Keystone Algebra 1

Baskets of Tomatoes

Handscoring
Anchor Set

1. Small baskets of tomatoes are sold at a vegetable stand for $3 per basket. Large baskets of tomatoes are sold at the stand for $5 per basket. Only whole numbers of baskets may be purchased.

A customer purchases a total of 8 baskets of tomatoes and pays $36.

A. Write and solve a system of equations that models the number of small baskets (x) and the number of large baskets (y) that the customer purchases. Show or explain all your work.

1. *Continued.* Please refer to the previous page for task explanation.

Another customer claims that he can purchase a total of 10 baskets of tomatoes and pay $45.

B. Use a system of equations that describes this other customer's purchase to explain why the claim is incorrect.

Algebra I
Baskets of Tomatoes

Assessment Anchor:
    A1.1.2 Linear Equations
Specific Anchor Descriptor addressed by this item:
    A1.1.2.2 Write, solve, and/or graph systems of linear equations using various methods.

Scoring Guide:

Score	In this item, –
4	The student demonstrates a thorough understanding of linear equations by correctly solving problems with clear and complete procedures and explanations when required.
3	The student demonstrates a general understanding of linear equations by solving problems and providing procedures and explanations with only minor errors or omissions.
2	The student demonstrates a partial understanding of linear equations by providing a portion of the correct problem solving, procedures, and explanations.
1	The student demonstrates a minimal understanding of linear equations.
0	The response has no correct answer and insufficient evidence to demonstrate any understanding of the mathematical concepts and procedures as required by the task. Response may show only information copied from the question.

Top Scoring Student Response And Training Notes:

Score	Description
4	Student earns 4 points.
3	Student earns 3.0 – 3.5 points.
2	Student earns 2.0 – 2.5 points.
1	Student earns 0.5 – 1.5 points. OR Student demonstrates minimal understanding of linear equations.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.

A.

What?	Why?
$x + y = 8$ $3x + 5y = 36$ **AND** $x = 2$ (small baskets) $y = 6$ (large baskets)	**Sample Work:** $\begin{array}{l} x+y=8 \\ 3x+5y=36 \end{array} \rightarrow \begin{array}{l} x=8-y \\ 3x+5y=36 \end{array}$ $\begin{array}{l} 3(8-y)+5y=36 \\ 24-3y+5y=36 \\ 2y=12 \\ y=6 \end{array} \rightarrow \begin{array}{l} x+6=8 \\ x=2 \end{array}$ **OR** **Sample Explanation:** First, I set up my system of equations as $\begin{array}{l} x+y=8 \\ 3x+5y=36 \end{array}$. I then multiplied the first row by 5 and the second row by ⁻1, so I could add them together and cancel out the y-terms. This gave me $2x = 4$, so $x = 2$. I substituted this value into the first equation and solved it for y to get $y = 6$.

(3 score points)

 ½ point for each correct equation

 ½ point for each correct value of the solution

  OR ½ point for embedded solution

 1 point for complete support

  OR ½ point for correct but incomplete support

B.

What?	Why?
	Sample Explanation: The system of equations that describes this other customer's purchase would be $\begin{array}{l} x+y=10 \\ 3x+5y=45 \end{array}$. The solution of this system of equations exists, but neither x nor y is a whole number, so the customer cannot purchase 10 baskets of tomatoes for $45.

(1 score point)

 1 point for correct and complete explanation

  OR ½ point for correct but incomplete explanation

16. Small baskets of tomatoes are sold at a vegetable stand for $3 per basket. Large baskets of tomatoes are sold at the stand for $5 per basket. Only whole numbers of baskets may be purchased.

A customer purchases a total of 8 baskets of tomatoes and pays $36.

A. Write and solve a system of equations that models the number of small baskets (x) and the number of large baskets (y) that the customer purchases. Show or explain all your work.

Let $x = \#$ of small baskets

Let $y = \#$ of large baskets

$3x + 5y = 36$ $\qquad y = 8 - x$

$x + y = 8$

$x + y = 8$

$3x + 5(8-x) = 36$ $\qquad 2 + y = 8$

$3x + 40 - 5x = 36$ $\qquad \boxed{y = 6}$

$\quad -40 \qquad -40$

$3x - 5x = -4$

$\dfrac{-2x}{-2} = \dfrac{-4}{-2}$

$\boxed{x = 2}$

The customer bought 2 small baskets and 6 large baskets. I used the substitution method when solving the system of equations.

16. *Continued.* Please refer to the previous page for task explanation.

Another customer claims that he can purchase a total of 10 baskets of tomatoes and pay $45.

B. Use a system of equations that describes this other customer's purchase to explain why the claim is incorrect.

Let x = # of small baskets

Let y = # of large baskets

$$x + y = 10$$

$$3x + 5y = 45$$

$$3x + 5(10-x) = 45$$

$$3x + 50 - 5x = 45$$
$$\quad -50 \qquad -50$$

$$3x - 5x = -5$$

$$\frac{-2x}{-2} = \frac{-5}{-2}$$

$$x = 2.5$$

$$2.5 + y = 10$$

$$y = 7.5$$

This claim is not correct. The information states that only whole numbers of baskets may be purchased. This customer's claim would lead him to buy 2.5 small baskets and 7.5 large baskets, and this cannot be done.

Small baskets of tomatoes are sold at a vegetable stand for $3 per basket. Large baskets of tomatoes are sold at the stand for $5 per basket. Only whole numbers of baskets may be purchased.

A customer purchases a total of 8 baskets of tomatoes and pays $36.

A. Write and solve a system of equations that models the number of small baskets (x) and the number of large baskets (y) that the customer purchases. Show or explain all your work.

$x + y = 8$

$3x + 5y = \$36$

Solution: (2,6)

I used the substitution method to solve the system of equations. I took $x + y = 8$ and put it into slope intercept form. I turned the equation into $y = -x + 8$ I then substituted the y value into y in the second equation. Doing so left me with $3x - 5x + 40 = 36$ so I completed the equation by subtracting 5x from 3x to get -2x +40=36. Then, I subtracted 40 from 36 and got -4. This left me with $-2x = -4$ Which i simplified down to x=2 by dividing. Then i substituted x back into the y value, and got $y = -2 + 8$ which equals 6. So the customer purchased 2 small baskets(x), and 6 large baskets(y).

Another customer claims that he can purchase a total of 10 baskets of tomatoes and pay $45.

B. Use a system of equations that describes this other customer's purchase to explain why the claim is incorrect.

$x + y = 10$

$3x + 5y = 45$

If you use the substitution method on this systems of equation, you end up with $-2x = -5$ which cannot be simplified any further because only whole numbers of baskets may be purchased.

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199 / 1000

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A customer purchases a total of 8 baskets of tomatoes and pays $36.

A. Write and solve a system of equations that models the number of small baskets (x) and the number of large baskets (y) that the customer purchases. Show or explain all your work.

x+y=8
3x+5y=36

x=2
y=6
2+6=8
3*2+5*6=36

Another customer claims that he can purchase a total of 10 baskets of tomatoes and pay $45.

B. Use a system of equations that describes this other customer's purchase to explain why the claim is incorrect.

x+y=10
3x+5y=45

It is not possible because the numbers do not add up and multiply right there is no way to get 45 dollars using the 2 equations x+y=10 and 3x+5y=45.

166 / 1000

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A customer purchases a total of 8 baskets of tomatoes and pays $36.

A. Write and solve a system of equations that models the number of small baskets (x) and the number of large baskets (y) that the customer purchases. Show or explain all your work.

$$3x + 5y = 36$$
$$x + y = 8$$

$$3(2) + 5(6) = 36$$
$$6 + 30 = 36$$
$$\boxed{36 = 36}$$

$$2 + 6 = 8$$
$$\boxed{8 = 8}$$

The only way she would be able to spend 36 dollars on 8 baskets is if she bought 2 small and 6 large.

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16. *Continued.* Please refer to the previous page for task explanation.

Another customer claims that he can purchase a total of 10 baskets of tomatoes and pay $45.

B. Use a system of equations that describes this other customer's purchase to explain why the claim is incorrect.

$$X + Y = 10$$
$$3X + 5Y = 45$$

This claim is incorrect because if you try to buy 10 baskets at 5 dollars each, the most expensive, you can only get to 9 baskets costing 45 dollars. and to buy all small basket you would only spend 30 for 10. No combination of baskets could be both 45 dollars with 10 baskets bought.

16. Small baskets of tomatoes are sold at a vegetable stand for $3 per basket. Large baskets of tomatoes are sold at the stand for $5 per basket. Only whole numbers of baskets may be purchased.

A customer purchases a total of 8 baskets of tomatoes and pays $36.

A. Write and solve a system of equations that models the number of small baskets (x) and the number of large baskets (y) that the customer purchases. Show or explain all your work.

$$\$3\overset{(2)}{x} + \$5\overset{(6)}{y} = \$36$$

$$\begin{array}{r} 3 \\ \times 2 \\ \hline 6 \end{array} \qquad \begin{array}{r} 5 \\ \times 6 \\ \hline 30 \end{array}$$

$$\begin{array}{r} 30 \\ + 6 \\ \hline 36 \end{array}$$

2 small baskets
6 Large baskets

16. *Continued.* Please refer to the previous page for task explanation.

Another customer claims that he can purchase a total of 10 baskets of tomatoes and pay $45.

B. Use a system of equations that describes this other customer's purchase to explain why the claim is incorrect.

5.5
6.4
7.3
8.2
1.9

$$^\$3x + {}^\$5y = {}^\$45$$

This customer's claim is incorrect because if you plug in any pair of numbers adding up to (10) and plugging them into (x) and (y), you couldn't get 45. To get this number, you would have to plug in decimals, but you could only use whole numbers.

Small baskets of tomatoes are sold at a vegetable stand for $3 per basket. Large baskets of tomatoes are sold at the stand for $5 per basket. Only whole numbers of baskets may be purchased.

A customer purchases a total of 8 baskets of tomatoes and pays $36.

A. Write and solve a system of equations that models the number of small baskets (x) and the number of large baskets (y) that the customer purchases. Show or explain all your work.

$3x+$5y=$36
y=6
x=2
I found out that 6 large baskets would equal $30, and that 2 small baskets would equal $6 so I put them together and got $36.
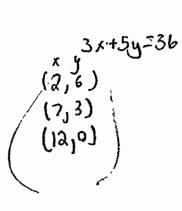
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146 / 1000

Another customer claims that he can purchase a total of 10 baskets of tomatoes and pay $45.

B. Use a system of equations that describes this other customer's purchase to explain why the claim is incorrect.

$3x+$5y=$45 isnt true because if you would take 5*9 you will get 45 and you would have to get 10 baskets. If you try 5*8 you will get $40 but you have to get $45 soyou will try and add the 2 small baskets to hit the limit of 10 baskets. but when you try and do that with a small basket costing $3 2 of them will equal $6 so the 8 large baskets plus the 2 small baskets will come out to be $46.

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393 / 1000

16. Small baskets of tomatoes are sold at a vegetable stand for $3 per basket. Large baskets of tomatoes are sold at the stand for $5 per basket. Only whole numbers of baskets may be purchased.

A customer purchases a total of 8 baskets of tomatoes and pays $36.

A. Write and solve a system of equations that models the number of small baskets (x) and the number of large baskets (y) that the customer purchases. Show or explain all your work.

$3x+5y=36$

x y
$(2,6)$
$(7,3)$
$(12,0)$

$3(2)+5(6)$
$3(7)+5(3)$
$3(12)+5(0)$

$x=2,7,12$
$y=6,3,0$

x	y
0	7.2
1	6.6
2	6
3	5.4
4	4.8
5	4.2
6	3.6
7	3
8	2.4
9	1.8
10	1.2
11	.6
12	0

16. *Continued.* Please refer to the previous page for task explanation.

Another customer claims that he can purchase a total of 10 baskets of tomatoes and pay $45.

B. Use a system of equations that describes this other customer's purchase to explain why the claim is incorrect.

$$3x + 5y = 45$$

$$43$$

If he purchases 10 baskets the price would be even no matter what way he arranges them. The closest he could pay to $45 is $46 and $48.

x	y	49-50
1	9	= 48
2	8	= 46
3	7	= 44
4	6	= 42
5	5	= 40
6	4	= 37
7	3	= 36
8	2	= 34
9	1	= 32
10	0	= 30

⊢

16. Small baskets of tomatoes are sold at a vegetable stand for $3 per basket. Large baskets of tomatoes are sold at the stand for $5 per basket. Only whole numbers of baskets may be purchased.

A customer purchases a total of 8 baskets of tomatoes and pays $36.

A. Write and solve a system of equations that models the number of small baskets (x) and the number of large baskets (y) that the customer purchases. Show or explain all your work.

$$X = 2 \text{ small}$$
$$Y = 6 \text{ Large}$$

$$6 \cdot 5 + 2 \cdot 3 = 36$$

The Customer Could have bought 2 small baskets and 6 large baskets for 36 dollars.

16. *Continued.* Please refer to the previous page for task explanation.

Another customer claims that he can purchase a total of 10 baskets of tomatoes and pay $45.

B. Use a system of equations that describes this other customer's purchase to explain why the claim is incorrect.

The costomer can not have paid for the baskets because 9 large baskets equals $45 plus a small basket is $48 so the costomer would go over the price range and couldn't have gotton 10 baskets the price of $45.

Small baskets of tomatoes are sold at a vegetable stand for $3 per basket. Large baskets of tomatoes are sold at the stand for $5 per basket. Only whole numbers of baskets may be purchased.

A customer purchases a total of 8 baskets of tomatoes and pays $36.

A. Write and solve a system of equations that models the number of small baskets (x) and the number of large baskets (y) that the customer purchases. Show or explain all your work.

$36 = $3x + $5y

$36 = $3(2) + $5(6)

I first took the amount payed for a large basket and small basket and multiplied them until I was able to get the total amount payed for 8 baskets. Once I did that, I multiplied 6 and 5 to get 30 dollars and then 3 and 2 to get 6 dollars. The amounts then were able to be added together to get 36 dollars in total.

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345 / 1000

Another customer claims that he can purchase a total of 10 baskets of tomatoes and pay $45.

B. Use a system of equations that describes this other customer's purchase to explain why the claim is incorrect.

$45 $3(5) + $5(3)
105x + 3y

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23 / 1000

Small baskets of tomatoes are sold at a vegetable stand for $3 per basket. Large baskets of tomatoes are sold at the stand for $5 per basket. Only whole numbers of baskets may be purchased.

A customer purchases a total of 8 baskets of tomatoes and pays $36.

A. Write and solve a system of equations that models the number of small baskets (x) and the number of large baskets (y) that the customer purchases. Show or explain all your work.

he buy 4 large baskets and 2 small baskets

42 / 1000

Another customer claims that he can purchase a total of 10 baskets of tomatoes and pay $45.

B. Use a system of equations that describes this other customer's purchase to explain why the claim is incorrect.

he buy 3 large baskets and 10 small baskets

43 / 1000

Small baskets of tomatoes are sold at a vegetable stand for $3 per basket. Large baskets of tomatoes are sold at the stand for $5 per basket. Only whole numbers of baskets may be purchased.

A customer purchases a total of 8 baskets of tomatoes and pays $36.

A. Write and solve a system of equations that models the number of small baskets (x) and the number of large baskets (y) that the customer purchases. Show or explain all your work.

$(x)(y) = 36$

$(3)(5) = 36$

He/She would have to purchase 12 small baskets and 0 large baskets.

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91 / 1000

Another customer claims that he can purchase a total of 10 baskets of tomatoes and pay $45.

B. Use a system of equations that describes this other customer's purchase to explain why the claim is incorrect.

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if you take 45/10 you would get 4.5 so his answer was hypotheoritical or not logical because its impossible

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108 / 1000

16. Small baskets of tomatoes are sold at a vegetable stand for $3 per basket. Large baskets of tomatoes are sold at the stand for $5 per basket. Only whole numbers of baskets may be purchased.

A customer purchases a total of 8 baskets of tomatoes and pays $36.

A. Write and solve a system of equations that models the number of small baskets (*x*) and the number of large baskets (*y*) that the customer purchases. Show or explain all your work.

$x =$ small baskets per basket
$x =$ large basket per basket

$$3x + 5x + 8y = 36$$
$$8x + 8y = 36$$

$$x = 4.5 \qquad y = 4.5$$

16. *Continued.* Please refer to the previous page for task explanation.

Another customer claims that he can purchase a total of 10 baskets of tomatoes and pay $45.

B. Use a system of equations that describes this other customer's purchase to explain why the claim is incorrect.

$$\frac{10X}{10} = \frac{45}{10}$$

$$X = 4.5$$