

Tennessee Comprehensive Assessment Program

TCAP/CRA 2013



3

Task 1 Scoring Guide

Multiplication Task

1. Multiplication Task Scoring Guide

The CCSS for Mathematical Content (2 points)

3.OA.A.1 Indicates an understanding of multiplication expression $x \times y$ as x equal groups of y objects using a diagram or an explanation. _____

(1 Point)

3.OA.B.5 Represents a diagram or an equation that shows one or both factors partitioned but with the same product as the original expression. Student may show: _____

- $7 \times 19 = (10 \times 7) + (9 \times 7)$
- $7 \times 19 = (7 \times 10) + (7 \times 9)$
- $7 \times 19 = (2 \times 19) + (2 \times 19) + (2 \times 19) + 19$
- $7 \times 19 = (7 \times 20) - (7 \times 1)$

(1 Point)

Total Content Points _____

The CCSS for Mathematical Practice (2 points)

MP3 Communicates the relationship between the factors or products in $(3 \times 9) + (3 \times 9)$ and in 3×18 . Student may indicate that: _____

- 9 items plus 9 items is equal to 18 items in 3×18 .
- the products of $(3 \times 9) + (3 \times 9)$ and (3×18) are equal.
- 9 groups and 9 groups make a total of 18 groups that each have 3 items.

(1 Point)

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

MP4 Represents with diagrams or equations the student's expression for solving 7×19 and Dylan's expression or 3×18 . _____

(1 Point)

(MP4: Model with mathematics.)

Total Practice Points _____

Total Awarded Points _____

The CCSS for Mathematical Content Addressed in This Task

Represent and solve problems involving multiplication and division.

3.OA.A.1 Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5×7 .*

Understand properties of multiplication and the relationship between multiplication and division.

3.OA.B.5 Apply properties of operations as strategies to multiply and divide. *Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.)*

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 1. Multiplication Task

Dylan had to solve this multiplication problem:

$$3 \times 18 = ?$$

Dylan claims, "I can add two multiplication facts I know in order to figure out the product of 3×18 . Here is my new expression."

$$(3 \times 9) + (3 \times 9)$$

- a. Draw a diagram of either the multiplication problem, 3×18 , or of Dylan's expression, $(3 \times 9) + (3 \times 9)$.

$3 \times 18 = 54 = (3 \times 9) + (3 \times 9) = 54$


I used what I know and $9 \times 2 = 18$, so he just broke it up.

3 groups
 9
 9
 9


$9 \times 2 = 18$

$1 \times 27 = 54$

- b. Explain the relationship between the multiplication problem, 3×18 , and Dylan's expression, $(3 \times 9) + (3 \times 9)$.

 Dylan's problem was easier the way he wrote it, because he was wanting to break it up.

- c. Use Dylan's method to solve the multiplication problem 7×19 . Use a diagram or equation to show the relationship between your new expression and 7×19 .

 $(7 \times 10) + (7 \times 9)$

$70 + 63 = 133$

$$\begin{array}{r} 6 \\ 19 \\ \times 7 \\ \hline 133 \end{array}$$

I just added what got from $7 \times 10 =$ and $7 \times 9 =$ and got 133.

Anchor 1

Litho 349995

Total Content Points: 2 (3.OA.A.1, 3.OA.B.5)

Total Practice Points: 2 (MP3, MP4)

In Part A, the student's drawing correctly represents Dylan's expression by showing 3 groups of 9 objects and showing that the product (27) should be multiplied by 2, indicating an understanding of multiplication as representing the number of objects in x equal groups (3.OA.A.1). The student communicates the relationship between $(3 \times 9) + (3 \times 9)$ and 3×18 by indicating that the products are equal (" $3 \times 18 = 54 = (3 \times 9) + (3 \times 9) = 54$ ") and that the factor 9 is used twice to equal the 18 in 3×18 (" $9 \times 2 = 18$, so he just broke it up") (MP3). Either explanation would communicate the relationship. In Part C, the student correctly partitions 7×19 into $(7 \times 10) + (7 \times 9)$ and indicates that both expressions have the same product (133), thereby applying the distributive property of multiplication (3.OA.B.5). The equations in Part A ($3 \times 18 = 54 = (3 \times 9) + (3 \times 9) = 54$) and Part C ($19 \times 7 = 133$) correctly model the solutions for 3×18 , $(3 \times 9) + (3 \times 9)$, and 7×19 (MP4).

Total Awarded Points: 4 out of 4

Task 1. Multiplication Task

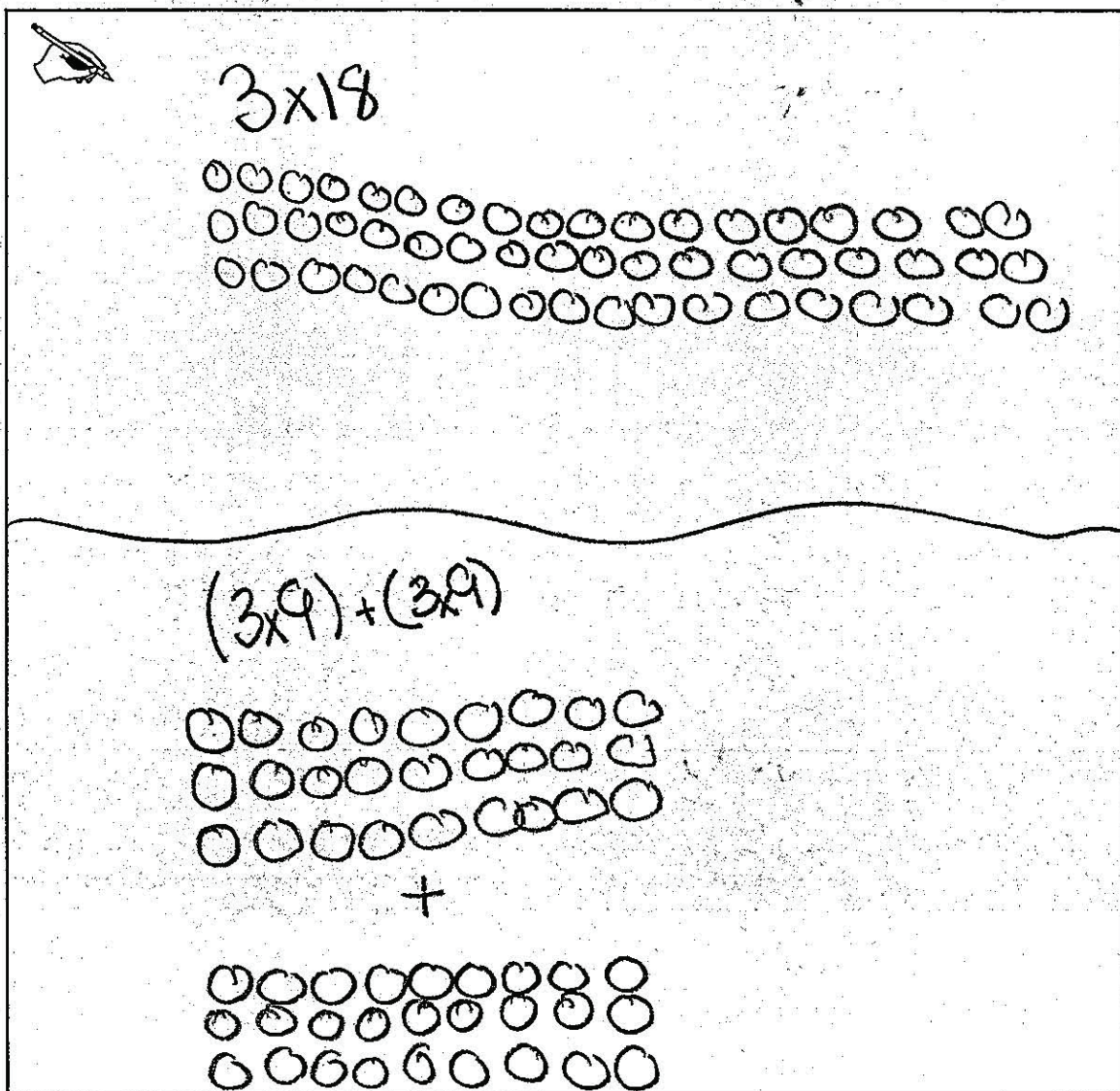
Dylan had to solve this multiplication problem:

$$3 \times 18 = ?$$


Dylan claims, "I can add two multiplication facts I know in order to figure out the product of 3×18 . Here is my new expression."

$$(3 \times 9) + (3 \times 9)$$


- a. Draw a diagram of either the multiplication problem, 3×18 , or of Dylan's expression, $(3 \times 9) + (3 \times 9)$.

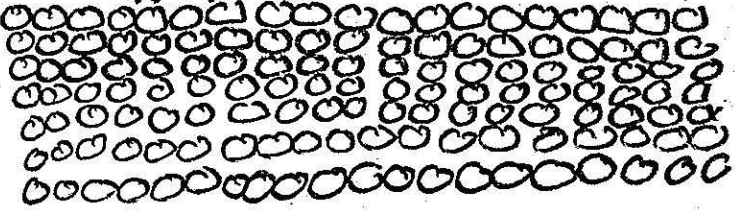


- b. Explain the relationship between the multiplication problem, 3×18 , and Dylan's expression, $(3 \times 9) + (3 \times 9)$.

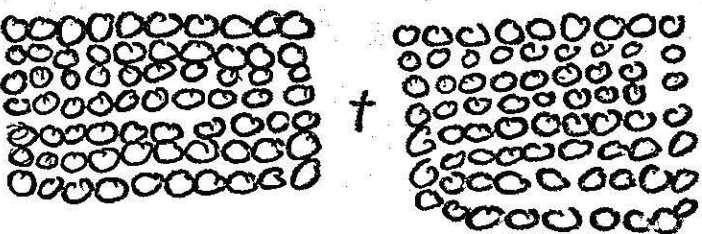
 They are equal + they are because $9+9=18$ so, if $9+9=18$ then you can do 3×9 twice. When you multiply 3×18 you get the same as when you add the product, of 3×9 twice, because $(3 \times 9) + (3 \times 9)$ is just 3×18 broken down so Dylan will be able to do this problem.

- c. Use Dylan's method to solve the multiplication problem 7×19 . Use a diagram or equation to show the relationship between your new expression and 7×19 .

 $7 \times 19 = 133$



$(7 \times 10) + (7 \times 9)$



Anchor 2

Litho 363880

Total Content Points: 2 (3.OA.A.1, 3.OA.B.5)

Total Practice Points: 2 (MP3, MP4)

In Part A, the student's drawing correctly represents 3×18 by showing 3 groups of 18 objects, indicating an understanding of multiplication as representing the number of objects in x equal groups (3.OA.A.1). In Part B, the student communicates the relationship between $(3 \times 9) + (3 \times 9)$ and 3×18 by stating that the products are equal and that the factors $9 + 9$ equal the 18 in 3×18 (MP3). In Part C, the student correctly partitions 7×19 into $(7 \times 10) + (7 \times 9)$ in the diagram and represents that both 7×19 and $(7 \times 10) + (7 \times 9)$ have the same product (133), thereby applying the distributive property of multiplication (3.OA.B.5). The diagrams in Parts A and C correctly model the solutions for 3×18 , $(3 \times 9) + (3 \times 9)$, 7×19 , and $(7 \times 10) + (7 \times 9)$ (MP4).

Total Awarded Points: 4 out of 4

Task 1. Multiplication Task

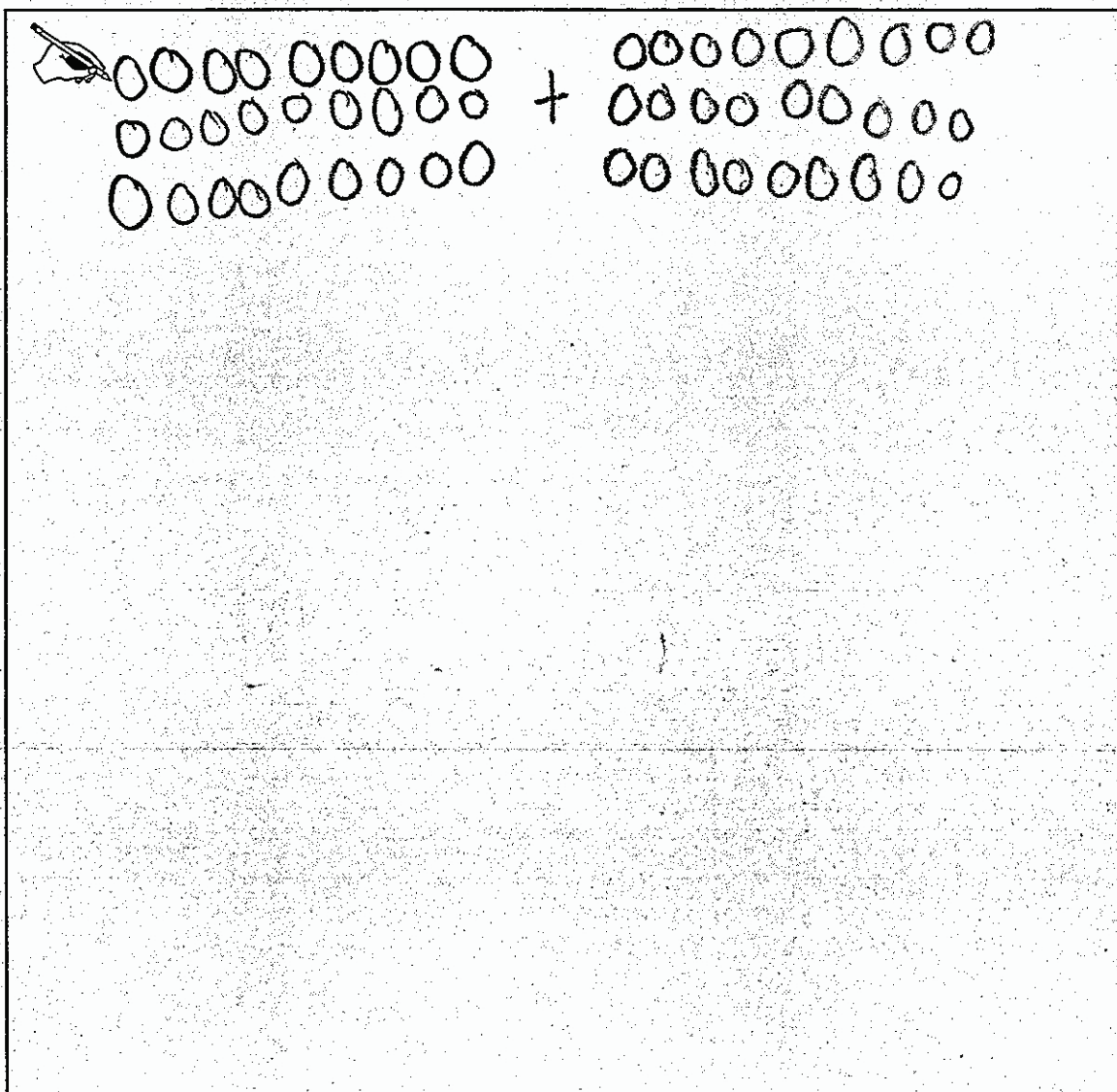
Dylan had to solve this multiplication problem:

$$3 \times 18 = ?$$

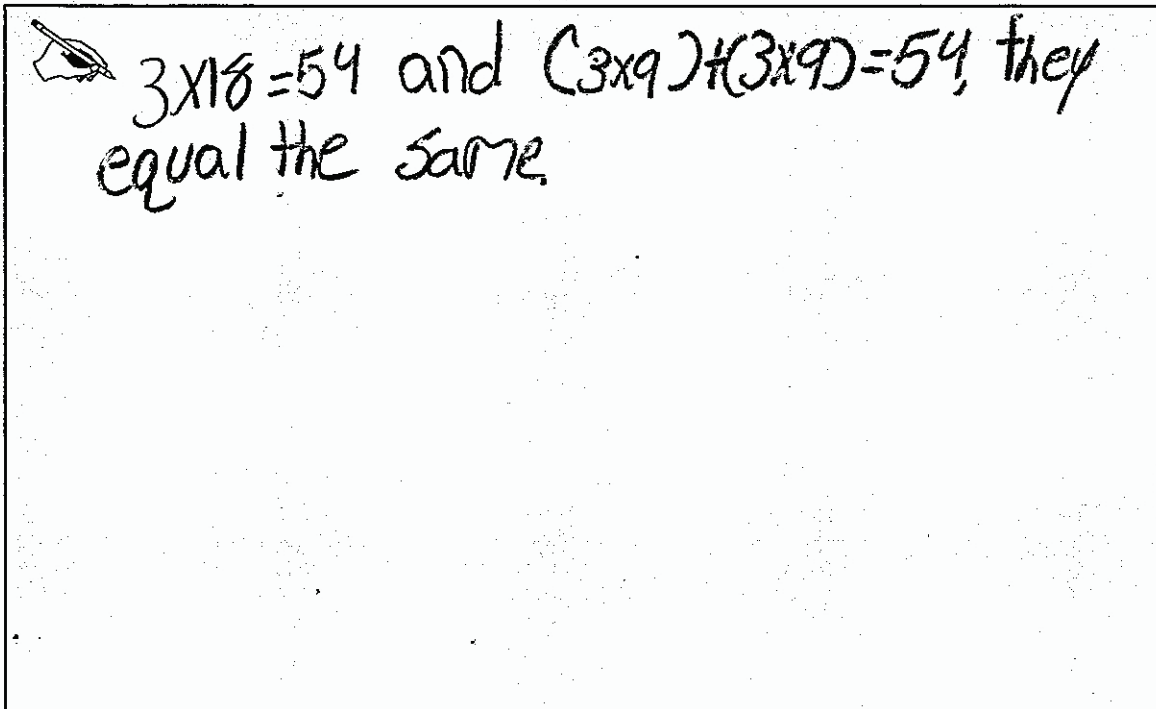
Dylan claims, "I can add two multiplication facts I know in order to figure out the product of 3×18 . Here is my new expression."

$$(3 \times 9) + (3 \times 9)$$

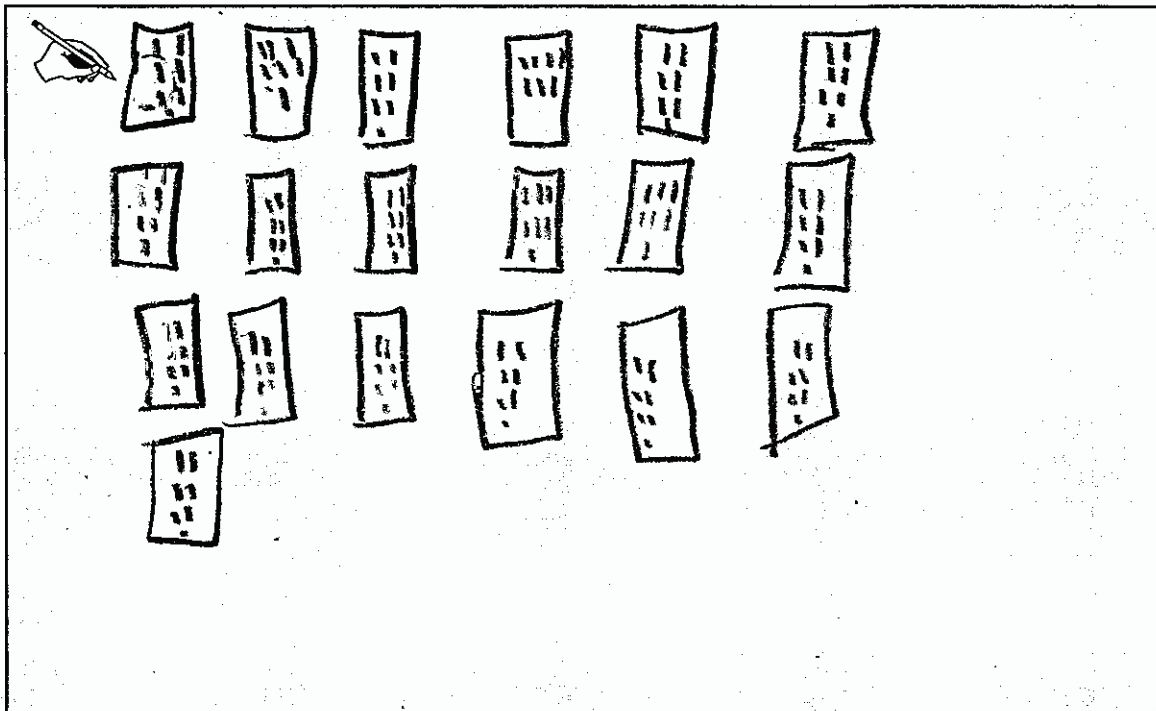
- a. Draw a diagram of either the multiplication problem, 3×18 , or of Dylan's expression, $(3 \times 9) + (3 \times 9)$.



- b. Explain the relationship between the multiplication problem, 3×18 , and Dylan's expression, $(3 \times 9) + (3 \times 9)$.



- c. Use Dylan's method to solve the multiplication problem 7×19 . Use a diagram or equation to show the relationship between your new expression and 7×19 .



Task 1. Multiplication Task

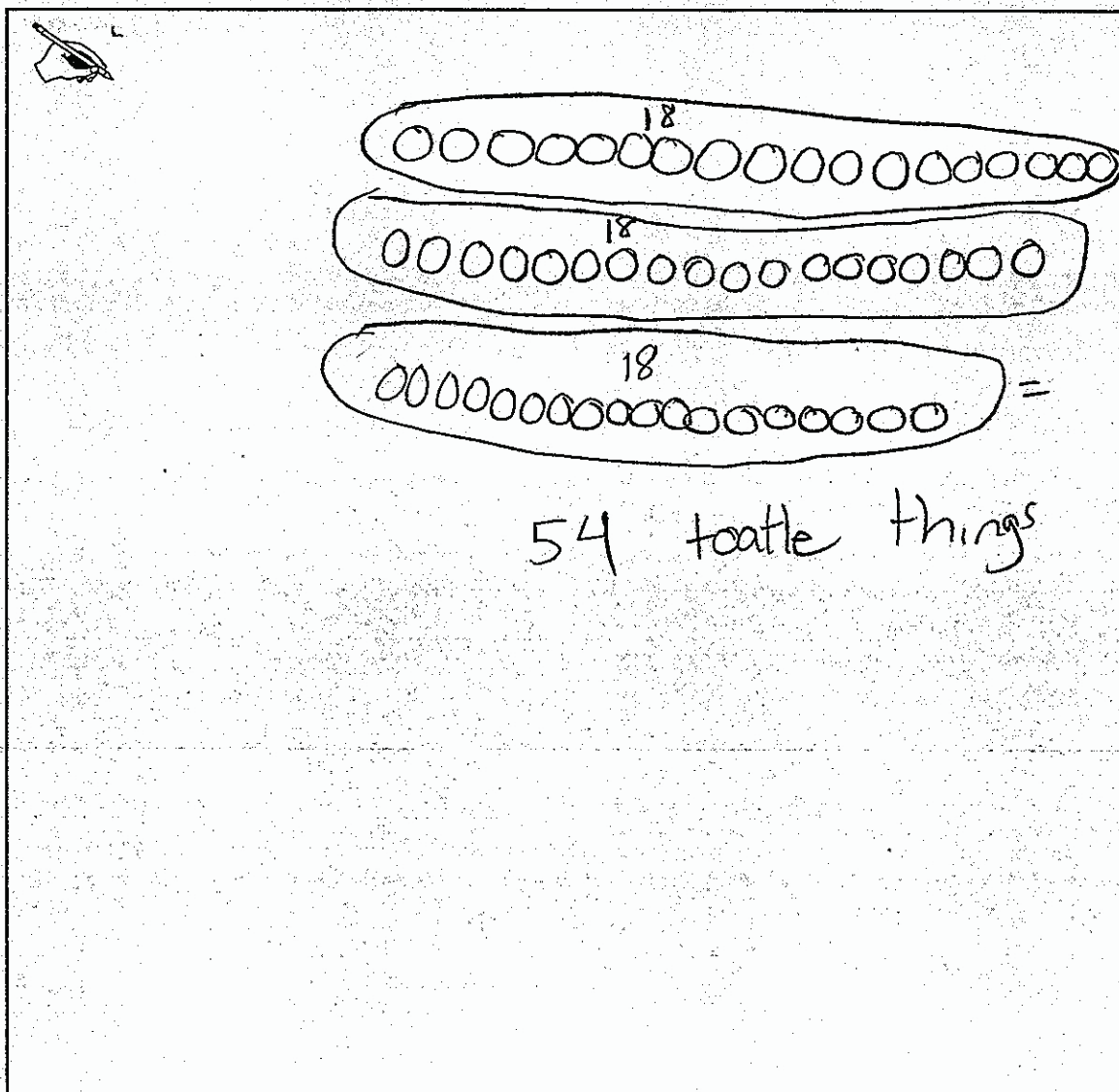
Dylan had to solve this multiplication problem:

$$3 \times 18 = ?$$


Dylan claims, "I can add two multiplication facts I know in order to figure out the product of 3×18 . Here is my new expression."

$$(3 \times 9) + (3 \times 9)$$

- a. Draw a diagram of either the multiplication problem, 3×18 , or of Dylan's expression, $(3 \times 9) + (3 \times 9)$.




- b. Explain the relationship between the multiplication problem, 3×18 , and Dylan's expression, $(3 \times 9) + (3 \times 9)$.

 They Both equal 54

Because 18 3 times = 54 and $3 \times 9 = 27$ if you put it together with the other 3×9 you will get 54.

- c. Use Dylan's method to solve the multiplication problem 7×19 . Use a diagram or equation to show the relationship between your new expression and 7×19 .

<p> $7 \times 19 = 133$</p> <p>They are different Because $7 \times 19 = 133$ The New expression is 54</p>	<p>New expression</p> <p>$(3 \times 9) + (3 \times 9) =$</p> <p>54</p>
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Task 1. Multiplication Task

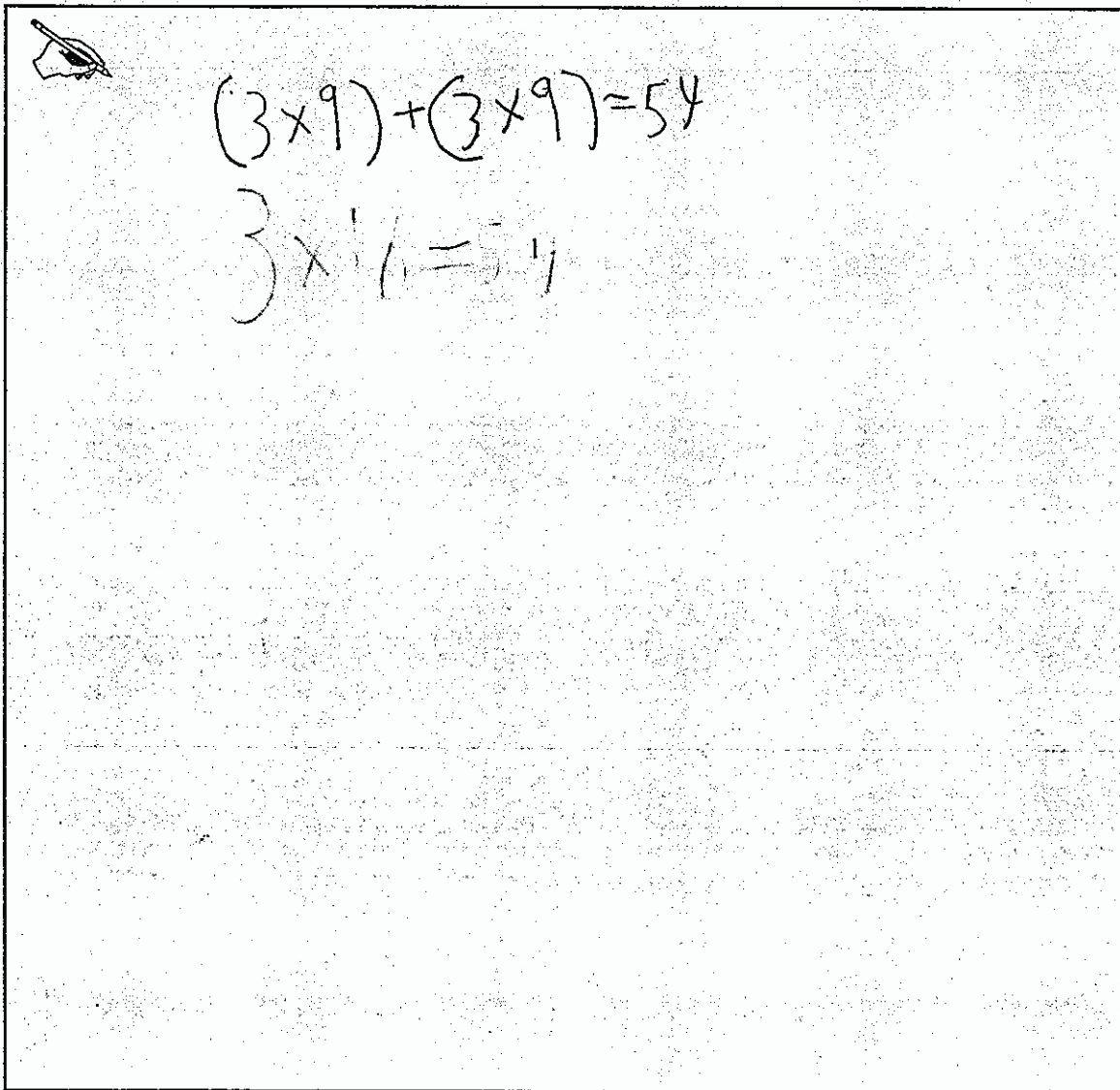
Dylan had to solve this multiplication problem:

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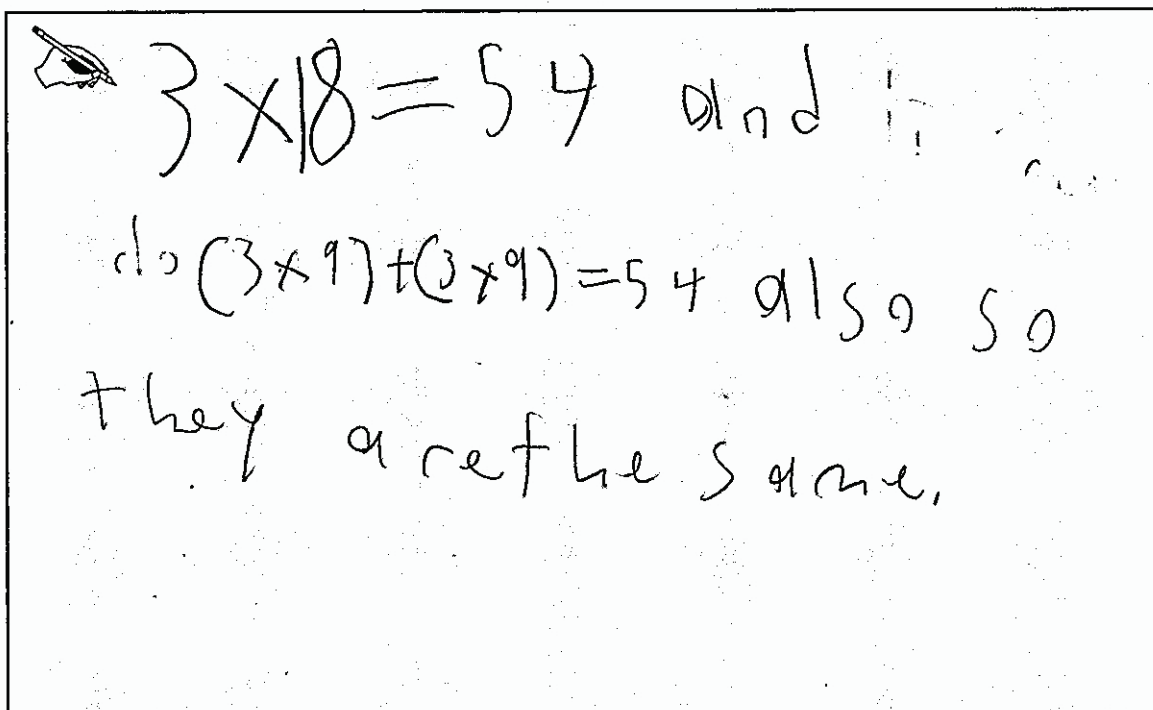
Dylan claims, "I can add two multiplication facts I know in order to figure out the product of 3×18 . Here is my new expression."

$$(3 \times 9) + (3 \times 9)$$

- a. Draw a diagram of either the multiplication problem, 3×18 , or of Dylan's expression, $(3 \times 9) + (3 \times 9)$.



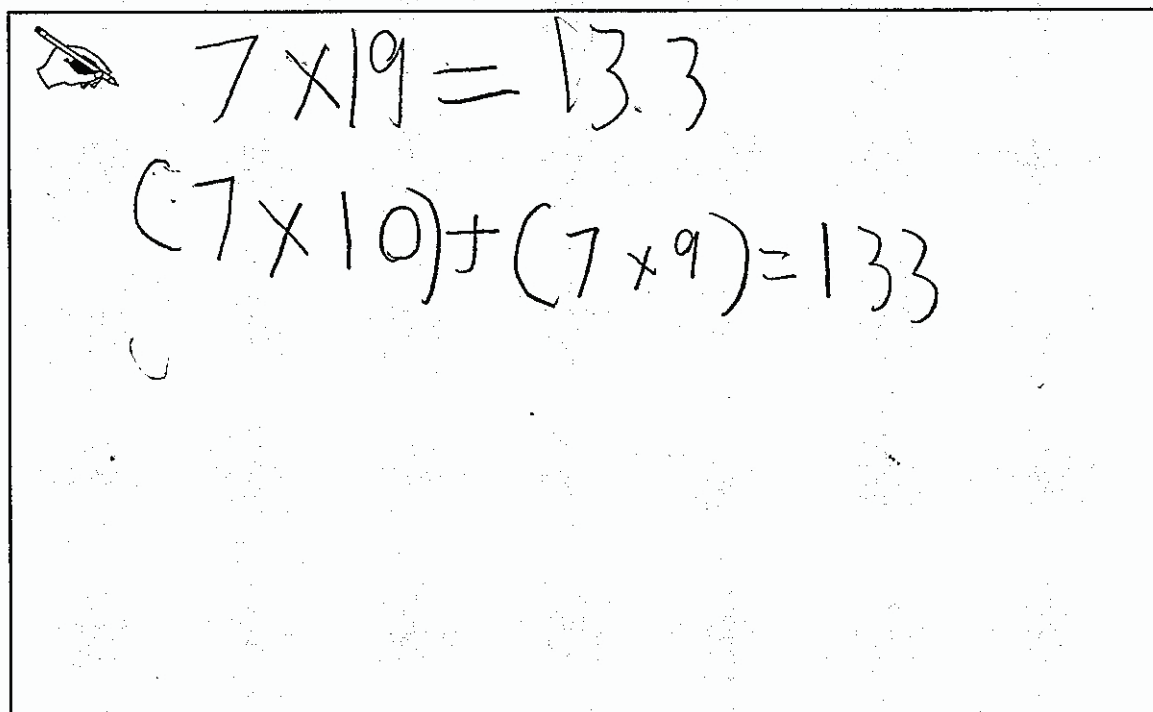
- b. Explain the relationship between the multiplication problem, 3×18 , and Dylan's expression, $(3 \times 9) + (3 \times 9)$.



A handwritten student response for problem b. It starts with a pencil icon and the equation $3 \times 18 = 54$. The word "and" follows, then another pencil icon and the equation $(3 \times 9) + (3 \times 9) = 54$. The word "also" follows, then "so" and "they are the same."

$$3 \times 18 = 54 \text{ and } (3 \times 9) + (3 \times 9) = 54 \text{ also so they are the same.}$$

- c. Use Dylan's method to solve the multiplication problem 7×19 . Use a diagram or equation to show the relationship between your new expression and 7×19 .



A handwritten student response for problem c. It starts with a pencil icon and the equation $7 \times 19 = 133$. Below that is another pencil icon and the equation $(7 \times 10) + (7 \times 9) = 133$.

$$7 \times 19 = 133$$
$$(7 \times 10) + (7 \times 9) = 133$$

Task 1. Multiplication Task

Dylan had to solve this multiplication problem:

$$3 \times 18 = ?$$

Dylan claims, "I can add two multiplication facts I know in order to figure out the product of 3×18 . Here is my new expression."

$$(3 \times 9) + (3 \times 9)$$

- a. Draw a diagram of either the multiplication problem, 3×18 , or of Dylan's expression, $(3 \times 9) + (3 \times 9)$.

The student's work is contained within a hand-drawn rectangular border. At the top left, there is a small drawing of a hand holding a pencil. To its right, the student has written "He's right" in cursive. In the upper right quadrant, the student has written the equation $3 \times 18 = 54$ and $(3 \times 9) + (3 \times 9) = 54$. Below these equations, there are three rectangular boxes, each containing a grid of small circles representing a multiplication array. The first box shows a 3x9 array of circles. The second box shows a 3x18 array of circles. The third box shows a 3x9 array of circles. At the bottom of the page, the student has written "He's right because $3 \times 18 = 54$ and" followed by two small multiplication problems: $3 \times 9 = 27$ and $3 \times 9 = 27$.

- b. Explain the relationship between the multiplication problem, 3×18 , and Dylan's expression, $(3 \times 9) + (3 \times 9)$.

Well $9+9=18$ so in

$$3 \times 9 + 3 \times 9$$

$9+9=18$

3×18

The diagram shows a hand-drawn box containing handwritten text and mathematical expressions. At the top left, there is a small drawing of a hand holding a pencil. The text reads "Well $9+9=18$ so in". Below this, the expression $3 \times 9 + 3 \times 9$ is written. A bracket underneath this expression points to the equation $9+9=18$ written below it. An arrow then points from $9+9=18$ to the expression 3×18 written further down.

- c. Use Dylan's method to solve the multiplication problem 7×19 . Use a diagram or equation to show the relationship between your new expression and 7×19 .

$7 \times 19 = 133$

The diagram shows a hand-drawn box containing a visual representation of the multiplication 7×19 . At the top left, there is a small drawing of a hand holding a pencil. The main part of the diagram consists of seven rectangular boxes arranged in two rows. The top row has four boxes, and the bottom row has three boxes. Each box contains the number "19". The first box in the top row is filled with ten small circles, representing 10×19 . The second box in the top row is filled with nine small circles, representing 9×19 . The remaining three boxes in the top row and all three boxes in the bottom row are empty. To the right of the top row of boxes, the equation $7 \times 19 = 133$ is written.

Anchor 6

Litho 366052

Total Content Points: 1 (3.OA.A.1)

Total Practice Points: 1 (MP3)

In Part A, the student's drawing correctly represents 3×18 by showing 3 groups of 18 objects, indicating an understanding of multiplication as representing the number of objects in x equal groups (3.OA.A.1). In Part B, the student communicates the relationship between $(3 \times 9) + (3 \times 9)$ and 3×18 by indicating that $9 + 9 = 18$ in 3×18 (MP3). In Part C, the student does not partition one or both factors of 7×19 , and therefore does not apply the distributive property of multiplication (no credit for 3.OA.B.5). Although the drawing and equations in Part A correctly model the solutions for 3×18 and $(3 \times 9) + (3 \times 9)$, the equation in Part C is incorrect ($7 \times 19 = 73$), and the diagram is not a correct model for solving 7×19 (no credit for MP4).

Total Awarded Points: 2 out of 4

Task 1. Multiplication Task

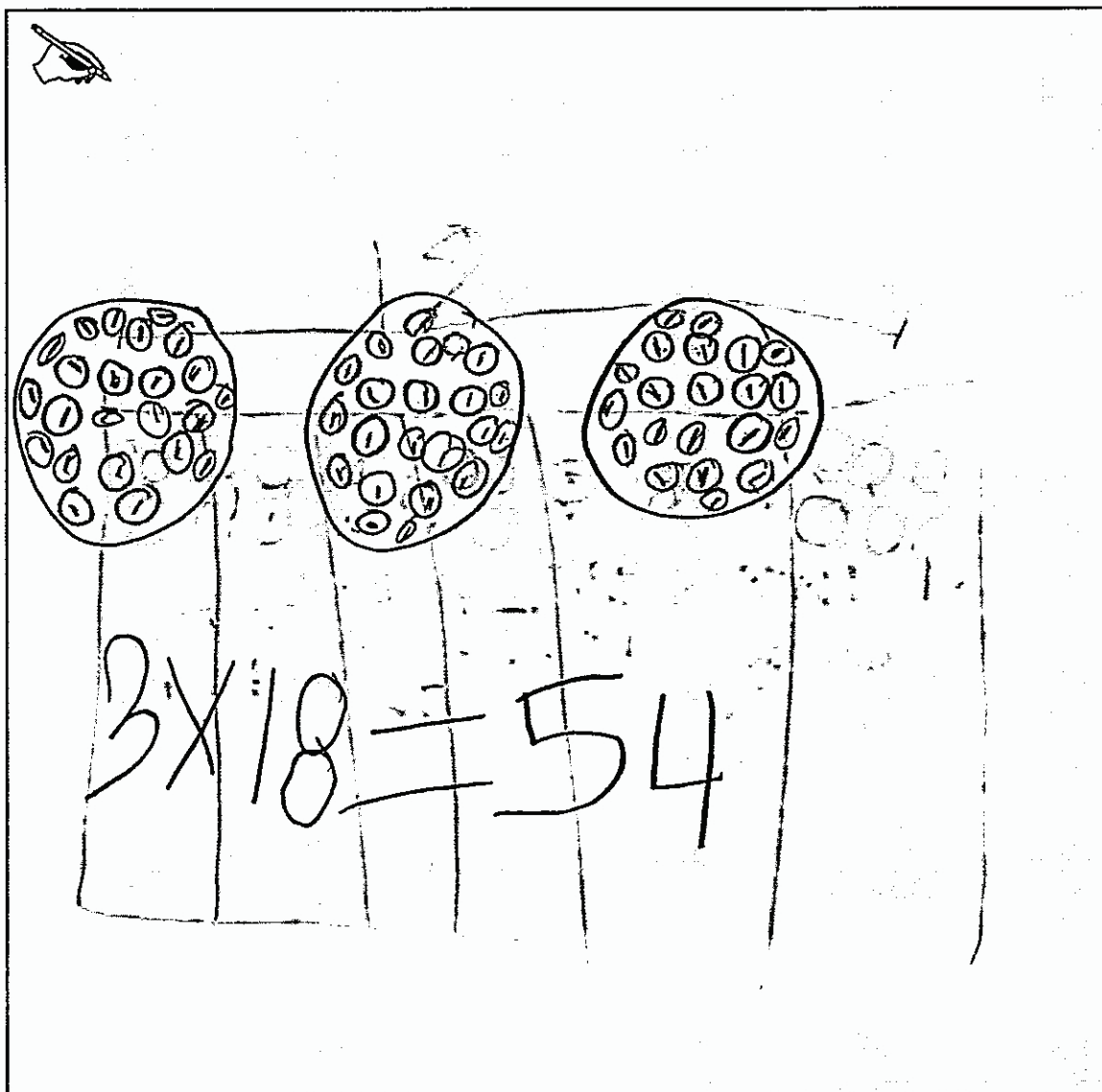
Dylan had to solve this multiplication problem:

$$3 \times 18 = ?$$


Dylan claims, "I can add two multiplication facts I know in order to figure out the product of 3×18 . Here is my new expression."

$$(3 \times 9) + (3 \times 9)$$


- a. Draw a diagram of either the multiplication problem, 3×18 , or of Dylan's expression, $(3 \times 9) + (3 \times 9)$.



- b. Explain the relationship between the multiplication problem, 3×18 , and Dylan's expression, $(3 \times 9) + (3 \times 9)$.

 $3 \times 18 = 54$ and $(3 \times 9) + (3 \times 9) = 54$
 so both of them = the
 same $3 \times 9 = 37$ and $37 + 37 = 54$
 so they are the same

- c. Use Dylan's method to solve the multiplication problem 7×19 . Use a diagram or equation to show the relationship between your new expression and 7×19 .

 $7 \times 19 = 133$ is the same
 as $(67) + (67) - 1 = 133$ because if
 I just do $67 + 67$ it will $= 134$ but if
 I $- 1$ it will $= 133$.

Anchor 7

Litho 364507

Total Content Points: 1 (3.OA.A.1)

Total Practice Points: 1 (MP3)

In Part A, the student's drawing correctly represents 3×18 by showing 3 groups of 18 objects, indicating an understanding of multiplication as representing the number of objects in x equal groups (3.OA.A.1). In Part B, the student communicates the relationship between $(3 \times 9) + (3 \times 9)$ and 3×18 by stating that the products are equal (" $3 \times 18 = 54$ and $(3 \times 9) + (3 \times 9) = 54$ ") (MP3). The inaccurate equations in Part B (" $3 \times 9 = 37$ and $37 + 37 = 54$ ") are not correct models for solving Dylan's expression (no credit for MP4). In Part C, the student does not correctly partition one or both factors of 7×19 ($67 + 67 - 1$), and therefore does not apply the distributive property of multiplication (no credit for 3.OA.B.5).

Total Awarded Points: 2 out of 4

Task 1. Multiplication Task

Dylan had to solve this multiplication problem:

$$3 \times 18 = ?$$

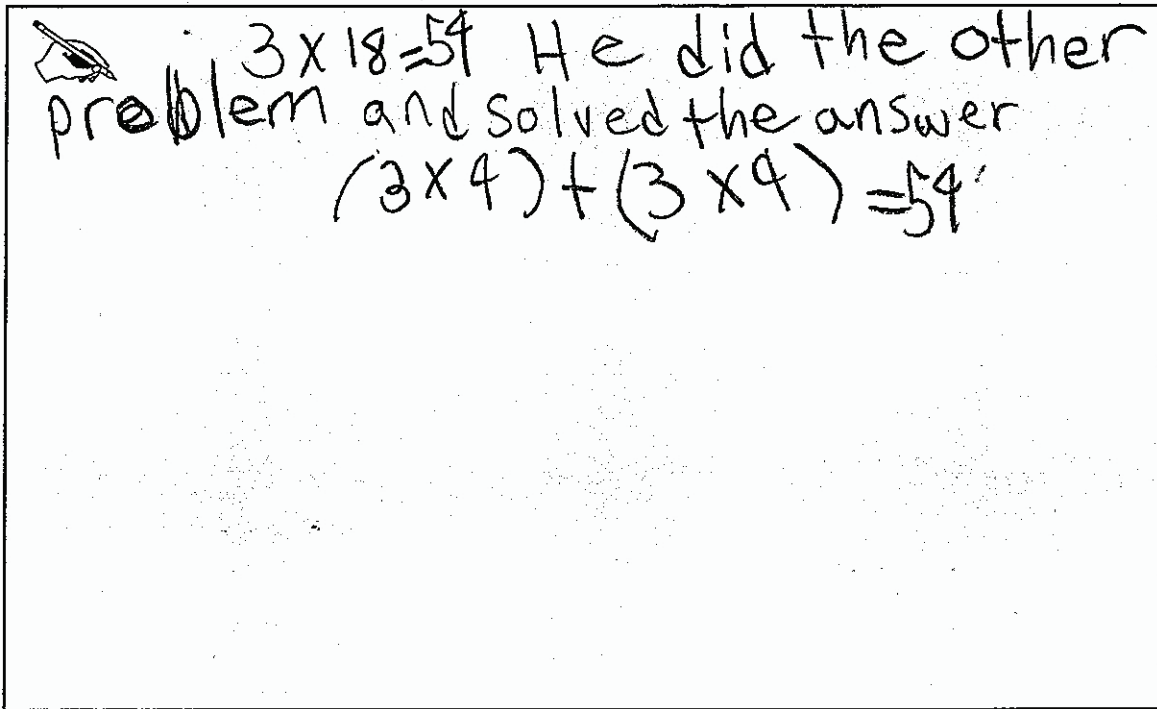
Dylan claims, "I can add two multiplication facts I know in order to figure out the product of 3×18 . Here is my new expression."


$$(3 \times 9) + (3 \times 9)$$

- a. Draw a diagram of either the multiplication problem, 3×18 , or of Dylan's expression, $(3 \times 9) + (3 \times 9)$.

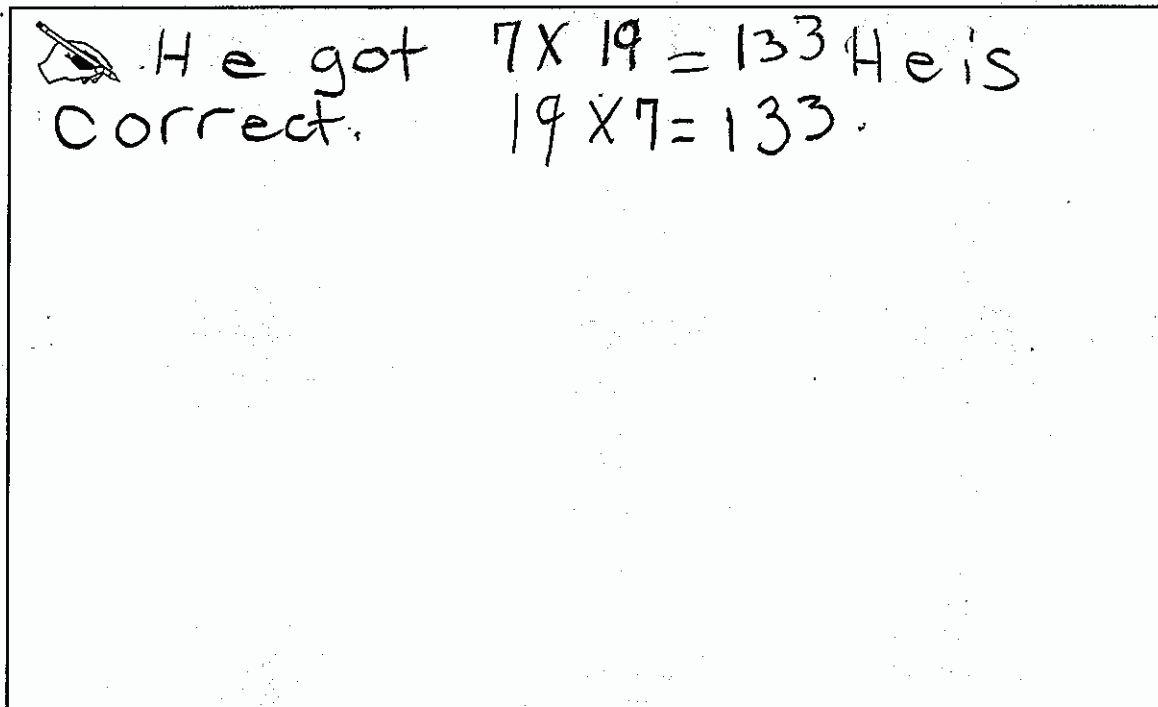
The image shows a rectangular box containing handwritten work. At the top right, the equation $3 \times 18 = 54$ is written and underlined. To the left of this, the text "He is right" is written above the equation $(3 \times 9) + (3 \times 9) = 54$, which is also underlined. A small drawing of a hand holding a pencil is in the top left corner. A plus sign is placed between the two underlined equations.


- b. Explain the relationship between the multiplication problem, 3×18 , and Dylan's expression, $(3 \times 9) + (3 \times 9)$.



 $3 \times 18 = 54$ He did the other problem and solved the answer
 $(3 \times 9) + (3 \times 9) = 54$

- c. Use Dylan's method to solve the multiplication problem 7×19 . Use a diagram or equation to show the relationship between your new expression and 7×19 .



 He got $7 \times 19 = 133$ He is correct.
 $19 \times 7 = 133$

Anchor 8

Litho 372747

Total Content Points: 0

Total Practice Points: 2 (MP3, MP4)

In Part A, the student provides no drawing and no explanation of objects in equal groups, and therefore does not indicate an understanding of multiplication as representing the number of objects in x equal groups (no credit for 3.OA.A.1). In Parts A and B, the student communicates the relationship between $(3 \times 9) + (3 \times 9)$ and 3×18 by showing that both expressions have the same product, 54 (MP3). In Part C, the student does not partition one or both factors of 7×19 , and therefore does not apply the distributive property of multiplication (no credit for 3.OA.B.5). The equations in Parts A, B, and C correctly model the solutions for 3×18 , $(3 \times 9) + (3 \times 9)$, and 7×19 (MP4).

Total Awarded Points: 2 out of 4

Task 1. Multiplication Task

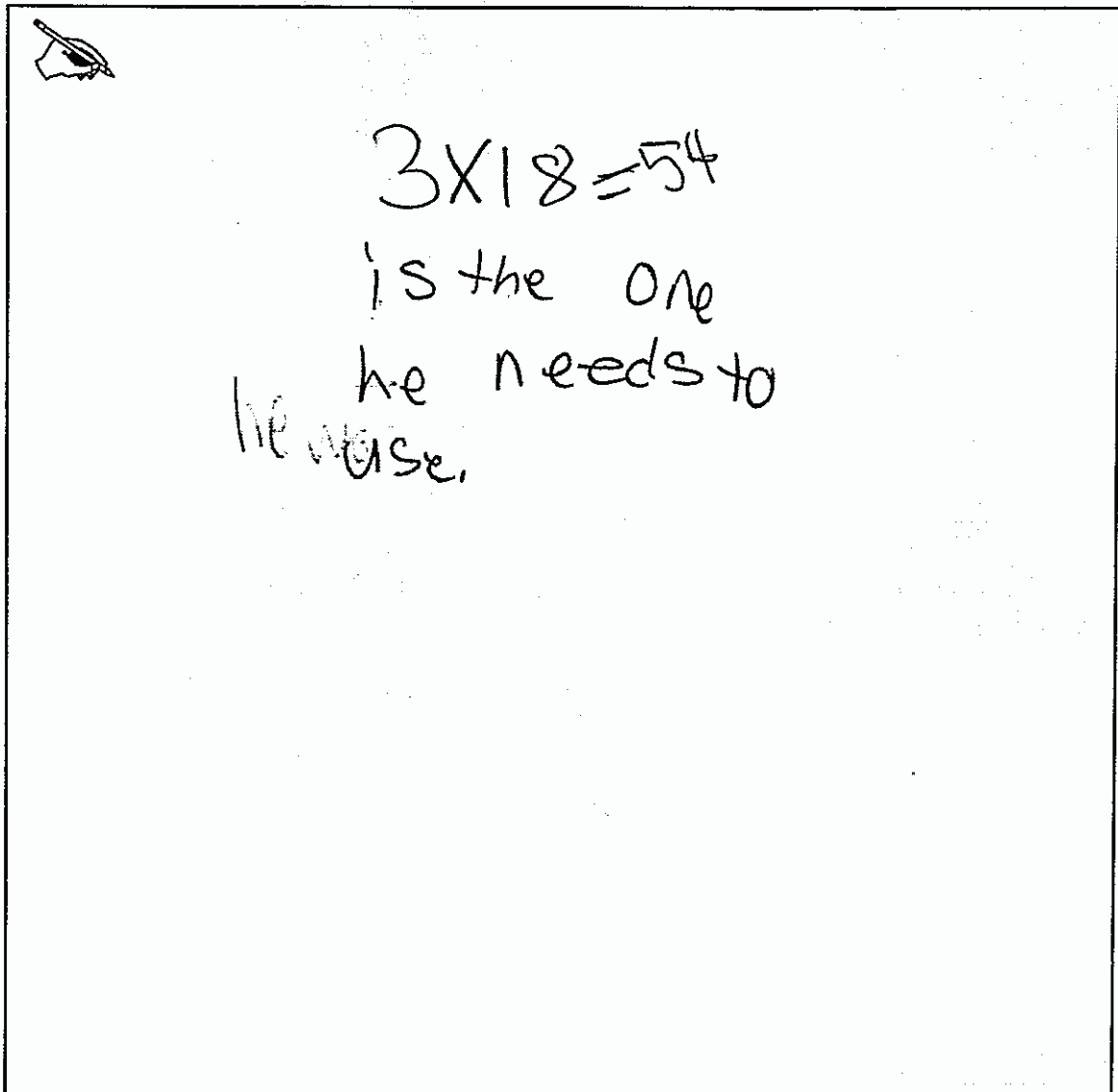
Dylan had to solve this multiplication problem:

$$3 \times 18 = ?$$


Dylan claims, "I can add two multiplication facts I know in order to figure out the product of 3×18 . Here is my new expression."

$$(3 \times 9) + (3 \times 9)$$


- a. Draw a diagram of either the multiplication problem, 3×18 , or of Dylan's expression, $(3 \times 9) + (3 \times 9)$.



- b. Explain the relationship between the multiplication problem, 3×18 , and Dylan's expression, $(3 \times 9) + (3 \times 9)$.

 He could use his expression but it would be easier to $3 \times 18 = 54$ because he wouldn't get the right answer

- c. Use Dylan's method to solve the multiplication problem 7×19 . Use a diagram or equation to show the relationship between your new expression and 7×19 .

 $7 \times 19 = 106$ $7 \times 19 = 106$

$10 \times 7 = 70$
 $9 \times 7 = 63$
 $\hline 106$

Anchor 9

Litho 362013

Total Content Points: 1 (3.OA.B.5)

Total Practice Points: 0

The student provides no drawing and no explanation of objects in equal groups, and therefore does not indicate an understanding of multiplication as representing the number of objects in x equal groups (no credit for 3.OA.A.1). In Part B, the student's response ("He could use his [expression] but it would be [easier] to $3 \times 18 = 54$ because he wouldn't get the right answer") does not correctly communicate the relationship between $(3 \times 9) + (3 \times 9)$ and 3×18 (no credit for MP3). In Part C, although the multiplication is incorrect, the student correctly partitions 7×19 into $(10 \times 7) + (9 \times 7)$ and indicates that both have the same product of 106, thereby applying the distributive property of multiplication (3.OA.B.5). However, the inaccurate equation in Part C ($7 \times 19 = 106$) is not a correct model for solving 7×19 (no credit for MP4).

Total Awarded Points: 1 out of 4

Task 1. Multiplication Task

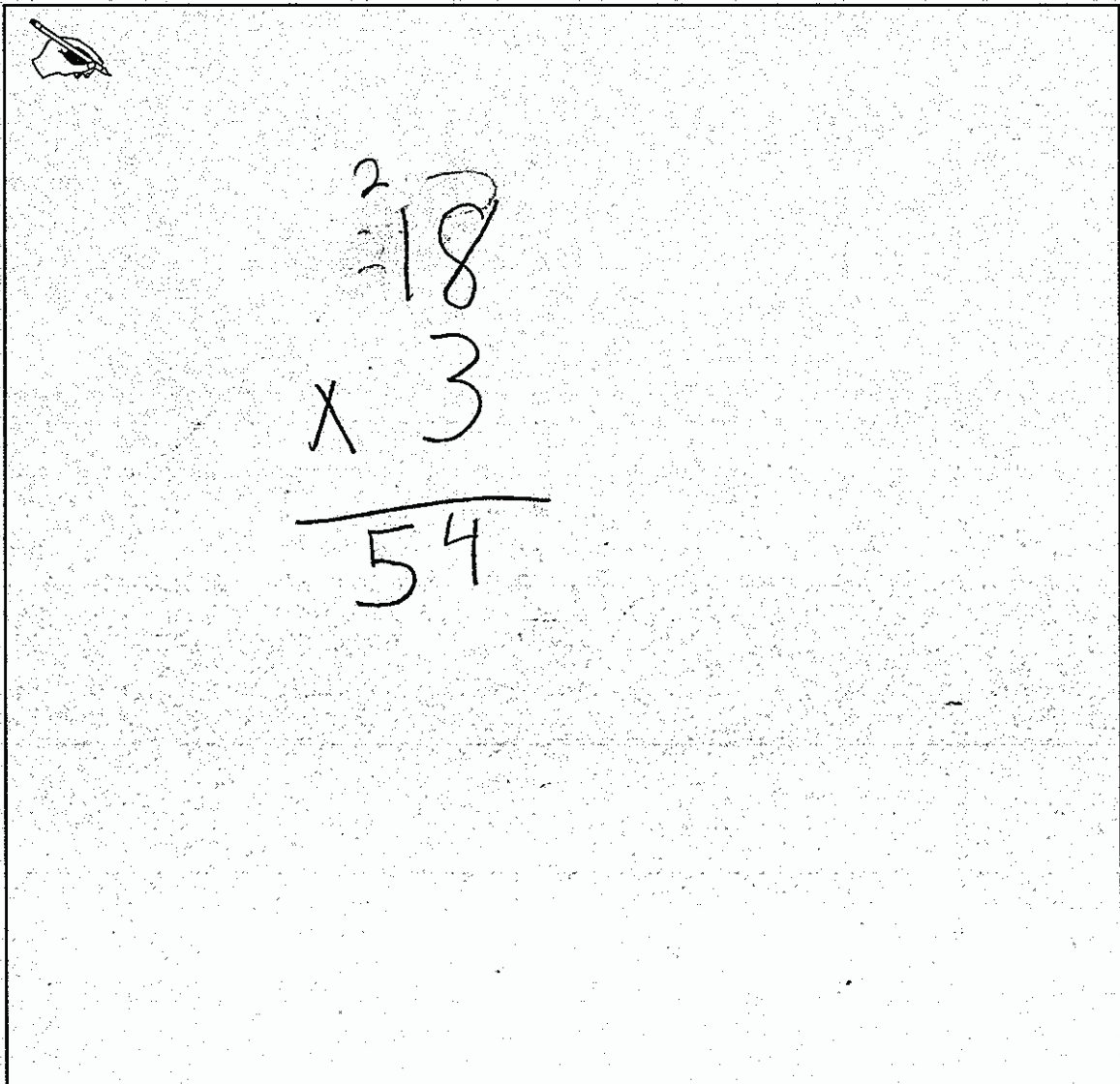
Dylan had to solve this multiplication problem:

$$3 \times 18 = ?$$

Dylan claims, "I can add two multiplication facts I know in order to figure out the product of 3×18 . Here is my new expression."


$$(3 \times 9) + (3 \times 9)$$

- a. Draw a diagram of either the multiplication problem, 3×18 , or of Dylan's expression, $(3 \times 9) + (3 \times 9)$.



A hand-drawn diagram of a multiplication problem. In the top left corner, there is a small icon of a hand holding a pencil. The main diagram shows the multiplication $18 \times 3 = 54$ written in a vertical format. The number 18 is written above the number 3. A horizontal line is drawn below the 3. Below the line, the product 54 is written. The numbers are written in a simple, hand-drawn style.

- b. Explain the relationship between the multiplication problem, 3×18 , and Dylan's expression, $(3 \times 9) + (3 \times 9)$.

 well you have this problem $\begin{array}{r} 18 \\ \times 3 \\ \hline \end{array}$ if you said


$\begin{array}{r} 8 \\ \times 3 \\ \hline 24 \end{array}$, but on the 2 you have $\overline{1}$ to carry it to

the 1 (above)

$\begin{array}{r} 17 \\ \times 18 \\ \hline 54 \\ \hline 324 \end{array}$ $3+2=5$

$\textcircled{54}$ is your answer

- c. Use Dylan's method to solve the multiplication problem 7×19 . Use a diagram or equation to show the relationship between your new expression and 7×19 .



$\begin{array}{r} 6 \\ 619 \\ \times 7 \\ \hline 133 \end{array}$

Anchor 10

Litho 368083

Total Content Points: 0

Total Practice Points: 1 (MP4)

The student provides no drawings and no explanation of objects in equal groups, and therefore does not indicate an understanding of multiplication as representing the number of objects in x equal groups (no credit for 3.OA.A.1). In Part B, the student's response does not correctly communicate the relationship between $(3 \times 9) + (3 \times 9)$ and 3×18 (no credit for MP3). In Part C, the student does not partition one or both factors of 7×19 , and therefore does not apply the distributive property of multiplication (no credit for 3.OA.B.5). The equations in Parts A, B, and C correctly model the solutions for 18×3 and 19×7 (MP4).

Total Awarded Points: 1 out of 4

Task 1. Multiplication Task

Dylan had to solve this multiplication problem:

$$3 \times 18 = ?$$


Dylan claims, "I can add two multiplication facts I know in order to figure out the product of 3×18 . Here is my new expression."

$$(3 \times 9) + (3 \times 9)$$

- a. Draw a diagram of either the multiplication problem, 3×18 , or of Dylan's expression, $(3 \times 9) + (3 \times 9)$.


The image shows a student's handwritten work on a grid background. In the top left corner, there is a small drawing of a hand holding a pencil. The work is divided into two horizontal sections by a hand-drawn line. In the top section, the student has written $(3 \times 9) + (3 \times 9) =$ followed by "or" and $3 \times 18 = 24$. In the bottom section, the student has written $(3 \times 9) + (3 \times 9) = 54$ followed by $3 \times 18 = 24$.

- b. Explain the relationship between the multiplication problem, 3×18 , and Dylan's expression, $(3 \times 9) + (3 \times 9)$.

 one may have 54 but the other one has 24 they have the four in common.

24 54

- c. Use Dylan's method to solve the multiplication problem 7×19 . Use a diagram or equation to show the relationship between your new expression and 7×19 .

 $7 \times 19 = 133$ | $33 \div 1 = 33$

they both have 33 in them.

Anchor 11

Litho 368333

Total Content Points: 0

Total Practice Points: 0

The student provides no drawings and no explanation of objects in equal groups, and therefore does not indicate an understanding of multiplication as representing the number of objects in x equal groups (no credit for 3.OA.A.1). In Part B, the student's response does not correctly communicate the relationship between $(3 \times 9) + (3 \times 9)$ and 3×18 (no credit for MP3). In Part C, the student does not partition one or both factors of 7×19 , and therefore does not apply the distributive property of multiplication (no credit for 3.OA.B.5). Although one equation in Part A ($(3 \times 9) + (3 \times 9) = 54$) and the equation in Part C ($7 \times 19 = 133$) are correct models, the inaccurate equation in Part A ($3 \times 18 = 24$) is not a correct model for solving 3×18 (no credit for MP4).

Total Awarded Points: 0 out of 4

Task 1. Multiplication Task

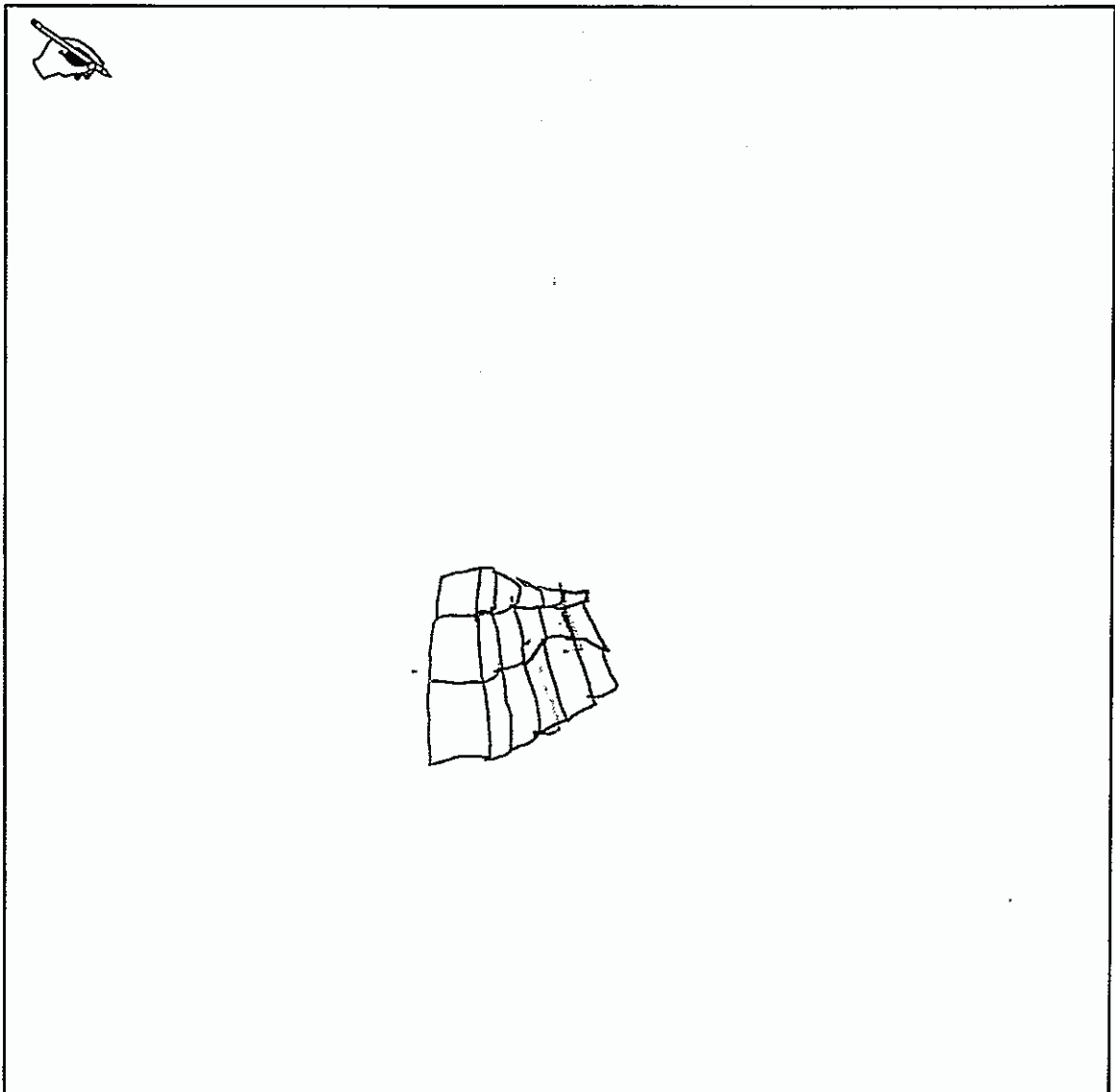
Dylan had to solve this multiplication problem:

$$3 \times 18 = ?$$

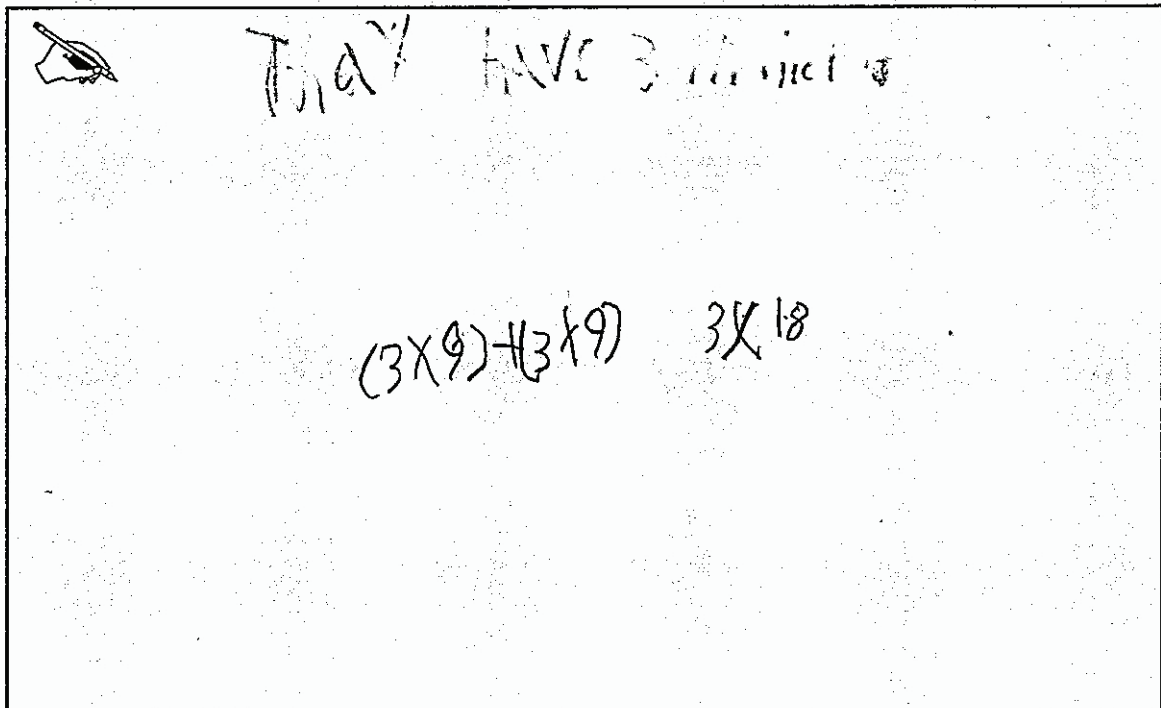
Dylan claims, "I can add two multiplication facts I know in order to figure out the product of 3×18 . Here is my new expression."

$$(3 \times 9) + (3 \times 9)$$

- a. Draw a diagram of either the multiplication problem, 3×18 , or of Dylan's expression, $(3 \times 9) + (3 \times 9)$.

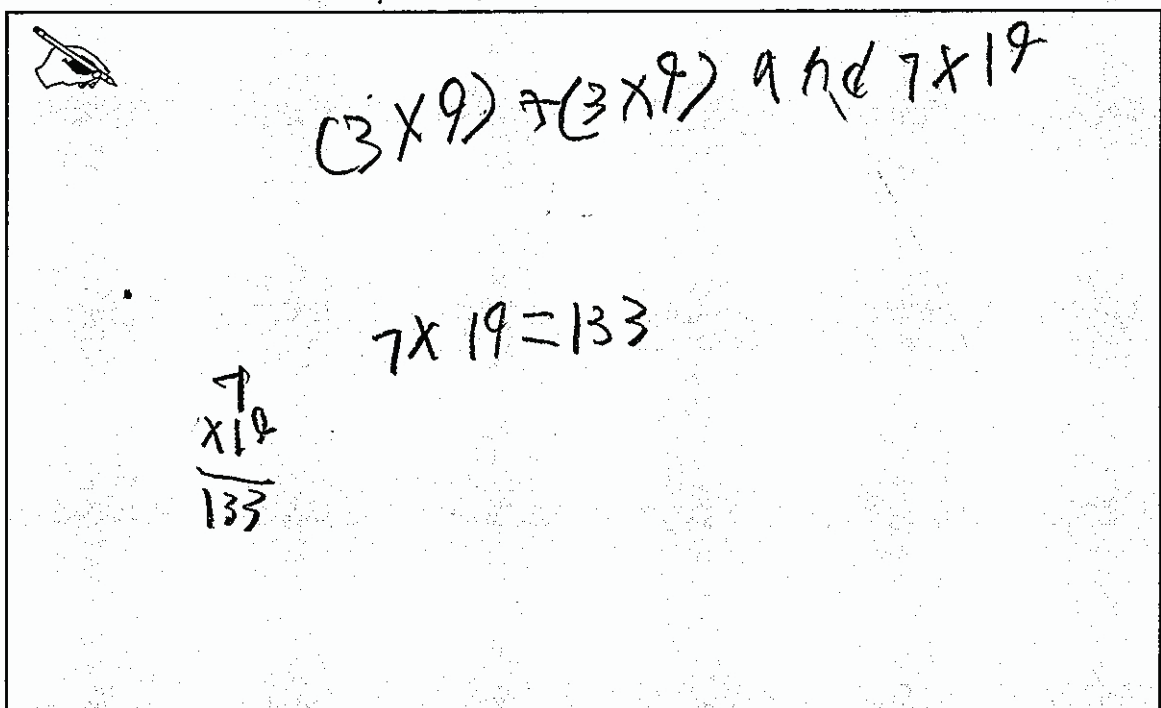


- b. Explain the relationship between the multiplication problem, 3×18 , and Dylan's expression, $(3 \times 9) + (3 \times 9)$.



Handwritten student work for part b. At the top left is a drawing of a hand holding a pencil. The text reads "Dylan has 3 groups". Below this, the equation $(3 \times 9) + (3 \times 9) = 3 \times 18$ is written.

- c. Use Dylan's method to solve the multiplication problem 7×19 . Use a diagram or equation to show the relationship between your new expression and 7×19 .



Handwritten student work for part c. At the top left is a drawing of a hand holding a pencil. The text reads $(3 \times 9) + (3 \times 9)$ and 7×19 . Below this, the equation $7 \times 19 = 133$ is written. To the left of this equation is a vertical multiplication problem: $\begin{array}{r} 7 \\ \times 19 \\ \hline 133 \end{array}$.

Anchor 12

Litho 382094

Total Content Points: 0

Total Practice Points: 0

In Part A, the student's drawing does not correctly represent 3×18 or $(3 \times 9) + (3 \times 9)$, and therefore does not indicate an understanding of multiplication as representing the number of objects in x equal groups (no credit for 3.OA.A.1). In Part B, the student rewrites the expressions from the prompt but does not communicate the relationship between $(3 \times 9) + (3 \times 9)$ and 3×18 (no credit for MP3). In Part C, the student does not partition one or both factors of 7×19 , and therefore does not apply the distributive property of multiplication (no credit for 3.OA.B.5). Although the equation in Part C ($7 \times 19 = 133$) is a correct model for solving 7×19 , the student does not provide a model for solving $(3 \times 9) + (3 \times 9)$ or 3×18 (no credit for MP4).

Total Awarded Points: 0 out of 4