Tennessee Comprehensive Assessment Program

TCAP/CRA 2013

4

Task 4

Scoring Guide

Bill's Claim Task

4. Bill's Claim Task Scoring Guide

The CCSS for Mathematical Content (1 point)

4.NF.B.4b   Indicates an understanding that $3 \times \dfrac{2}{5}$ is equal to $6 \times \dfrac{1}{5}$. Student may: _____

- indicate the relationship between a group of $\dfrac{2}{5}$ and 2 of the fifths from $6 \times \dfrac{1}{5}$ and indicate that the product of $3 \times \dfrac{2}{5}$ and $6 \times \dfrac{1}{5}$ is the same in each diagram.

- represent 2 diagrams, one illustrating $3 \times \dfrac{2}{5}$ and one representing $6 \times \dfrac{1}{5}$ and indicating that both represent $\dfrac{6}{5}$.

(1 Point)

Total Content Points _____

The CCSS for Mathematical Practice (1 point)

MP3   Provides a reasonable explanation showing that the two expressions are equivalent.   _____

(1 Point)

(MP3: Construct viable arguments and critique the reasoning of others.)

Total Practice Points _____

Total Awarded Points _____

The CCSS for Mathematical Content Addressed in This Task

Build fractions from unit fractions by applying and extending previous understanding of operations on whole numbers.

4.NF.B.4b Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 x (2/5) as 6 x (1/5), recognizing this product as 6/5. (In general, n x (a/b) = (n x a)/b.)*

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 4. Bill's Claim Task

Bill claims that the expressions $3 \times \frac{2}{5}$ and $6 \times \frac{1}{5}$ are equivalent.

Draw and label diagrams and give a written explanation to show that the two expressions are equivalent.

$3 \times \frac{2}{5} = 1\frac{1}{5}$

Diagram labels: $\frac{2}{5}$, $\frac{2}{5}$, $\frac{2}{5}$, $\frac{1}{5}$, $\frac{1}{5}$, $\frac{1}{5}$, $\frac{1}{5}$, $\frac{1}{5}$, $\frac{1}{5}$

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

yes the two are equivalent
Becase 3 is half of 6 so $\frac{1}{5}$ is half
of $\frac{2}{5}$.

Anchor 1   Litho 479732

Total Content Points: 1   (4.NF.B.4b)

Total Practice Points: 1   (MP3)

The student indicates an understanding that $3 \times \dfrac{2}{5}$ is equal to $6 \times \dfrac{1}{5}$ by drawing two diagrams, with one illustrating $3 \times \dfrac{2}{5}$ and one representing $6 \times \dfrac{1}{5}$, and indicating that both represent $1\dfrac{1}{5}$ (4.NF.B.4b). The student provides a reasonable explanation showing that the 2 expressions are equivalent ("the two are equivalent Becase 3 is half of 6 so $\dfrac{1}{5}$ is half of $\dfrac{2}{5}$") (MP3).
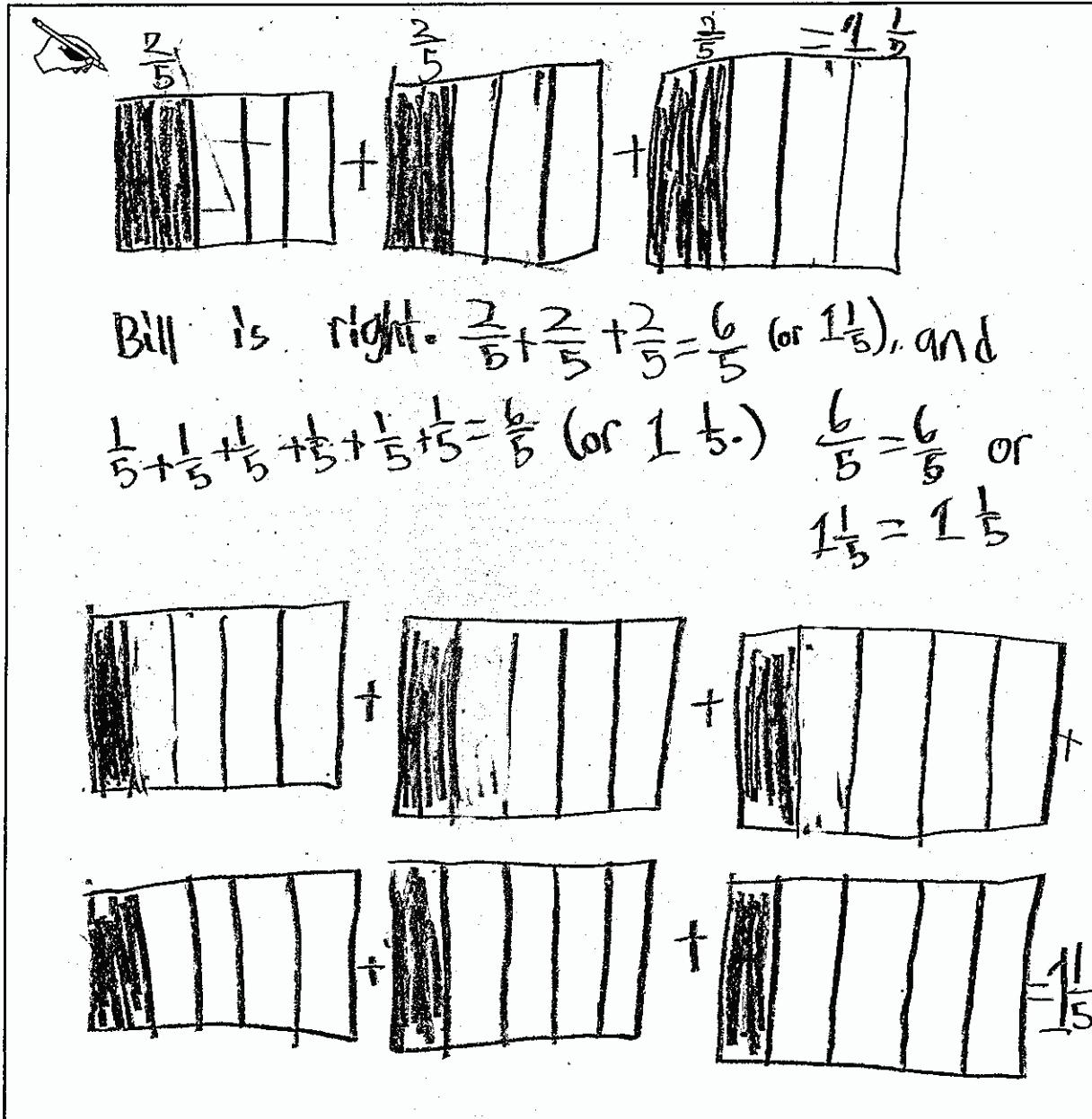
Total Awarded Points: 2 out of 2

Task 4. Bill's Claim Task

Bill claims that the expressions $3 \times \frac{2}{5}$ and $6 \times \frac{1}{5}$ are equivalent.

Draw and label diagrams and give a written explanation to show that the two expressions are equivalent.

Bill is right. $\frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{6}{5}$ (or $1\frac{1}{5}$), and

$\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \frac{6}{5}$ (or $1\frac{1}{5}$.) $\frac{6}{5} = \frac{6}{5}$ or

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

Anchor 2   Litho 481000

Total Content Points: 1   (4.NF.B.4b)

Total Practice Points: 1   (MP3)

The student indicates an understanding that $3 \times \dfrac{2}{5}$ is equal to $6 \times \dfrac{1}{5}$ by constructing two diagrams, one illustrating $\dfrac{2}{5} + \dfrac{2}{5} + \dfrac{2}{5} = 1\dfrac{1}{5}$, and one illustrating $\dfrac{1}{5}$ added 6 times equals $\dfrac{6}{5}$, which equals $1\dfrac{1}{5}$ (4.NF.B.4b). The student provides a reasonable explanation that the two expressions $\left(\dfrac{2}{5} + \dfrac{2}{5} + \dfrac{2}{5} \text{ and } \dfrac{1}{5} + \dfrac{1}{5} + \dfrac{1}{5} + \dfrac{1}{5} + \dfrac{1}{5} + \dfrac{1}{5} \right)$ are equivalent by having the same solution, $\dfrac{6}{5}$ $\left(\text{or } 1\dfrac{1}{5} \right)$ (MP3).
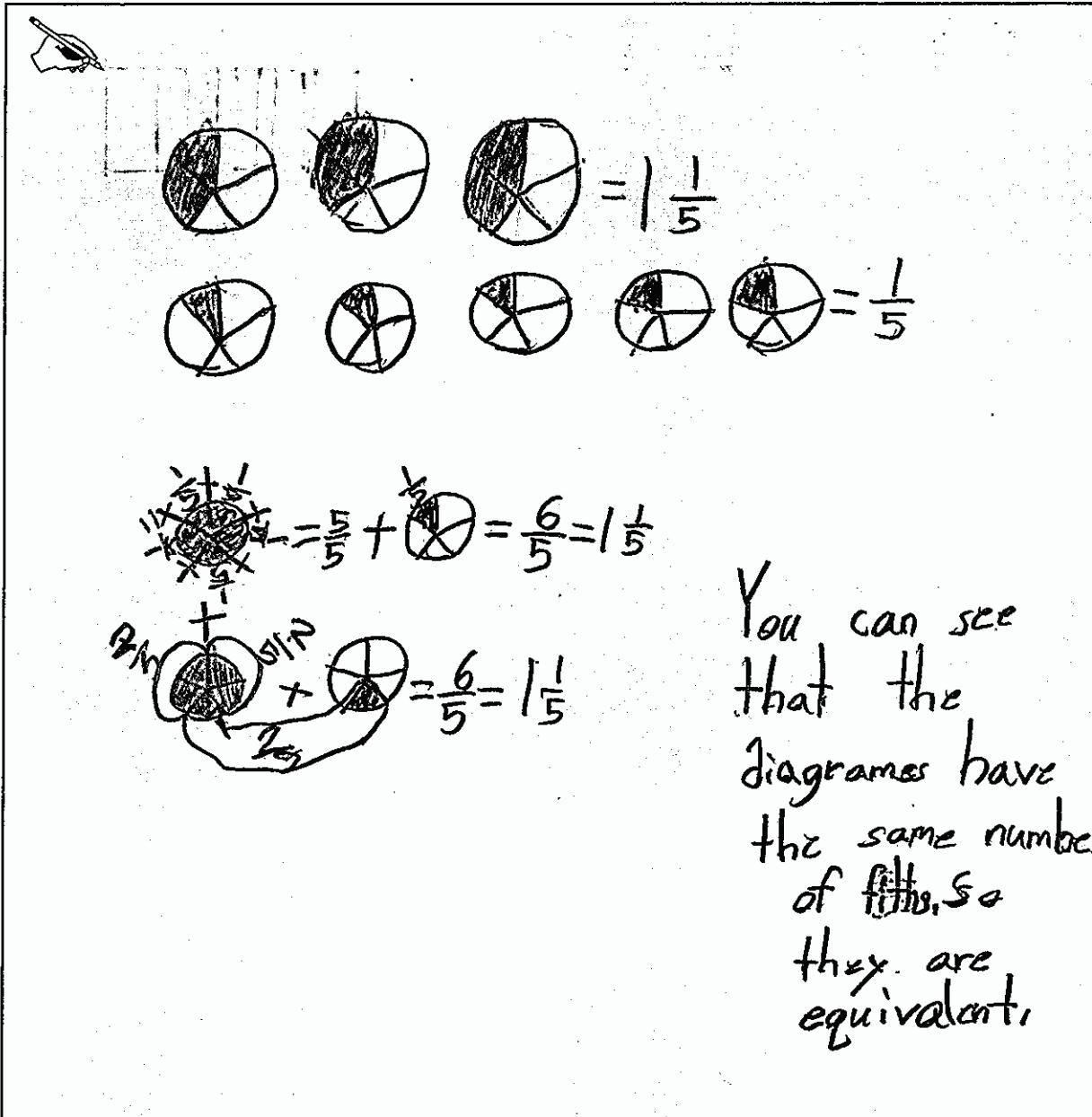
Total Awarded Points: 2 out of 2

Task 4. Bill's Claim Task

Bill claims that the expressions $3 \times \frac{2}{5}$ and $6 \times \frac{1}{5}$ are equivalent.

Draw and label diagrams and give a written explanation to show that the two expressions are equivalent.

You can see that the diagrames have the same number of fifths, So they are equivalent.

Litho#: 451276

Anchor 3   Litho 451276

Total Content Points: 1   (4.NF.B.4b)

Total Practice Points: 1   (MP3)

The student indicates an understanding that $3 \times \frac{2}{5}$ is equal to $6 \times \frac{1}{5}$ by indicating both the relationship between a group of $\frac{2}{5}$ and 2 of the fifths from $6 \times \frac{1}{5}$, and that the product $\frac{6}{5} = 1\frac{1}{5}$ is the same in each diagram. The two diagrams also illustrate that $3 \times \frac{2}{5}$ and $6 \times \frac{1}{5}$ both represent $\frac{6}{5}$ (4.NF.B.4b). The student provides a clear and reasonable explanation ("the diagrames have the same number of fiths. So they are equivalent") (MP3).

Total Awarded Points: 2 out of 2

Task 4. Bill's Claim Task

Bill claims that the expressions $3 \times \frac{2}{5}$ and $6 \times \frac{1}{5}$ are equivalent.

Draw and label diagrams and give a written explanation to show that the two expressions are equivalent.

$3 \times \frac{2}{5}$

$\boxed{\dfrac{6}{5} = \dfrac{6}{5}}$ (circled)

$\boxed{6 \times \frac{1}{5}}$ (circled)

	$\frac{2}{5}$
1	$\frac{2}{5}$
2	$\frac{2}{5}$
3	$\frac{2}{5}$

$\boxed{\dfrac{6}{5}}$

	$\frac{1}{5}$
1	$\frac{1}{5}$
2	$\frac{1}{5}$
3	$\frac{1}{5}$
4	$\frac{1}{5}$
5	$\frac{1}{5}$
6	$\frac{1}{5}$

$\boxed{\dfrac{6}{5}}$

The denomnates stay the some becuase that is the total number.

Both the exspressions are the same becuase you are only supposed to multiply the whole number by the numerator, so When you multiply 3 times 2 you get 6 but the denomanator stays the same. When you multiply 6 times 1 you get 6 and the denomantor stays the same, So when you do all that

Anchor 4   Litho 481675

Total Content Points: 1   (4.NF.B.4b)

Total Practice Points: 1   (MP3)

The student indicates an understanding that $3 \times \dfrac{2}{5}$ is equal to $6 \times \dfrac{1}{5}$ by providing two diagrams, one illustrating 3 groups of $\dfrac{2}{5}$ and the other 6 groups of $\dfrac{1}{5}$, and indicating that they both represent $\dfrac{6}{5}$ (4.NF.B.4b). The student provides a reasonable explanation showing the two expressions are equivalent ("becuase you are only supposed to multiply the whole number by the numerator. When you multiply 3 times 2 you get 6 but the denomanator stays the same. When you multiply 6 times 1 you get 6 and the denomantor stays the same") (MP3).

Total Awarded Points: 2 out of 2

Task 4. Bill's Claim Task

Bill claims that the expressions $3 \times \frac{2}{5}$ and $6 \times \frac{1}{5}$ are equivalent.

Draw and label diagrams and give a written explanation to show that the two expressions are equivalent.

$$\begin{array}{cc} & 1/5 \\ & 1/5 \\ 2/5 & 1/5 \\ & 1/5 \\ 2/5 & 1/5 \\ +\ 2/5 & +\ 1/5 \\ \hline 6/5 & 6/5 \end{array}$$

They are equivalent because, 3 is half of 6 & $\frac{1}{5}$ is half $\frac{2}{5}$. Take $3 \times \frac{2}{5}$ cut $\frac{2}{5}$ in half, but double 3 you'll get $6 \times \frac{1}{5}$. They are the very same thing.

Anchor 5   Litho 479396

Total Content Points: 0

Total Practice Points: 1   (MP3)

The student attempts to model that $3 \times \frac{2}{5}$ is equal to $6 \times \frac{1}{5}$, but the material provided is insufficient. The student does not provide diagrams that indicate a relationship between $\frac{2}{5}$ and $\frac{1}{5}$, nor are diagrams provided to indicate both expressions represent $\frac{6}{5}$; instead the student adds the numbers (no credit for 4.NF.B.4b). The student does provide a reasonable explanation showing that the two expressions are equivalent ("Take $3 \times \frac{2}{5}$ cut $\frac{2}{5}$ in half, but double 3 you'll get $6 \times \frac{1}{5}$. They are the very same thing") (MP3).
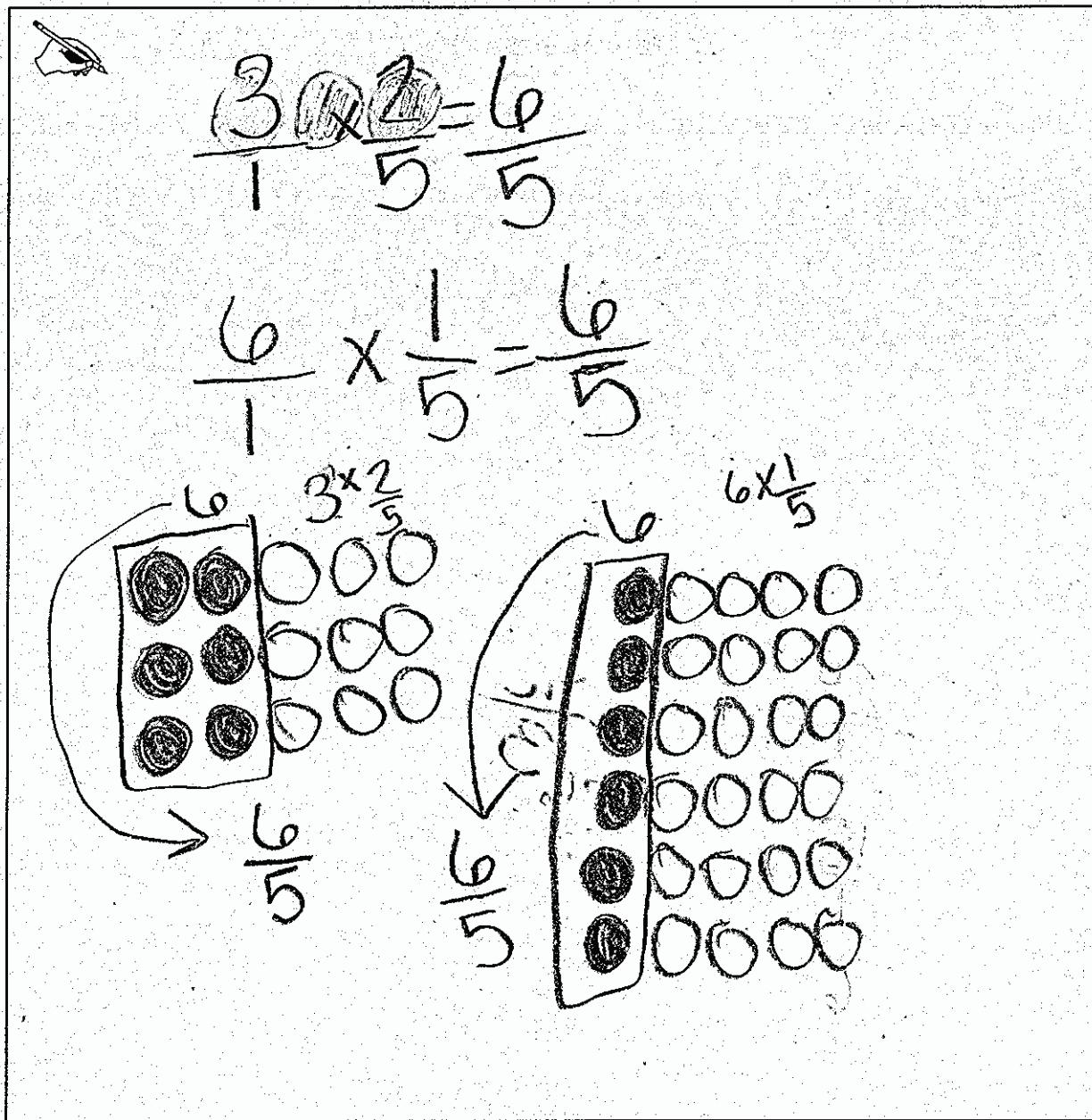
Total Awarded Points: 1 out of 2

Task 4. Bill's Claim Task

Bill claims that the expressions $3 \times \frac{2}{5}$ and $6 \times \frac{1}{5}$ are equivalent.

Draw and label diagrams and give a written explanation to show that the two expressions are equivalent.

$$\frac{3}{1} \times \frac{2}{5} = \frac{6}{5}$$

$$\frac{6}{1} \times \frac{1}{5} = \frac{6}{5}$$

$3 \times \frac{2}{5}$

$6 \times \frac{1}{5}$

$6 \qquad \frac{6}{5}$

$6 \qquad \frac{6}{5}$

Anchor 6   Litho 452364

Total Content Points: 1   (4.NF.B.4b)

Total Practice Points: 0

The student indicates an understanding that $3 \times \dfrac{2}{5}$ is equal to $6 \times \dfrac{1}{5}$ by drawing two diagrams, one illustrating 3 groups of $\dfrac{2}{5}$ and one representing 6 groups of $\dfrac{1}{5}$, and indicating that both represent $\dfrac{6}{5}$ (4.NF.B.4b). The student does not provide any explanation showing that the two expressions are equivalent (no credit for MP3).

Total Awarded Points: 1 out of 2
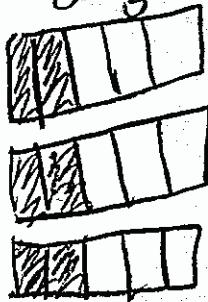
Task 4. Bill's Claim Task

Bill claims that the expressions $3 \times \frac{2}{5}$ and $6 \times \frac{1}{5}$ are equivalent.
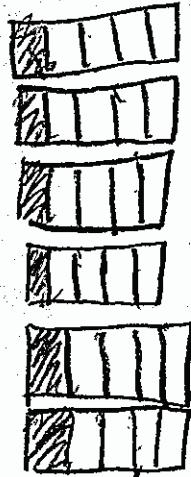
Draw and label diagrams and give a written explanation to show that the two expressions are equivalent.

$$3 \times \frac{2}{5} = \frac{6}{5} \qquad 6 \times \frac{1}{5} = \frac{6}{5}$$

$3 \times \frac{2}{5} = 6$, then add in the five $\frac{6}{5}$

Then $6 \times \frac{1}{5} = 6$ then go back and add the five again $\frac{6}{5}$ they both equal $\frac{6}{5}$ so they both are equivalent

Anchor 7   Litho 461945

Total Content Points: 1   (4.NF.B.4b)

Total Practice Points: 0

The student indicates an understanding that $3 \times \dfrac{2}{5}$ is equal to $6 \times \dfrac{1}{5}$ by drawing two diagrams, one illustrating $3 \times \dfrac{2}{5}$ and one representing $6 \times \dfrac{1}{5}$, and indicating that both represent $\dfrac{6}{5}$ (4.NF.B.4b). The student does not provide an accurate explanation showing that the two expressions are equivalent (no credit for MP3).

Total Awarded Points: 1 out of 2

Task 4. Bill's Claim Task

Bill claims that the expressions $3 \times \frac{2}{5}$ and $6 \times \frac{1}{5}$ are equivalent.

Draw and label diagrams and give a written explanation to show that the two expressions are equivalent.

$$\frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{6}{5}$$

$$\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \frac{6}{5}$$

yes they are equivalent

$$\times 3 = \frac{6}{5}$$

$$\times 6 = \frac{6}{5}$$

Anchor 8   Litho 461663

Total Content Points: 0

Total Practice Points: 1   (MP3)

The student unsuccessfully attempts to model that $3 \times \dfrac{2}{5}$ is equal to $6 \times \dfrac{1}{5}$. The student provides two addition equations, but the diagrams provided are not accurate and do not sufficiently indicate that both expressions equal $\dfrac{6}{5}$ (no credit for 4.NF.B.4b). The student uses the equations $\left(\dfrac{2}{5} + \dfrac{2}{5} + \dfrac{2}{5} = \dfrac{6}{5} \text{ and } \dfrac{1}{5} + \dfrac{1}{5} + \dfrac{1}{5} + \dfrac{1}{5} + \dfrac{1}{5} + \dfrac{1}{5} = \dfrac{6}{5} \right)$ to explain why the two expressions are equivalent (MP3).

Total Awarded Points: 1 out of 2

Task 4. Bill's Claim Task

Bill claims that the expressions $3 \times \frac{2}{5}$ and $6 \times \frac{1}{5}$ are equivalent.

Draw and label diagrams and give a written explanation to show that the two expressions are equivalent.

Bill $3 \times \frac{2}{5} = 1\frac{1}{5}$

Bill $6 \times \frac{1}{5} = 1\frac{1}{5}$

I did both of them on a Calculator and they both gave me $1\frac{1}{5}$.

$3 \quad \frac{2}{5}$

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

$6 \quad \frac{1}{5}$

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

Anchor 9   Litho 467462

Total Content Points: 0

Total Practice Points: 0

The student unsuccessfully attempts to model that $3 \times \dfrac{2}{5}$ is equal to $6 \times \dfrac{1}{5}$. The student does not provide clear diagrams that indicate a relationship, nor does the student provide diagrams that indicate both expressions represent $\dfrac{6}{5}$ (no credit for 4.NF.B.4b). The student does not provide a reasonable explanation ("I did both of them on a calculator and they both gave me $1\dfrac{1}{5}$") (no credit for MP3).

Task 4. Bill's Claim Task

Bill claims that the expressions $3 \times \frac{2}{5}$ and $6 \times \frac{1}{5}$ are equivalent.

Draw and label diagrams and give a written explanation to show that the two expressions are equivalent.

$3 \times \frac{2}{5} = \frac{6}{5}$ = 1 $\frac{1}{5}$

$6 \times \frac{1}{5} = \frac{6}{5}$ = 1 $\frac{1}{5}$

they are equalivant fractions

Anchor 10   Litho 460760

Total Content Points: 0

Total Practice Points: 0

The student unsuccessfully attempts to model that $3 \times \dfrac{2}{5}$ is equal to $6 \times \dfrac{1}{5}$. The student does not provide clear diagrams to indicate a relationship or clear diagrams indicating both expressions represent $\dfrac{6}{5}$ (no credit for 4.NF.B.4b). The student does not provide a reasonable explanation to show that the two expressions are equivalent ("they are equalivant fractions") (no credit for MP3).