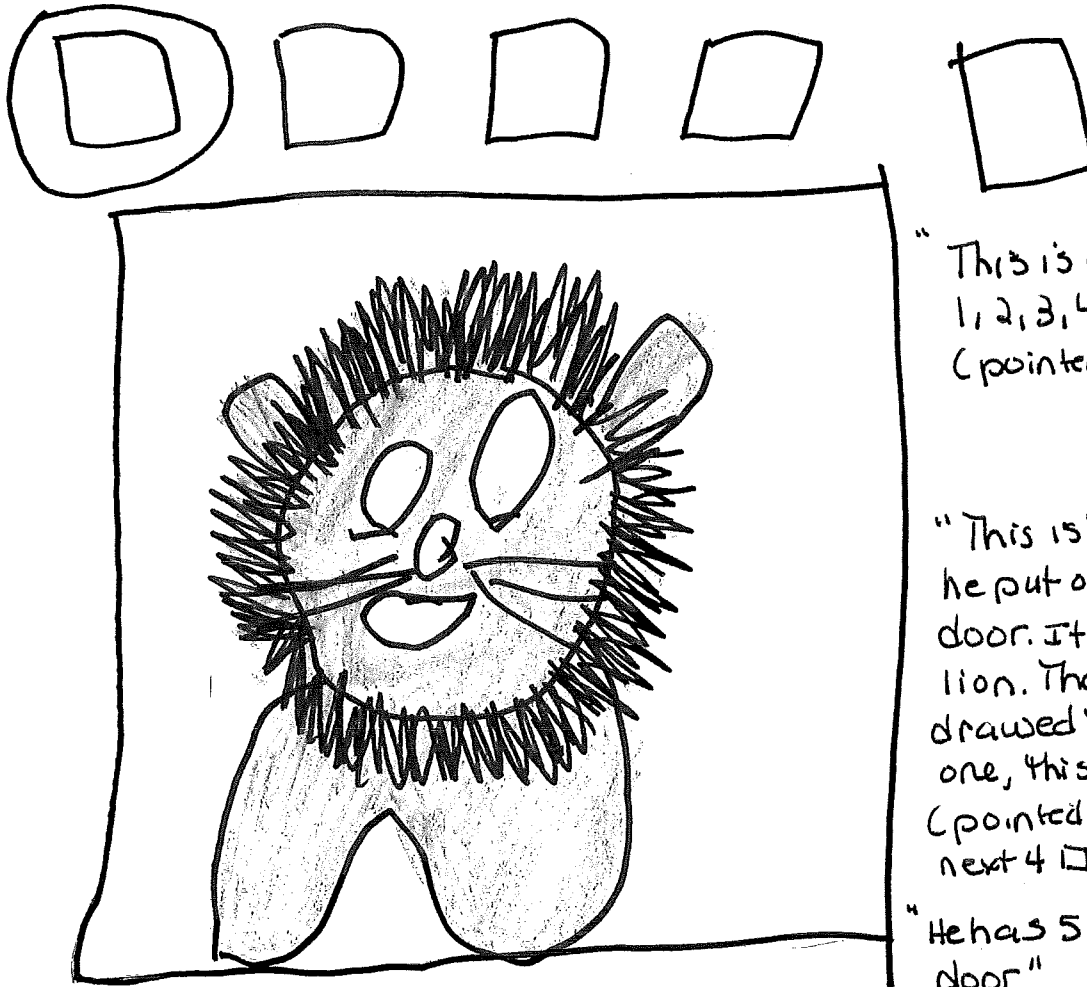
- Ryan was half way done with his pictures.
- 10 pictures is an even number.
- 5 pictures is an odd number.
- Relate to a similar task and state a math link.
- Solve more than one way to verify the answer.
- 5 made, 5 to make is a fair share of pictures.
- There are an equal number of pictures made and pictures left to make.
- Equations: $5 + ? = 10$ and $10 - 5 = 5$.
- Double 5 is 10.
- Half of 10 is 5.

Novice Scoring Rationales

Criteria and Performance Level	Assessment Rationales
Problem Solving <i>Apprentice</i>	The student's strategy of diagramming the five pictures needed to be completed works to solve the first part of the problem. The student's answer, "He has 5 on the door," is not correct.
Reasoning Proof <i>Apprentice</i>	The student shows correct reasoning of the underlying concept of five completed pictures. The student does not diagram the pictures that need to be completed.
Communication <i>Novice</i>	The student does not use any mathematical language.
Connections <i>Novice</i>	The student does not make any mathematically relevant observation about her/his solution.
Representation <i>Apprentice</i>	The student's diagram of the five completed pictures is appropriate and accurate to the first part of the problem. The student defines the five pictures and the drawing on the first picture in the scribing. The student does not diagram the pictures that need to be completed.

Novice

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



"This is drawing 1, 2, 3, 4, 5" (pointed correctly)

"This is the one he put on the door. It is a lion. Then he drew this one, this one..." (pointed to next 4 □)

"He has 5 on the door"

NOTE: Student drew a lion with a pencil and colored in with a brown crayon

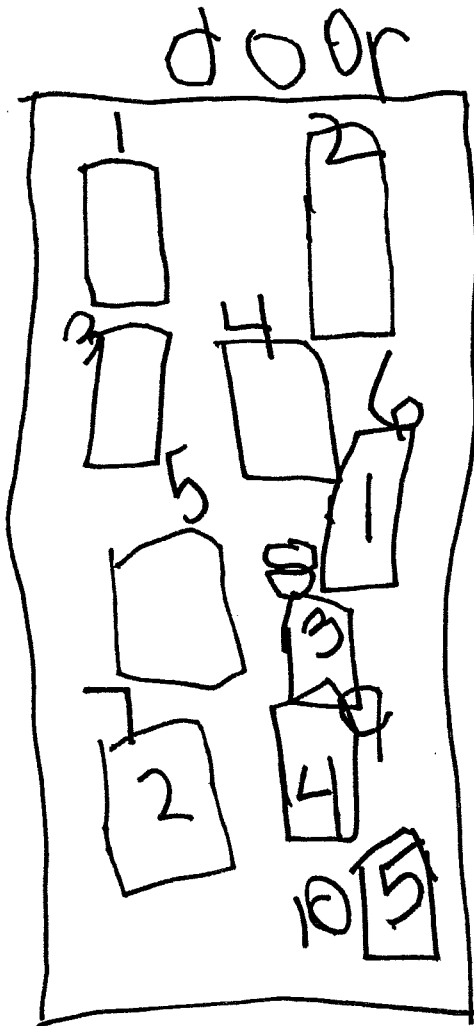
[Reread problem tried "How many pictures are left to draw?"]
"I don't know"

Apprentice Scoring Rationales, Student 1

Criteria and Performance Level	Assessment Rationales
Problem Solving <i>Practitioner</i>	The student's strategy of diagramming the five complete pictures and the five pictures needed to be completed on the door works to solve the problem. The student's answer, "5 more," is correct.
Reasoning Proof <i>Practitioner</i>	The student shows correct reasoning of the underlying concepts of the problem. The student diagrams the completed pictures, the pictures needed to be completed, and compares the two totals to determine that five pictures need to be completed.
Communication <i>Apprentice</i>	The student correctly uses the mathematical term <i>more</i> .
Connections <i>Novice</i>	The student does not make a mathematically relevant observation about her/his solution.
Representation <i>Practitioner</i>	The student's diagram of the five completed pictures and the five pictures needed to be completed on a door is appropriate and accurate to the problem. The student's scribing defines the door, finished pictures and pictures needed to be drawn.
Notes	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.

Apprentice, Student 1

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



5 more

"He has 5 more pictures to draw"

"This is the door.
These are the 10 pictures
but only picture 1, 2, 3,
4, 5 are done. These,
1, 2, 3, 4, 5, need a animal.
(That is 6, 7, 8, 9, 10"
support numbering) A2

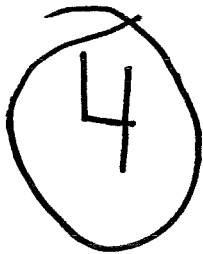
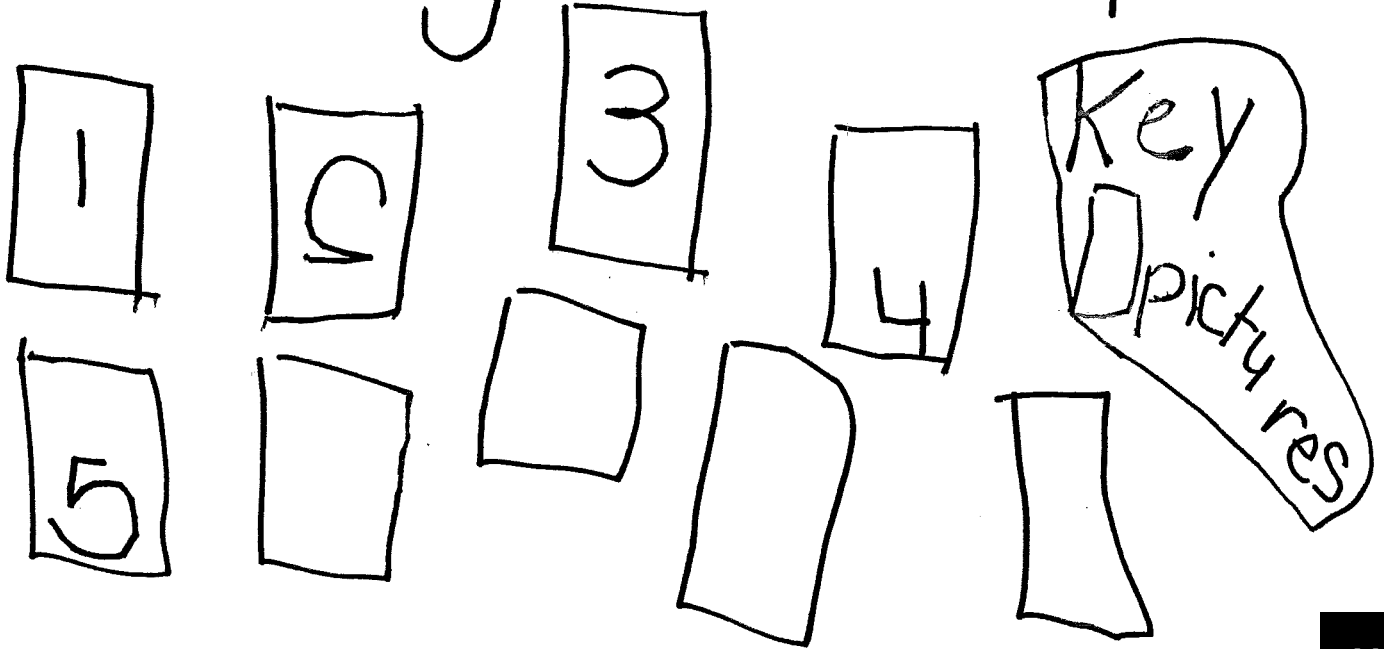
Apprentice Scoring Rationales, Student 2

Criteria and Performance Level	Assessment Rationales
Problem Solving <i>Apprentice</i>	The student's strategy of diagramming pictures would work to solve the problem, but the student omits the 10th picture. The student's answer, "4," is not correct.
Reasoning Proof <i>Practitioner</i>	The student shows correct reasoning of the underlying concepts of the problem. The student diagrams the completed pictures, the pictures needed to be completed, and compares the two totals to determine that four pictures need to be completed. The student makes an error in leaving out picture number 10. This is not considered a lack of reasoning but a careless counting error.
Communication <i>Practitioner</i>	The student correctly uses the mathematical terms <i>diagram</i> , <i>key</i> .
Connections <i>Novice</i>	The student does not make any mathematically relevant observation about her/his solution.
Representation <i>Apprentice</i>	The student's diagram of the five completed pictures and four pictures needed to be completed is appropriate to the problem but is not accurate. The 10th picture is not indicated. The student's key and scribing defines the finished pictures and pictures needed to be drawn.
Notes	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.

Apprentice, Student 2

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

Diagram



"He has 4 animal pictures to put on the door to be done"

"My diagram is pictures. I didn't draw the animals because you don't have to if you say they are animal pictures."
A2

Summative Assessment

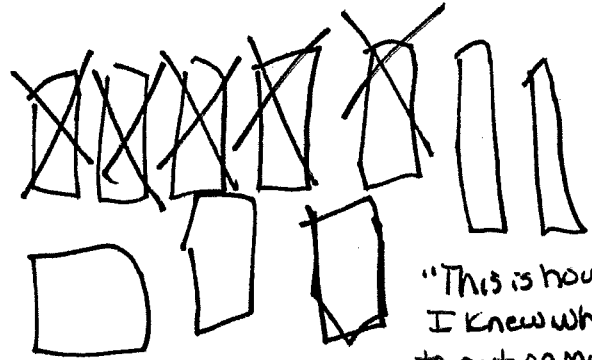
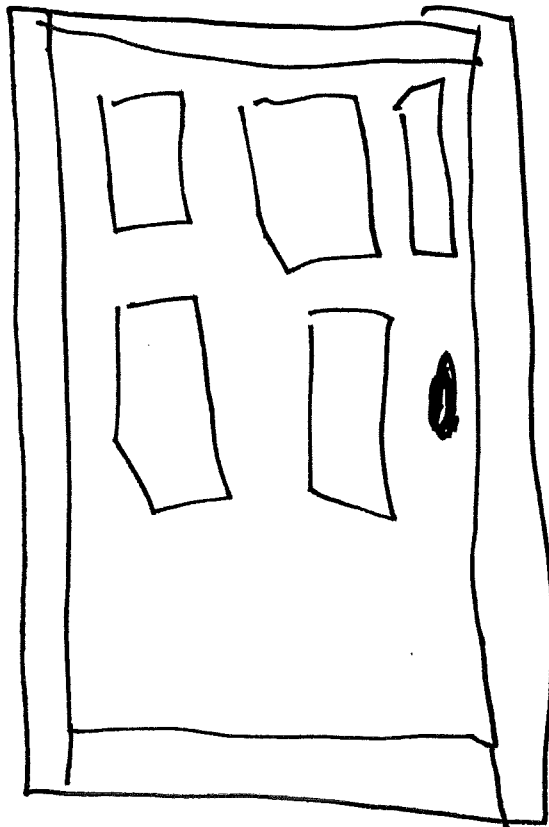
Apprentice Scoring Rationales, Student 3

Criteria and Performance Level	Assessment Rationales
Problem Solving <i>Practitioner</i>	The student's strategy of diagramming the five completed pictures on the door and diagramming all 10 pictures with five crossed out works to solve the problem. The student's answer, "5," is correct.
Reasoning Proof <i>Practitioner</i>	The student shows correct reasoning of the underlying concepts of the problem. The student diagrams the completed pictures, the pictures needed to be completed and compares the two totals to determine that five pictures need to be completed.
Communication <i>Apprentice</i>	The student correctly uses the mathematical term <i>diagram</i> .
Connections <i>Novice</i>	The student does not make any mathematically relevant observation about her/his solution.
Representation <i>Practitioner</i>	The student's diagram of the five completed pictures on a door and the 10 pictures with five crossed out is appropriate and accurate to the problem. The student's scribing defines the door, finished pictures and pictures needed to be drawn.
Notes	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.

Apprentice, Student 3

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

my diagram



"This is how I knew what to put on my door. I didn't guess."



"5 to do."

"This is the door.
This is the pictures of animals.
This is the 10 pictures.
I crossed out the ones to go on the door. 1, 2, 3, 4, 5
Now there are 1, 2, 3, 4, 5 to finish. I would do all kinds of dogs if I was him!" A2

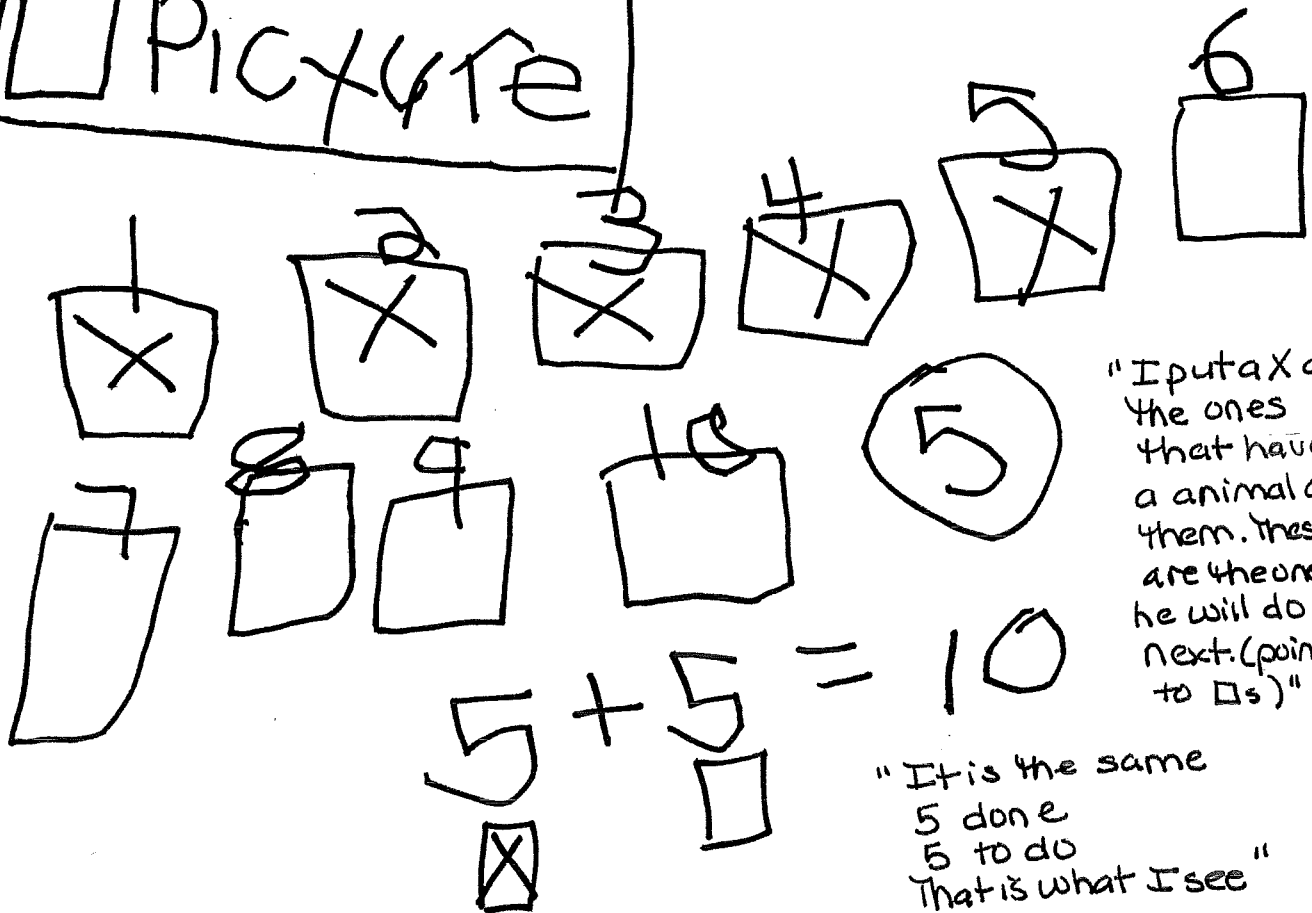
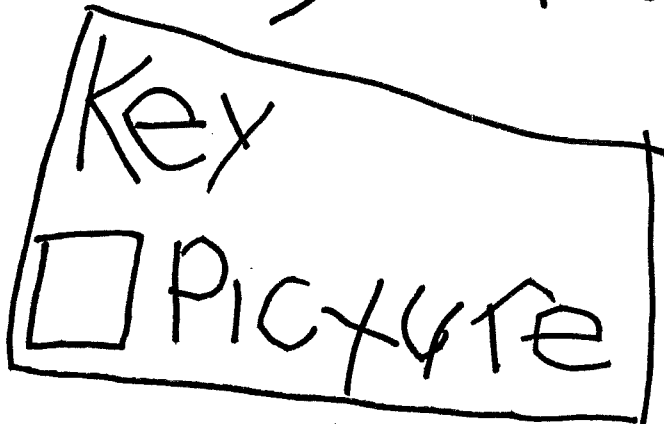
Practitioner Scoring Rationales, Student 1

Criteria and Performance Level	Assessment Rationales
Problem Solving <i>Practitioner</i>	The student's strategy of diagramming the five completed pictures and the five pictures needed to be drawn works to solve the problem. The student's answer, "5," is correct.
Reasoning Proof <i>Practitioner</i>	The student shows correct reasoning of the underlying concepts of the problem. The student diagrams the completed pictures, the pictures needed to be completed and compares the two totals to determine that five pictures need to be completed.
Communication <i>Practitioner</i>	The student correctly uses the mathematical terms <i>diagram</i> , <i>key</i> .
Connections <i>Practitioner</i>	The student makes the mathematically relevant observation, "It is the same, 5 done, 5 to do, That is what I see."
Representation <i>Practitioner</i>	The student's diagram of the five completed pictures and the five pictures needed to be drawn is appropriate to the problem and accurate. The student's key and scribing defines the drawn pictures and the pictures not drawn.

Practitioner, Student 1

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

my did g ram



"I put a X on the ones that have a animal on them. These are the ones he will do next. (pointed to □s)"

"It is the same 5 done 5 to do That is what I see"

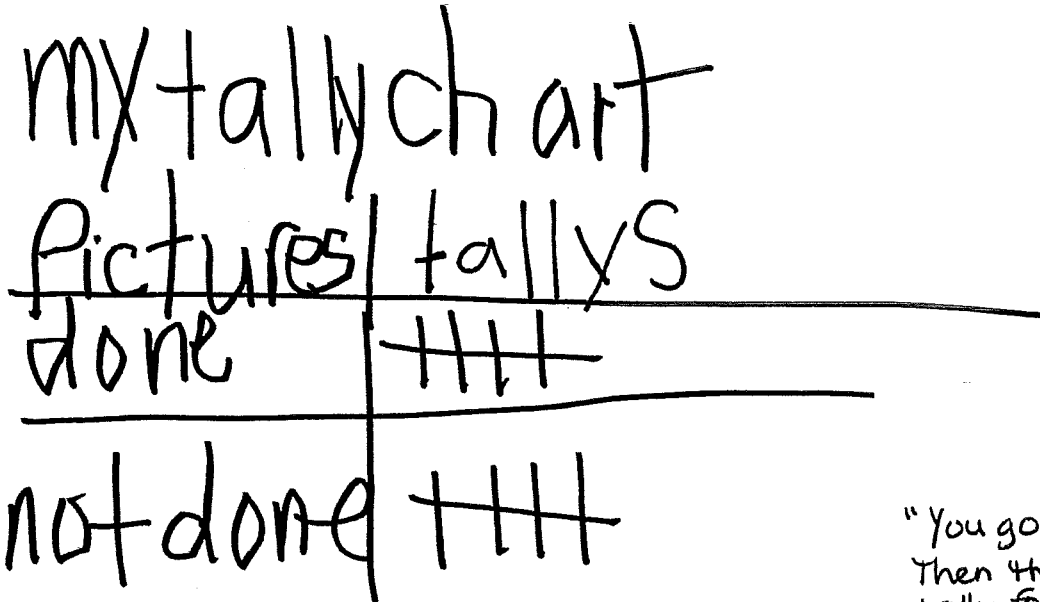
Summative Assessment

Practitioner Scoring Rationales, Student 2

Criteria and Performance Level	Assessment Rationales
Problem Solving <i>Practitioner</i>	The student's strategy of using a tally chart to show the five completed pictures and the five pictures needed to be drawn works to solve the problem. The student's answer, "5 more," is correct.
Reasoning Proof <i>Practitioner</i>	The student shows correct reasoning of the underlying concepts of the problem. The student tallies the completed pictures, the pictures needed to be completed, and compares the two totals to determine that five pictures need to be completed.
Communication <i>Practitioner</i>	The student correctly uses the mathematical terms "tallys," (<i>tally chart</i>), <i>more</i> , <i>amount</i> .
Connections <i>Practitioner</i>	The student makes the mathematically relevant observation, "I see Ryan has the same amount pictures finished and to draw." The student also describes how a tally works, "You go 1, 2, 3, 4 then the sideways tally for 5."
Representation <i>Practitioner</i>	The student's tally chart of the five finished pictures and the five unfinished pictures needed to be drawn is appropriate to the problem and accurate.

Practitioner, Student 2

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



"You go 1, 2, 3, 4
Then the sideways
tally for 5"

A 5
more

"Ryan made 5 animals to
put on his door. But he
wants 10 so he has to do
pictures 6, 7, 8, 9, 10. That
is 5 more"

"I see Ryan has the same
amount pictures finished
and to draw" p2

Expert Scoring Rationales

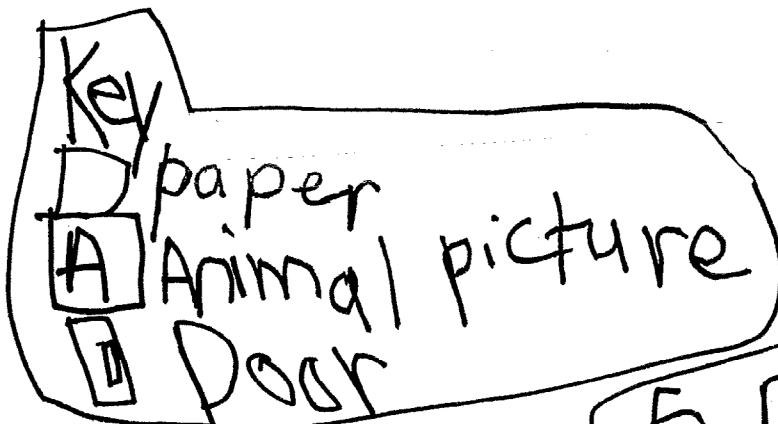
Criteria and Performance Level	Assessment Rationales
Problem Solving <i>Expert</i>	The student's strategy of using a diagram to show the number of completed pictures on the door and the number of pictures needed to be completed works to solve the problem. The student's answer, "5 more to Do," is correct. The student also verifies that her/his answer is correct.
Reasoning Proof <i>Expert</i>	The student shows correct reasoning of the underlying concepts of the problem. The student diagrams the completed pictures, the pictures needed to be completed and compares the two totals to determine that five pictures need to be completed. The student also uses a tally to compare the completed and need to be completed pictures. The student also brings the concepts of odd, even, and one-half to the problem.
Communication <i>Expert</i>	The student correctly uses the mathematical terms <i>diagram</i> , <i>key</i> , <i>even</i> , <i>odd</i> , <i>tally</i> , <i>equals</i> , <i>more</i> . The student also uses the mathematical notation, "1/2."
Connections <i>Expert</i>	The student makes mathematically relevant Expert observations: "10-even, ten pictures is even number," "5-odd, 5 pictures is odd number," "1/2 of the pictures are done but 1/2 are not done." The student uses a tally to verify that her/his diagram is correct and states, "5 + 5 = 10, five are done, five more to do equals ten in all for pictures," "5 more to Do," "You always got to do five more pictures."
Representation <i>Expert</i>	The student's diagram of the five completed pictures on the door and the five pictures needed to be drawn is appropriate to the problem and accurate. The student's key and scribing defines the paper, animal pictures and door. The student creates an accurate tally using her/his key to verify that five more pictures need to be drawn.

Expert

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

my Diagram

"10 pictures is even number"

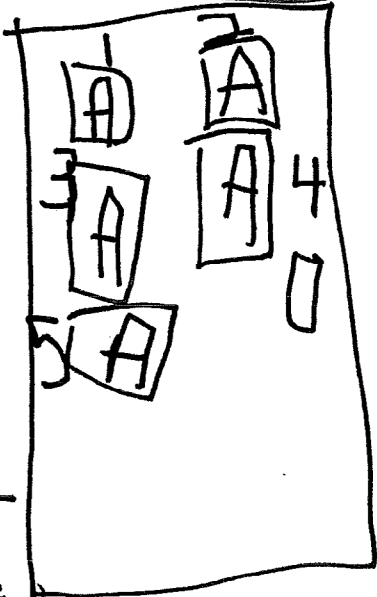


10 - even

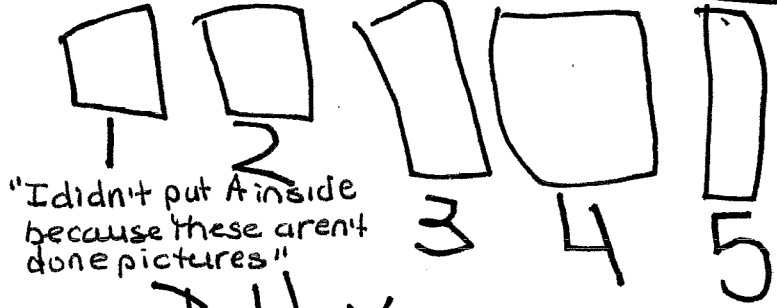
5 - odd

"5 pictures is odd number"

5 more to do



"1/2 of the pictures are done but 1/2 are not done"



"I didn't put A inside because these aren't done pictures"



5 + 5 = 10

"Five five are done more to do equals 10 in all for pictures"

5

5 more to do

"You always got to do 5 more pictures"

Summative Assessment