TCAP/CRA

2014

4

Phase III

Paint By Number Task

Anchor Set

Paint by Numbers Task

The Johnsons have a fence around their backyard that needs to be painted. Lani and Sandy spent all morning painting the fence. At lunch time, $\frac{1}{5}$ of the fence remains to be painted.

a.   What fraction of the fence did Lani and Sandy paint in the morning? Write an equation and draw a diagram to explain your answer.

Paint by Numbers Task

b.   Lani painted $\frac{2}{5}$ of the whole fence that morning. How much of the fence did Sandy paint?

**REVIEW YOUR
WORK IF YOU
HAVE TIME.**

Scoring Guide

The CCSS for Mathematical Content (2 points)

4.NF.B.3d(x) Identifies the answer in part a as $\frac{4}{5}$.

(1 Point)

4.NF.B.3d(z) Finds the fraction of the fence Sandy painted as $\frac{2}{5}$.

(1 Point)

The CCSS for Mathematical Practice (2 points)

MP4(x) Represents the fraction of the fence painted in the morning as an addition
$(\frac{1}{5} + \frac{4}{5} = \frac{5}{5})$ or subtraction $(1 - \frac{1}{5} = \frac{4}{5})$ expression or equation in part a.
(1 point)
(MP4: Model with mathematics.)

MP4(z) Represents the situation with an accurate visual model in part a.
(1 Point)
(MP4: Model with mathematics.)

TOTAL POINTS: 4

The CCSS for Mathematical Content Addressed In This Task

Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.	
4.NF.B.3d	Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

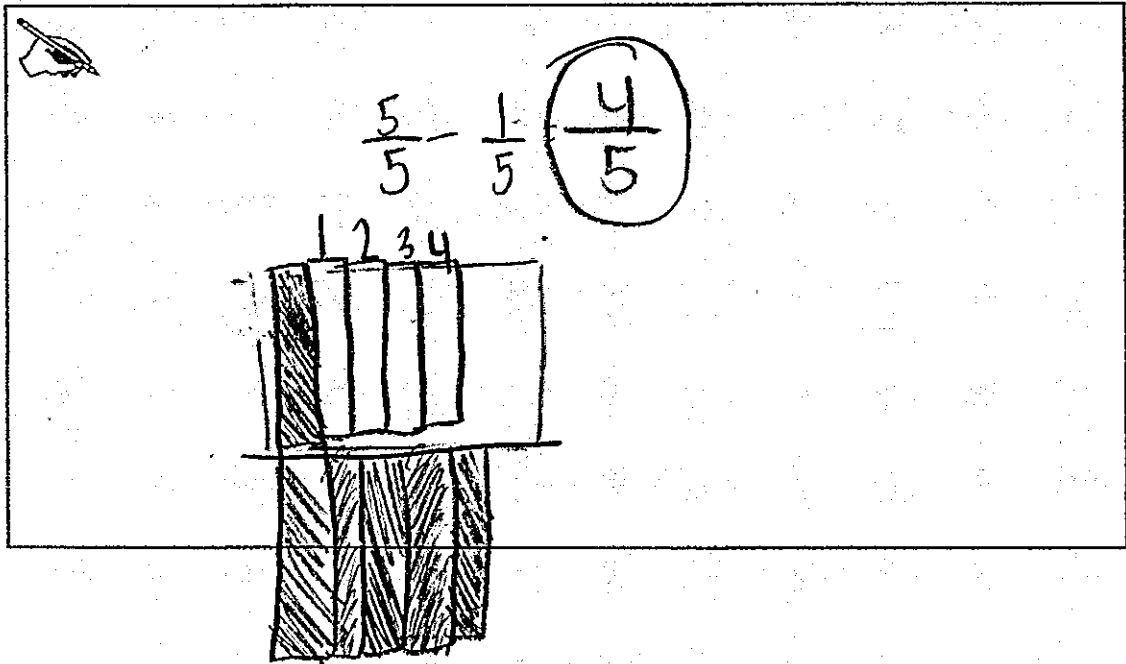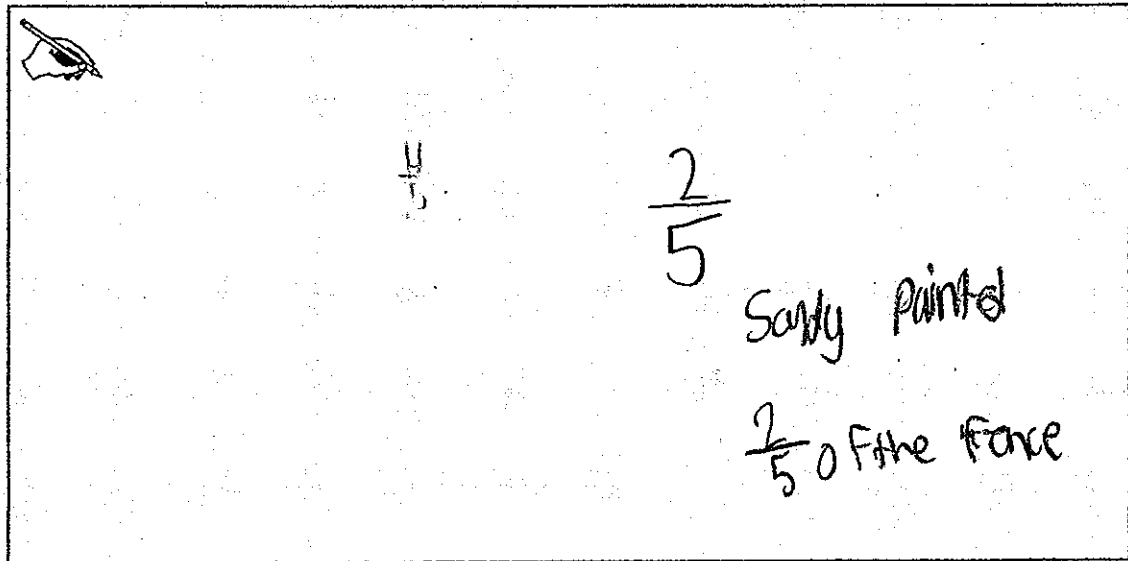| **The CCSS for Mathematical Practice*** |
|---|
| 1. Make sense of problems and persevere in solving them. |
| 2. Reason abstractly and quantitatively. |
| 3. Construct viable arguments and critique the reasoning of others. |
| **4. Model with mathematics.** |
| 5. Use appropriate tools strategically. |
| 6. Attend to precision. |
| 7. Look for and make use of structure. |
| 8. Look for and express regularity in repeated reasoning. |
| |
| * Gray type indicates Mathematical Practices not addressed in this assessment. |

Paint By Numbers Task

The Johnsons have a fence around their backyard that needs to be painted. Lani and Sandy spent all morning painting the fence. At lunch time, $\frac{1}{5}$ of the fence remains to be painted.

a. What fraction of the fence did Lani and Sandy paint in the morning? Write an equation and draw a diagram to explain your answer.

$$\frac{5}{5} - \frac{1}{5} = \boxed{\frac{4}{5}}$$

Paint By Numbers Task

b.   Lani painted $\frac{2}{5}$ of the whole fence that morning. How much of the fence did Sandy paint?

$$\frac{4}{5}$$

$$\frac{2}{5}$$

Sandy painted

$\frac{2}{5}$ o f the fence

Anchor 1   Litho 00044200171

Total Content Points: 2   (4.NF.B.3d(x), 4.NF.B.3d(z))

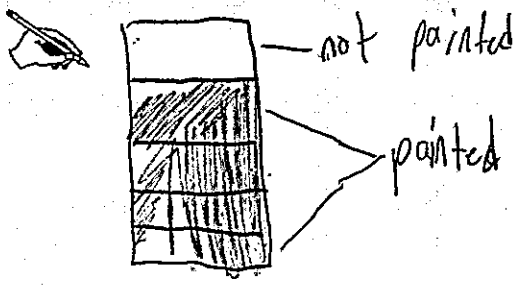Total Practice Points: 2   (MP4(x), MP4(z))

The student identifies the answer in Part A as $\frac{4}{5}$ (4.NF.B.3d(x)). In Part B, the student finds the

fraction $\frac{2}{5}$ as the portion of the fence that Sandy painted (4.NF.B.3d(z)). The student represents

the fraction of the fence painted as a subtraction equation $\left(\frac{5}{5} - \frac{1}{5} = \frac{4}{5}\right)$ in Part A (MP4(x)). The

student also uses shading with a visual model to represent the $\frac{4}{5}$ of the fence has been painted

and the $\frac{1}{5}$ of the fence that still needs to be painted (MP4(z)).

Total Awarded Points: 4 out of 4

Paint By Numbers Task

The Johnsons have a fence around their backyard that needs to be painted. Lani and Sandy spent all morning painting the fence. At lunch time, $\frac{1}{5}$ of the fence remains to be painted.

a.   What fraction of the fence did Lani and Sandy paint in the morning? Write an equation and draw a diagram to explain your answer.

$$\frac{5}{5} - \frac{1}{5} = \frac{4}{5}$$

Lani and Sandy $\frac{4}{5}$ in the morning because $\frac{5}{5} - \frac{1}{5} = \frac{4}{5}.$

Paint By Numbers Task

b.   Lani painted $\frac{2}{5}$ of the whole fence that morning. How much of the fence did Sandy paint?

$$\frac{4}{5} - \frac{2}{5} = \frac{2}{5}$$

They painted $\frac{4}{5}$ all together. Next,

$\frac{4}{5} - \frac{2}{5} = \frac{2}{5}$. Sandi painet $\frac{2}{5}$ of the fence.

STOP

REVIEW YOUR
WORK IF YOU
HAVE TIME.

ltho#: 00154200171

Anchor 2   Litho 00154200171

Total Content Points: 2   (4.NF.B.3d(x), 4.NF.B.3d(z))
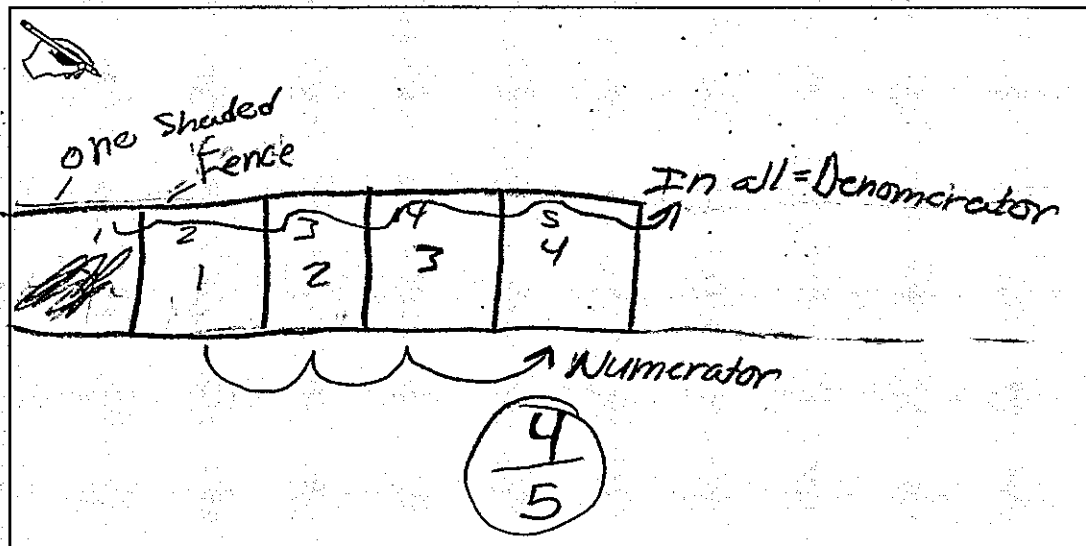
Total Practice Points: 2   (MP4(x), MP4(z))

The student identifies the answer in Part A as $\frac{4}{5}$ (4.NF.B.3d(x)). In Part B, the student finds the fraction $\frac{2}{5}$ as the portion of the fence that Sandy painted (4.NF.B.3d(z)). The student represents the fraction of the fence painted as a subtraction equation $\left(\frac{5}{5} - \frac{1}{5} = \frac{4}{5} \right)$ in Part A (MP4(x)). The student also shades a visual model divided into five equal parts to represent that $\frac{4}{5}$ of the fence was painted and $\frac{1}{5}$ of the fence remains (MP4(z)).

Total Awarded Points: 4 out of 4
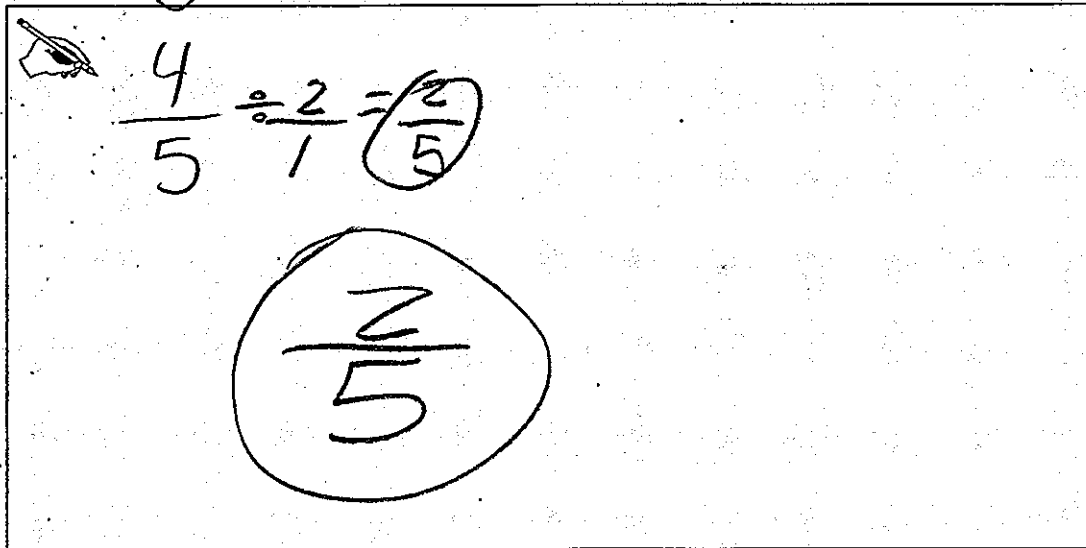
Paint By Numbers Task

The Johnsons have a fence around their backyard that needs to be painted. Lani and Sandy spent all morning painting the fence. At lunch time, $\frac{1}{5}$ of the fence remains to be painted.

a: What fraction of the fence did Lani and Sandy paint in the morning? Write an <u>equation</u> and draw a <u>diagram</u> to <u>explain your answer</u>.

one shaded fence

In all = Denomerator

Numerator

$$\frac{4}{5}$$

Paint By Numbers Task

b.   Lani painted $\frac{2}{5}$ of the whole fence that morning. How much of the fence did Sandy paint?

$$\frac{4}{5} \div \frac{2}{1} = \frac{2}{5}$$

$$\frac{2}{5}$$

Anchor 3   Litho 00194200175

Total Content Points: 2   (4.NF.B.3d(x), 4.NF.B.3d(z))

Total Practice Points: 1   (MP4(z))

The student identifies the answer in Part A as $\frac{4}{5}$ (4.NF.B.3d(x)). In Part B, the student finds the

fraction $\frac{2}{5}$ as the portion of the fence that Sandy painted (4.NF.B.3d(z)). The student does not

use an equation or expression to find the answer in Part A (no credit for MP4(x)). In Part A, the

student uses and explains a visual model to represent that $\frac{1}{5}$ of the fence still needs to be painted

and that the remaining $\frac{4}{5}$ of the fence has been painted (MP4(z)).

Total Awarded Points: 3 out of 4
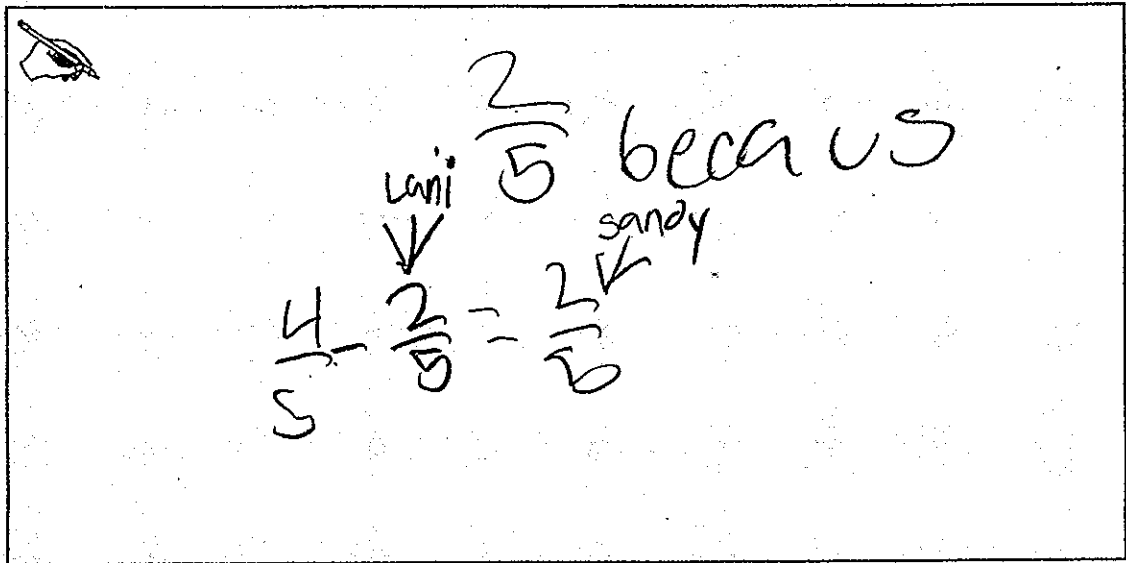
Paint By Numbers Task

The Johnsons have a fence around their backyard that needs to be painted. Lani and Sandy spent all morning painting the fence. At lunch time, $\frac{1}{5}$ of the fence remains to be painted.

a. What fraction of the fence did Lani and Sandy paint in the morning? Write an equation and draw a diagram to explain your answer.

$$\frac{5}{5} - \frac{1}{5} = \boxed{\frac{4}{5}}$$

Paint By Numbers Task

b.   Lani painted $\frac{2}{5}$ of the whole fence that morning. How much of the fence did Sandy paint?

$$\frac{2}{5} \text{ becaus}$$

Lani

Sandy

$$\frac{4}{5} - \frac{2}{5} = \frac{2}{5}$$

tho#: 00104200171

Anchor 4   Litho 00104200171

Total Content Points: 2   (4.NF.B.3d(x), 4.NF.B.3d(z))

Total Practice Points: 1   (MP4(x))

The student identifies the answer in Part A as $\frac{4}{5}$ (4.NF.B.3d(x)). In Part B, the student finds the fraction $\frac{2}{5}$ as the portion of the fence that Sandy painted (4.NF.B.3d(z)). The student represents the fraction of the fence painted as a subtraction equation $\left(\frac{5}{5} - \frac{1}{5} = \frac{4}{5} \right)$ in Part A (MP4(x)). The student attempts to represent the situation with a visual model, but the model is not sufficiently clear to accurately represent the situation, and is not explained (no credit for MP4(z)).
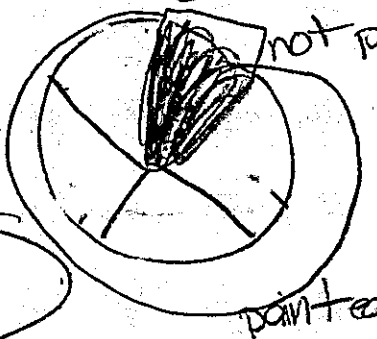
Total Awarded Points: 3 out of 4

Paint By Numbers Task

The Johnsons have a fence around their backyard that needs to be painted. Lani and Sandy spent all morning painting the fence. At lunch time, $\frac{1}{5}$ of the fence remains to be painted.

a.   What fraction of the fence did Lani and Sandy paint in the morning? Write an equation and draw a diagram to explain your answer.
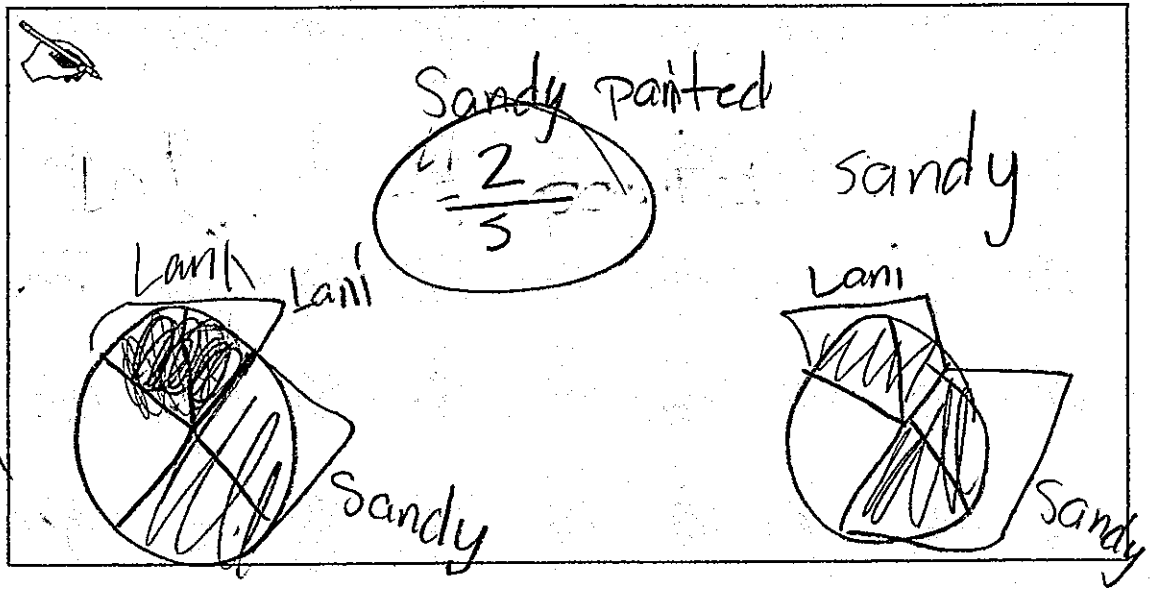
There is $\frac{1}{5}$ or the fence not done not painted

But what is painted

there is $\frac{4}{5}$ painted

painted

Paint By Numbers Task

b. Lani painted $\frac{2}{5}$ of the whole fence that morning. How much of the fence did Sandy paint?

Sandy painted

$\frac{2}{5}$

Lani   Lani   sandy   Lani   Sandy   Sandy

tho#: 00534200171

Anchor 5 Litho 00534200171

Total Content Points: 2 (4.NF.B.3d(x), 4.NF.B.3d(z))
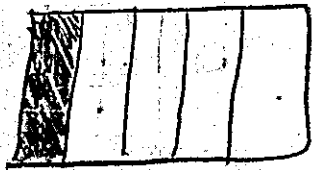
Total Practice Points: 1 (MP4(z))

The student identifies the answer in Part A as $\frac{4}{5}$ (4.NF.B.3d(x)). In Part B, the student finds the fraction $\frac{2}{5}$ as the portion of the fence that Sandy painted (4.NF.B.3d(z)). The student does not show the equation or expression used to find the answer in Part A (no credit for MP4(x)). In Part A, the student uses shading with a pie-shaped visual model to represent that $\frac{1}{5}$ of the fence still remains to be painted (MP4(z)).

Total Awarded Points: 3 out of 4

Paint By Numbers Task

The Johnsons have a fence around their backyard that needs to be painted. Lani and Sandy spent all morning painting the fence. At lunch time, $\frac{1}{5}$ of the fence remains to be painted.

a. What fraction of the fence did Lani and Sandy paint in the morning? Write an equation and draw a diagram to explain your answer.

$$\frac{1}{5} \times \frac{4}{4} = \frac{4}{5}$$

$$\frac{1}{5} + \text{ equals}$$

$$\frac{4}{5}$$

A-6b

Paint By Numbers Task

b.   Lani painted $\frac{2}{5}$ of the whole fence that morning. How much of the fence did Sandy paint?

$$\frac{4}{5} - \frac{2}{5} = \frac{2}{5}$$

STOP

REVIEW YOUR
WORK IF YOU
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tho#: 00334200171

Anchor 6   Litho 00334200171

Total Content Points: 2   (4.NF.B.3d(x), 4.NF.B.3d(z))

Total Practice Points: 1   (MP4(z))

The student identifies the answer in Part A as $\frac{4}{5}$ (4.NF.B.3d(x)). In Part B, the student finds the fraction $\frac{2}{5}$ as the portion of the fence that Sandy painted (4.NF.B.3d(z)). The student uses an incorrect multiplication equation, not a subtraction or addition equation, to represent $\frac{4}{5}$ in Part A (no credit for MP4(x)). In Part A, the student uses shading with a visual model to represent that $\frac{1}{5}$ of the fence still needs to be painted. The drawing represents the context, even though it is not labeled or explained (MP4(z)).

Total Awarded Points: 3 out of 4

Paint By Numbers Task

The Johnsons have a fence around their backyard that needs to be painted. Lani and Sandy spent all morning painting the fence. At lunch time, $\frac{1}{5}$ of the fence remains to be painted.

a.   What fraction of the fence did Lani and Sandy paint in the morning? Write an equation and draw a diagram to explain your answer.

$$\frac{1}{5}$$

$$\frac{2}{5} + \frac{2}{5} = \frac{4}{5}$$

$$\frac{2}{5}$$

$$\frac{1}{5}$$

$$\frac{2}{5}$$

They had painted $\frac{4}{5}$ of the fence.

Paint By Numbers Task

b.   Lani painted $\frac{2}{5}$ of the whole fence that morning. How much of the fence did Sandy paint?

$\frac{4}{5} - \frac{2}{5} = \frac{2}{5}$ → Sandy painted $\frac{2}{5}$ of the paints with $\frac{1}{5}$ leftover to be painted.

litho#: 00244200171

Anchor 7 Litho 00244200171

Total Content Points: 2 (4.NF.B.3d(x), 4.NF.B.3d(z))

Total Practice Points: 0

The student identifies the answer in Part A as $\frac{4}{5}$ (4.NF.B.3d(x)). In Part B, the student finds the fraction $\frac{2}{5}$ as the portion of the fence that Sandy painted (4.NF.B.3d(z)). The student uses the equation $\frac{2}{5} + \frac{2}{5} = \frac{4}{5}$ instead of $\frac{1}{5} + \frac{4}{5} = \frac{5}{5}$ to represent the fraction of the fence painted in the morning, and therefore does not represent the whole situation (no credit for MP4(x)). In Part A, the student attempts to represent the situation with a visual model, but does not use labeling or shading accurately (no credit for MP4(z)).

Total Awarded Points: 2 out of 4

Paint By Numbers Task

The Johnsons have a fence around their backyard that needs to be painted. Lani and Sandy spent all morning painting the fence. At lunch time, $\frac{1}{5}$ of the fence remains to be painted.
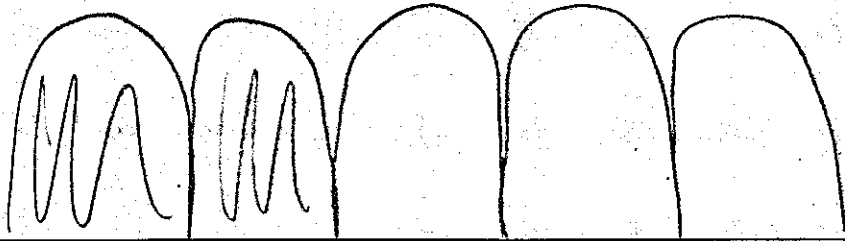
a: What fraction of the fence did Lani and Sandy paint in the morning? Write an equation and draw a diagram to explain your answer.
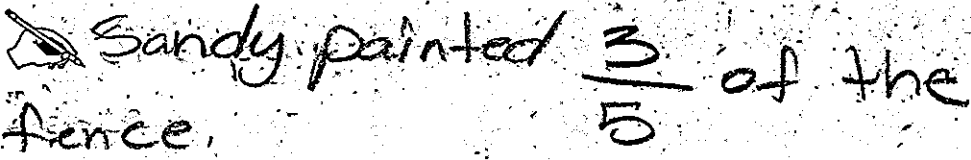
They had painted $\frac{4}{5}$ of the fence.

$$\frac{3}{5} + \frac{1}{5} = \frac{4}{5}$$

RGH

Paint By Numbers Task

b.   Lani painted $\frac{2}{5}$ of the whole fence that morning. How much of the fence did Sandy paint?

Sandy painted $\frac{3}{5}$ of the fence.

Litho#: 00104200175

Anchor 8   Litho 00104200175

Total Content Points: 1   (4.NF.B.3d(x))

Total Practice Points: 1   (MP4(z))

The student identifies the answer in Part A as $\frac{4}{5}$ (4.NF.B.3d(x)). In Part B, the student incorrectly finds that Sandy painted $\frac{3}{5}$ of the fence, not $\frac{2}{5}$ (no credit for 4.NF.B.3d(z)). In Part A, the student uses the addition equation $\frac{3}{5} + \frac{1}{5} = \frac{4}{5}$ instead of $\frac{1}{5} + \frac{4}{5} = \frac{5}{5}$ to represent the fraction of the fence painted in the morning, and therefore does not accurately represent the whole fence (no credit for MP4(z)). The student represents the situation in Part A with an accurate visual model showing that $\frac{4}{5}$ of the fence was painted and $\frac{1}{5}$ remains to be painted (MP4(z)).
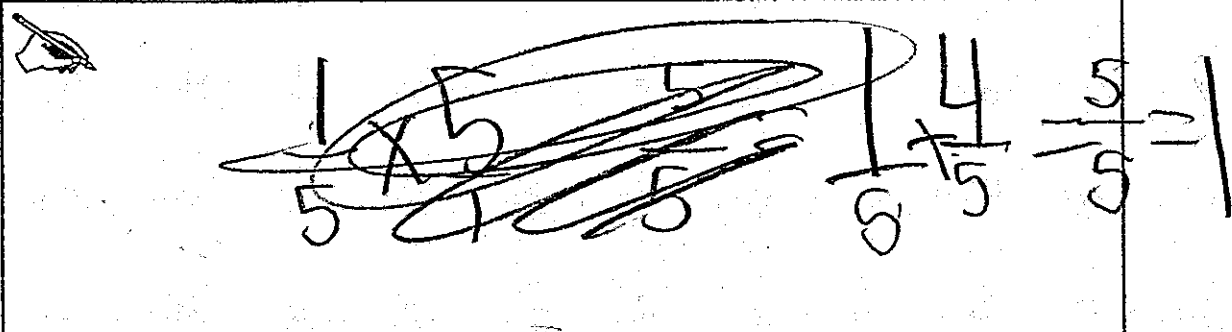
Total Awarded Points: 2 out of 4

Paint By Numbers Task

The Johnsons have a fence around their backyard that needs to be painted. Lani and Sandy spent all morning painting the fence. At lunch time, $\frac{1}{5}$ of the fence remains to be painted.

a. What fraction of the fence did Lani and Sandy paint in the morning? Write an equation and draw a diagram to explain your answer.
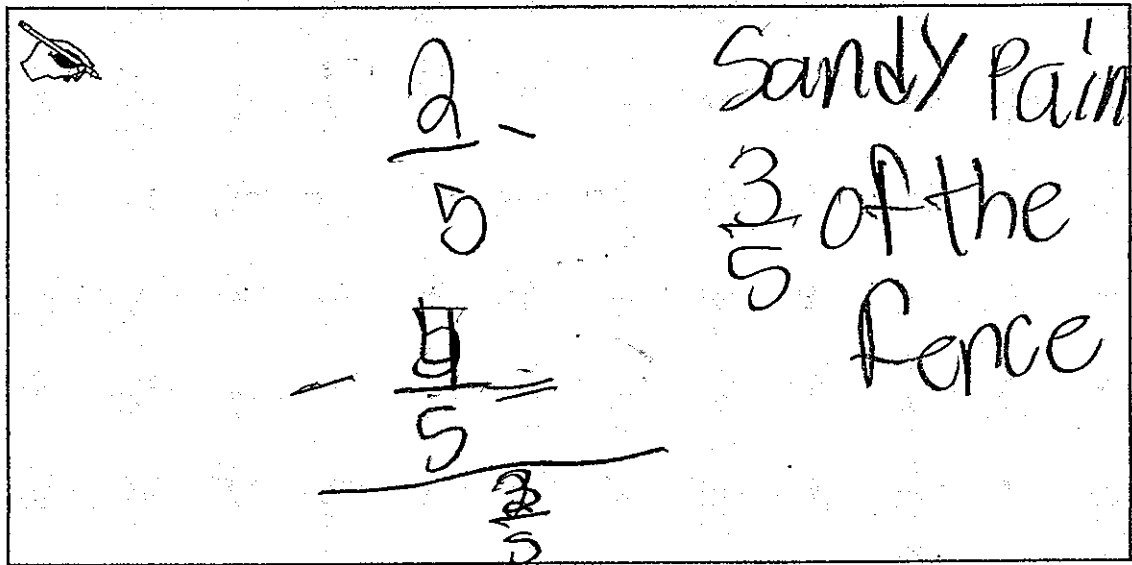
$$\frac{1}{5} \times 5 \qquad \frac{1}{5} + \frac{4}{5} = \frac{5}{5} = 1$$

They have $\frac{4}{5}$ Left to paint

Paint By Numbers Task

b.   Lani painted $\frac{2}{5}$ of the whole fence that morning. How much of the fence did Sandy paint?

$$\frac{2}{5}$$

$$-\frac{\boxed{5}}{5}$$

$$\frac{2}{5}$$

Sandy painted $\frac{3}{5}$ of the fence

Anchor 9   Litho 00514200171

Total Content Points: 0

Total Practice Points: 1   (MP4(x))

The student identifies that $\frac{4}{5}$ was left to paint, not that $\frac{4}{5}$ was already painted (no credit

for 4.NF.B.3d(x)). In Part B, the student finds that Sandy painted $\frac{3}{5}$ of the fence, not $\frac{2}{5}$

(no credit for 4.NF.B.3d(z)). In Part A, the student uses the addition equation $\frac{1}{5} + \frac{4}{5} = \frac{5}{5} = 1$ to

represent the fraction of the fence painted, which is a correct model of the situation, even though
the student has confused the fraction of the fence that has been painted with the fraction not
painted (MP4(x)). The student does not use a visual model to represent the situation in Part A
(no credit for MP4(z)).

Total Awarded Points: 1 out of 4

Paint By Numbers Task

The Johnsons have a fence around their backyard that needs to be painted. Lani and Sandy spent all morning painting the fence. At lunch time, $\frac{1}{5}$ of the fence remains to be painted.

a.   What fraction of the fence did Lani and Sandy paint in the morning? Write an equation and draw a diagram to explain your answer.

> $\frac{1}{5}$ of the fence is left to be painted by lunch time. So from morning to lunchtime they had painted $\frac{4}{5}$ of the fence.

Paint By Numbers Task

b. Lani painted $\frac{2}{5}$ of the whole fence that morning. How much of the fence did Sandy paint?

$\frac{3}{5}$ of the painted fence, Sandy Painted $\frac{3}{5}$ of the fence

STOP
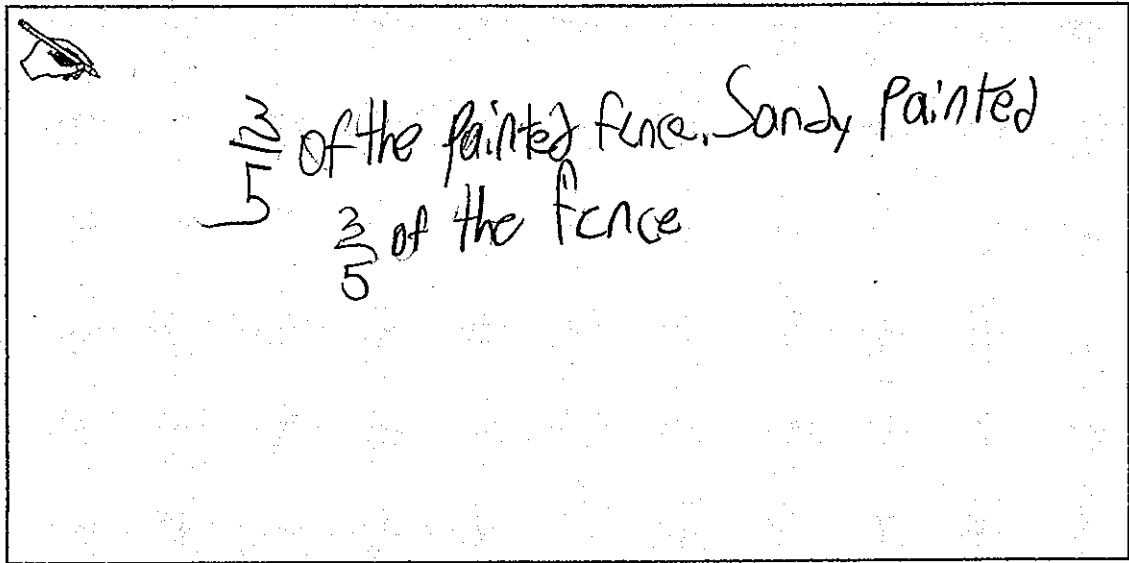
REVIEW YOUR
WORK IF YOU
HAVE TIME.

Anchor 10   Litho 00164200171

Total Content Points: 1   (4.NF.B.3d(x))
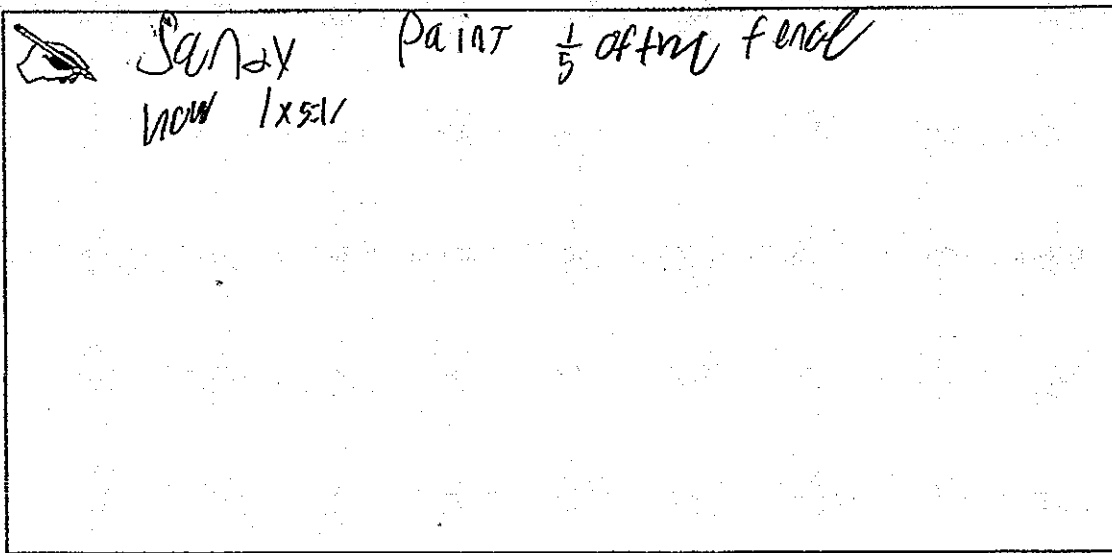
Total Practice Points: 0

The student identifies the answer in Part A by saying "So from morning to lunchtime they had painted $\frac{4}{5}$ of the fence" (4.NF.B.3d(x)). In Part B, the student finds that Sandy painted $\frac{3}{5}$ of the fence, not $\frac{2}{5}$ (no credit for 4.NF.B.3d(z)). The student does not use a subtraction or addition equation, an expression, or a visual model to represent the situation in Part A (no credit for MP4(x); no credit for MP4(z)).

Total Awarded Points: 1 out of 4
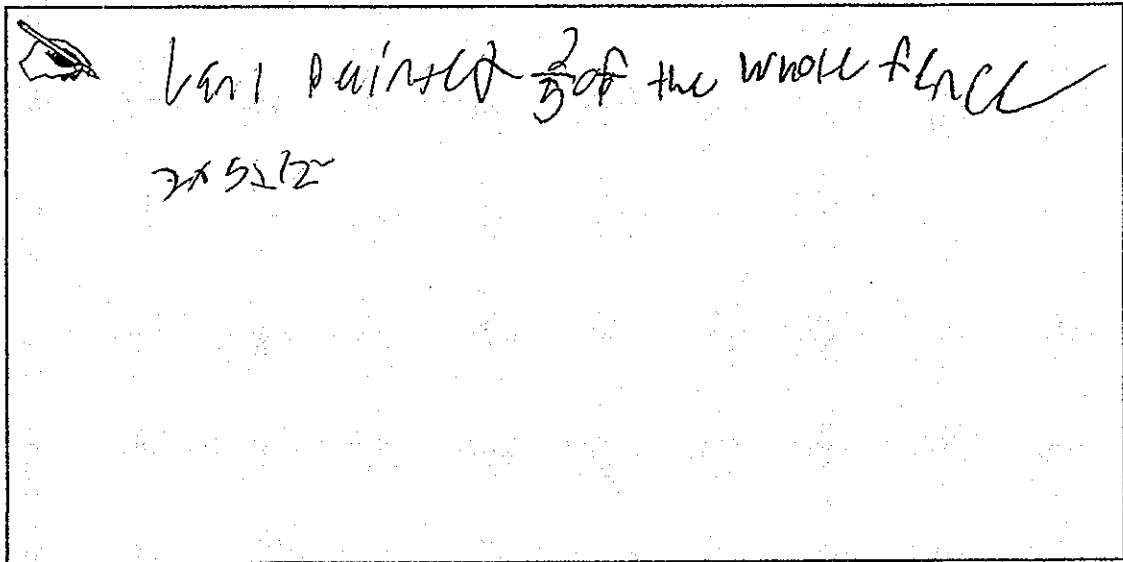
Paint By Numbers Task

The Johnsons have a fence around their backyard that needs to be painted. Lani and Sandy spent all morning painting the fence. At lunch time, $\frac{1}{5}$ of the fence remains to be painted.

a. What fraction of the fence did Lani and Sandy paint in the morning? Write an equation and draw a diagram to explain your answer.

Sandy   Paint $\frac{1}{5}$ of the fence

how $1 \times 5 = 1$

Paint By Numbers Task

b.   Lani painted $\frac{2}{5}$ of the whole fence that morning. How much of the fence did Sandy paint?

Lani painted $\frac{2}{5}$ of the whole fence

2×5=2

ho#: 00434200171

Anchor 11   Litho 00434200171

Total Content Points: 0

Total Practice Points: 0

The student incorrectly identifies the answer in Part A by saying, "Sandy paint $\frac{1}{5}$ of the fence" (no credit for 4.NF.B.3d(x)). In Part B, the student mentions that Lani painted $\frac{2}{5}$ of the fence, but does not answer how much of the fence Sandy painted (no credit for 4.NF.B.3d(z)). The student does not use a subtraction or addition equation, an expression, or a visual model to represent the situation in Part A (no credit for MP4(x); no credit for MP4(z)).

Total Awarded Points: 0 out of 4