SECURE MATERIAL - Reader Name: _____

Tennessee Comprehensive Assessment Program

TCAP/CRA

2014

6

Phase II

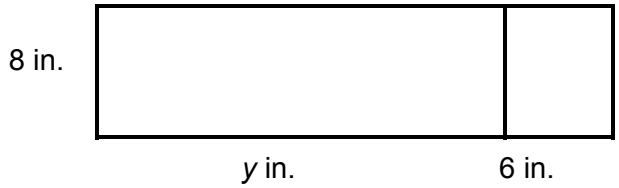
Rectangle Task

Anchor Set

Part 1: Constructed Response Task Section

Rectangle Task

Juan and Bill's teacher drew this rectangle on the board during math class.



Some students in the class suggested using the following expressions to find the perimeter of this rectangle:

Expression R: $2(8) + 2(6+y)$

Expression S: $2y + 14$

Expression T: $16 + y + 12$

Expression U: $8 + 8 + 6 + y + 6 + y$

a. Which of these expressions could be used to find the **perimeter** of this rectangle?

Part 1: Constructed Response Task Section

Rectangle Task

b. Juan gives another expression for finding the **perimeter** of this rectangle: $2(y + 14)$. Bill says Juan's expression cannot be used because there is no 14 on the rectangle. Is Bill correct? Justify your answer.

c. Write two different expressions that are equivalent to $36 + 3x$.

Part 1: Constructed Response Task Section

Rectangle Task

d. Draw and label a rectangle whose **area** is $36 + 3x$.

Scoring Guide

The CCSS for Mathematical Content (2 points)

6.EE.A.4 Identifies the two expressions in part a that are equivalent. _____
(1 Point)

6.EE.A.3 Writes two expressions that are equivalent to 36 + 3*x*. _____
(1 Point)

The CCSS for Mathematical Practice (2 points)

MP3 Provides a sound algebraic or geometric rationale showing that 2(*y* + 14) represents the perimeter of the rectangle. _____

(1 Point)

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

MP7 Recognizes that area is a product of two numbers and correctly repesents 36 + 3*x* as the product of two numbers by drawing and labeling a rectangle with the length and width whose product is 36 + 3*x*. _____

(1 Point)

(MP7: Look for and make use of structure.)

TOTAL POINTS: 4

The CCSS for Mathematical Content Addressed In This Task

Apply and extend previous understandings of arithmetic to algebraic expressions.	
6.EE.A.3	Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression 3(2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6(4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.*
6.EE.A.4	Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.*

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.

A-1a

Rectangle Task

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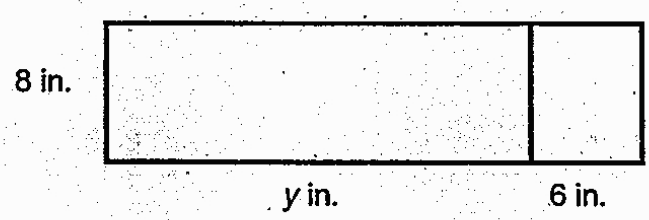


Some students in the class suggested using the following expressions to find the perimeter of this rectangle:

Expression R: $2(8) + 2(6+y)$

Expression S: $2y + 14$ X

Expression T: $16 + y + 12$ X

Expression U: $8 + 8 + 6 + y + 6 + y$

a. Which of these expressions could be used to find the **perimeter** of this rectangle?.

2(8)+2(6+y)

and

8+8+6+y+6+y

A-1b

Rectangle Task

b. Juan gives another expression for finding the **perimeter** of this rectangle: $2(y + 14)$. Bill says Juan's expression cannot be used because there is no 14 on the rectangle. Is Bill correct? Justify your answer.

y=5 (just to tes)
2(5+14)
2(19)
38

Yes it would work because 8+6 = 14 and then you would add y and multiply by two, of which there are of each.

c. Write two different expressions that are equivalent to $36 + 3x$.

$36+3x$

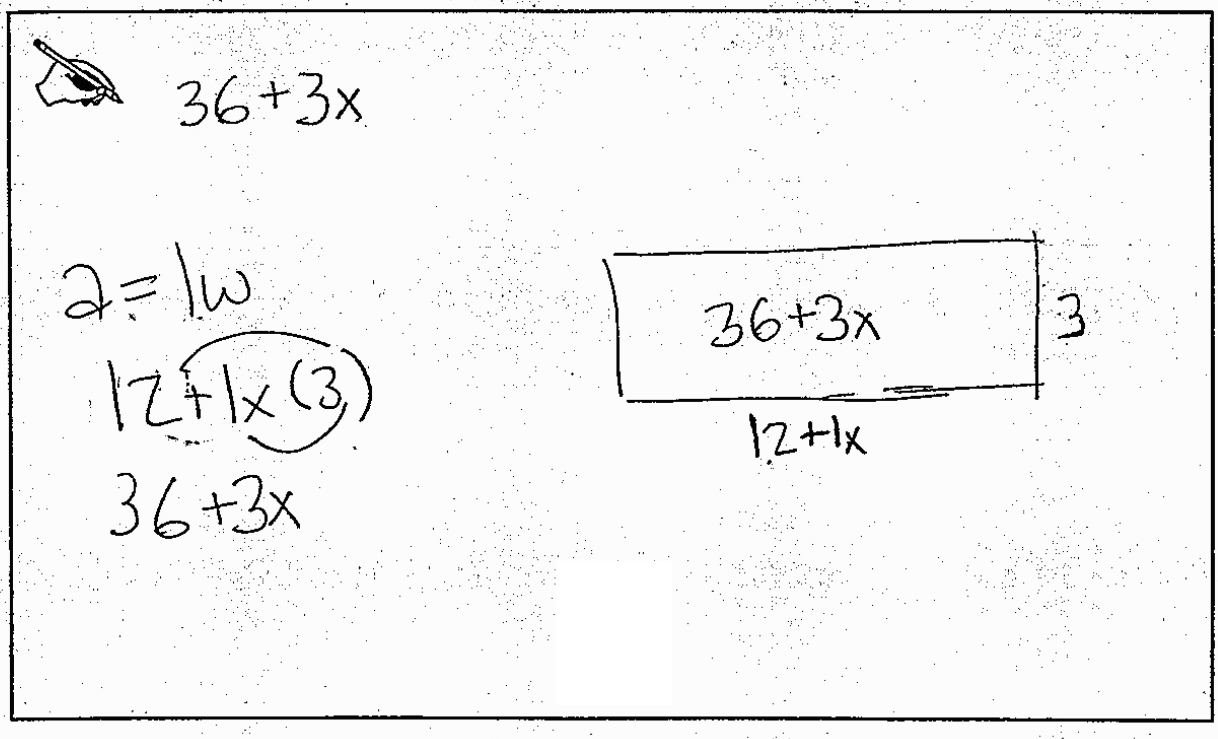
1) 6^2+3x

2) $9(4)+3x$

A-1c

Rectangle Task

d. Draw and label a rectangle whose area is 36 + 3x.



Anchor 1 Litho 00346200149

Total Content Points: 2 (6.EE.A.4, 6.EE.A.3)

Total Practice Points: 2 (MP3, MP7)

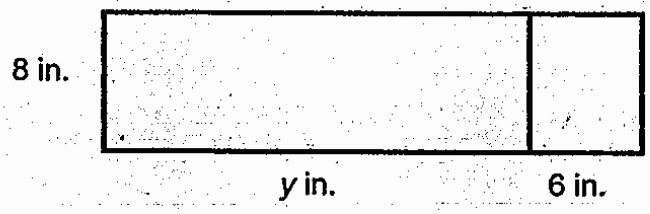
The student identifies two expressions in Part A that are equivalent ($2(8) + 2(6 + y)$ and $8 + 8 + 6 + y + 6 + y$) (6.EE.A.4). The response contains two expressions that are equivalent to $36 + 3x$ in Part C ($6^2 + 3x$ and $9(4) + 3x$) (6.EE.A.3). In Part B, the student provides a sound algebraic rationale showing that $2(y + 14)$ represents the perimeter of the rectangle ($8 + 6 = 14$) (MP3). The student correctly represents $36 + 3x$ as the product of two numbers by drawing and labeling a rectangle in Part D with a width of 3 and a length of $12 + x$, creating a rectangle with an area of $36 + 3x$ (MP7).

Total Awarded Points: 4 out of 4

A-2a

Rectangle Task

Juan and Bill's teacher drew this rectangle on the board during math class.



Some students in the class suggested using the following expressions to find the perimeter of this rectangle:

Expression R: $2(8) + 2(6+y)$

Expression S: $2y + 14$

Expression T: $16 + y + 12$

Expression U: $8 + 8 + 6 + y + 6 + y$

a. Which of these expressions could be used to find the **perimeter** of this rectangle?.

Expression R: 2(8)+2(6+y) and Expression U: 8+8+6+y+6+y, if correctly used, could find the perimeter of the rectangle.

A-2b

Rectangle Task

b. Juan gives another expression for finding the **perimeter** of this rectangle: $2(y + 14)$. Bill says Juan's expression cannot be used because there is no 14 on the rectangle. Is Bill correct? Justify your answer.

Bill is not correct because if you multiply 8 by two and 6 by two, than add them together (28), you get the same answer as multiplying 14 by 2.

c. Write two different expressions that are equivalent to $36 + 3x$.

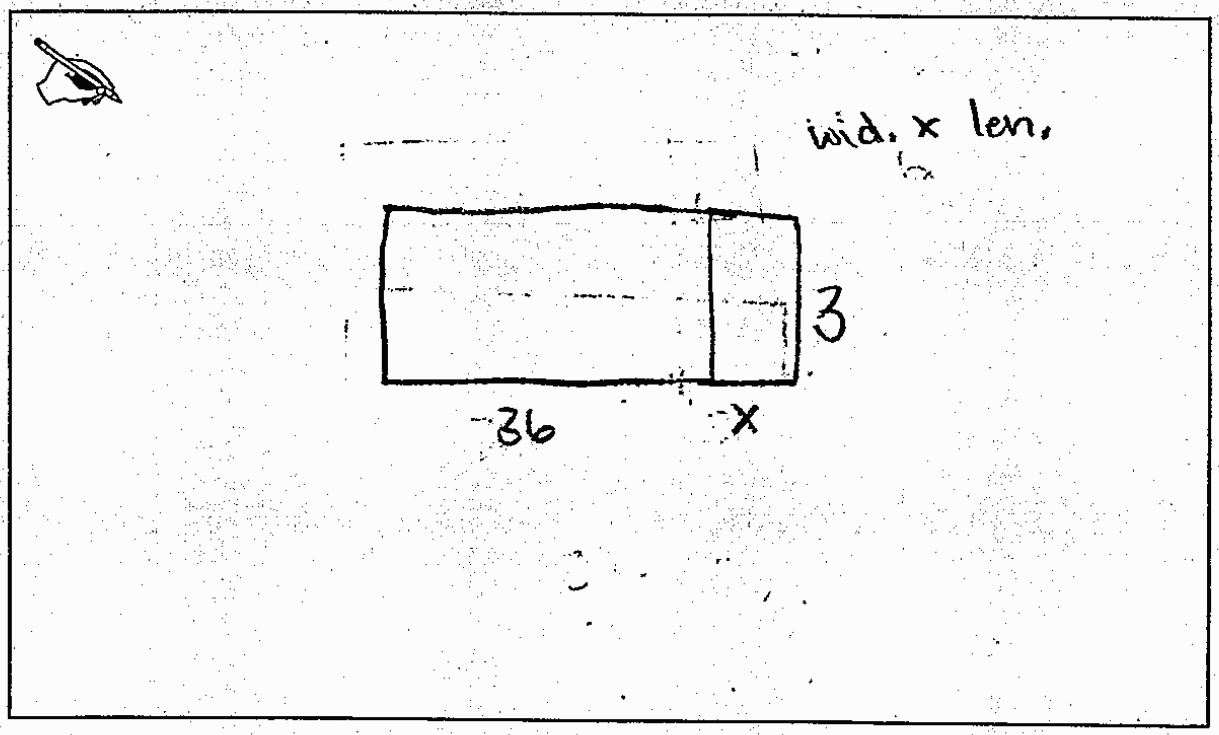
$(12 \cdot 3) + 3x$

$(144/4) + (-3 \cdot (-1))x$

A-2c

Rectangle Task

d. Draw and label a rectangle whose area is $36 + 3x$.



Anchor 2 Litho 00166200149

Total Content Points: 2 (6.EE.A.4, 6.EE.A.3)

Total Practice Points: 1 (MP3)

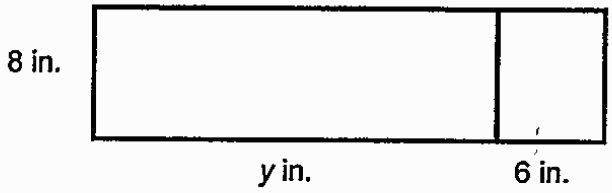
The student identifies two expressions in Part A that are equivalent (Expression R, Expression U) (6.EE.A.4). The response contains two expressions in Part C that are equivalent to $36 + 3x$ ($(12 \times 3 + 3x$ and $(144/4) + (-3 \times (-1))x$) (6.EE.A.3). In Part B, the student provides a sound algebraic showing that $2(y + 14)$ represents the perimeter of the rectangle ("if you multiply 8 by two and 6 by two, than add them together (28), you get the same answer as multiplying 14 by 2") (MP3). However, in Part D the student does not draw a rectangle whose length and width have a product of $36 + 3x$ (no credit for MP7).

Total Awarded Points: 3 out of 4

A-3a

Rectangle Task

Juan and Bill's teacher drew this rectangle on the board during math class.



Some students in the class suggested using the following expressions to find the perimeter of this rectangle:

Expression R: $2(8) + 2(6+y)$

Expression S: $2y + 14$

Expression T: $16 + y + 12$

Expression U: $8 + 8 + 6 + y + 6 + y$

a. Which of these expressions could be used to find the **perimeter** of this rectangle?.

2y+14

A-3b

Rectangle Task

b. Juan gives another expression for finding the **perimeter** of this rectangle: $2(y + 14)$. Bill says Juan's expression cannot be used because there is no 14 on the rectangle. Is Bill correct? Justify your answer.

Bill is wrong. Because 8+6=14. Which

In the expression it is 2(y+14).

c. Write two different expressions that are equivalent to $36 + 3x$.

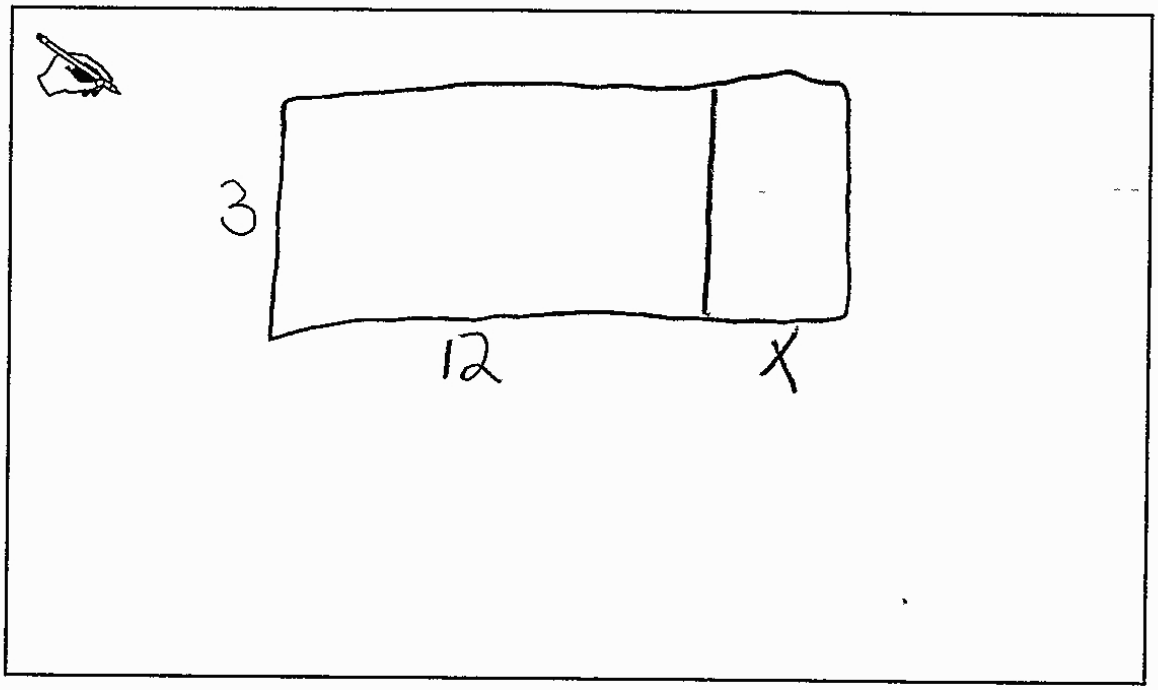
3·12+3x

((4·9))+3x

A-3c

Rectangle Task

d. Draw and label a rectangle whose area is $36 + 3x$.



Anchor 3 Litho 00016200105

Total Content Points: 1 (6.EE.A.3)

Total Practice Points: 2 (MP3, MP7)

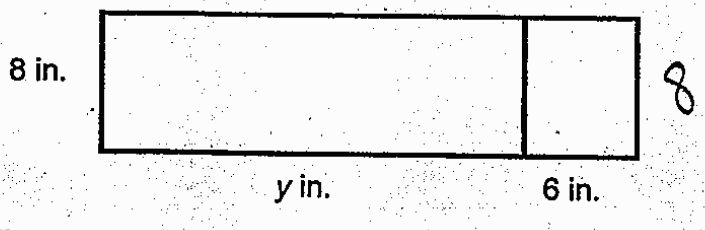
The student only identifies one incorrect expression in Part A (no credit for 6.EE.A.4). The student does state two expressions that are equivalent to $36 + 3x$ in Part C ($3 \times 12 + 3x$ and $(4 \times 9) + 3x$) (6.EE.A.3). In Part B, the student provides a sound algebraic rationale showing that $2(y + 14)$ represents the perimeter of the rectangle ($8 + 6 = 14$) (MP3). The student also recognizes that area is a product of two numbers, and correctly represents $36 + 3x$ as the product of two numbers in Part D by drawing and labeling a rectangle with width of 3 and length of $12 + x$ (MP7).

Total Awarded Points: 3 out of 4

A-4a

Rectangle Task

Juan and Bill's teacher drew this rectangle on the board during math class.



Some students in the class suggested using the following expressions to find the perimeter of this rectangle:

Expression R: $2(8) + 2(6+y)$

Expression S: $2y + 14$ X

Expression T: $16 + y + 12$ X

Expression U: $8 + 8 + 6 + y + 6 + y$

a. Which of these expressions could be used to find the **perimeter** of this rectangle?.

Expressions R and U could be used because both of them accomplish the same thing: they both add up all the sides of the rectangle. $2(8)+2(6+y)$ is similar to $8+8+6+y+6y$ because it just combines them together for a shorter equation.

A-4b

Rectangle Task

b. Juan gives another expression for finding the **perimeter** of this rectangle: $2(y + 14)$. Bill says Juan's expression cannot be used because there is no 14 on the rectangle. Is Bill correct? Justify your answer.

Bill is not correct because the expression can be used. 8+6 is 14. If you add 14 to y, you would have one side and one width of the rectangle. then you would multiply by 2 to get the perimeter. You could also use the distributive property.

$2(y+14)$
$2y + 28$

c. Write two different expressions that are equivalent to $36 + 3x$.

$36 + 3x$

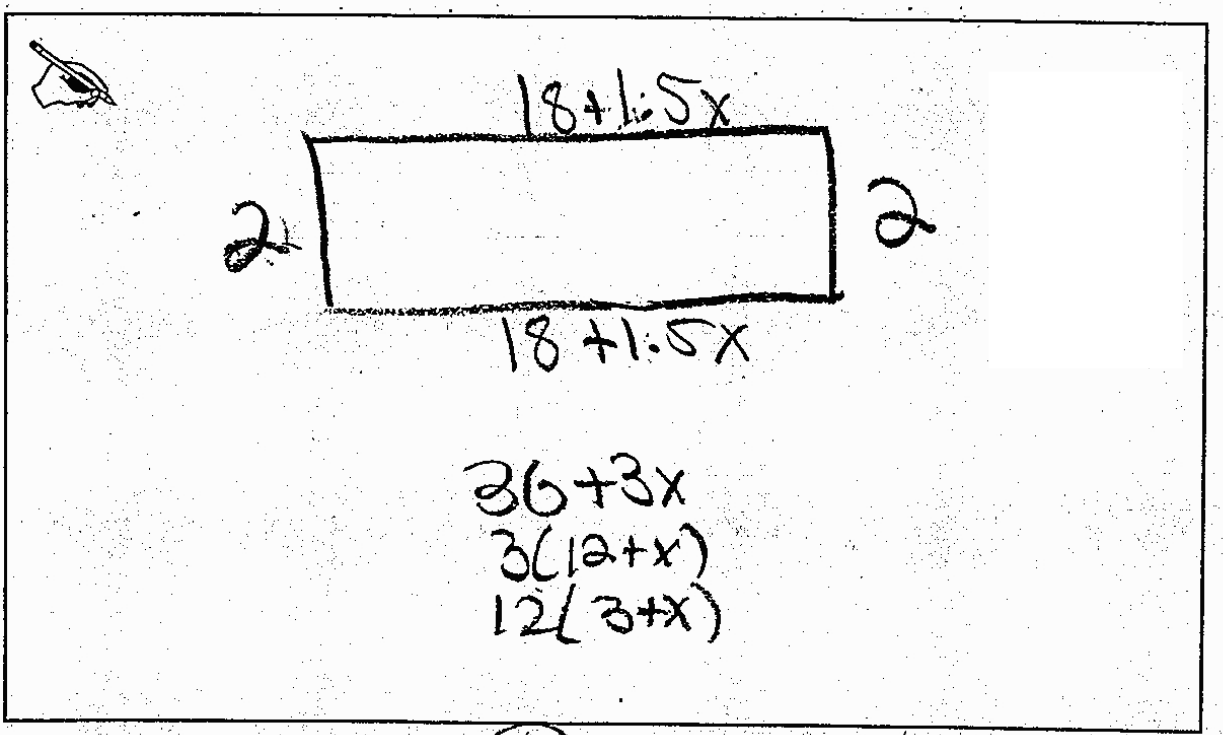
$3(12 + x)$

$12(3 + x)$

A-4c

Rectangle Task

d. Draw and label a rectangle whose **area** is 36 + 3x.



Anchor 4 Litho 00186200149

Total Content Points: 1 (6.EE.A.4)

Total Practice Points: 2 (MP3, MP7)

The student identifies two expressions in Part A that can be used to find the perimeter of the given rectangle (Expression R, Expression U) (6.EE.A.4). In Part C, the response does not contain two expressions that are equivalent to $36 + 3x$ (no credit for 6.EE.A.3). In Part B, the student provides a sound algebraic rationale showing that $2(y + 14)$ represents the perimeter of the rectangle (8 + 6 is 14) (MP3). By correctly representing $36 + 3x$ as the product of two numbers through drawing and labeling a rectangle with a width of 2 and length of $18 + 1.5x$ in Part D, the student demonstrates recognition that area is a product of two numbers (MP7).

Total Awarded Points: 3 out of 4

A-5a

Rectangle Task

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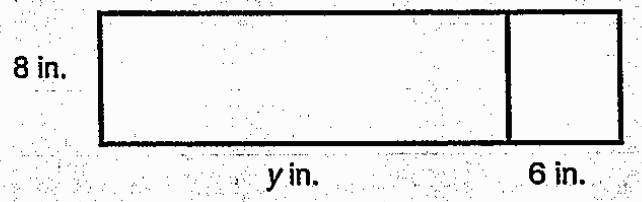


Some students in the class suggested using the following expressions to find the perimeter of this rectangle:

Expression R: $2(8) + 2(6+y)$

Expression S: $2y + 14$

Expression T: $16 + y + 12$

Expression U: $8 + 8 + 6 + y + 6 + y$

a. Which of these expressions could be used to find the **perimeter** of this rectangle?.

Expression R and Expression U

A-5b

Rectangle Task

b. Juan gives another expression for finding the **perimeter** of this rectangle: $2(y + 14)$. Bill says Juan's expression cannot be used because there is no 14 on the rectangle. Is Bill correct? Justify your answer.

NO, because 8 + 6 = 14

c. Write two different expressions that are equivalent to $36 + 3x$.

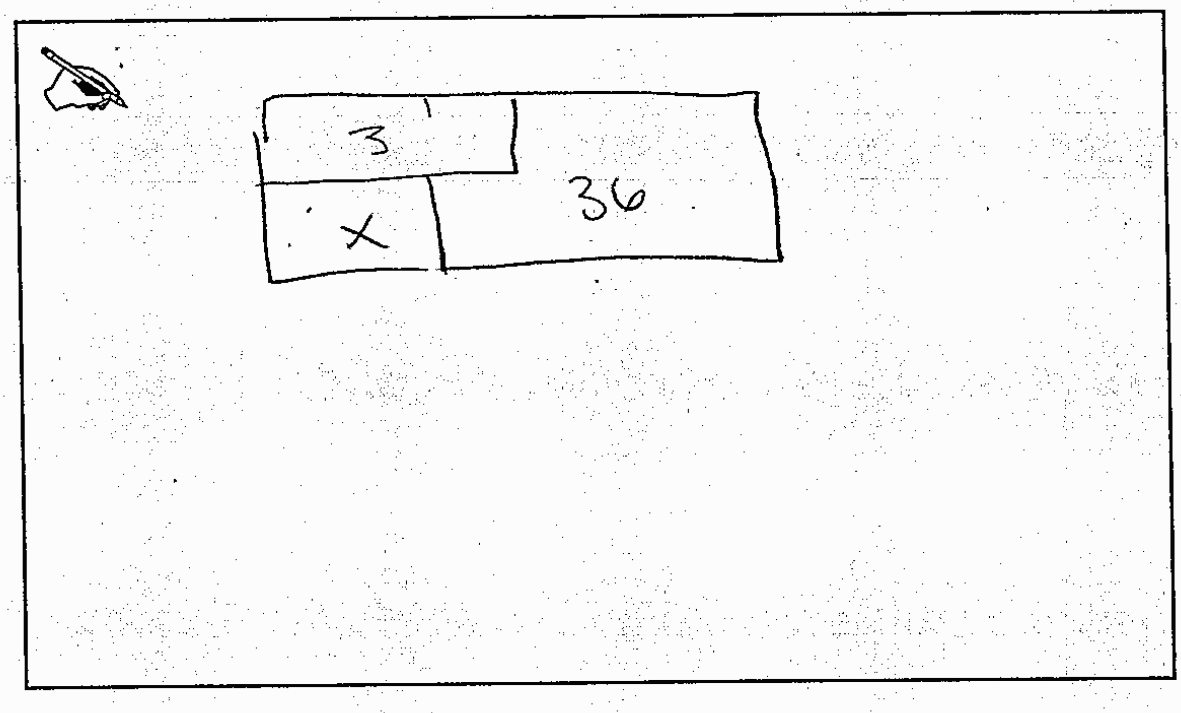
(9 x 4) + 3x

(12 x 3) + 3x.

A-5c

Rectangle Task

d. Draw and label a rectangle whose **area** is $36 + 3x$.



Anchor 5 Litho 00176200148

Total Content Points: 2 (6.EE.A.4, 6.EE.A.3)

Total Practice Points: 1 (MP3)

The student identifies two expressions in Part A that are equivalent and can be used to find the perimeter of the given rectangle (Expression R, Expression U) (6.EE.A.4). The response contains two expressions that are equivalent to $36 + 3x$ in Part C ($(9 \times 4) + 3x$ and $(12 \times 3) + 3x$) (6.EE.A.3). In Part B, the student provides a sound algebraic rationale showing that $2(y + 14)$ represents the perimeter of the rectangle ($8 + 6 = 14$) (MP3). In Part D, the student does not demonstrate recognition that area is a product of two numbers or correctly represent $36 + 3x$ as the product of two numbers (no credit for MP7).

Total Awarded Points: 3 out of 4

A-6a

Rectangle Task

Juan and Bill's teacher drew this rectangle on the board during math class.

Some students in the class suggested using the following expressions to find the perimeter of this rectangle:

Expression R: $2(8) + 2(6+y)$

Expression S: $2y + 14$

Expression T: $16 + y + 12$

Expression U: $8 + 8 + 6 + y + 6 + y$

a. Which of these expressions could be used to find the **perimeter** of this rectangle?

Expression R could be used to find the perimeter.

A-6b

Rectangle Task

b. Juan gives another expression for finding the **perimeter** of this rectangle: $2(y + 14)$. Bill says Juan's expression cannot be used because there is no 14 on the rectangle. Is Bill correct? Justify your answer.

Bill is correct because there is an 8 and a 6 on the rectangle 8+6=14.

c. Write two different expressions that are equivalent to $36 + 3x$.

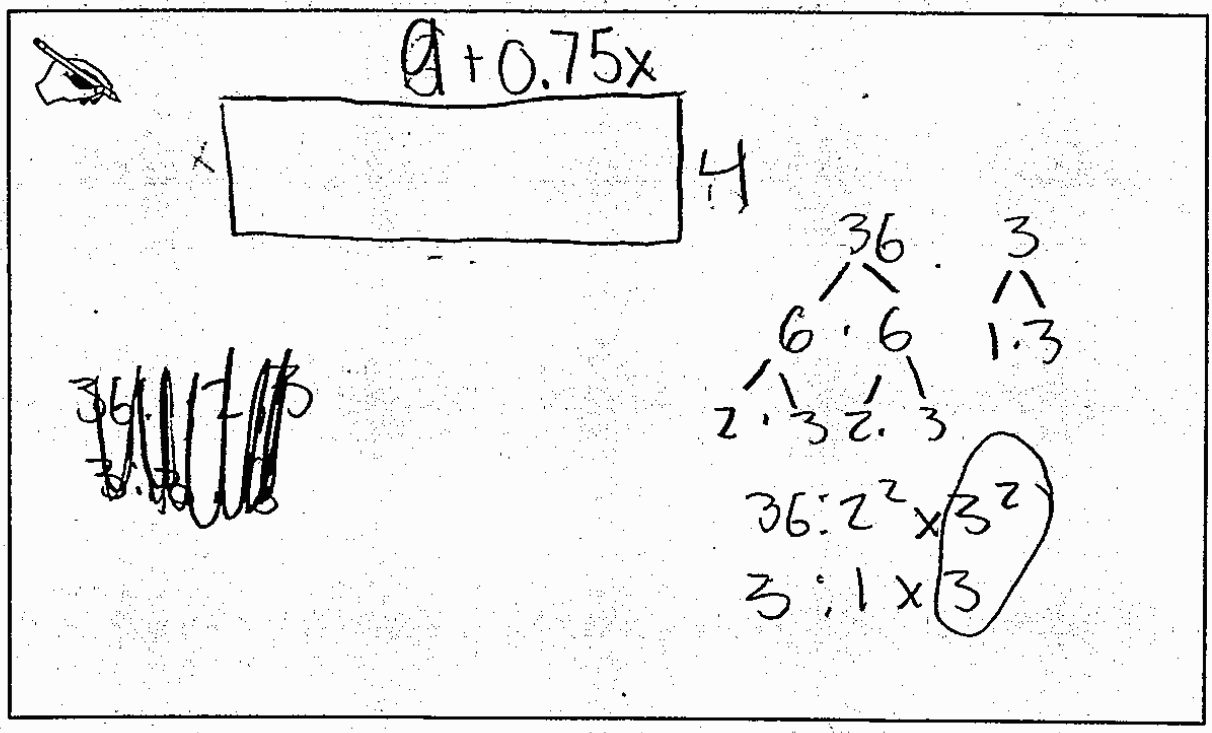
$(6 \times 6) + 3x$

$(4 \times 9) + 3x$

A-6c

Rectangle Task

d. Draw and label a rectangle whose area is 36 + 3x.



Anchor 6 Litho 00226200149

Total Content Points: 1 (6.EE.A.3)

Total Practice Points: 1 (MP7)

The student only identifies one of the two expressions in Part A that are equivalent and can be used to find the perimeter of the given rectangle (no credit for 6.EE.A.4). In Part C, the response contains two expressions that are equivalent to $36 + 3x$ ($(6 \times 6) + 3x$ and $(4 \times 9) + 3x$) (6.EE.A.3). In Part B, the student provides a sufficient rationale showing that $2(y + 14)$ represents the perimeter of the rectangle ($8 + 6 = 14$), but states that Bill is correct instead of Juan (no credit for MP3). The student recognizes in Part D that area is a product of two numbers, and correctly represents $36 + 3x$ as the product of two numbers by drawing and labeling a rectangle with a width of 4 and length of $9 + 0.75x$ (MP7).

Total Awarded Points: 2 out of 4

A-7a

Rectangle Task

Juan and Bill's teacher drew this rectangle on the board during math class.

Some students in the class suggested using the following expressions to find the perimeter of this rectangle:

Expression R: $2(8) + 2(6+y)$

Expression S: $2y + 14$

Expression T: $16 + y + 12$

Expression U: $8 + 8 + 6 + y + 6 + y$

a. Which of these expressions could be used to find the **perimeter** of this rectangle?.

8+8+6+y+6+y

none of the others can because they only have y and not 2y

A-7b

Rectangle Task

b. Juan gives another expression for finding the **perimeter** of this rectangle: $2(y + 14)$. Bill says Juan's expression cannot be used because there is no 14 on the rectangle. Is Bill correct? Justify your answer.

Bill is incorrect because you could add 6+8 and get 14.

c. Write two different expressions that are equivalent to $36 + 3x$.

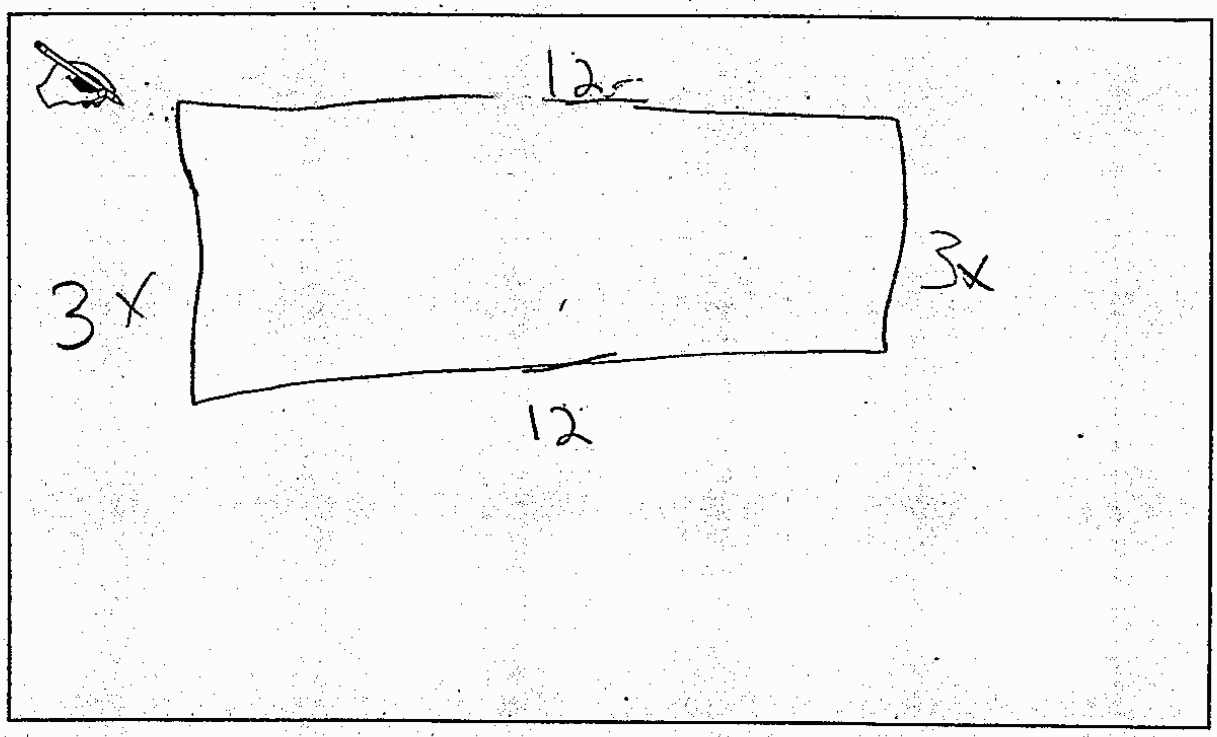
18 +18 + 3x

3x + 18 +18

A-7c

Rectangle Task

d. Draw and label a rectangle whose **area** is $36 + 3x$.



$A = l \cdot w$

$A = 12(3x)$

$A = 12x3 = 36 + 12x$

Anchor 7 Litho 00276200149

Total Content Points: 1 (6.EE.A.3)

Total Practice Points: 1 (MP3)

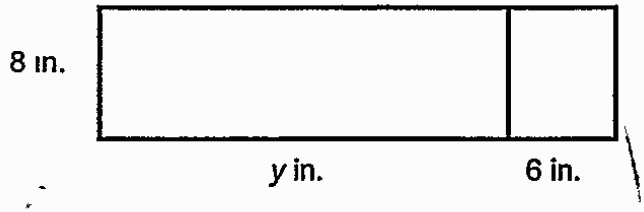
The student only identifies one of the two correct expressions in Part A, stating that the other three are incorrect (no credit for 6.EE.A.4). In Part C, the student does write two differently formed expressions that are equivalent to $36 + 3x$ ($18 + 18 + 3x$ and $3x + 18 + 18$) (6.EE.A.3). The student provides a sound algebraic rationale in Part B showing that $2(y + 14)$ represents the perimeter of the rectangle ("you could add 6 + 8 and get 14") (MP3). In Part D, the student does not correctly label a rectangle with a length and width whose product is $36 + 3x$ (no credit for MP7).

Total Awarded Points: 2 out of 4

A-8a

Rectangle Task

Juan and Bill's teacher drew this rectangle on the board during math class.



Some students in the class suggested using the following expressions to find the perimeter of this rectangle:

Expression R: $2(8) + 2(6+y)$

Expression S: $2y + 14$

Expression T: $16 + y + 12$

Expression U: $8 + 8 + 6 + y + 6 + y$

a. Which of these expressions could be used to find the **perimeter** of this rectangle?.

Expression R, T, & U

A-8b

Rectangle Task

b. Juan gives another expression for finding the **perimeter** of this rectangle: $2(y + 14)$. Bill says Juan's expression cannot be used because there is no 14 on the rectangle. Is Bill correct? Justify your answer.

Yes instead of 14 it needs to be 16+12 wich equals 28 and is the comboination of 2(8) & 2(6) from the known sides

c. Write two different expressions that are equivalent to $36 + 3x$.

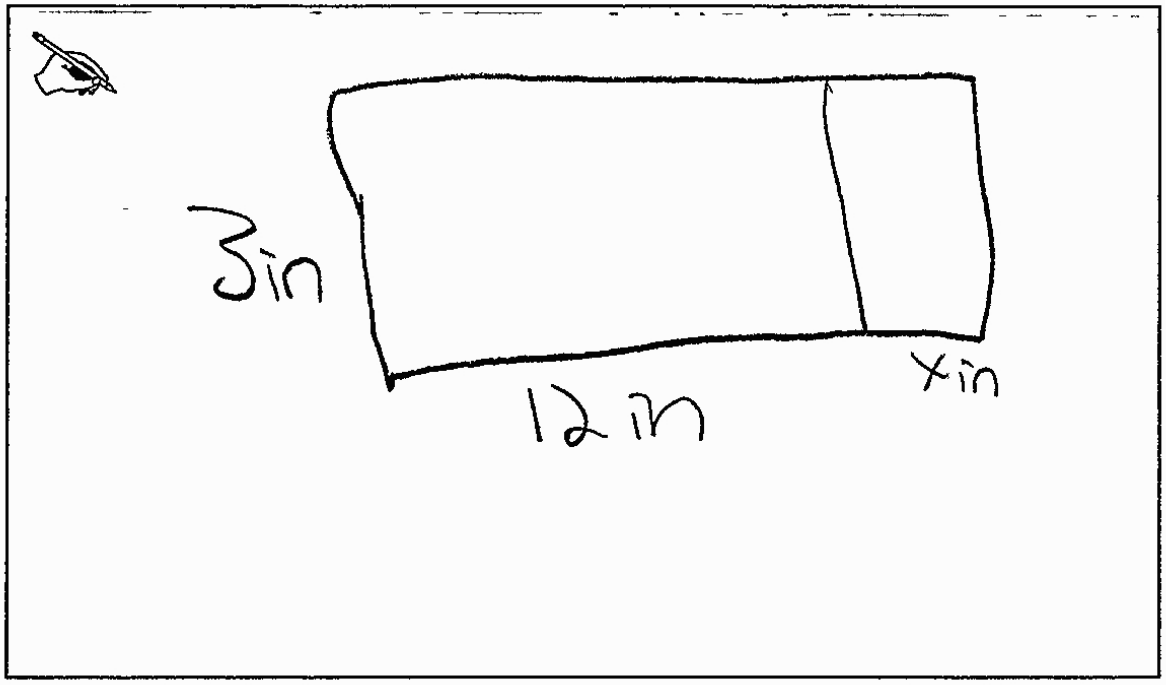
$36 + 3(x)$

$\frac{(36 \times 2)}{2} + 3x$

A-8c

Rectangle Task

d. Draw and label a rectangle whose area is $36 + 3x$.



Anchor 8 Litho 00526200114

Total Content Points: 0

Total Practice Points: 1 (MP7)

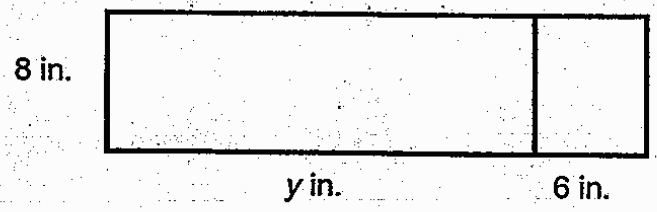
The student chooses three expressions in Part A—the two that are equivalent as well as one (Expression T) that is not (no credit for 6.EE.A.4). The student writes one expression that is equivalent to $36 + 3x$ in Part C $\left(\frac{36 \times 2}{2} + 3x\right)$, but the other expression $(36 + 3(x))$ is identical to the given expression, not equivalent to it (no credit for 6.EE.A.3). In Part B, the student says that Bill is correct, and the explanation supporting that answer is incorrect (no credit for MP3). By drawing and labeling a rectangle with a width of 3 and length of $12 + x$ in Part D, the student correctly represents $36 + 3x$ as the product of two numbers and therefore recognizes that area is a product of two numbers (MP7).

Total Awarded Points: 1 out of 4

A-9a

Rectangle Task

Juan and Bill's teacher drew this rectangle on the board during math class.



Some students in the class suggested using the following expressions to find the perimeter of this rectangle:

Expression R: $2(8) + 2(6+y)$

Expression S: $2y + 14$

Expression T: $16 + y + 12$

Expression U: $8 + 8 + 6 + y + 6 + y$

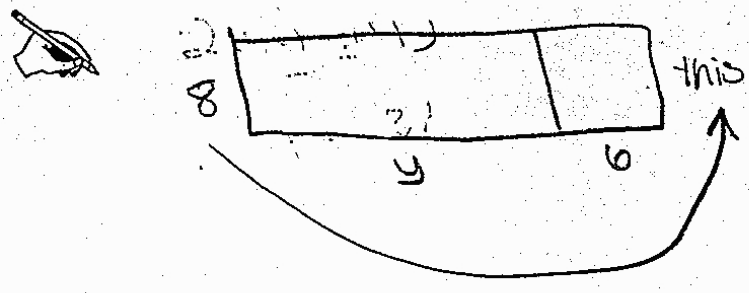
a. Which of these expressions could be used to find the **perimeter** of this rectangle?.

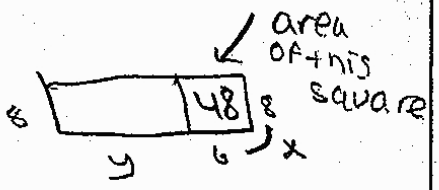
Expression r because having two of each of the given sides makes up the perimeter.

A-9b

Rectangle Task

b. Juan gives another expression for finding the **perimeter** of this rectangle: $2(y + 14)$. Bill says Juan's expression cannot be used because there is no 14 on the rectangle. Is Bill correct? Justify your answer.





'Bill is right that Juan is wrong, but not because there is no 14.

The equation doesn't work because not all of the side work in the equation

c. Write two different expressions that are equivalent to $36 + 3x$.

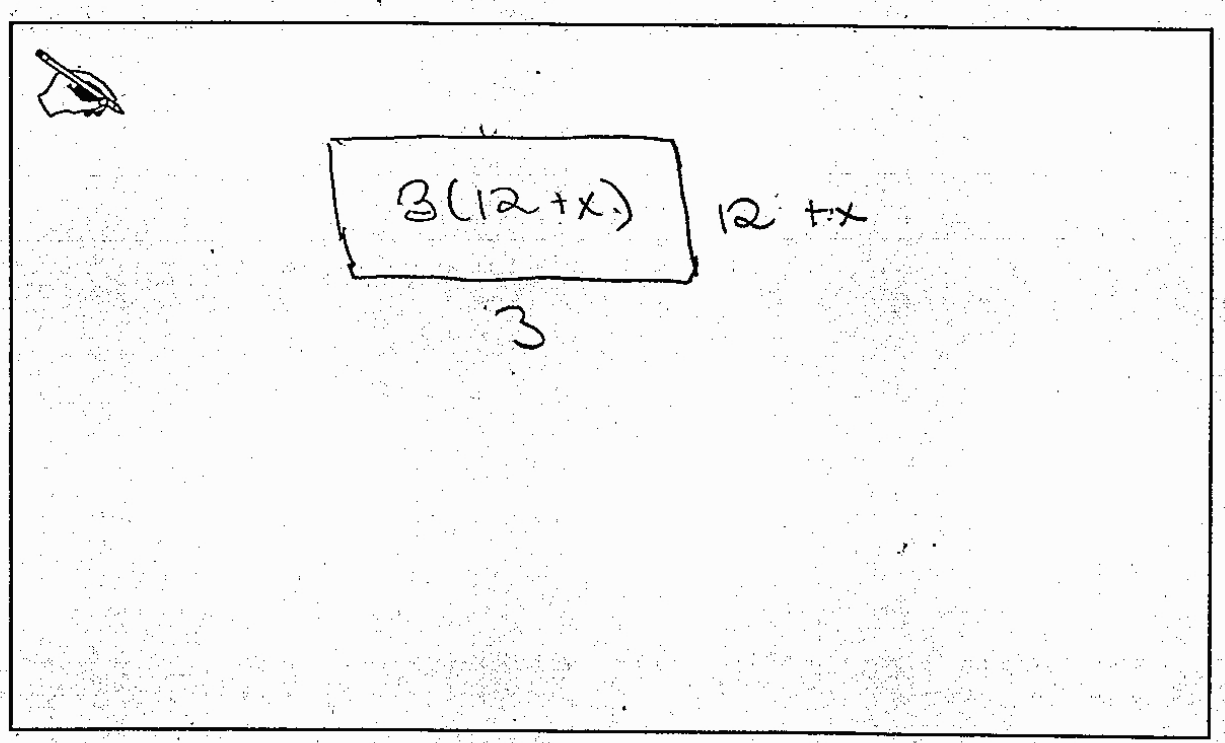
$3(12+x)$

$24 + 4x$

A-9c

Rectangle Task

d. Draw and label a rectangle whose area is $36 + 3x$.



Anchor 9 Litho 000356200149

Total Content Points: 0

Total Practice Points: 1 (MP7)

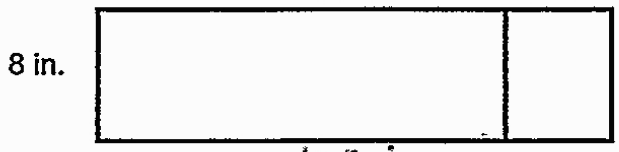
The student only identifies one of the two correct expressions in Part A (no credit for 6.EE.A.4). In Part C, the student does not write two different expressions that are equivalent to $36 + 3x$ (no credit for 6.EE.A.3). In Part B, the student incorrectly states that Bill is correct and Juan is incorrect (no credit for MP3). However, by drawing and labeling a rectangle with a width of $12 + x$ and length of 3, and correctly representing $36 + 3x$ as the product of two numbers in Part D, the student does recognize that area is a product of two numbers (MP7).

Total Awarded Points: 1 out of 4

A-10a

Rectangle Task

Juan and Bill's teacher drew this rectangle on the board during math class.



Some students in the class suggested using the following expressions to find the perimeter of this rectangle:

Expression R: $2(8) + 2(6+y)$

Expression S: $2y + 14$

Expression T: $16 + y + 12$

Expression U: $8 + 8 + 6 + y + 6 + y$

a. Which of these expressions could be used to find the **perimeter** of this rectangle?.

Expression R

A-10b

Rectangle Task

b. Juan gives another expression for finding the **perimeter** of this rectangle: $2(y + 14)$. Bill says Juan's expression cannot be used because there is no 14 on the rectangle. Is Bill correct? Justify your answer.

yes Bill is correct because you can't add 8+6 and get 14. 8 is the length on one side so the opposite side also has to equal 8

c. Write two different expressions that are equivalent to $36 + 3x$.

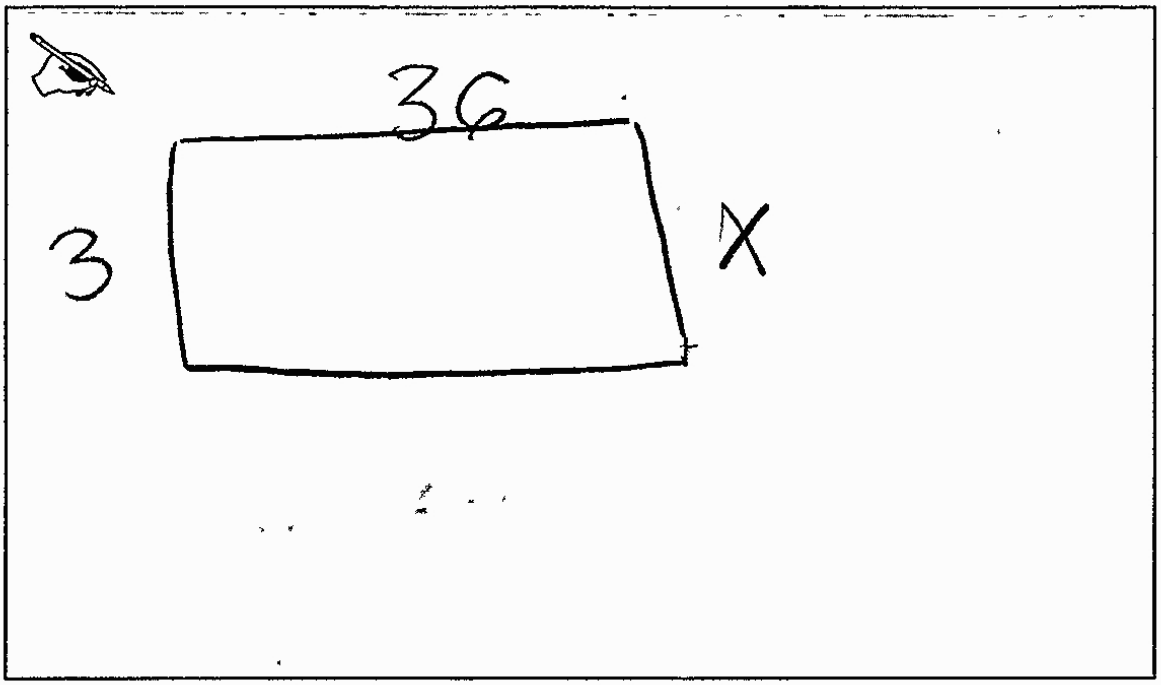
(1) 18+18+3x

(2) 6+6+6+6+6+6 +3x

A-10c

Rectangle Task

d. Draw and label a rectangle whose **area** is $36 + 3x$.



Anchor 10 Litho 00216200114

Total Content Points: 1 (6.EE.A.3)

Total Practice Points: 0

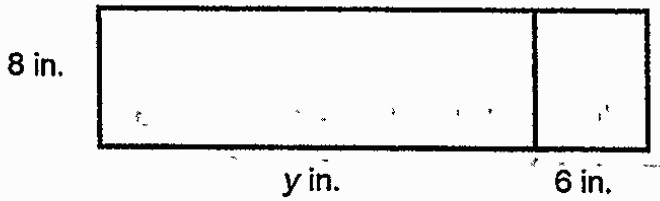
The student only identifies one of the two correct expressions in Part A that can be used to find the perimeter of the given rectangle (no credit for 6.EE.A.4). In Part C, the student writes two expressions equivalent to $36 + 3x$ ($18 + 18 + 3x$ and $6 + 6 + 6 + 6 + 6 + 6 + 3x$) (6.EE.A.3). The student gives an incorrect explanation in Part B, and therefore does not demonstrate recognition that $2(y + 14)$ represents the perimeter of the rectangle (no credit for MP3). In Part D, the student draws a rectangle, but it is incorrectly labeled and does not have an area of $36 + 3x$ (no credit for MP7).

Total Awarded Points: 1 out of 4

A-11a

Rectangle Task

Juan and Bill's teacher drew this rectangle on the board during math class.



Some students in the class suggested using the following expressions to find the perimeter of this rectangle:

Expression R: $2(8) + 2(6+y)$

Expression S: $2y + 14$

Expression T: $16 + y + 12$

Expression U: $8 + 8 + 6 + y + 6 + y$

a. Which of these expressions could be used to find the **perimeter** of this rectangle?.

Expression R

A-11b

Rectangle Task

b. Juan gives another expression for finding the **perimeter** of this rectangle: $2(y + 14)$. Bill says Juan's expression cannot be used because there is no 14 on the rectangle. Is Bill correct? Justify your answer.

Bill is correct because in order to get perimeter, you have to multiply the sides by two and add. To get fourteen, you'd have to add 6 and 8,

c Write two different expressions that are equivalent to $36 + 3x$.

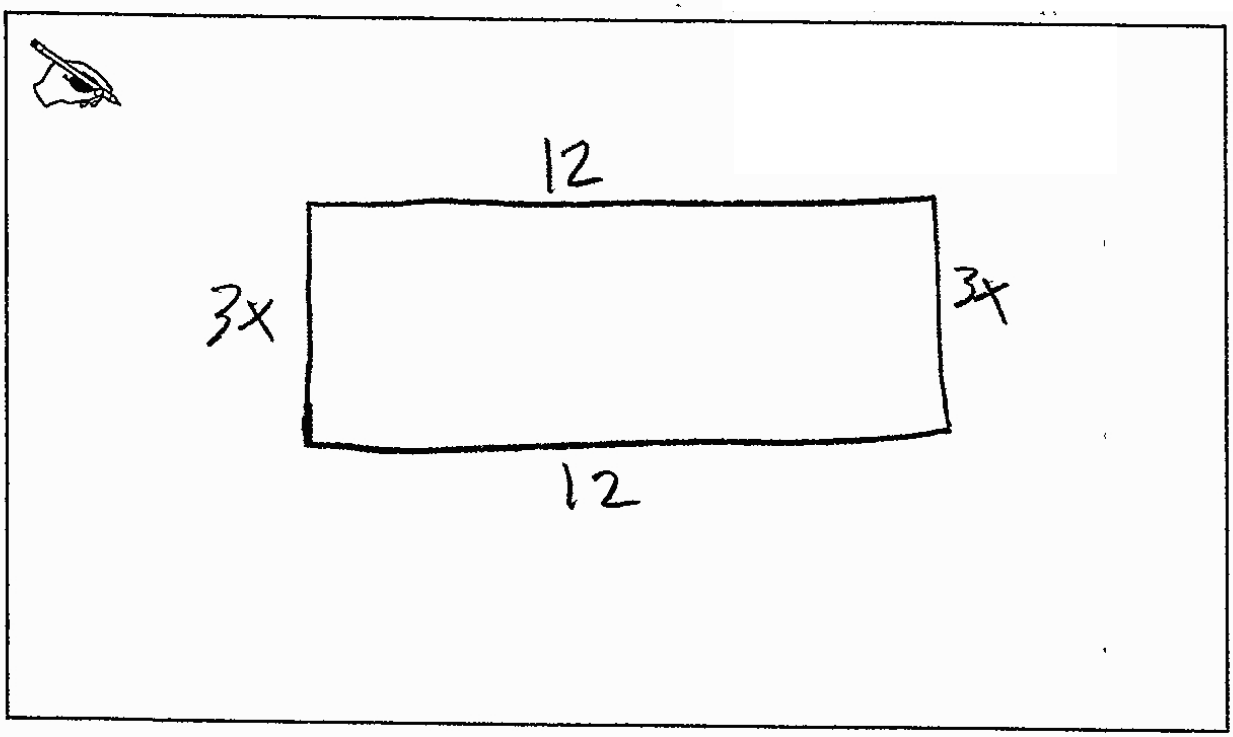
$12 \cdot 3 + (1x + 2x)$

$23 + 23 + (1x + 2x)$

A-11c

Rectangle Task

d. Draw and label a rectangle whose area is $36 + 3x$.



Anchor 11 Litho 00366200108

Total Content Points: 0

Total Practice Points: 0

The student only identifies one of the two correct expressions in Part A that can be used to find the perimeter of the given rectangle (no credit for 6.EE.A.4). The response does not contain two expressions in Part C that are equivalent to $36 + 3x$ (no credit for 6.EE.A.3). In Part B, the student does not provide a sound algebraic or geometric rationale showing that $2(y + 14)$ represents the perimeter of the rectangle (no credit for MP3). The labeled rectangle in Part D does not have a length and width whose product is
$36 + 3x$ (no credit for MP7).

Total Awarded Points: 0 out of 4