

MeTEOR Performance Task

Sixth Grade

Mathematics
Ratios and Recipes

Performance Task Item: Ratios with Recipes

Grade Level: Sixth Grade

Focus Area: Ratios

Essential Question: What strategies can be used when adjusting a recipe for greater or lesser servings?

Core Ideas:

- Understands operations involving fractions.
- Understands equivalent fractions.
- Understands rate and ratio reasoning.
- Understands proportional relationships.

Learning Targets:

- Students will determine missing values in a ratio table.
- Students will convert measurement units.
- Students will explain ratio and rate reasoning as they solve real-world mathematical problems.

STANDARDS

Domain: Geometry-Congruence

Content Standards:

- Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
- Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables.
- Use tables to compare ratios.
- Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

Supporting Standards:

- Adding fractions.
- Multiplying fractions.
- Dividing fractions.

Math Practice Standards:

MP 1: Make sense of problems and persevere in solving them.

MP 3: Construct viable arguments and critique the reasoning of others.

MP 4: Model with mathematics.

MP 6: Attend to precision.

Materials:

- Performance Task
- Pencil
- Paper
- Recipe

Task/Question 1:

DOK Level 1: Recall & Reproduction

Math Practice Standards:

- MP 1: Make sense of problems and persevere in solving them.
- MP 6: Attend to precision.

A. Simplify this fraction, $12/16$:

B. Define Unit Rate:

C. Write an equivalent fraction for $1/2$:

Task/Question 2:

DOK Level 2: Basic Application of Skills and Concepts

Math Practice Standards:

- MP 1: Make sense of problems and persevere in solving them.
- MP 4: Model with mathematics.
- MP 6: Attend to precision.

This is Amy's box of candies.
She ate 6 pieces from this box.

●	●	●

- A.** Create a ratio showing the amount of the candies that Amy has eaten?
- B.** Rewrite the ratio in simplest form.

This is Valerie's box of candies.
Valerie wants to share her candy with Cindy.
She gives Cindy 1 candy for every 3 candies she eats herself.

●	●	●	●
●	●	●	●
●	●	●	●

- C.** What fraction of the candies has Valerie eaten?
- D.** Rewrite the fraction as a ratio in simplified form.

This is Anthony's box of candies.
Anthony wants to share his candy with Johnny.
He gives Johnny 1 candy for every 4 candies he eats.

	●	●		●	●	●
●		●	●	●	●	●
	●	●				●
●	●	●		●	●	●

- E.** Create a ratio showing the amount of the candies has Anthony eaten?
- F.** Rewrite the ratio in simplified form.

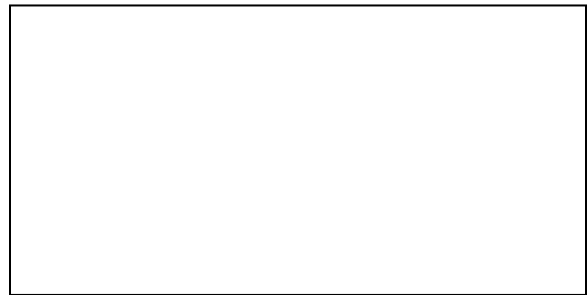
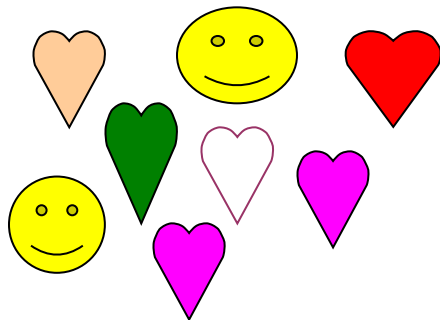
Task/Question 3:

DOK Level 3: Strategic Thinking and Complex Reasoning

Math Practice Standards:

- MP 1: Make sense of problems and persevere in solving them.
- MP 3: Construct viable arguments and critique the reasoning of others.
- MP 4: Model with mathematics.
- MP 7: Look for and make use of structure.

A. Complete the Picture showing a ratio of Hearts to Smiley Faces as 4 to 6. You CANNOT remove any of the hearts or smiley faces in the picture; you can only add to them or leave the amount the same. Defend your rational for drawing more figures.



B. Complete the table showing the ratio in Part A of this task by entering all ratios up to 20 Hearts.

Hearts	Smiley Faces
4	6
	18
20	

Task/Question 4:

DOK Level 3: Strategic Thinking and Complex Reasoning

Math Practice Standards:

- MP 1: Make sense of problems and persevere in solving them.
- MP 4: Model with mathematics.
- MP 7: Look for and make use of structure.

Ratio Brownies



MMMMM... Brownies



Prep
25 m

Cook
25 m

Ready In
1 h

Recipe By: cicada77

"Best brownies I've ever had!"

Ingredients

1/2 cup white sugar	1/2 teaspoon vanilla extract
2 tablespoons butter	2/3 cup all-purpose flour
2 tablespoons water	1/4 teaspoon baking soda
1 1/2 cups semisweet chocolate chips	1/2 teaspoon salt
2 eggs	

Directions

- 1 Preheat the oven to 325 degrees F (165 degrees C). Grease an 8x8 inch square pan.
- 2 In a medium saucepan, combine the sugar, butter and water. Cook over medium heat until boiling. Remove from heat and stir in chocolate chips until melted and smooth. Mix in the eggs and vanilla. Combine the flour, baking soda and salt; stir into the chocolate mixture. Spread evenly into the prepared pan.
- 3 Bake for 25 to 30 minutes in the preheated oven, until brownies set up. Do not overbake! Cool in pan and cut into squares.

A. This recipe serves 16 people. Rewrite the ingredients in the recipe to serve **twice** as many people. Defend your mathematical changes.

B. This recipe serves 16 people. Rewrite the ingredients in the recipe to serve **half as many** people. Defend your mathematical changes.

Task/Question 5:

DOK Level 4: Extended Thinking

Math Practice Standards:

- MP 1: Make sense of problems and persevere in solving them.
- MP 3: Construct viable arguments and critique the reasoning of others.
- MP 4: Model with mathematics.

A. Find and prepare any family recipe adjusting it to $\frac{3}{4}$ of the original.

Create a presentation that documents the original recipe, adjusted $\frac{3}{4}$ recipe, and your family enjoying the finished product!

Performance Task Scoring Rubric

Ratios with Recipes

40-50 Proficient 30-39 Good 22-29 Satisfactory 15-21 Poor 0-14 Unsatisfactory

	Depth of Knowledge Level	Points	Total Possible Points for Task	Total Points Earned by Student
<p>Task 1:</p> <p>A. $\frac{3}{4}$</p> <p>B. A unit rate in math is the expression of a rate in a quantity of one.</p> <p>C. Answers may vary. Any ratio/fraction equivalent to $\frac{1}{2}$ is accurate.</p>	1	1 1 1	3	
<p>Task 2:</p> <p>A. $\frac{6}{9}$</p> <p>B. $\frac{2}{3}$</p> <p>C. $\frac{9}{12}$</p> <p>D. $\frac{3}{4}$</p> <p>E. $\frac{16}{20}$</p> <p>F. $\frac{4}{5}$</p>	2	1 1 1 1 1 1	6	
<p>Task 3:</p> <p>A. 2 more hearts, 10 more smiley faces. Because the ratio is 4:6 and there are currently 6 hearts, students must draw an additional 2 hearts. There are currently 2 smiley faces, so students must match the 4:6 ratio and draw an additional 10 smiley faces.</p>	3	8	14	

<p>B.</p> <table border="1"> <thead> <tr> <th>Hearts</th> <th>Smiley Faces</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>6</td> </tr> <tr> <td>8</td> <td>12</td> </tr> <tr> <td>12</td> <td>18</td> </tr> <tr> <td>16</td> <td>24</td> </tr> <tr> <td>20</td> <td>30</td> </tr> </tbody> </table>	Hearts	Smiley Faces	4	6	8	12	12	18	16	24	20	30		6																										
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Task 5: A. Answers will vary.	4	5	5	
TOTAL POINTS:				



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