Tennessee Comprehensive Assessment Program

TCAP/CRA 2013

7

Task 2 Scoring Guide

Snack Mix Task

Task 2. Snack Mix Task

Brittanie has a recipe for 12 servings of snack mix that requires:

Snack Mix Recipe	
3	cups corn cereal
3	cups rice cereal
3	cups wheat cereal
1	cup mixed nuts
6	tablespoons butter
$1\frac{1}{2}$	teaspoons seasoned salt
$\frac{3}{4}$	teaspoon garlic powder
$\frac{1}{2}$	teaspoon onion powder

a. Brittanie follows the recipe to make snack mix for her mother's party. Use the recipe to find the unit rate of seasoned salt per serving. Show your work and explain your reasoning.

b. Brittanie wants to determine the relationship between the number of servings of snack mix, m, and the number of tablespoons of butter, b. Use the information in the table to find the constant of proportionality and explain its meaning in this situation.

c. Write an equation representing the proportional relationship between m and b.

2. Snack Mix Task Scoring Guide

The CCSS for Mathematical Content (3 points)

7.RP.A.1 Computes the unit rate as the amount of seasoned salt to number of servings or as the number of servings to amount of seasoned salt. May include a calculation error in the computation process. _____

(1 Point)

7.RP.A.2b Determines a constant of proportionality. Explains the meaning of the constant of proportionality. Student's explanation may indicate: _____

- 1 serving per $\frac{1}{2}$ tablespoon of butter.
- 1 tablespoon of butter per 2 servings of snack mix.
- The number of tablespoons of butter is $\frac{1}{2}$ the number of servings.

(1 Point)

7.RP.A.2c Writes the equation $m = 2b$ or $b = \frac{1}{2}m$ or any equivalent equation to represent the proportional relationship between m and b. _____

(1 Point)

Total Content Points _____

The CCSS for Mathematical Practice (2 points)

MP4 Demonstrates appropriate reasoning using models such as equations or tables. _____

(1 Point)

(MP4: Model with mathematics.)

MP6 Accurately scales, labels quantities correctly, and uses precise mathematical notation and language. _____

(1 Point)

(MP6: Attend to precision.)

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.

7.RP.A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour.

7.RP.A.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

7.RP.A.2c Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn*.

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 2. Snack Mix Task

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$\frac{3}{4}$	teaspoon garlic powder
$\frac{1}{2}$	teaspoon onion powder

a. Brittanie follows the recipe to make snack mix for her mother's party. Use the recipe to find the unit rate of seasoned salt per serving. Show your work and explain your reasoning.

To find the unit rate, or the amount of one thing per single unit of another, can be found by dividing. Since we want Season Salt per serving, & since there are 12 servings we will divide by 12. The amount of season salt in the recipe is 1.5 teaspoons; therefore our expression would be 1.5/12. 1.5/12 is, in fact, 0.125, or $\frac{1}{8}$. So Brittanie uses $\frac{1}{8}$ of a teaspoon of season salt per serving.

A-1b

b. Brittanie wants to determine the relationship between the number of servings of snack mix, *m*, and the number of tablespoons of butter, *b*. Use the information in the table to find the constant of proportionality and explain its meaning in this situation.

The "constant of proportionality" is another term for Unit Rate, and/or Slope, so the meaning of it in this instance is unit rate. Brittanie wants the unit rate of m (servings of snacks) to b (butter). The insimplified form of this would be 12s./6tbs. As previously explained in part a, Unit Rate can be found by dividing. 12/6=2. Therefore there is 2 servings per 1 Tablespoon of butter.(1 n

c. Write an equation representing the proportional relationship between *m* and *b*.

Since the unit rate is M (2serving) per B (1teaspoon), the slope, or Constant is 2, For 2/1=2. B=M/2, or M=2b (slope-intercept form)

M	B
2	1
4	2
6	3
8	4
10	5

Guide 1 Litho 761969

Total Content Points: 3 (7.RP.A.1, 7.RP.A.2b, 7.RP.A.2c)

Total Practice Points: 2 (MP4, MP 6)

The student correctly computes the unit rate, $\frac{1}{8}$ teaspoon of seasoned salt per serving, by solving the expression $\frac{1.5}{12}$ to find "0.125, or $\frac{1}{8}$" (7.RP.A.1). The student correctly determines a constant of proportionality (2) for the number of servings of snack mix, *m*, to the number of tablespoons of butter, *b*, by using division $\left(\frac{12}{6} = 2\right)$, and correctly explains the meaning as "2 servings per 1 Tablespoon of butter" (7.RP.A.2b). The student writes a correct equation ($m = 2b$) in Part C to represent the proportional relationship between *m* and *b* (7.RP.A.2c). The student uses equations to model the situations in all three parts of the task (MP4). The student accurately determines values, labels quantities correctly, and uses precise mathematical notation and language throughout the task (MP6).

Total Awarded Points: 5 out of 5

Task 2. Snack Mix Task

Brittanie has a recipe for 12 servings of snack mix that requires:

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6	tablespoons butter
$1\frac{1}{2}$	teaspoons seasoned salt
$\frac{3}{4}$	teaspoon garlic powder
$\frac{1}{2}$	teaspoon onion powder

a. Brittanie follows the recipe to make snack mix for her mother's party. Use the recipe to find the unit rate of seasoned salt per serving. Show your work and explain your reasoning.

A unit rate means you have to find out how much of something you have to use if you use a specific amount to make something. If she is trying to make 12 servings and you use $1\frac{1}{2}$ teaspoons make 12. We are trying to find out how much for 1 serving. So you divide $12 \div 1\frac{1}{2}$ And you get 8. So for every 8 servings, you have to use 1 teaspoon of salt.

b. Brittanie wants to determine the relationship between the number of servings of snack mix, *m*, and the number of tablespoons of butter, *b*. Use the information in the table to find the constant of proportionality and explain its meaning in this situation.

If you use 6 tablespoons of butter for 12 servings of snack mix, That means 1 tablespoon of butter for 2 servings of mix. So the ratio for butter to mix is 1:2. So say you need to make 100 servings, Then you need 50 tablespoons of butter. So however many servings of mix you need you just divide it by 2 to find out how much butter you need.

c. Write an equation representing the proportional relationship between *m* and *b*.

$2b = m$

For instance you are needing 20 servings of mix, You just divide by 2 so $2 \times 10 = 20$

$2\overline{)20}$ → 10

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Guide 2 Litho 784828

Total Content Points: 3 (7.RP.A.1, 7.RP.A.2b, 7.RP.A.2c)

Total Practice Points: 2 (MP4, MP6)

The student correctly computes a unit rate of 8 servings per teaspoon of seasoned salt (7.RP.A.1). The student correctly determines a constant of proportionality in ratio form (1:2) for the number of tablespoons of butter, b, to the number of servings of snack mix, m, and correctly explains the meaning ("1 tablespoon of butter for 2 servings of mix") (7.RP.A.2b). The student writes a correct equation ($2b = m$) in Part C to represent the proportional relationship between m and b (7.RP.A.2c). The student models the situations using equations in Parts A and C (MP4). The student accurately determines values, labels quantities correctly, and uses precise mathematical notation and language throughout the task (MP6).

Total Awarded Points: 5 out of 5

Task 2. Snack Mix Task

Brittanie has a recipe for 12 servings of snack mix that requires:

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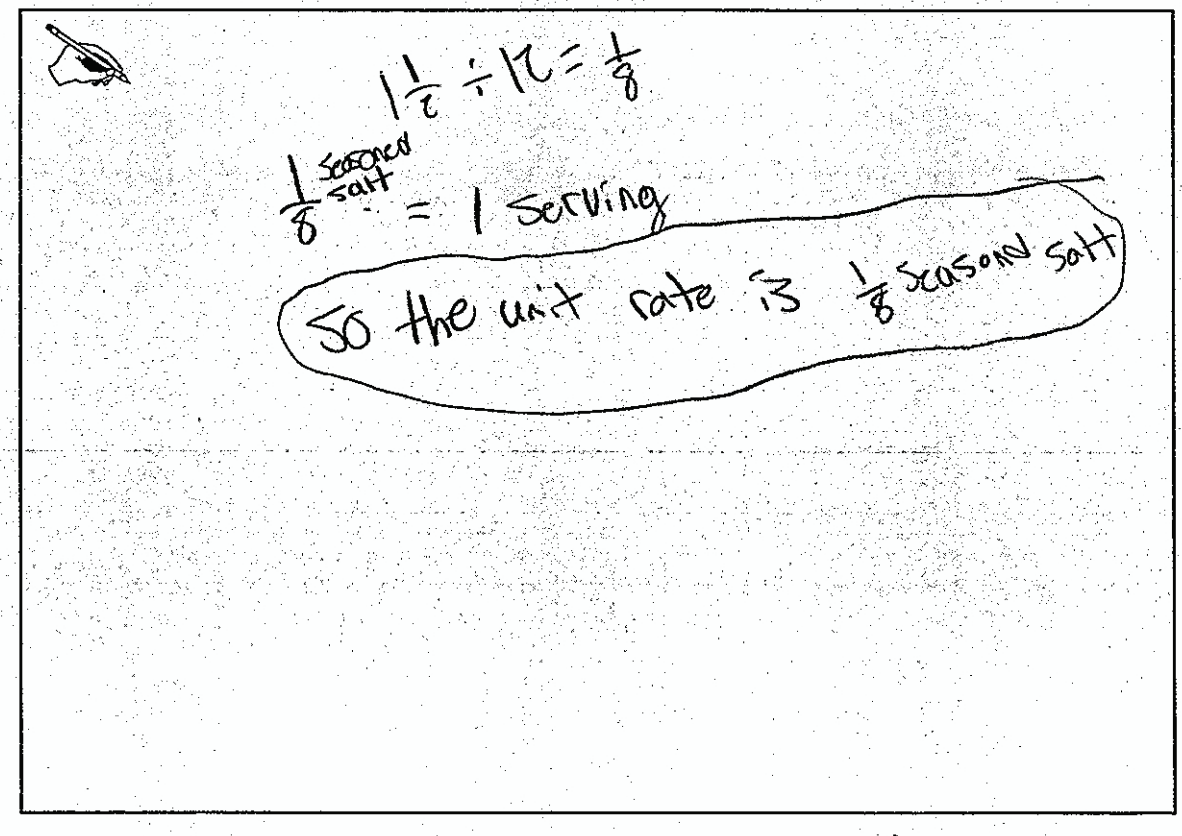
a. Brittanie follows the recipe to make snack mix for her mother's party. Use the recipe to find the unit rate of seasoned salt per serving. Show your work and explain your reasoning.



b. Brittanie wants to determine the relationship between the number of servings of snack mix, *m*, and the number of tablespoons of butter, *b*. Use the information in the table to find the constant of proportionality and explain its meaning in this situation.

6 ÷ 12 = 0.5

0.5 for 1

0.5 x 2 = 1

0.5 x 3 = 1.5

0.5 x 4 = 2.0

0.5 x 5 = 2.5

0.5 x 6 = 3.0

0.5 x 7 = 3.5

0.5 x 8 = 4.0 and so one up till you get 6

this means for every serving you use 0.5 teaspoons of butter

c. Write an equation representing the proportional relationship between *m* and *b*.

0.5 x M = b

Guide 3 Litho 747366

Total Content Points: 3 (7.RP.A.1, 7.RP.A.2b, 7.RP.A.2c)

Total Practice Points: 1 (MP4)

The student uses an equation $\left(1\frac{1}{2} \div 12 = \frac{1}{8}\right)$ to compute a correct unit rate, $\frac{1}{8}$ teaspoon of seasoned salt per serving (7.RP.A.1). The student correctly determines a constant of proportionality by using division $\left(\frac{6}{12} = 0.5\right)$, and correctly explains the meaning in terms of butter per serving (7.RP.A.2b). However, the student imprecisely notes "teaspoons" of butter instead of tablespoons (no credit for MP6). The student writes a correct equation ($0.5 \times m = b$) in Part C to represent the proportional relationship between m and b (7.RP.A.2c). The student uses equations to model the situations in all three parts of the task (MP4).

Total Awarded Points: 4 out of 5

Task 2. Snack Mix Task

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3	cups wheat cereal
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6	tablespoons butter
$1\frac{1}{2}$	teaspoons seasoned salt
$\frac{3}{4}$	teaspoon garlic powder
$\frac{1}{2}$	teaspoon onion powder

a. Brittanie follows the recipe to make snack mix for her mother's party. Use the recipe to find the unit rate of seasoned salt per serving. Show your work and explain your reasoning.

Divide $1\frac{1}{2}$ teaspoons of seasoned salt to how many servings their are. which is 12 servings

so $1\frac{1}{2} \div 12 = \frac{1}{8}$ teaspoons per serving

b. Brittanie wants to determine the relationship between the number of servings of snack mix, *m*, and the number of tablespoons of butter, *b*. Use the information in the table to find the constant of proportionality and explain its meaning in this situation.

Divide the 6 tablespoons of butter to the number of servings, 12.

You get 0.5 tablespoons for each serving

c. Write an equation representing the proportional relationship between *m* and *b*.

$b \div m = 0.5$ b. per m

Guide 4 Litho 747505

Total Content Points: 3 (7.RP.A.1, 7.RP.A.2b, 7.RP.A.2c)

Total Practice Points: 1 (MP4)

The student uses an equation $\left(1\frac{1}{2} \div 12 = \frac{1}{8}\right)$ to compute a correct unit rate, $\frac{1}{8}$ teaspoon of seasoned salt per serving (7.RP.A.1). The student correctly determines a constant of proportionality (0.5) for the number of tablespoons of butter, *b*, to the number of servings of snack mix, *m*, by stating "divide the 6 tablespoons of butter to the number of servings, 12," and correctly explains the meaning as "0.5 tablespoons for each serving" (7.RP.A.2b). The student writes a correct equation ($b \div m = 0.5$) in Part C to represent the proportional relationship between *m* and *b* (7.RP.A.2c). However, part of the equation, "0.5*b* per *m*," is not accurately expressed (no credit for MP6). The student uses equations to model the situations in all three parts of the task (MP4).

Total Awarded Points: 4 out of 5

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$\frac{1}{2}$	teaspoon onion powder

a. Brittanie follows the recipe to make snack mix for her mother's party. Use the recipe to find the unit rate of seasoned salt per serving. Show your work and explain your reasoning.

the way you would find the unit rate would be 1 1/2 ÷ 12 because you have 1 1/2 teaspoons of seasoned salt & 12 servings of snack mix, so when you do 1 1/2 ÷ 12 it gives you 1/8.

b. Brittanie wants to determine the relationship between the number of servings of snack mix, *m*, and the number of tablespoons of butter, *b*. Use the information in the table to find the constant of proportionality and explain its meaning in this situation.

$\frac{m}{b}$ $\frac{12}{6}=2$

Well you have 12 servings of snack mix & 6 tablespoons of butter so if you divide them you get 2.

c. Write an equation representing the proportional relationship between *m* and *b*.

$\frac{12}{6}=2$ $\frac{m}{b}=2$

Guide 5 Litho 759820

Total Content Points: 3 (7.RP.A.1, 7.RP.A.2b, 7.RP.A.2c)

Total Practice Points: 1 (MP4)

The student correctly computes the unit rate of $\frac{1}{8}$ teaspoon of seasoned salt per serving (7.RP.A.1). The student correctly determines a constant of proportionality (2) for the number of servings of snack mix, *m*, to the number of tablespoons of butter, *b*, by division $\left(\frac{12}{6}=2\right)$ (7.RP.A.2b). However, the meaning of the constant of proportionality is not fully explained in Part B (no credit for MP6). The student writes a correct equation $\left(\frac{m}{b}=2\right)$ in Part C to represent the proportional relationship between *m* and *b* (7.RP.A.2c). The student uses equations to model the situations in all three parts of the task (MP4).

Total Awarded Points: 4 out of 5

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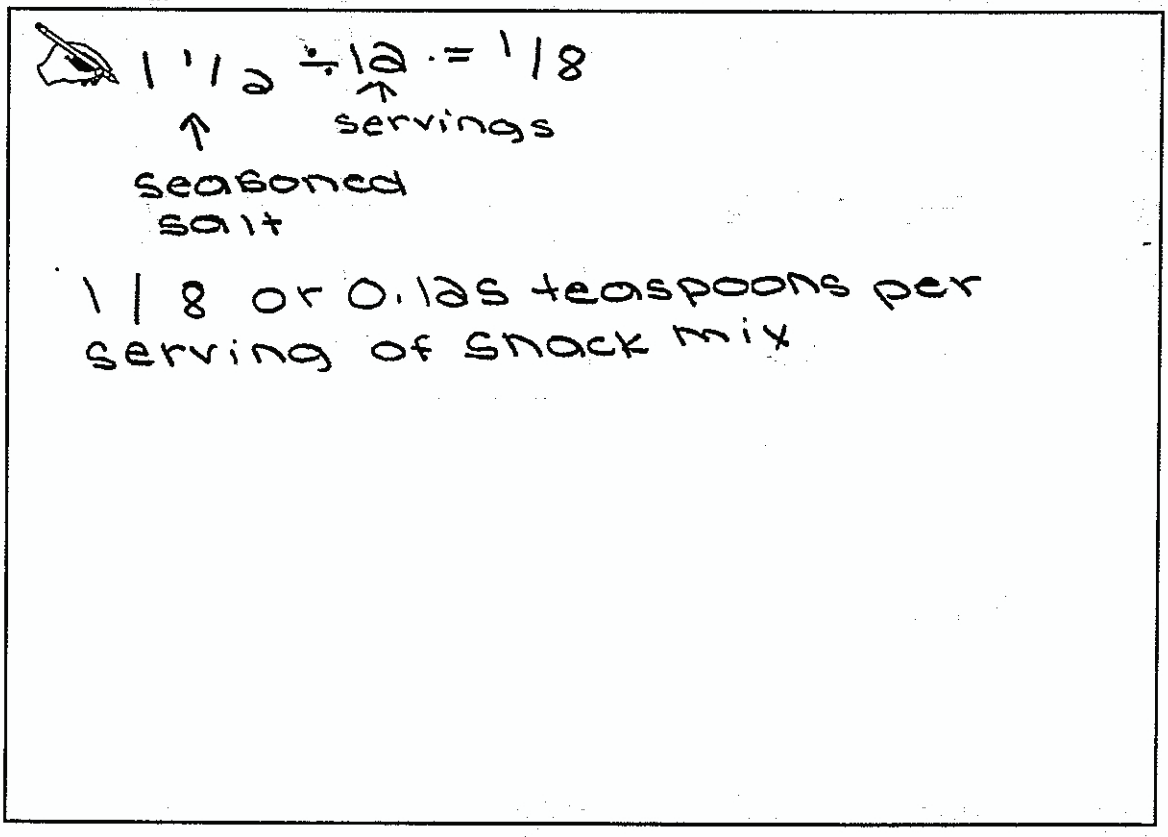
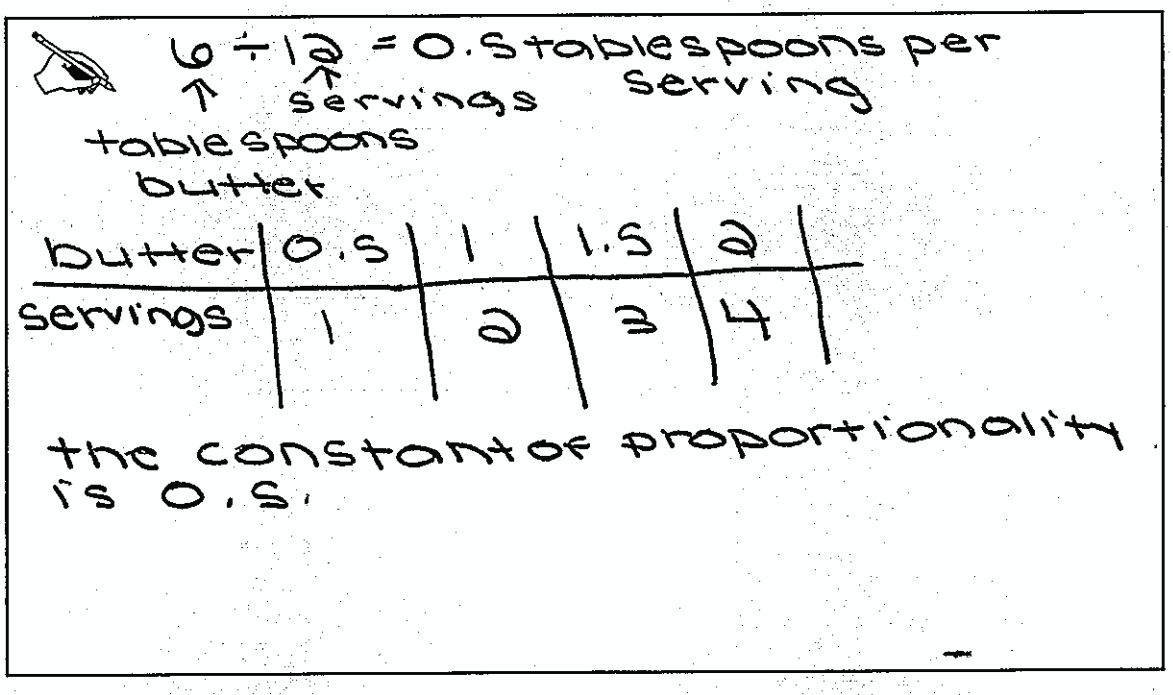
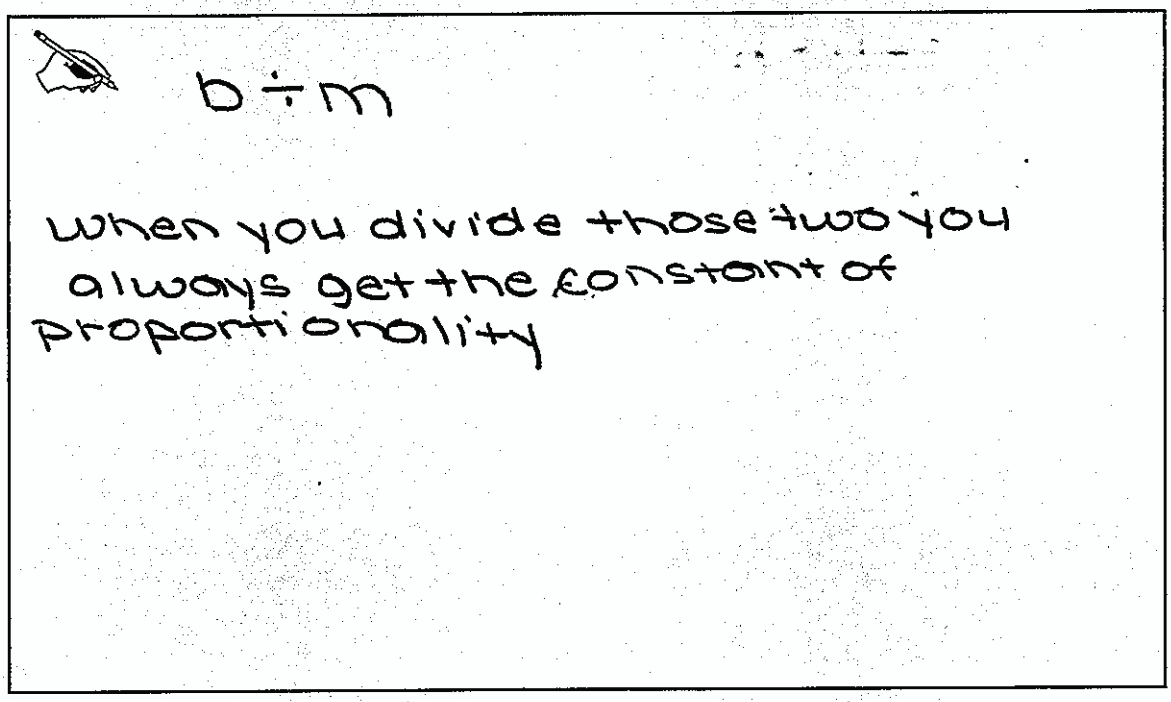


b. Brittanie wants to determine the relationship between the number of servings of snack mix, *m*, and the number of tablespoons of butter, *b*. Use the information in the table to find the constant of proportionality and explain its meaning in this situation.



c. Write an equation representing the proportional relationship between *m* and *b*.



Guide 6 Litho 747100

Total Content Points: 2 (7.RP.A.1, 7.RP.A.2b)

Total Practice Points: 1 (MP4)

The student uses an equation $\left(1\frac{1}{2} \div 12 = \frac{1}{8}\right)$ to compute a correct unit rate of $\frac{1}{8}$ teaspoon of seasoned salt per serving (7.RP.A.1). The student correctly determines a constant of proportionality (0.5) for the number of tablespoons of butter, *b*, to the number of servings of snack mix, *m*, by using division $\left(\frac{6}{12} = 0.5\right)$, and correctly explains the meaning of the constant of proportionality as "0.5 tablespoons per serving" (7.RP.A.2b). An incomplete equation $\left(\frac{b}{m}\right)$ in Part C represents the proportional relationship between *m* and *b* (no credit for 7.RP.A.2c); thus, not all parts of the task are precisely completed (no credit for MP6). The student uses equations to model the situations in all three parts of the task (MP4).

Total Awarded Points: 3 out of 5

Task 2. Snack Mix Task

Brittanie has a recipe for 12 servings of snack mix that requires:

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6	tablespoons butter
$1\frac{1}{2}$	teaspoons seasoned salt
$\frac{3}{4}$	teaspoon garlic powder
$\frac{1}{2}$	teaspoon onion powder

a. Brittanie follows the recipe to make snack mix for her mother's party. Use the recipe to find the unit rate of seasoned salt per serving. Show your work and explain your reasoning.

$\frac{1\frac{1}{2}}{12} = \frac{x}{1}$ $\quad \frac{12x}{12} = \frac{1\frac{1}{2}}{12}$ $\quad x = \frac{1}{8}$

When you do a proportion you can take $1\frac{1}{2}$ and divide it by 12 servings, and it comes to $\frac{1}{8}$ per serving.

b. Brittanie wants to determine the relationship between the number of servings of snack mix, *m*, and the number of tablespoons of butter, *b*. Use the information in the table to find the constant of proportionality and explain its meaning in this situation.

you use 12 divided by 6 and you get 2, so 2 tablespoons of butter for each serving.

c. Write an equation representing the proportional relationship between *m* and *b*.

$\frac{12}{6} = \frac{x}{1}$

$\frac{6x}{6} = \frac{12}{6}$

$x = 2$

Guide 7 Litho 782956

Total Content Points: 2 (7.RP.A.1, 7.RP.A.2b)

Total Practice Points: 1 (MP4)

The student correctly sets up and solves a proportion, $\frac{1\frac{1}{2}}{12}=\frac{x}{1}$, to compute a correct unit rate $\left(\frac{1}{8}\right)$ of seasoned salt per serving (7.RP.A.1). The student correctly determines a constant of proportionality (2) for the number of servings of snack mix, *m*, to the number of tablespoons of butter, *b*, by stating "12 divided by 6 and you get 2." (7.RP.A.2b) The equation in Part C does not correctly represent the proportional relationship between and *m* and *b* (no credit for 7.RP.A.2c). Since the constant in Part B is incorrectly defined as "2 tablespoons of butter for each serving" instead of as 2 servings per 1 tablespoon of butter, and the equation in Part C is incorrect, the response shows a lack of precision (no credit for MP6). The student models the situations using appropriate equations in Parts A and B (MP4).

Total Awarded Points: 3 out of 5

Task 2. Snack Mix Task

Brittanie has a recipe for 12 servings of snack mix that requires:

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$\frac{3}{4}$	teaspoon garlic powder
$\frac{1}{2}$	teaspoon onion powder

a. Brittanie follows the recipe to make snack mix for her mother's party. Use the recipe to find the unit rate of seasoned salt per serving. Show your work and explain your reasoning.

The unit rate for 1 serving of snack mix is: 1/8 teaspoons of seasoned salt for 1 serving of snack mix.

1 1/2 ÷ 12 = 1/8

b. Brittanie wants to determine the relationship between the number of servings of snack mix, *m*, and the number of tablespoons of butter, *b*. Use the information in the table to find the constant of proportionality and explain its meaning in this situation.

$12 \div 6 = 2$

The proportionality is 2 because there are 12 servings of snack mix and 6 tablespoons of butter, when you divide 12 by 6 you get 2, So the proportionality is 2.

c. Write an equation representing the proportional relationship between *m* and *b*.

$12 \div 6 = 2$

Guide 8 Litho 747176

Total Content Points: 2 (7.RP.A.1, 7.RP.A.2b)

Total Practice Points: 1 (MP4)

The student uses an equation $\left(1\frac{1}{2} \div 12 = \frac{1}{8}\right)$ to compute a correct unit rate of $\frac{1}{8}$ teaspoon of seasoned salt per serving (7.RP.A.1). The student correctly determines a constant of proportionality (2) for the number of servings of snack mix, *m*, to the number of tablespoons of butter, *b*, by division (12 ÷ 6 = 2) (7.RP.A.2b).The student does not use the variables *m* and *b* to write a correct equation representing the proportional relationship in Part C (no credit for 7.RP.A.2c). The incomplete definition for the constant of proportionality in Part B and the incorrect equation in Part C show a lack of precision (no credit for MP6). The student models the situations using appropriate equations in Parts A and B (MP4).

Total Awarded Points: 3 out of 5

Task 2. Snack Mix Task

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$\frac{1}{2}$	teaspoon onion powder

a. Brittanie follows the recipe to make snack mix for her mother's party. Use the recipe to find the unit rate of seasoned salt per serving. Show your work and explain your reasoning.

The unit rate of seasoned salt per serving is $\frac{8}{1}$

$12 \div 1\frac{1}{2} = 8 = \frac{8}{1}$

b. Brittanie wants to determine the relationship between the number of servings of snack mix, *m*, and the number of tablespoons of butter, *b*. Use the information in the table to find the constant of proportionality and explain its meaning in this situation.

The relationship between the number of servings of snack mix and the number of tablespoons of butter is Proportional.

c. Write an equation representing the proportional relationship between *m* and *b*.

The Proportional relationship between M & d is 2.

Guide 9 Litho 767409

Total Content Points: 0

Total Practice Points: 1 (MP4)

The student uses an appropriate equation $\left(12 \div 1\frac{1}{2} = 8\right)$ in Part A to model for the situation (MP4). However, this equation is incorrectly interpreted as "seasoned salt per serving" (no credit for 7.RP.A.1). The student does not clearly describe the meaning of the constant of proportionality for the number of servings of snack mix, *m*, to the number of tablespoons of butter, *b*, as the statement in Part C that "the proportinal relationship . . . is 2" does not clearly relate the number of tablespoons of butter to the number of servings of snack mix (no credit for 7.RP.A.2b).The student does not write an equation in Part C to represent the proportional relationship between *m* and *b* (no credit for 7.RP.A.2c). Lack of precision is indicated by the incorrectly interpreted unit rate in Part A and constant of proportionality in Part B (no credit for MP6).

Total Awarded Points: 1 out of 5

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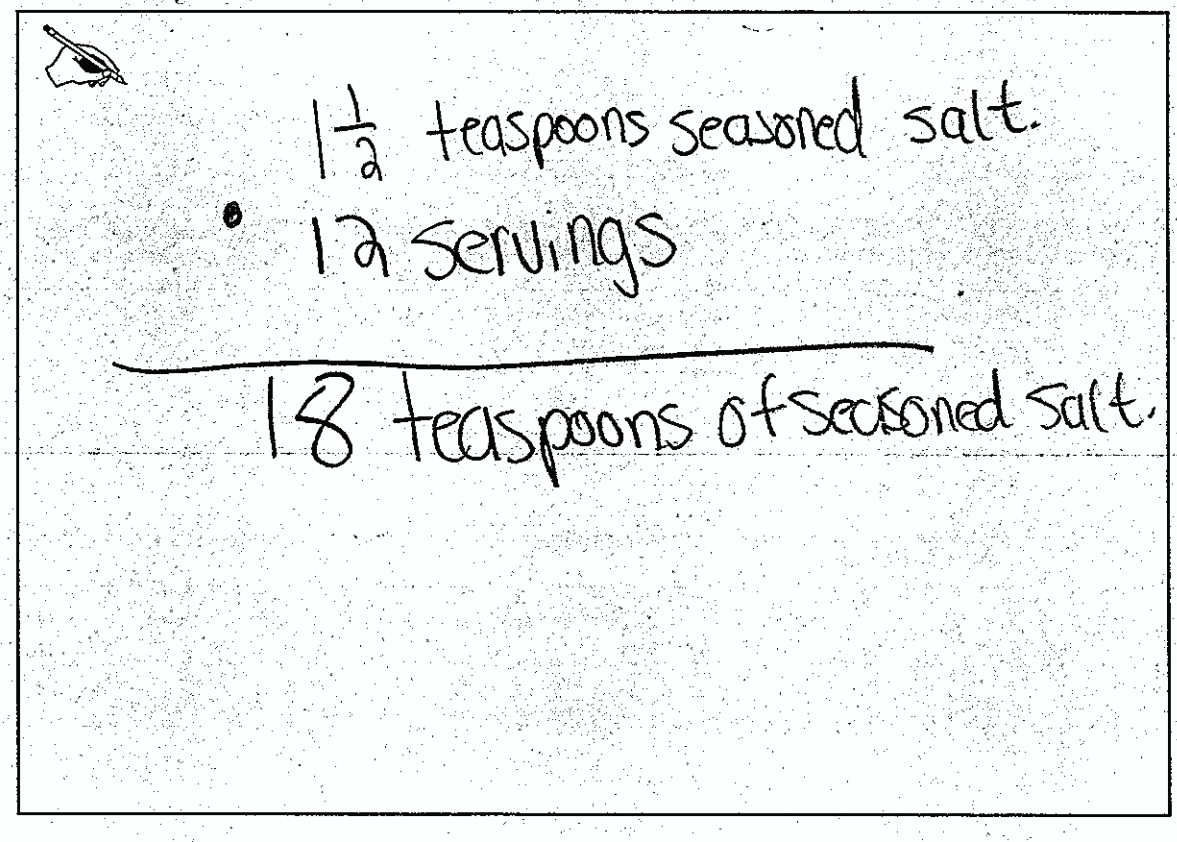

b. Brittanie wants to determine the relationship between the number of servings of snack mix, *m*, and the number of tablespoons of butter, *b*. Use the information in the table to find the constant of proportionality and explain its meaning in this situation.

6 tablespoons of butter
• 12 servings
72 tablespoons.

c. Write an equation representing the proportional relationship between *m* and *b*.

m=72 b=6 y=12

b · y = m
6 12 72

Guide 10 Litho 782957

Total Content Points: 0

Total Practice Points: 0

The student does not determine a correct unit rate of seasoned salt per serving in Part A (no credit for 7.RP.A.1). The student does not find a correct constant of proportionality for the number of servings of snack mix, m, to the number of tablespoons of butter, b, nor define the constant of proportionality in this situation (no credit for 7.RP.A.2b). The equation in Part C does not correctly represent the proportional relationship between m and b (no credit for 7.RP.A.2c). Misinterpretation of the recipe leads to incorrect determination of values and the relationships of the variables, indicating lack of precision (no credit for MP6). The student does not appropriately model the situations in any part of the task (no credit for MP4).

Total Awarded Points: 0 out of 5

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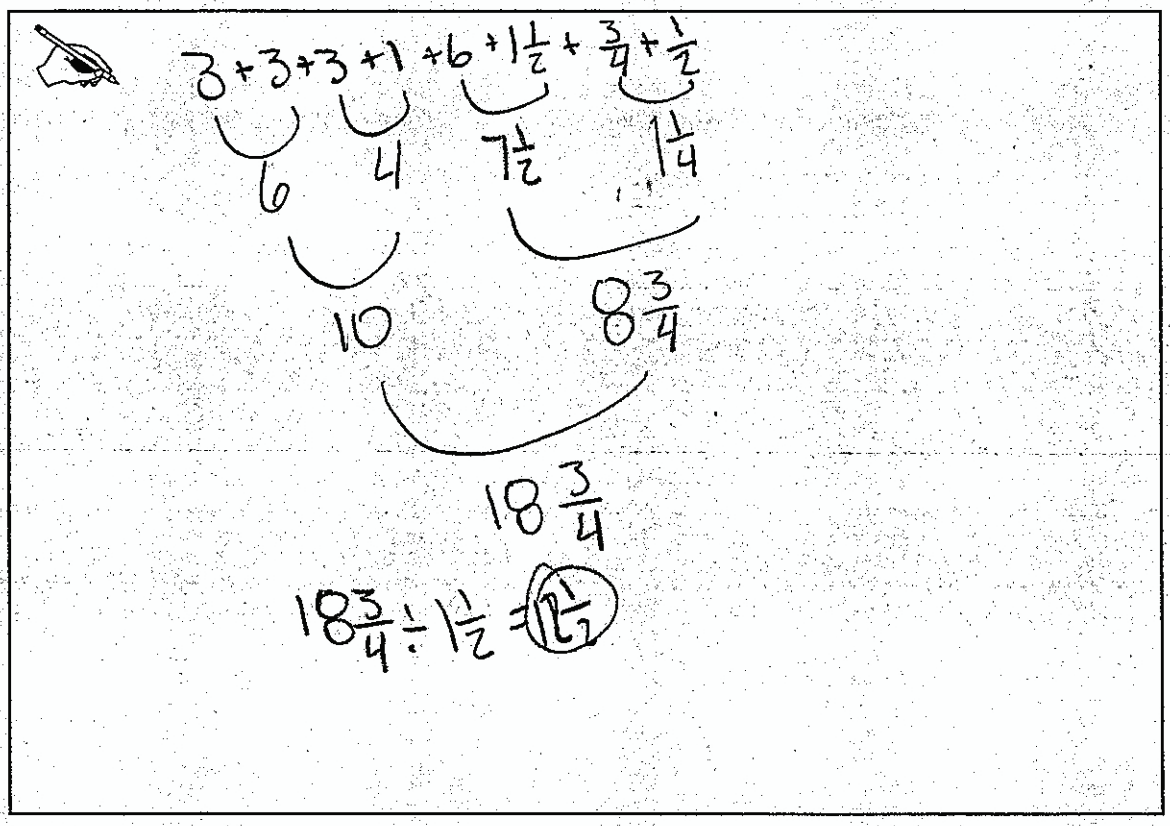
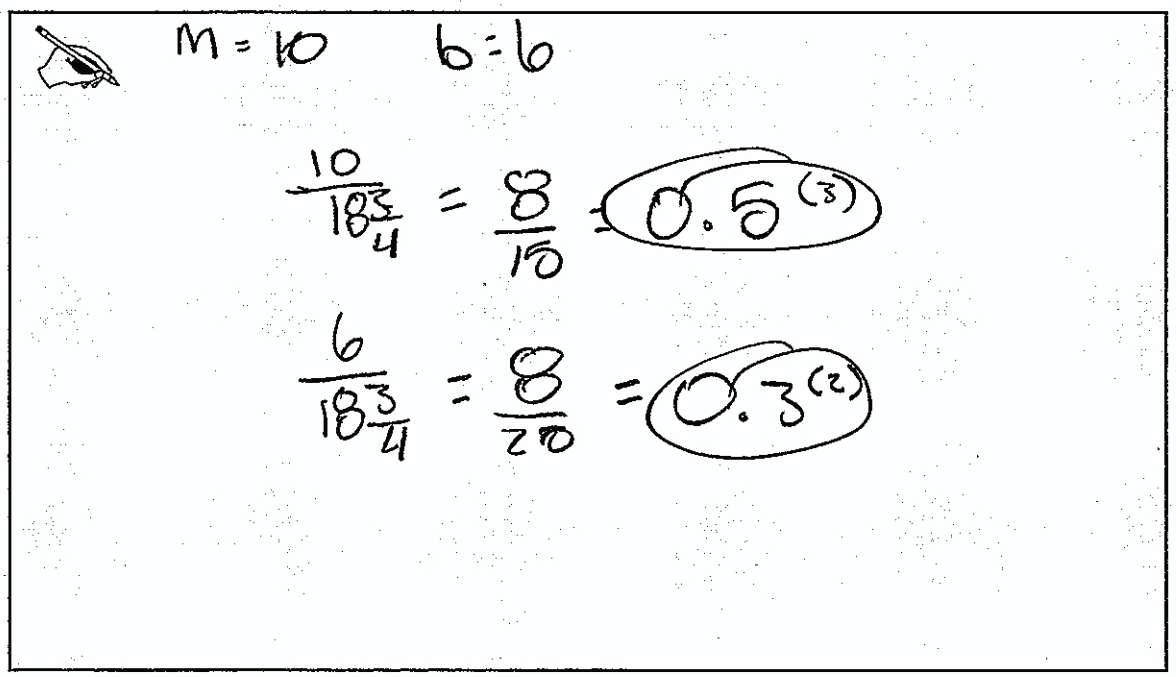
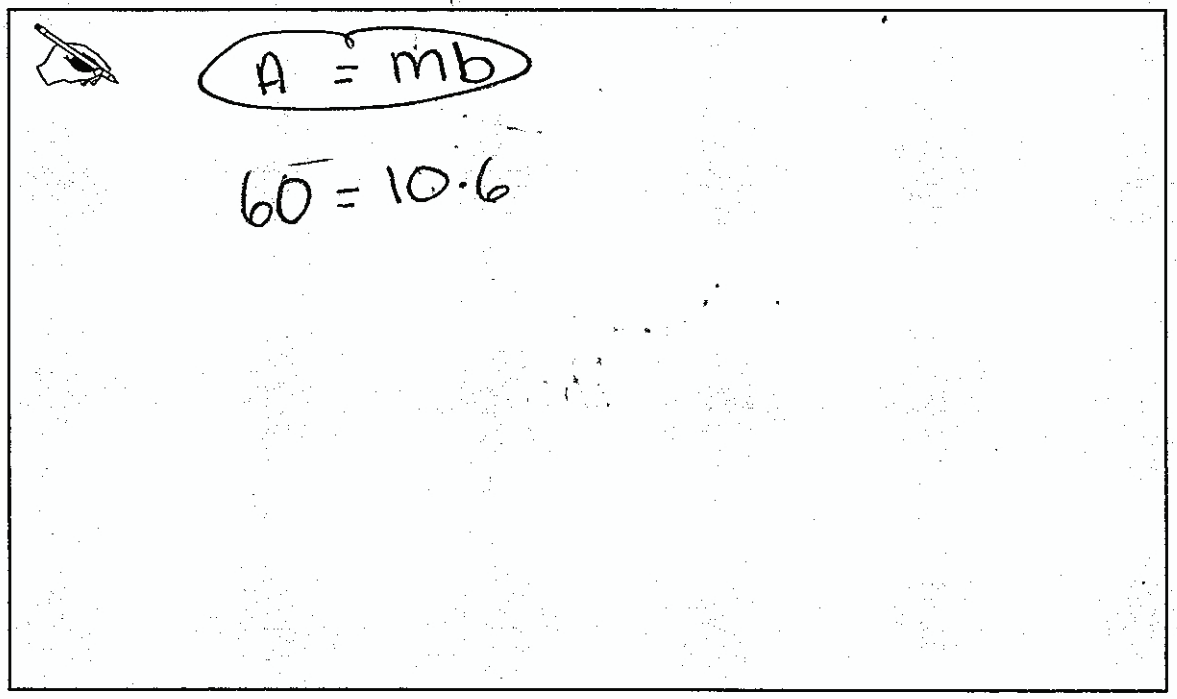
a. Brittanie follows the recipe to make snack mix for her mother's party. Use the recipe to find the unit rate of seasoned salt per serving. Show your work and explain your reasoning.



b. Brittanie wants to determine the relationship between the number of servings of snack mix, *m*, and the number of tablespoons of butter, *b*. Use the information in the table to find the constant of proportionality and explain its meaning in this situation.



c. Write an equation representing the proportional relationship between *m* and *b*.



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Total Content Points: 0

Total Practice Points: 0

The student does not determine a correct unit rate of seasoned salt per serving in Part A (no credit for 7.RP.A.1). The student does not find a correct constant of proportionality for the number of servings of snack mix, m, to the number of tablespoons of butter, b, nor provide a meaning for the constant of proportionality (no credit for 7.RP.A.2b). The student does not provide a correct equation in Part C to represent the proportional relationship between m and b (no credit for 7.RP.A.2c). Inability to recognize the context of the values given in the problem prevents the student from setting up and labeling the proportions in the task with any precision (no credit for MP6). The student does not appropriately model the situations in any part of the task (no credit for MP4).

Total Awarded Points: 0 out of 5