**Tennessee Comprehensive Assessment Program / Mathematics**
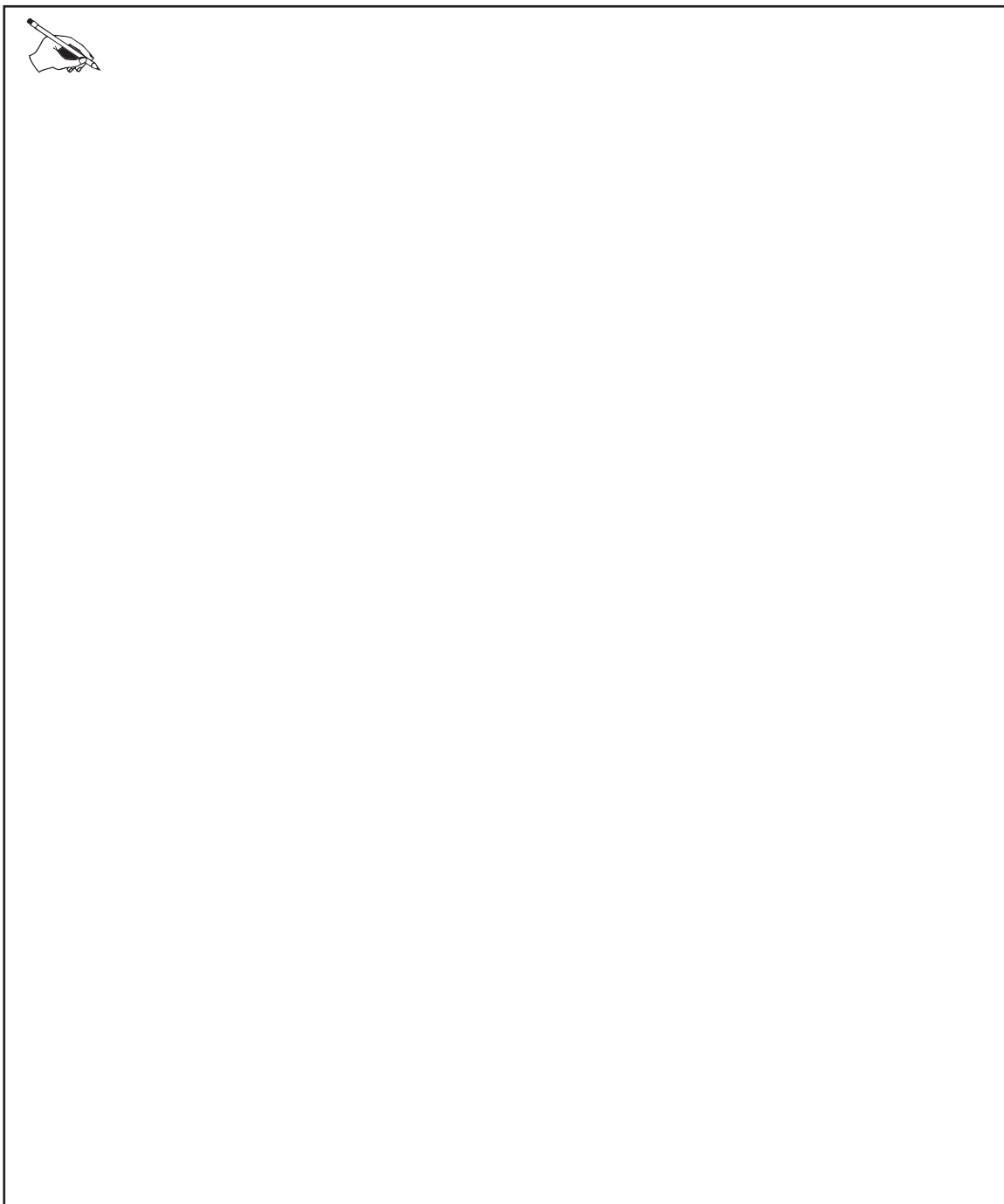
# TCAP/CRA PILOT 2012

**7**

# Task 4 : Farmers Market
## Scoring Guide

**Task 4. Farmers Market Task**

The local farmers market sells 6 ears of corn for $3.  Anna often buys ears of corn there for her restaurant.  She correctly writes the equation $y = 2x$ to help her solve problems involving buying ears of corn at the market.

a.    Explain what the 2, $x$ and $y$ mean in Anna's equation in the context of the problem.

b. Anna plans to use her equation $y = 2x$ to determine the cost of buying 60 ears of corn. What equation will Anna solve? Explain your reasoning in words.

**STOP**

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

## 4. The Farmers Market Task Scoring Guide

**The CCSS for Mathematical Content (2 points)**

7.EE.4    The student identifies the 2 as the number of ears that can be bought for $1 and       _____
the y as the number of ears that can be bought for x dollars.

7.RP.2c    The student writes equations that use scaling or unit rate, e.g., if 6 x 10 = 60 then 3    _____
x 10 = 30, the cost of the corn, or writes $60 = 2x$, $\dfrac{60}{2} = x$.

**Total Content Points** _____


**The CCSS for Mathematical Practices (4 points)**

MP1    The student completes both parts of the task and explains the reasoning used.       _____

(MP1:  Make sense of problems and persevere in solving them.)

MP2    The student abstracts the data from the context, correctly noting the meaning of       _____
the 2 in the context of the problem and the meaning of the 60 with respect to the
equation.

(MP2:  Reason abstractly and quantitatively.)

MP3    The student provides a clear and logical explanation explaining why $60 = 2x$ is the       _____
correct formulation of the equation Anna will solve to find the cost of 60 ears of
corn.

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

MP7    Work specifically indicates that the student understands the multiplicative       _____
relationship that underlies ratio and proportional relationships.

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

**Total Practice Points** _____

**Total Awarded Points** _____

**The CCSS for Mathematical Content Addressed in This Task**

**Analyze proportional relationships and use them to solve real-world and mathematical problems.**

**Recognize and represent proportional relationships between quantities.**
7.RP.2c    Represent proportional relationships by equations.

**Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**
7.EE.4    Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

**The CCSS for Mathematical Practices\***

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 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. Farmers Market Task**

The local farmers market sells 6 ears of corn for $3. Anna often buys ears of corn there for her restaurant. She correctly writes the equation $y = 2x$ to help her solve problems involving buying ears of corn at the market.

a. Explain what the 2, $x$ and $y$ mean in Anna's equation in the context of the problem.

Well, x = $3, so Y = 6 ears of corn.
If you work the problem like this,
$$y = 2 \times 3$$
$$y = 6.$$
So you double the price to equal the number of ears of corn. Each corn costs 50¢ each.

b. Anna plans to use her equation $y = 2x$ to determine the cost of buying 60 ears of corn. What equation will Anna solve? Explain your reasoning in words.

$$\frac{60}{2} = \frac{2x}{2}$$
$$x = \$30$$

Anna will spend $30.00 on corn, and will then have bought 60 ears of corn.

STOP
REVIEW YOUR WORK IF YOU HAVE TIME.

Litho#: 70039

Guide 1                    Litho 70039

Total Content Points: 2       (7.EE.4, 7.RP.2c)

Total Practice Points: 4      (MP1, MP2, MP3, MP7)

This response identifies the meaning of *x* and *y*, and the meaning of the 2 in terms of the relationship between quantity of corn and price ("you double the price to equal the number of ears of corn") (7.EE.4). The student also indicates the equations that Anna will solve (7.RP.2c) and has provided a logical explanation by appropriately associating the variables with words (MP3). Both parts of the task have been completed successfully with reasoning as required (MP1). By recognizing the meaning of the 2 and by correctly using the 60 in the equation, the student has successfully abstracted the data from the context (MP2). The student has indicated an understanding of the multiplicative relationship underlying proportional relationships in the equations shown and in the explanation in part a (MP7).

Total Awarded Points: 6 out of 6

## Task 4. Farmers Market Task

The local farmers market sells 6 ears of corn for $3. Anna often buys ears of corn there for her restaurant. She correctly writes the equation $y = 2x$ to help her solve problems involving buying ears of corn at the market.

a. Explain what the 2, $x$ and $y$ mean in Anna's equation in the context of the problem.

> 'y' is the number of ears of corn bought
> 'x' is the cost of the ears of corn
> and 2 is because the number of ears
> of corn is twice the cost, so for the
> equation to be right, you must multiply
> the cost by 2.

b. Anna plans to use her equation $y = 2x$ to determine the cost of buying 60 ears of corn. What equation will Anna solve? Explain your reasoning in words.

> $$\frac{60}{2} = \frac{2x}{2}$$
> $$30 = x$$
>
> Anna will solve the equation 60=2x. she is buying
> 60 ears of corn, so y=60. she is trying to find
> the cost, so x is what is being solved for. She then
> divides 60 by two to get the cost, 30 dollars.

**STOP**

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

Litho#: 70262

Guide 2                              Litho 70262

Total Content Points: 2          (7.EE.4, 7.RP.2c)

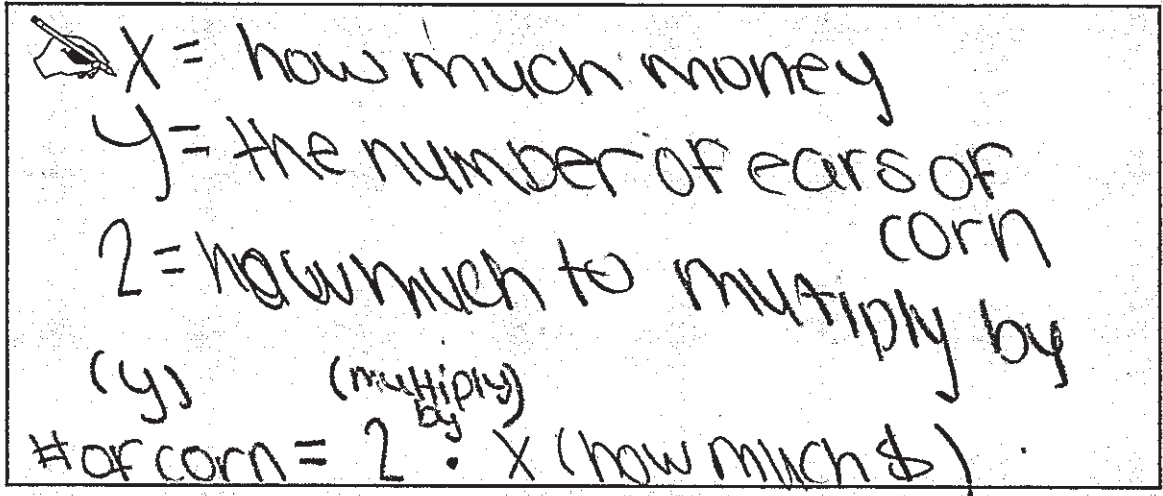Total Practice Points: 4          (MP1, MP2, MP3, MP7)

This response identifies the meaning of *x* and *y*, and the meaning of the 2 in terms of the relationship between quantity of corn and price ("the number of ears of corn is twice the cost") (7.EE.4). The student also indicates the equations that Anna will solve (7.RP.2c) and has provided a logical explanation by appropriately associating the variables with words (MP3). Both parts of the task have been completed successfully with reasoning as required (MP1). By recognizing the meaning of the 2 and by correctly using the 60 in the equation, the student has successfully abstracted the data from the context (MP2). The student has indicated an understanding of the multiplicative relationship underlying proportional relationships in the explanation given as well as an understanding of the equation provided (MP7).

Total Awarded Points: 6 out of 6
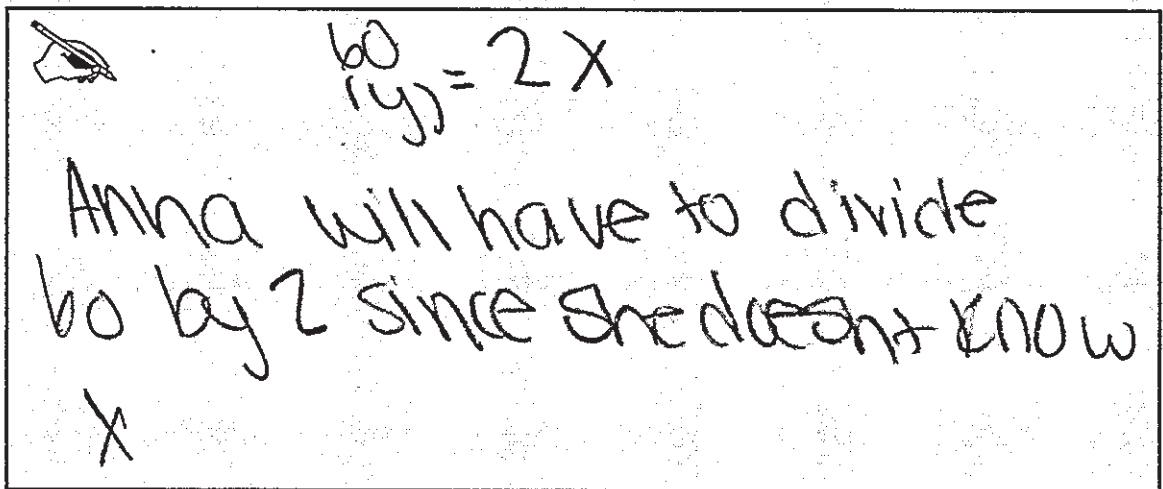
**Task 4. Farmers Market Task**

The local farmers market sells 6 ears of corn for $3. ~~Anna often buys ears of corn there for her restaurant.~~ She correctly writes the equation $y = 2x$ to help her solve problems involving buying ears of corn at the market.

a. Explain what the 2, $x$ and $y$ mean in Anna's equation in the context of the problem.

> $x$ = how much money
> $y$ = the number of ears of corn
> 2 = how much to multiply by (y)  (multiply)
> #of corn = 2 · X (how much $)

b. Anna plans to use her equation $y = 2x$ to determine the cost of buying 60 ears of corn. What equation will Anna solve? Explain your reasoning in words.

> 60 (y) = 2X
> Anna will have to divide 60 by 2 since she doesn't know X

STOP

REVIEW YOUR
WORK IF YOU
HAVE TIME.

Guide 3                    Litho 70310

Total Content Points: 2         (7.EE.4, 7.RP.2c)

Total Practice Points: 4        (MP1, MP2, MP3, MP7)

This response identifies the meaning of *x* and *y*, and the meaning of the 2 in terms of the relationship between quantity of corn and price ("2 = how much to mutiply by") (7.EE.4). The student also indicates the equations that Anna will solve (7.RP.2c). The student has completed both parts of the task, and explained the reasoning used (MP1). By recognizing the meaning of the 2 and by correctly using the 60 in the equation, the student has successfully abstracted the data from the context (MP2). The definitions provided in part a provide a logical explanation to why "$60 = 2x$" is the correct formulation (MP3). The student has indicated an understanding of the multiplicative relationship underlying proportional relationships through the explanations and equations provided (MP7).

Total Awarded Points: 6 out of 6

## Task 4. Farmers Market Task

The local farmers market sells 6 ears of corn for $3. Anna often buys ears of corn there for her restaurant. She correctly writes the equation $y = 2x$ to help her solve problems involving buying ears of corn at the market.

a.  Explain what the 2, $x$ and $y$ mean in Anna's equation in the context of the problem.

> The 2 in y=2x means however much corn she buys, She should divide it by 2 and get the price.

b.  Anna plans to use her equation $y = 2x$ to determine the cost of buying 60 ears of corn. What equation will Anna solve? Explain your reasoning in words.

> $y = 2x$
> $\dfrac{60 = 2 \cdot x}{30 = x}$
>
> Anna would have to pay 30 dollars because you divide how much corn buy two to get the price.

**STOP**

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

Guide 4                          Litho 70320

Total Content Points: 1          (7.RP.2c)

Total Practice Points: 3         (MP2, MP3, MP7)

This student explains the meaning of 2 in the given equation, but does not clearly identify the meaning of $x$ and $y$ (no credit for 7.EE.4). The equation in part b is written correctly and the second step (solving for $x$) is implied by the correct answer (7.RP.2c). Although the explanation given in part b is sufficient for part b, the student has not completed part a of the task (no credit for MP1). The meaning of the 2 is recognized in the context of the problem as well as the meaning of the 60 with respect to the equation in part b, so the student has demonstrated the ability to reason quantitatively and abstractly (MP2). The student has given an explanation in part b that is sufficient to explain the correct formulation of the equation (MP3). By replacing $y$ with 60, and dividing the number of ears of corn by two to get the price, a specific understanding of the proportional relationship between ears of corn and price is indicated (MP7).

Total Awarded Points: 4 out of 6

**Task 4. Farmers Market Task**

The local farmers market sells 6 ears of corn for $3. Anna often buys ears of corn there for her restaurant. She correctly writes the equation $y = 2x$ to help her solve problems involving buying ears of corn at the market.

a. Explain what the 2, $x$ and $y$ mean in Anna's equation in the context of the problem.

> Y means the total amount of the ears of corn. The 2 means for every $1 equals 2 ears of corn so you would multiply the amount of money by the amount of ears of corn. The x shows the amount of money in the equation.

b. Anna plans to use her equation $y = 2x$ to determine the cost of buying 60 ears of corn. What equation will Anna solve? Explain your reasoning in words.

> $y = 2x$   $y = 2 \times 30$
>
> You would cut 60 ears of corn in half which would equal 30 and then multiply it by 2 which would equal your 60 ears of corn.   60 ears of corn = $30

**STOP**

REVIEW YOUR
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HAVE TIME.

Page 10

Litho#: 70213

Page 13

Guide 5                          Litho 70213

Total Content Points: 1          (7.EE.4)

Total Practice Points: 2         (MP2, MP7)

This response identifies the meaning of 2 as the number of ears that can be bought for $1 and also correctly identifies *x* and *y* (7.EE.4). The student's reasoning in words in part b is an explanation of the process to arrive at $30 rather than a clear explanation relating quantity of corn with cost, and she fails to give the correct form of the equation (no credit for 7.RP.2c). Because she fails to give the correct equation to be solved in part b, the student has not correctly responded to all parts of the task (no credit for MP1). However, the student's two equations together are sufficient to correctly note the meaning of 60 and the correct identification of 2 has already been noted (MP2). The explanation in part b is insufficient (no credit for MP3). The student's clear definition of 2 in part a specifically indicates an understanding of the proportional relationship between ears of corn and cost (MP7).

Total Awarded Points: 3 out of 6

## Task 4. Farmers Market Task

The local farmers market sells 6 ears of corn for $3. Anna often buys ears of corn there for her restaurant. She correctly writes the equation $y = 2x$ to help her solve problems involving buying ears of corn at the market.

a. Explain what the 2, $x$ and $y$ mean in Anna's equation in the context of the problem.

$$2x = the price times two.$$
$$y = 6 ears of corn$$

b. Anna plans to use her equation $y = 2x$ to determine the cost of buying 60 ears of corn. What equation will Anna solve? Explain your reasoning in words.

$$\frac{60}{2} = \frac{2x}{2}$$
$$y = 2x \quad 30 = x$$
$$y = 60$$
$$2x = the price times two$$

Anna will divide 60 by 2 to figure out X.

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

Guide 6                    Litho 70073

Total Content Points: 1        (7.RP.2c)

Total Practice Points: 1       (MP7)

In part a of this response, the explanation of the meaning of the 2 is insufficient. It is not separated from the *x* (cost of *y* number of ears of corn) (no credit for 7.EE.4). The student writes the equations that Anna will solve to determine cost and is able to use the correct equation to demonstrate the price (7.RP.2c). The lack of an acceptable explanation in part a means that not all parts of the task are appropriately addressed (no credit for MP1). There is no clear explanation of the meaning of 2 in the context of the task (no credit for MP2), and the student does not provide enough of an explanation for why the correct equation in part b was selected (no credit for MP3). However, the work in part b is sufficient to demonstrate an understanding of the multiplicative nature of proportional relationships (MP7).

Total Awarded Points: 2 out of 6

**Task 4. Farmers Market Task**

The local farmers market sells 6 ears of corn for $3. Anna often buys ears of corn there for her restaurant. She correctly writes the equation $y = 2x$ to help her solve problems involving buying ears of corn at the market.

a. Explain what the 2, $x$ and $y$ mean in Anna's equation in the context of the problem.

> $y=2x$
>
> $y$ - number of ears of corn you are purchasing,
> $x$ - total price
> 2 - number that you multiply the total price by

b. Anna plans to use her equation $y = 2x$ to determine the cost of buying 60 ears of corn. What equation will Anna solve? Explain your reasoning in words.

> she will solve $x = y \div 2$
>
> in order to find the price she must divide the number of ears of corn by 2 to find the price

**STOP**

REVIEW YOUR
WORK IF YOU
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Guide 7                          Litho 70031

Total Content Points: 0

Total Practice Points: 1          (MP3)

The explanation that the student provides for the meaning of the 2 in the equation does
not relate the two variables in the equation (no credit for 7.EE.4). The student has not
substituted the known factor into the given equation in part b, and has not stated the
proper equation for Anna to solve (no credit for 7.RP.2c). Both parts of the task have not
been appropriately addressed (no credit for MP1). Although the 60 is not placed in the
equation in part b, the student offers a logical explanation in words, clearly and correctly
relating the variables (MP3). The student has not successfully related the given
multiplicative relationship to a ratio or proportional relationship (no credit for MP7).

Total Awarded Points: 1 out of 6

**Task 4. Farmers Market Task**

The local farmers market sells 6 ears of corn for $3. Anna often buys ears of corn there for her restaurant. She correctly writes the equation $y = 2x$ to help her solve problems involving buying ears of corn at the market.

a. Explain what the 2, $x$ and $y$ mean in Anna's equation in the context of the problem.

> $y = 2x$ in this is meaning that every 2 ears of corn is $1

b. Anna plans to use her equation $y = 2x$ to determine the cost of buying 60 ears of corn. What equation will Anna solve? Explain your reasoning in words.

> $y = 2x$. Because she can use the same equation if you buy 6 ears for $3 then it would be 60 ears for $30

STOP

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WORK IF YOU
HAVE TIME.

Litho#: 70026

Guide 8                        Litho 70026

Total Content Points: 0

Total Practice Points: 1          (MP7)

The work in part a correctly identifies the meaning of 2 but not *x* or *y* (no credit for 7.EE.4). The correct equation is not given in part b, so although the student uses some correct logic, he has not demonstrated equations that make use of scaling or unit rate (no credit for 7.RP.2c). The student has not appropriately responded to both parts of the task (no credit for MP1). Although the response indicates that the student understands the meaning of the 2 in the given equation, the lack of a correct equation in part b does not demonstrate understanding of how to place the 60 into context (no credit for MP2). The explanations given are insufficient to explain how to use the given equation to find the cost of *y* ears of corn (no credit for MP3). However, the work that is shown indicates an understanding of the multiplicative nature of ratio and proportional relationships (MP7).

Total Awarded Points: 1 out of 6

**Task 4. Farmers Market Task**

The local farmers market sells 6 ears of corn for $3. Anna often buys ears of corn there for her restaurant. She correctly writes the equation $y = 2x$ to help her solve problems involving buying ears of corn at the market.

a.  Explain what the 2, $x$ and $y$ mean in Anna's equation in the context of the problem.

> The y is the amount of ears of corn bought, the x is the price and the 2 represents the price of one ear of corn.

b.  Anna plans to use her equation $y = 2x$ to determine the cost of buying 60 ears of corn. What equation will Anna solve? Explain your reasoning in words.

> 60=2x, because y= amount of corn bought and she is trying to find x, the cost.

**STOP**

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Guide 9                          Litho 70105

Total Content Points: 0

Total Practice Points: 1          (MP3)

The student correctly identifies $y$ and $x$ in the equation, but the identification of the 2 is incorrect (no credit for 7.EE.4). In part b only the correct equation $60 = 2x$ is provided, without an explanation or the next step in solving the problem. The student does not demonstrate the use of scaling or of unit rate (no credit for 7.RP.2c). The student does not appropriately address both parts of the task (no credit for MP1). The student has incorrectly identified the meaning of the 2 in the original equation, which demonstrates a lack of understanding of the context of the problem (no credit for MP2). However, the student provides a logical explanation as to why the formulation is the correct one to use to solve for the cost of the corn (MP3). The student does not show any work, or explain the multiplicative relationship underlying the relationship between $y$ number of ears of corn and the price $x$ (no credit for MP7).

Total Awarded Points: 1 out of 6

**Task 4. Farmers Market Task**

The local farmers market sells 6 ears of corn for $3. Anna often buys ears of corn there for her restaurant. She correctly writes the equation $y = 2x$ to help her solve problems involving buying ears of corn at the market.

a.    Explain what the 2, $x$ and $y$ mean in Anna's equation in the context of the problem.

> In the equation, 2 is the simplified way of saying $\frac{6}{3} = \frac{2}{1}$. X means the total amount of corn she's buying. Y means the total cost.

b.    Anna plans to use her equation $y = 2x$ to determine the cost of buying 60 ears of corn. What equation will Anna solve? Explain your reasoning in words.

> Anna will solve a one step equation because all she will have to do is divide the total amount by $\frac{6}{3}$.

**STOP**

REVIEW YOUR WORK IF YOU HAVE TIME.

Litho#: 70042

Guide 10                    Litho 70042

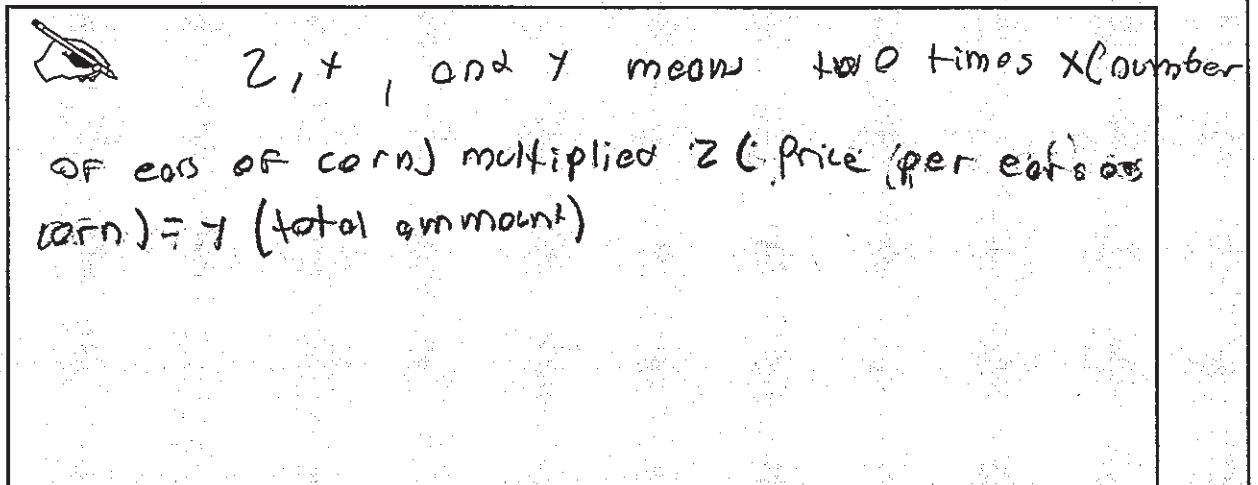Total Content Points: 0

Total Practice Points: 0

The student does not correctly identify *x*, *y*, or 2 in the context of the task (no credit for 7.EE.4). The student does not give a correct equation or adequately explain a relationship that uses scaling in part b (no credit for 7.RP.2c). The student does not appropriately address both parts of the task (no credit for MP1). The incorrect identification of the variables in the original equation demonstrates a lack of conceptual understanding of the problem (no credit for MP2). Although the student appears to show some understanding of the correct process of solving the equation given, her explanation is too imprecise to clearly explain what the correct equation would be (no credit for MP3). The incorrect identifications in part a and the general explanation in part b do not sufficiently demonstrate an understanding of ratio and proportional relationships (no credit for MP7).

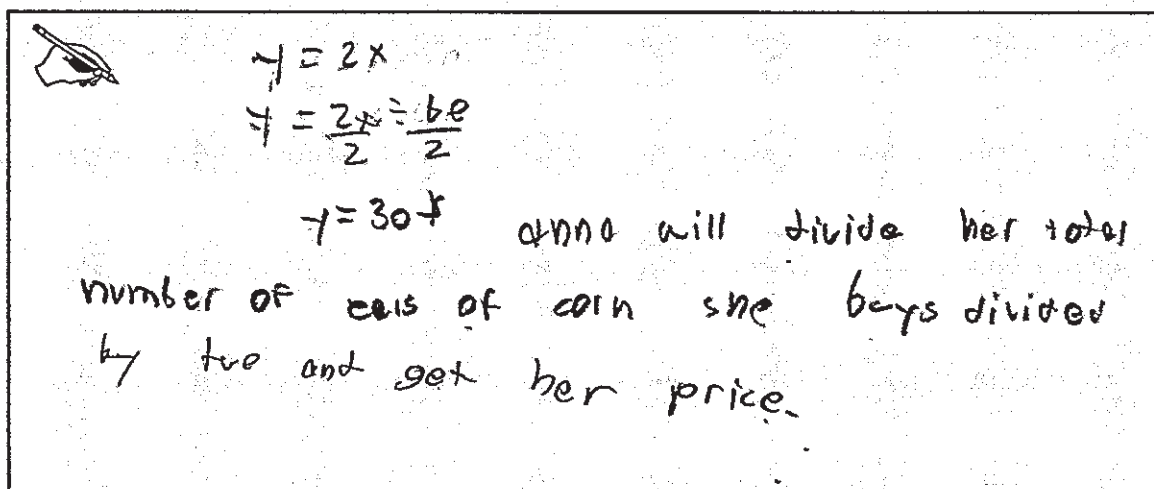Total Awarded Points: 0 out of 6

**Task 4. Farmers Market Task**

The local farmers market sells 6 ears of corn for $3. Anna often buys ears of corn there for her restaurant. She correctly writes the equation $y = 2x$ to help her solve problems involving buying ears of corn at the market.

a. Explain what the 2, $x$ and $y$ mean in Anna's equation in the context of the problem.

> 2, x, and y mean two times x(number of ears of corn) multiplied 2 (price (per ears of corn) = y (total ammount)

b. Anna plans to use her equation $y = 2x$ to determine the cost of buying 60 ears of corn. What equation will Anna solve? Explain your reasoning in words.

> $y = 2x$
> $y = \frac{2x}{2} = \frac{60}{2}$
> $y = 30$   anna will divide her total number of ears of corn she buys divided by two and get her price.

**STOP**

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

Litho#: 70285

Guide 11                    Litho 70285

Total Content Points: 0

Total Practice Points: 0

The student incorrectly identifies the 2 and the variables in the original equation (no credit for 7.EE.4). The student sets up $y = 2x$ as the equation that Anna will solve, but incorrectly calculates the problem to find "$y = 30\$$" (no credit for 7.RP.2c). The confusion of the variables representing the cost and the number of ears of corn bought in part b along with the lack of clarity in the explanation in part a demonstrate a lack of understanding of the task (no credit for MP1). The student uses $y = $ cost in the equation, and is not consistent in her approach in parts a and b, and therefore she does not demonstrate an ability to reason abstractly and quantitatively (no credit for MP2). The verbal explanation given shows some understanding of the proper approach to the problem, but it not does not match the student's incorrect calculations in part b (no credit for MP3). The response as a whole is too inconsistent to indicate an understanding of ratio and proportional relationships (no credit for MP7).

Total Awarded Points: 0 out of 6

**Task 4. Farmers Market Task**

The local farmers market sells 6 ears of corn for $3. Anna often buys ears of corn there for her restaurant. She correctly writes the equation $y = 2x$ to help her solve problems involving buying ears of corn at the market.

a. Explain what the 2, $x$ and $y$ mean in Anna's equation in the context of the problem.

> Y is the total cost of the corn.
>
> X is the amount of ear of corn.
>
> 2 is the money for 1 ear of corn.

b. Anna plans to use her equation $y = 2x$ to determine the cost of buying 60 ears of corn. What equation will Anna solve? Explain your reasoning in words.

> Anna will solve how much would 60 ears of corn would cost.

**STOP**

REVIEW YOUR WORK IF YOU HAVE TIME.

Guide 12                              Litho 70190

Total Content Points: 0

Total Practice Points: 0

In this response, *x*, *y*, and 2 are incorrectly identified (no credit for 7.EE.4). There is no equation or explanation given in part b to place the 60 in the context of the given equation (no credit for 7.RP.2c). The student has not responded appropriately to both parts of the task (no credit for MP1). The student has not correctly noted the meaning of 2 in the variable equation, nor shown an understanding of how to place the 60 into context in part b (no credit for MP2). There is no explanation of the proper equation for Anna to solve (no credit for MP3), and there is no work showing that the student understands the multiplicative relationship that underlies ratio and proportional relationships (no credit for MP7).

Total Awarded Points: 0 out of 6