Tennessee Comprehensive Assessment Program

TCAP/CRA 2013

5

Task 2 Scoring Guide

Walking 5 Miles Task

2. Walking 5 Miles Task Scoring Guide

The CCSS for Mathematical Content (2 points)

5.NF.B.7c Indicates that it would take Nalia 15 days of walking $\frac{1}{3}$ of a mile each day to walk a total of 5 miles. (Note: not necessary to include the unit "days"). _____

(1 Point)

5.NF.A.2 Calculates $1\frac{2}{5} - \frac{1}{3}$ as equal to $1\frac{1}{15}$, or $\frac{16}{15}$. _____

(1 Point)

Total Content Points _____

The CCSS for Mathematical Practice (2 points)

MP2 Abstracts the numbers from the problem, correctly interprets the meaning of each of the numbers in the given context, derives the division equation necessary, and indicates the unit "miles" in Part B. _____

(1 Point)

(MP2: Reason abstractly and quantitatively.)

MP4 Provides diagrams and/or equations that accurately model division involving a whole number divided by a unit fraction, and represents subtraction in some way relevant to the problem. _____

(1 Point)

(MP4: Model with mathematics.)

Total Practice Points _____

Total Awarded Points _____

The CCSS for Mathematical Content Addressed in This Task

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

5.NF.A.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.*

5.NF.B.7c Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*

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.

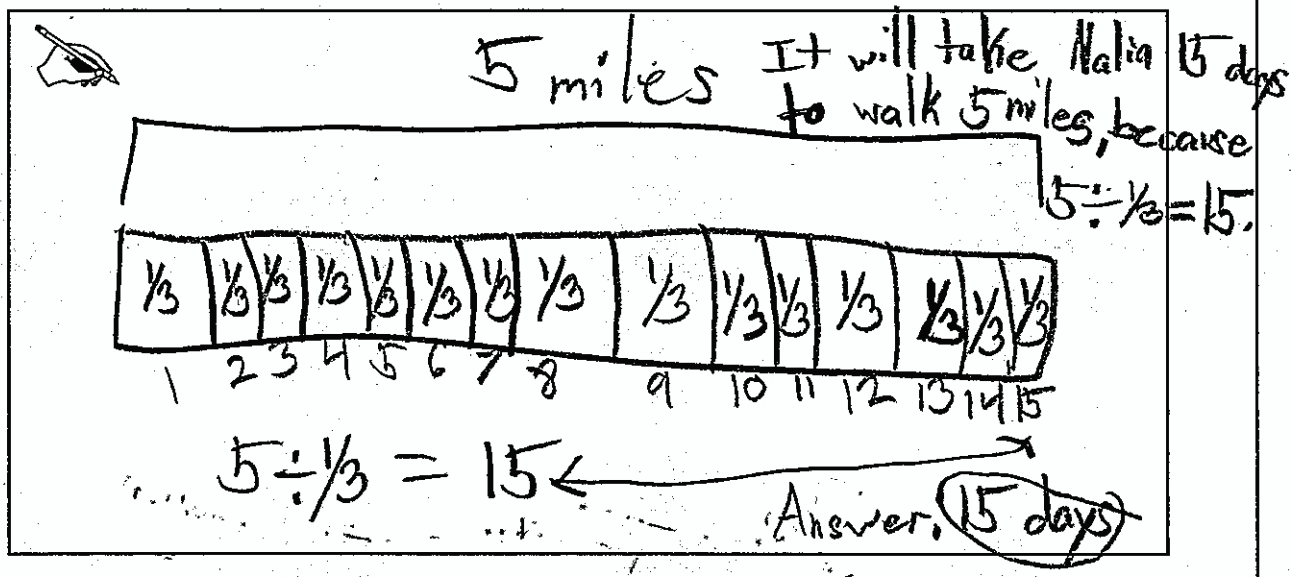
*Gray text indicates Mathematical Practices that are not addressed in this task.

Students' responses to a mathematical task provide evidence of what they understand and are able to do in relation to the standards and practices. Across tasks, this cumulative evidence shows students' understanding and abilities within a domain. When students do not respond completely to all parts of a task, they provide insufficient evidence of their mathematical understanding and abilities and therefore do not fully demonstrate the expectations of the standards and practices aligned with that task.

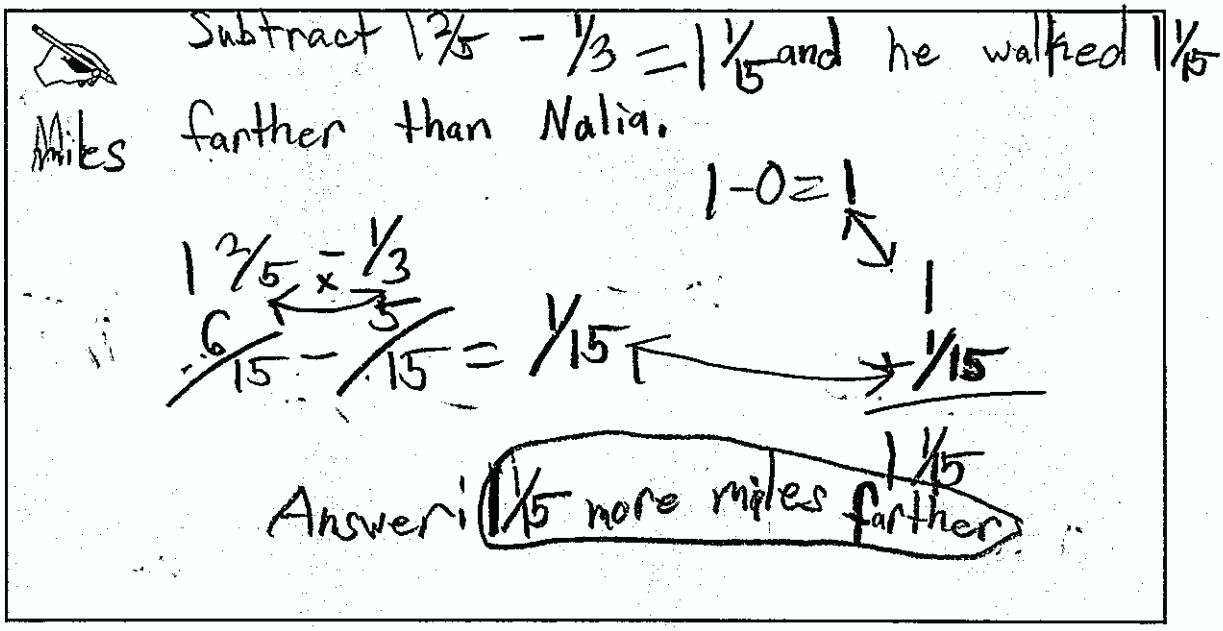
Task 2. Walking 5 Miles Task

Nalia wants to walk a total of 5 miles. If she walks $\frac{1}{3}$ of a mile each day, how many days will it take to walk 5 miles?

a. Write a division equation and draw a diagram that shows how many days Nalia must walk.



b. Nalia walks $\frac{1}{3}$ of a mile each day. Nalia's brother walks $1\frac{2}{5}$ miles each day. How much farther does he walk each day than Nalia? Show your work by using a diagram, number line, or equation.



Litho#: 564631

Anchor 1 Litho 564631

Total Content Points: 2 (5.NF.B.7c, 5.NF.A.2)

Total Practice Points: 2 (MP2, MP4)

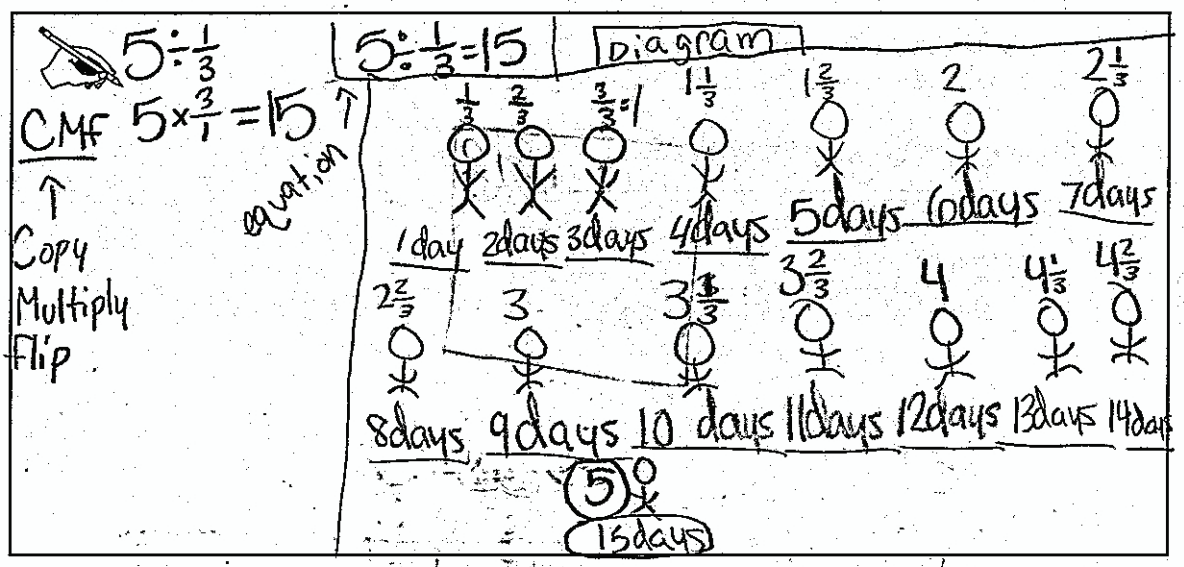
In Part A, the student solves a division problem containing a whole number divided by a unit fraction $\left(5 \div \frac{1}{3}\right)$ and indicates that it would take Nalia 15 days of walking $\frac{1}{3}$ of a mile each day to walk 5 miles (5.NF.B.7c). In Part B, the student solves a subtraction problem containing fractions with unlike denominators $\left(1\frac{2}{5} - \frac{1}{3}\right)$ and calculates the correct answer $\left(1\frac{1}{15}\right)$ (5.NF.A.2). The student abstracts and interprets numbers from the word problem to derive the correct division equation in Part A and to show that the answer in Part B refers to additional miles walked by Nalia's brother (MP2). A correct equation, with a corresponding diagram, is provided to model division in Part A, and in Part B, the equation $1\frac{2}{5} - \frac{1}{3} = 1\frac{1}{15}$ correctly models subtraction (MP4).

Total Awarded Points: 4 out of 4

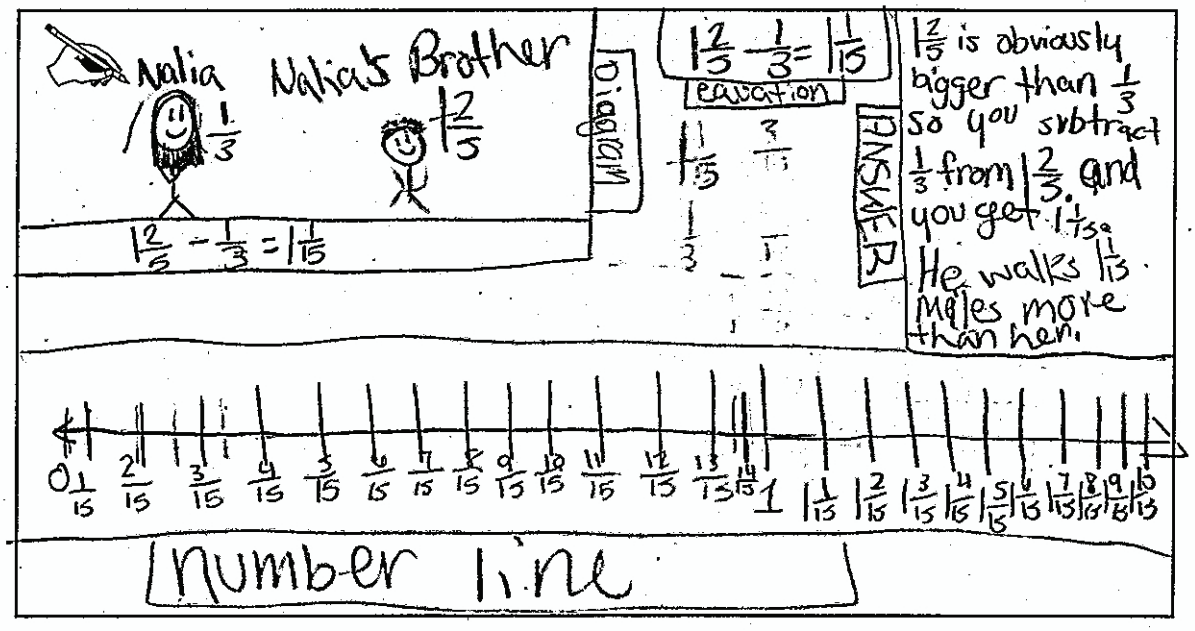
Task 2. Walking 5 Miles Task

Nalia wants to walk a total of 5 miles. If she walks $\frac{1}{3}$ of a mile each day, how many days will it take to walk 5 miles?

a. Write a division equation and draw a diagram that shows how many days Nalia must walk.



b. Nalia walks $\frac{1}{3}$ of a mile each day. Nalia's brother walks $1\frac{2}{5}$ miles each day. How much farther does he walk each day than Nalia? Show your work by using a diagram, number line, or equation.



Anchor 2 Litho 551719

Total Content Points: 2 (5.NF.B.7c, 5.NF.A.2)

Total Practice Points: 2 (MP2, MP4)

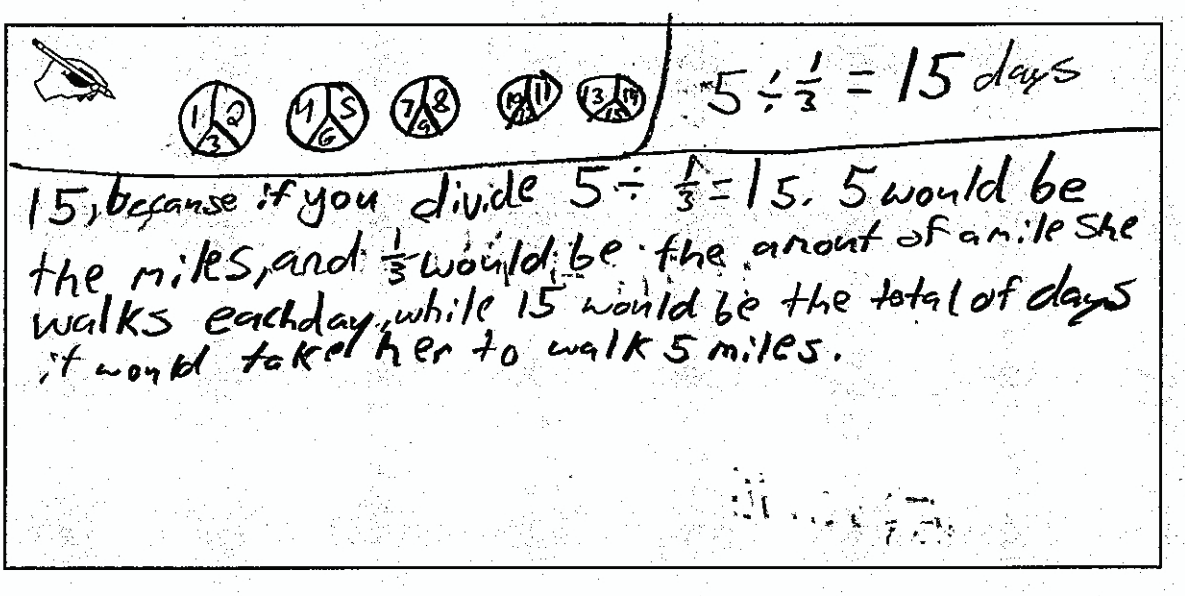
In Part A, the student solves a division problem containing a whole number divided by a unit fraction $\left(5 \div \frac{1}{3}\right)$ and indicates that it would take Nalia 15 days of walking $\frac{1}{3}$ of a mile each day to walk 5 miles (5.NF.B.7c). In Part B, the student solves a subtraction problem containing fractions with unlike denominators $\left(1\frac{2}{5} - \frac{1}{3}\right)$ and calculates the correct answer $\left(1\frac{1}{15}\right)$ (5.NF.A.2). The student abstracts and interprets numbers from the word problem to derive the correct division equation in Part A and to show that the answer $\left(1\frac{1}{15}\right)$ refers to additional miles walked by Nalia's brother (MP2). A correct equation, with a corresponding diagram, is provided to model division in Part A, and in Part B, the equation $1\frac{2}{5} - \frac{1}{3} = 1\frac{1}{15}$ correctly models subtraction (MP4).

Total Awarded Points: 4 out of 4

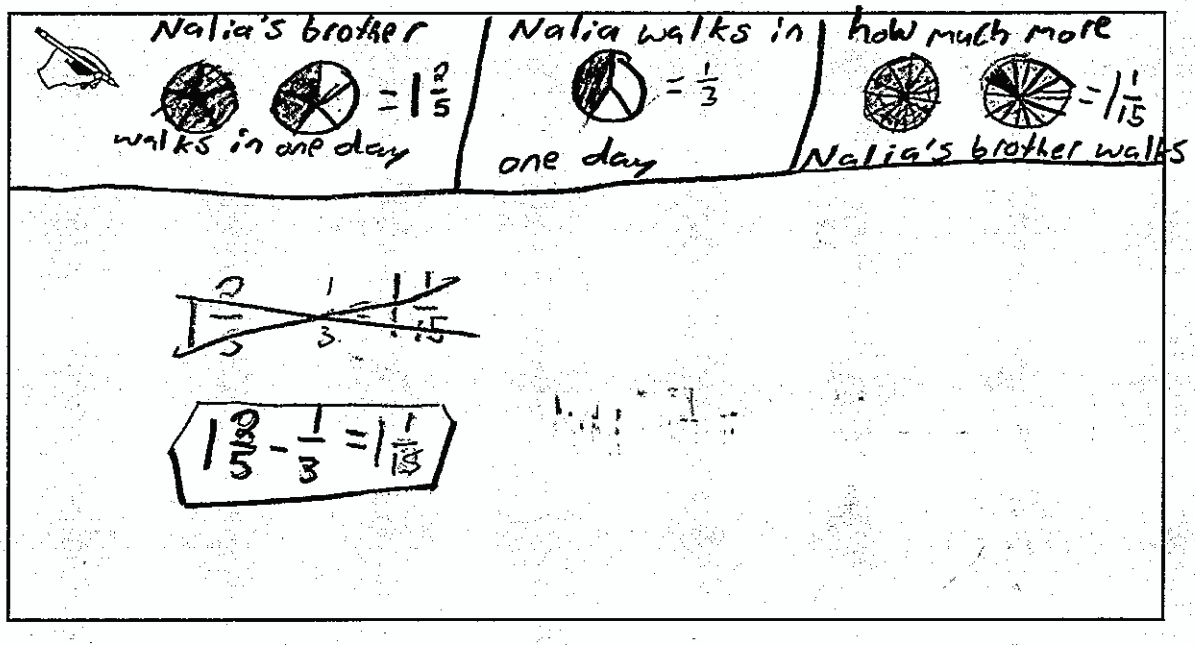
Task 2. Walking 5 Miles Task

Nalia wants to walk a total of 5 miles. If she walks $\frac{1}{3}$ of a mile each day, how many days will it take to walk 5 miles?

a. Write a division equation and draw a diagram that shows how many days Nalia must walk.



b. Nalia walks $\frac{1}{3}$ of a mile each day. Nalia's brother walks $1\frac{2}{5}$ miles each day. How much farther does he walk each day than Nalia? Show your work by using a diagram, number line, or equation.



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Total Content Points: 2 (5.NF.A.7.c, 5.NF.A.2)

Total Practice Points: 1 (MP4)

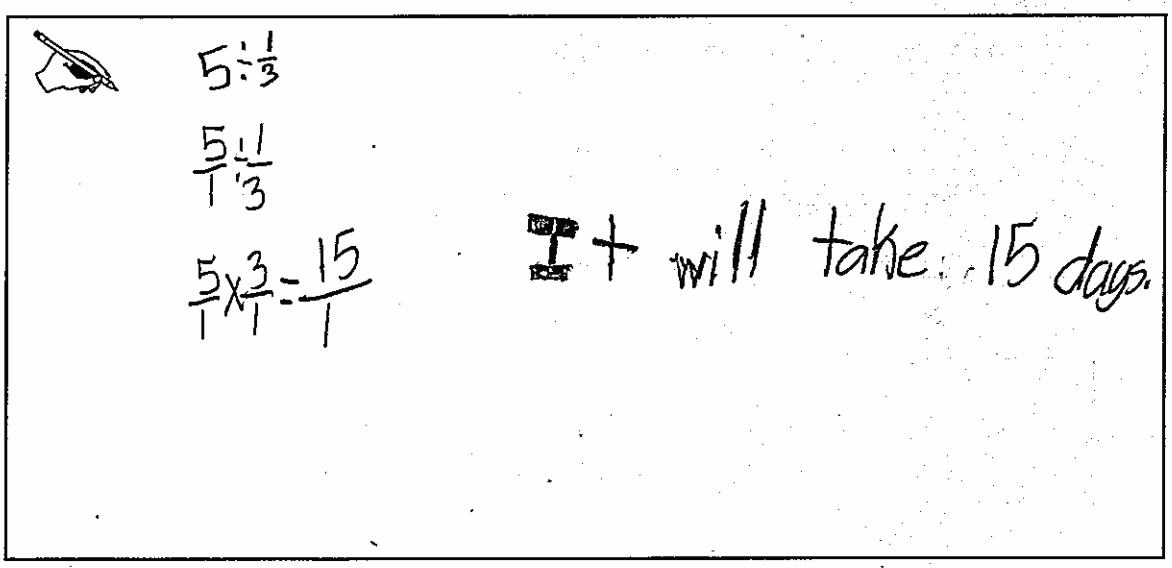
In Part A, the student solves a division problem containing a whole number divided by a unit fraction $\left(5 \div \frac{1}{3}\right)$ and indicates that it would take Nalia 15 days of walking $\frac{1}{3}$ of a mile each day to walk 5 miles (5.NF.B.7c). In Part B, the student solves a subtraction problem containing fractions with unlike denominators $\left(1\frac{2}{5} - \frac{1}{3}\right)$ and calculates the correct answer $\left(1\frac{1}{15}\right)$ (5.NF.A.2). In Part B, the student abstracts but does not label the answer as miles walked by Nalia's brother, thus not showing the interpretation of the numbers in the context of the story problem (no credit for MP2). A correct equation, with a corresponding diagram, is provided to model division in Part A, and in Part B, the equation $1\frac{2}{5} - \frac{1}{3} = 1\frac{1}{15}$ correctly models subtraction (MP4).

Total Awarded Points: 3 out of 4

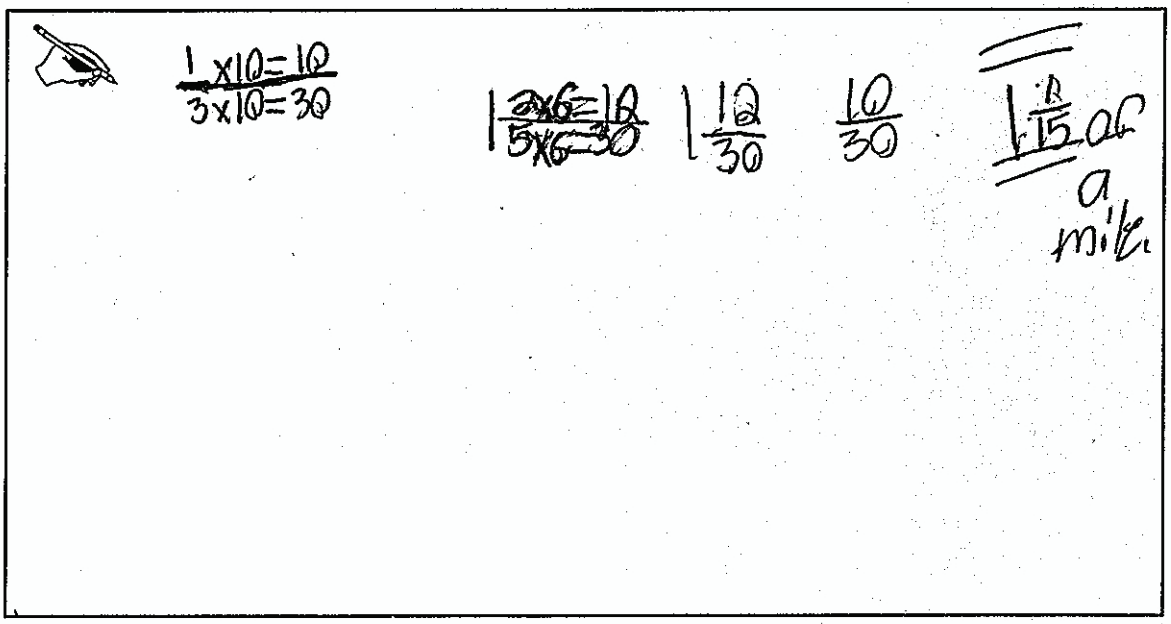
Task 2. Walking 5 Miles Task

Nalia wants to walk a total of 5 miles. If she walks $\frac{1}{3}$ of a mile each day, how many days will it take to walk 5 miles?

a. Write a division equation and draw a diagram that shows how many days Nalia must walk.



b. Nalia walks $\frac{1}{3}$ of a mile each day. Nalia's brother walks $1\frac{2}{5}$ miles each day. How much farther does he walk each day than Nalia? Show your work by using a diagram, number line, or equation.



Litho#: 554326

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Total Content Points: 2 (5.NF.B.7c, 5.NF.A.2)

Total Practice Points: 1 (MP2)

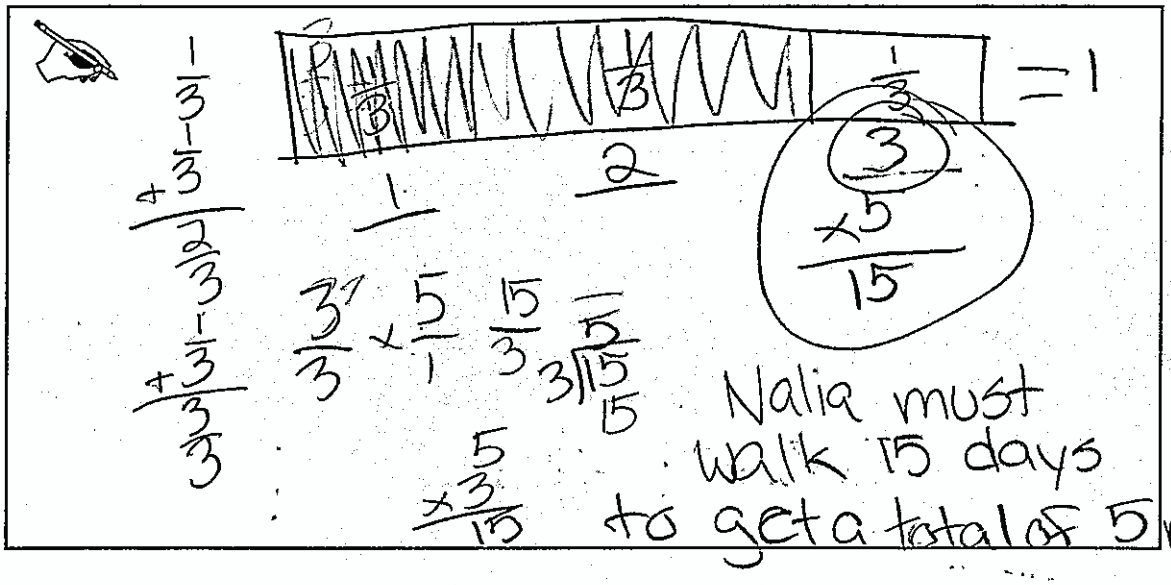
In Part A, the student solves a division problem containing a whole number divided by a unit fraction $\left(5 \div \frac{1}{3}\right)$ and indicates that it would take Nalia 15 days of walking $\frac{1}{3}$ of a mile each day to walk a total of 5 miles (5.NF.B.7c). In Part B, the student solves a subtraction problem containing fractions with unlike denominators $\left(1\frac{2}{5} - \frac{1}{3}\right)$ and calculates the correct answer $\left(1\frac{1}{15}\right)$ (5.NF.A.2). The student abstracts and interprets numbers from the word problem to derive the correct division equation in Part A and to show that the answer $\left(1\frac{1}{15}\right)$ refers to additional miles walked by Nalia's brother (MP2). Although there are correct equations for both Parts A and B, no corresponding diagram is provided to accurately model division involving a whole number divided by a unit fraction (no credit for MP4).

Total Awarded Points: 3 out of 4

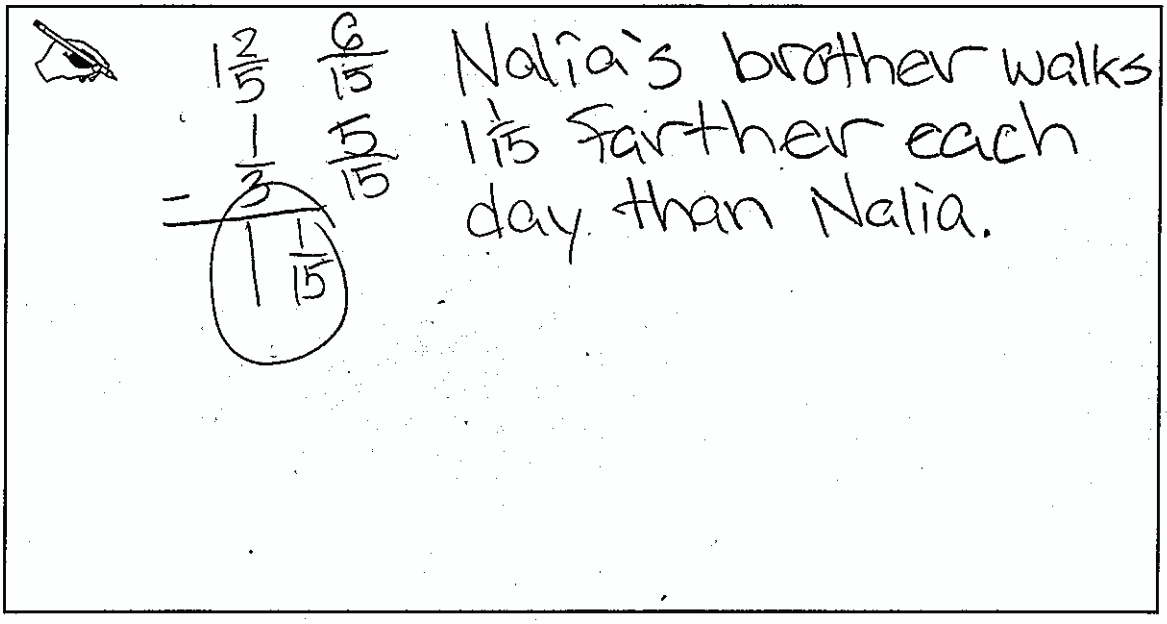
Task 2. Walking 5 Miles Task

Nalia wants to walk a total of 5 miles. If she walks $\frac{1}{3}$ of a mile each day, how many days will it take to walk 5 miles?

a. Write a division equation and draw a diagram that shows how many days Nalia must walk.



b. Nalia walks $\frac{1}{3}$ of a mile each day. Nalia's brother walks $1\frac{2}{5}$ miles each day. How much farther does he walk each day than Nalia? Show your work by using a diagram, number line, or equation.



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Total Content Points: 2 (5.NF.B.7c, 5.NF.A.2)

Total Practice Points: 0

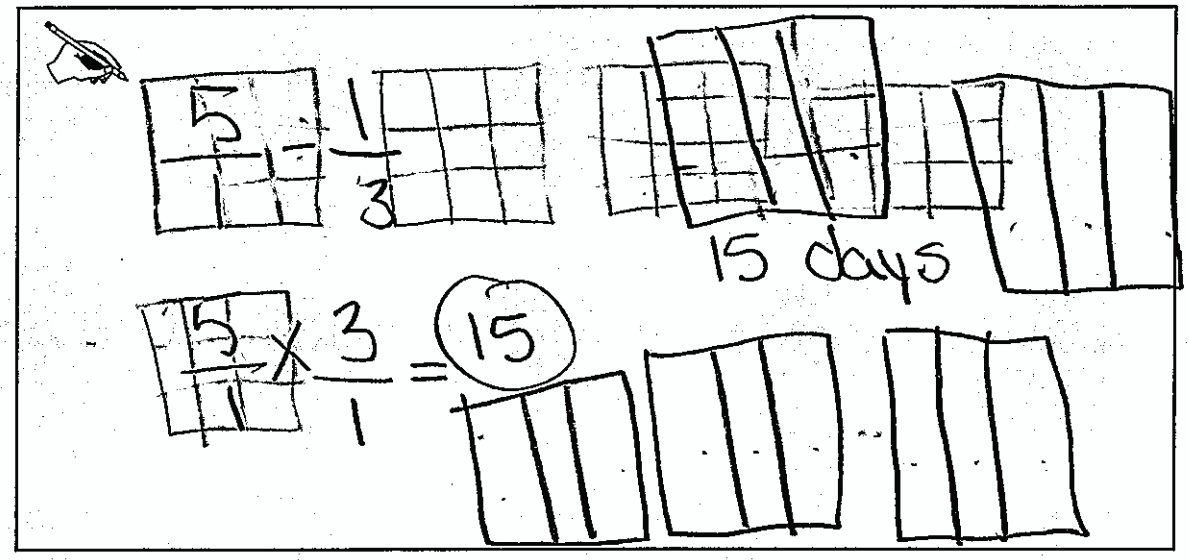
In Part A, the student indicates that it would take Nalia 15 days of walking $\frac{1}{3}$ of a mile each day to walk a total of 5 miles (5.NF.B.7c). In Part B, the student solves a subtraction problem containing fractions with unlike denominators $\left(1\frac{2}{5}-\frac{1}{3}\right)$ and calculates the correct answer $\left(1\frac{1}{15}\right)$ (5.NF.A.2). In Part A, no division equation is provided to show how 5 is divided into fractional parts, and in Part B, the student abstracts but does not label the answer to show that the answer $\left(1\frac{1}{15}\right)$ refers to additional miles walked by Nalia's brother (no credit for MP2). In Part A, the student does not appropriately address the task to demonstrate ability to model division of a whole number by a unit fraction, as the equation is not the correct operation and the diagram does not clearly represent the number of days to walk 5 miles, and no corresponding diagram is shown (no credit for MP4).

Total Awarded Points: 2 out of 4

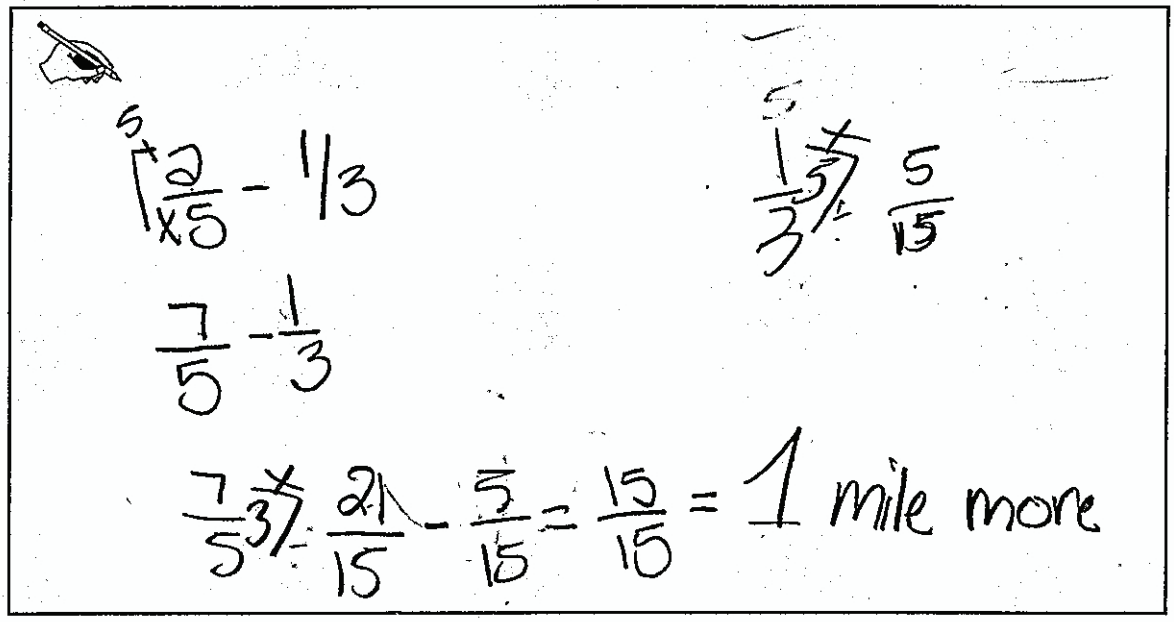
Task 2. Walking 5 Miles Task

Nalia wants to walk a total of 5 miles. If she walks $\frac{1}{3}$ of a mile each day, how many days will it take to walk 5 miles?

a. Write a division equation and draw a diagram that shows how many days Nalia must walk.



b. Nalia walks $\frac{1}{3}$ of a mile each day. Nalia's brother walks $1\frac{2}{5}$ miles each day. How much farther does he walk each day than Nalia? Show your work by using a diagram, number line, or equation.



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Total Content Points: 1 (5.NF.B.7c)

Total Practice Points: 1 (MP2)

In Part A, the student indicates that it would take Nalia 15 days of walking $\frac{1}{3}$ of a mile each day to walk a total of 5 miles (5.NF.B.7c). In Part B, the student does not calculate the correct answer to the subtraction problem $\left(1\frac{2}{5}-\frac{1}{3}\right)$ (no credit for 5.NF.A.2). The student abstracts and interprets numbers from the word problem to derive the correct equations in both parts of the response and to show that the answer in Part B refers to miles walked by Nalia's brother (MP2). Although division of a whole number by a unit fraction is correctly modeled in Part A, with an equation and diagram showing 5 squares divided into thirds, the equation in Part B does not adequately represent the process of subtracting fractional values (no credit for MP4).

Total Awarded Points: 2 out of 4

Task 2. Walking 5 Miles Task

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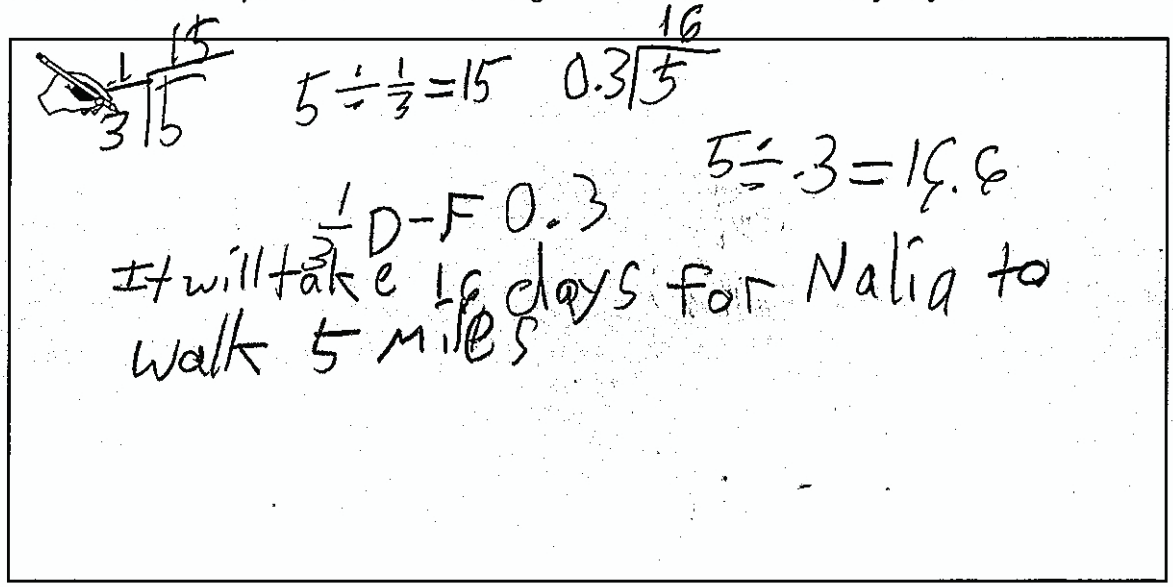
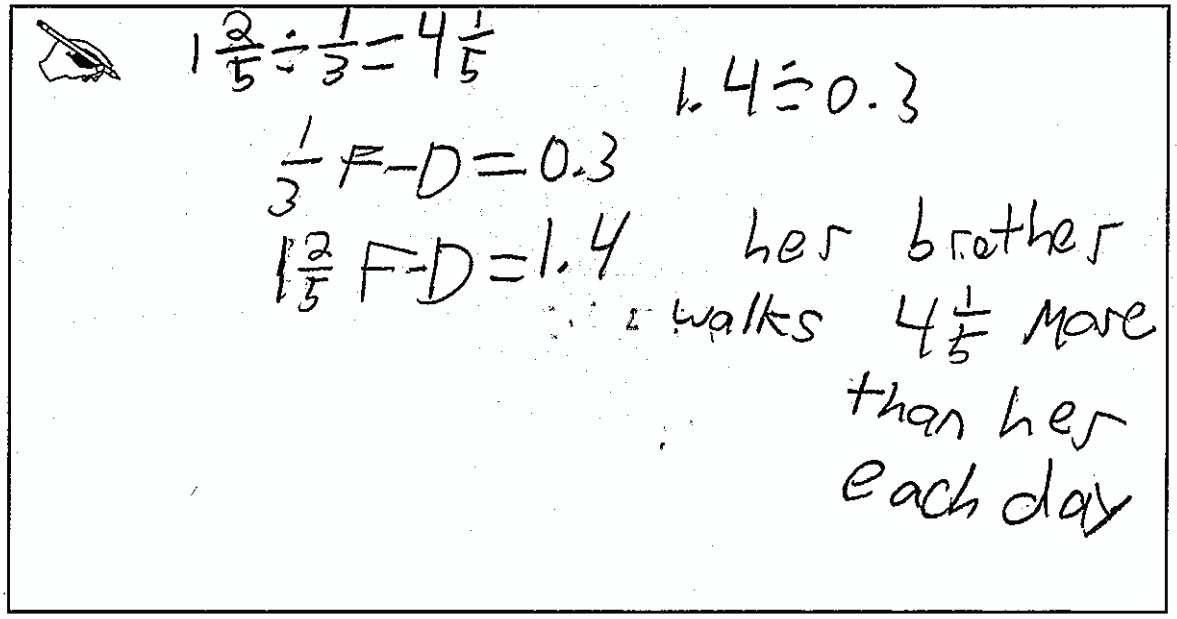


b. Nalia walks $\frac{1}{3}$ of a mile each day. Nalia's brother walks $1\frac{2}{5}$ miles each day. How much farther does he walk each day than Nalia? Show your work by using a diagram, number line, or equation.



Litho#: 548947

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Total Content Points: 1 (5.NF.B.7c)

Total Practice Points: 0

In Part A, the student calculates correctly, showing understanding of division of a whole number by a unit fraction; giving the incorrect number of days does not count against the student (5.NF.B.7c). In Part B, the student divides instead of subtracting, which leads to an incorrect answer (no credit for 5.NF.A.2). In Part B, the student does not derive the necessary subtraction equation and does not label the answer provided with "miles" (no credit for MP2). A correct equation models division in Part A; however, in Part B, the equation $1\frac{2}{5} \div \frac{1}{3}$ does not correctly represent subtraction (no credit for MP4).

Total Awarded Points: 1 out of 4

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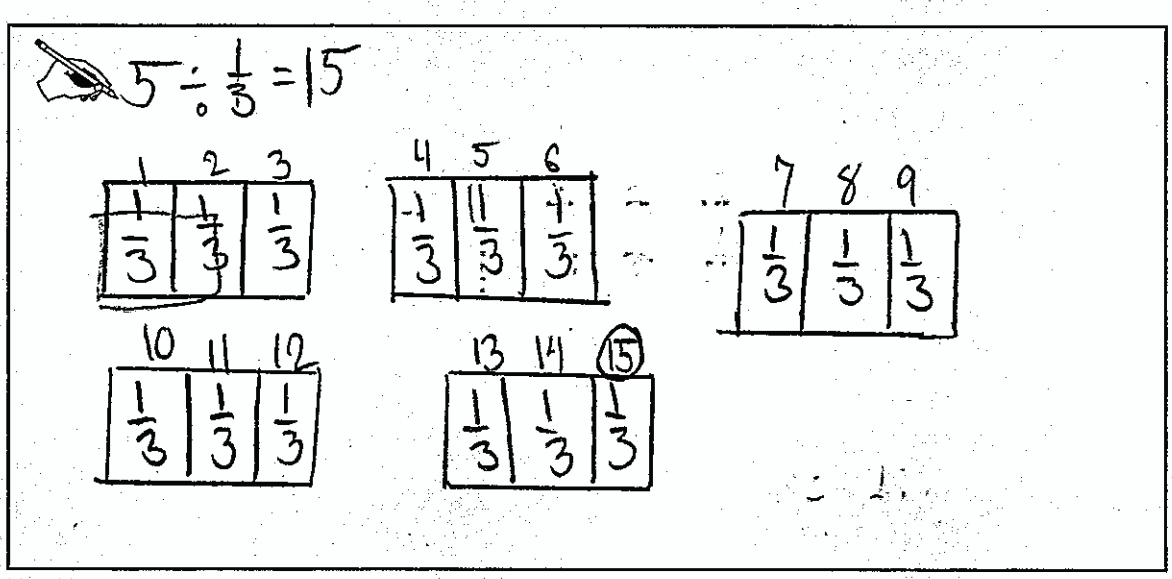
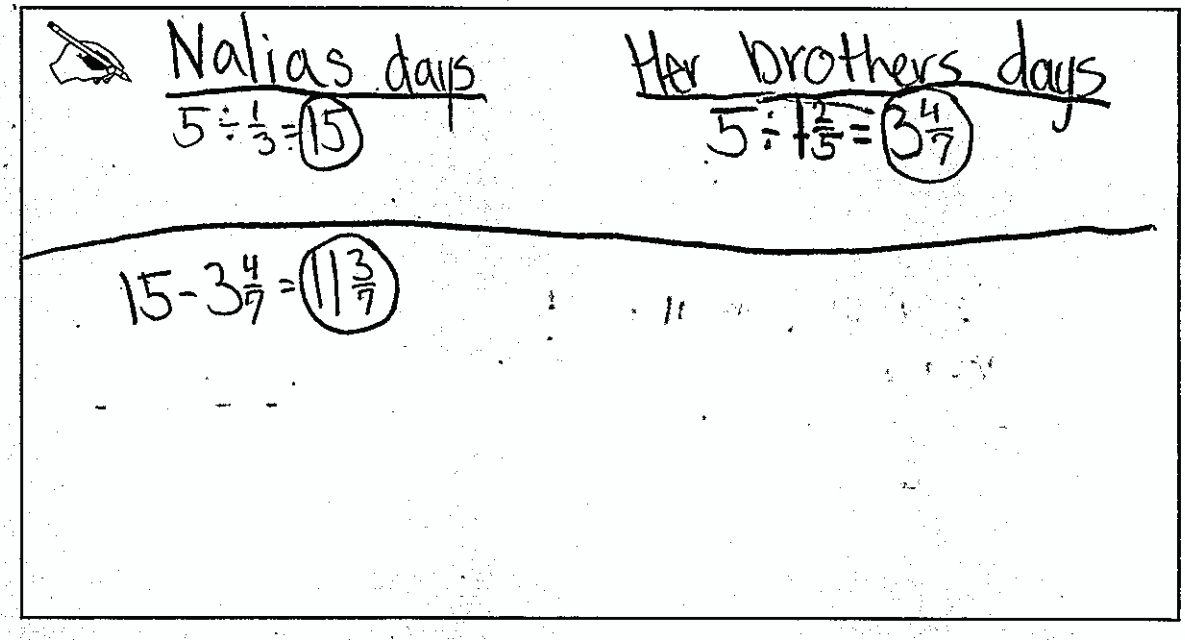


b. Nalia walks $\frac{1}{3}$ of a mile each day. Nalia's brother walks $1\frac{2}{5}$ miles each day. How much farther does he walk each day than Nalia? Show your work by using a diagram, number line, or equation.



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Total Content Points: 1 (5. NF.B.7c)

Total Practice Points: 0

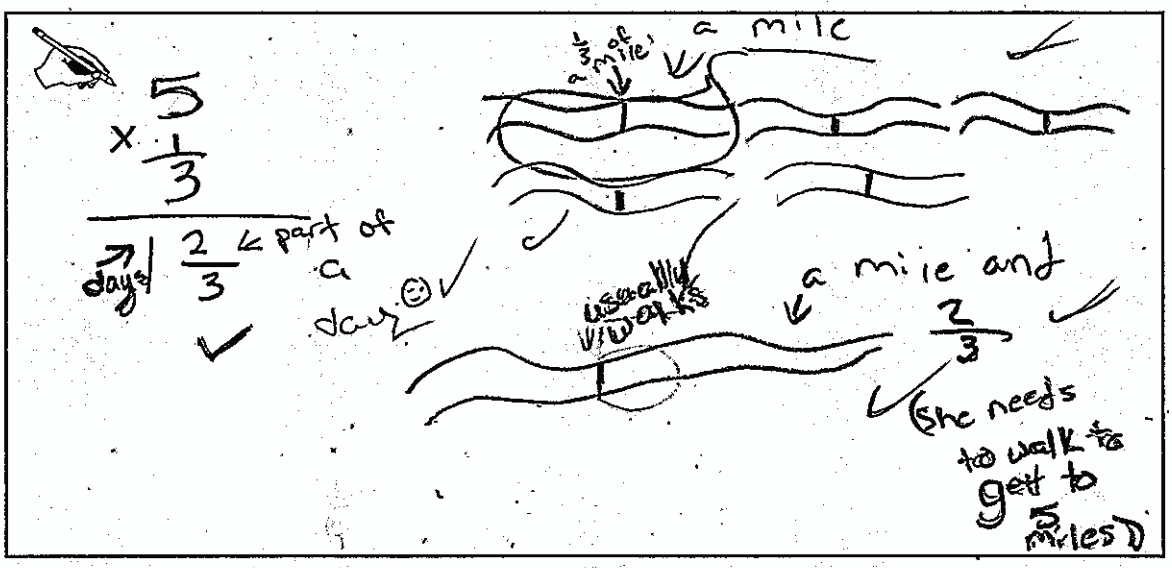
In Part A, the student calculates that $5 \div \frac{1}{3}$ is 15, demonstrating understanding of dividing a whole number by a unit fraction (5.NF.B.7c). In Part B, the student divides and subtracts incorrect sets of numbers for the problem (no credit for 5.NF.A.2). In Part B, the student abstracts numbers from the word problem, but incorrectly interprets them to calculate the difference in number of days Nalia and her brother would take to walk 5 miles instead of the difference in their daily rates (no credit for MP2). Although both the division equation and the diagram in Part A are correct, the equations in Part B are incorrect (no credit for MP4).

Total Awarded Points: 1 out of 4

Task 2. Walking 5 Miles Task

Nalia wants to walk a total of 5 miles. If she walks $\frac{1}{3}$ of a mile each day, how many days will it take to walk 5 miles?

a. Write a division equation and draw a diagram that shows how many days Nalia must walk.



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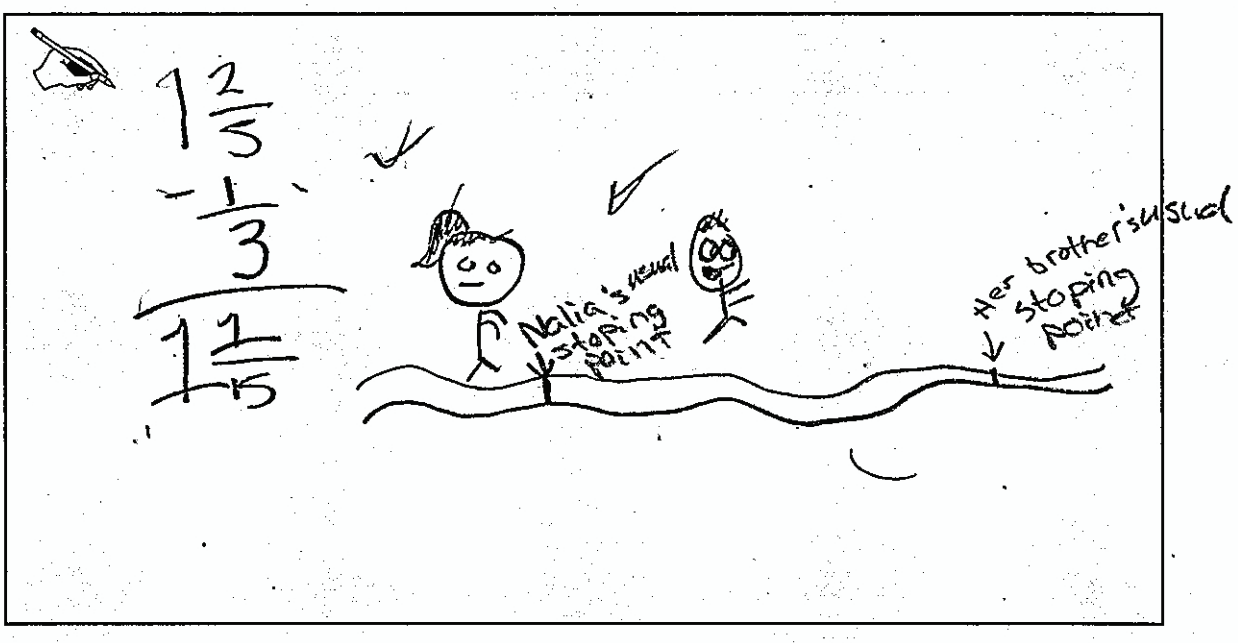

Litho#: 561641

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Total Content Points: 1 (5.NF.A.2)

Total Practice Points: 0

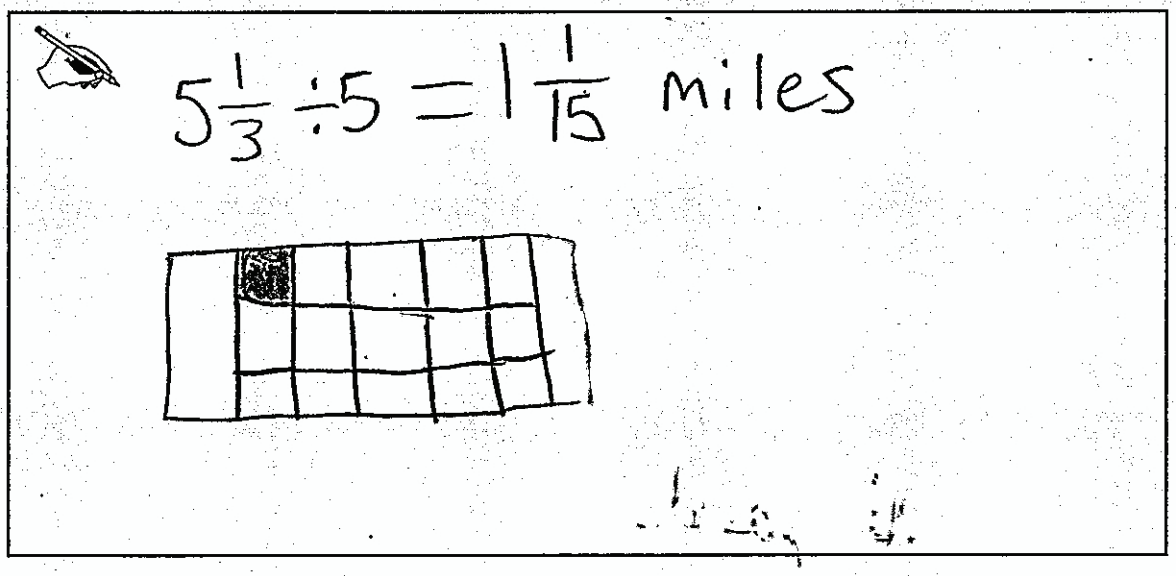
In Part A, the student multiplies instead of dividing and does not conclude that it would take Nalia 15 days to walk 5 miles (no credit for 5.NF.B.7c). In Part B, the student solves a subtraction problem containing fractions with unlike denominators $\left(1\frac{2}{5}-\frac{1}{3}\right)$ and calculates the correct answer $\left(1\frac{1}{15}\right)$ (5.NF.A.2). However, in Part B the student abstracts but does not label numbers from the word problem to show that the answer $\left(1\frac{1}{15}\right)$ refers to additional miles walked by Nalia's brother (no credit for MP2). In Part A, neither the equation nor the diagram accurately model division involving a whole number divided by a unit fraction (no credit for MP4).

Total Awarded Points: 1 out of 4

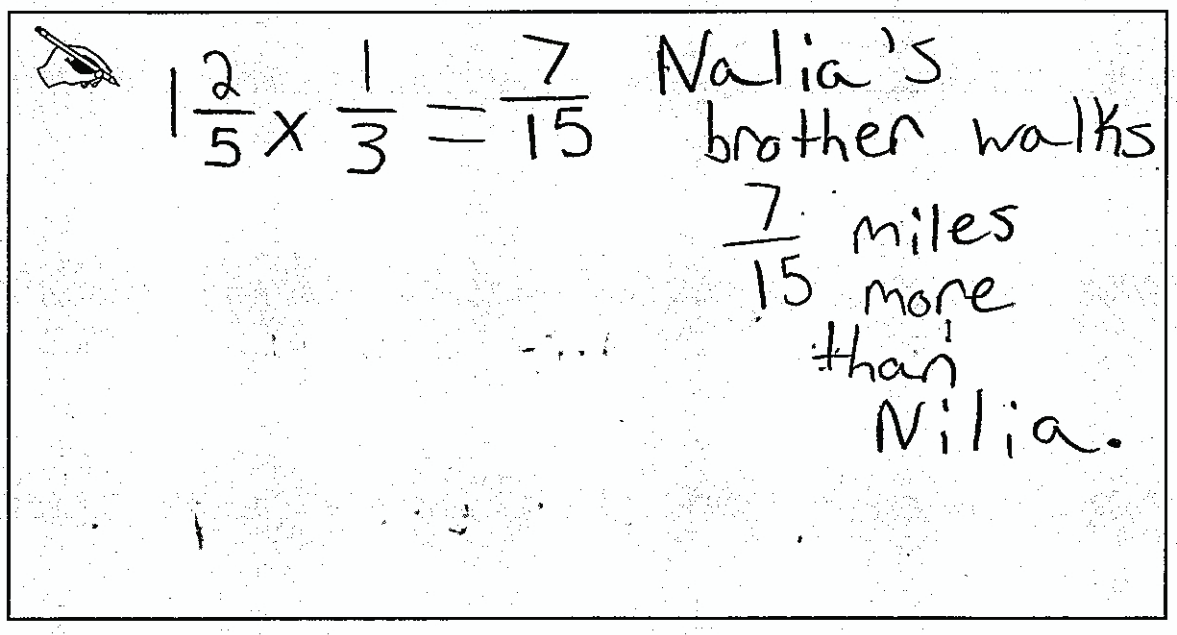
Task 2. Walking 5 Miles Task

Nalia wants to walk a total of 5 miles. If she walks $\frac{1}{3}$ of a mile each day, how many days will it take to walk 5 miles?

a. Write a division equation and draw a diagram that shows how many days Nalia must walk.



b. Nalia walks $\frac{1}{3}$ of a mile each day. Nalia's brother walks $1\frac{2}{5}$ miles each day. How much farther does he walk each day than Nalia? Show your work by using a diagram, number line, or equation.



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Total Content Points: 0

Total Practice Points: 0

In Part A, the student does not indicate that it would take Nalia 15 days to walk 5 miles (no credit for 5.NF.B.7c). In Part B, the student does not use subtraction of fractions to calculate how much farther Nalia's brother walks each day than she does (no credit for 5.NF.A.2). In Part A, the student does not derive a correct division equation, and in Part B, the student multiplies instead of subtracting the numbers from the problem, which shows misunderstanding of the context (no credit for MP2). The student provides neither correct equations nor appropriate diagrams accurately modeling either division of a whole number by a unit fraction or subtraction of fractions (no credit for MP4).

Total Awarded Points: 0 out of 4