

Rational Reasoning

Directions: For this exploration you will be scored on the attached rubric. You will choose one of the following two tasks (both labeled Level C) to solve. Complete work is expected on all parts of the task. This means you need to show your work, explain your thinking, verify your answers for reasonableness and record your findings in a way that allows you to recreate your thinking. Zero credit will be given for unsupported answers. You will lose points for unorganized, messy or incomplete work. All work must be done on a separate sheet of paper; do not try to squeeze your work and answers in the small spaces on this page. The rubric page attached will serve as the cover page to your exploration. In addition to completing the task you will write a paragraph using complete sentences explaining what about the task you choose appealed to you most. Please include the following in your response: did you choose the task that was easier for you or the task that challenged you most, how much time did it take you, did you try multiple strategies before coming up with a solution, etc.

Level C

Maxine and Sammie have lawns that are the same size. Maxine can mow her lawn in 24 minutes and Sammie can mow his lawn in 36 minutes. After how many minutes will Sammie have twice as much lawn to mow as Maxine?

Maxine and Sammie have to also mow their parking strips that are the same size. Maxine can mow her parking strip in 6 minutes and Sammie can mow his parking strip in 9 minutes. After how many minutes will Sammie have twice as much grass to mow as Maxine?

Level C

Roxie is a show dog. Her trainer wants her to have a beautiful and brilliant coat. The veterinarian suggested a special diet for the trainer to follow. Each feeding, Roxie eats $\frac{2}{3}$ of a can of wet dog food, $\frac{1}{8}$ of a bag of dry dog food, and $\frac{3}{5}$ a patty of special meat. The special meat comes in a package of 6 patties. Roxie has two meals a day.



The dog is completely out of food. The trainer goes to the store and buys 24 cans of wet food, 4 bags of dry food and 3 packages of meat.

How many days will the dog be fed before the trainer needs to buy any more food?

Which type of dog food will the trainer run out of first? Explain.

How much of the other two types of dog food will be left after the first type of dog food runs out?

The trainer wants to plan better. She goes to the store on the day she ran out of the first type of dog food. She decides to buy enough dog food to last 90 days. Knowing what she already has in the house, how much more of each type of dog food does she need to buy in order to use up all the food in 90 days? Is it possible? Explain.

What is the minimum amount of food the trainer could buy such that the dog would finish all of it after a certain number of meals? Explain.

Rational Reasoning

This is how I will be scoring your work:

Exploration Rubric

Name: _____

	Conceptual Understanding	Processes and Strategies	Verification and Reasonableness	Communication	Symbols, Techniques & Computations
	<i>Interpreting the concepts of the task and translating them into mathematics.</i> <i>What?</i>	<i>Applying mathematical processes and solutions in making mathematical, personal, and/or societal choices</i> <i>How?</i>	<i>Identifiable evidence of a second look at the concepts/strategies/calculations to defend the solution and verify reasonableness of solutions.</i> <i>Defend!</i>	<i>Using pictures, symbols, and/or vocabulary to convey the path to the identified solution.</i>	<i>Demonstrating proficiency in the skills supporting mathematical understanding as well as presentation of the information.</i>
+	KNOCKS MY SOCKS OFF...This is rare, but it's fun when it happens! This score exists to allow you to extend your work in any category beyond any standard expectations. There needs not be a limit!				
4	Skillfully converts relevant information from the task into an insightful mathematical portrayal in a way that contributes to further understanding.	Pictures, models, diagrams, symbols, and/or words used to solve the task are thoroughly developed.	The solution(s) is(are) clearly demonstrated to be reasonable and to make sense mathematically and contextually (if applicable). May include a generalized solution.	The reasoning process used is clearly and thoroughly explained and presented in a logical and coherent manner with no steps taken where thinking has to be inferred.	Answers given are mathematically accurate, easy to locate and are justified and supported by the process shown.
3	Competently converts the relevant information into a desired mathematical portrayal.	Pictures, models, diagrams, symbols, and/or words used to solve the task are primarily effective in justifying choices made, with a possible minor error.	Attempts to demonstrate reasonableness/sense-making are adequate with very few steps taken where thinking has to be inferred.	The process is explained and adequately developed with very few steps taken where thinking has to be inferred.	Answers given are adequate, may contain a minor error, but are otherwise supported by the process shown.
2	The translation of relevant information from the task is partially completed, partially recorded, and/or partially effective.	Pictures, models, diagrams, symbols, and/or words used to solve the task are only partially completed, partially recorded, and/or partially effective.	Attempts to demonstrate reasonableness/sense-making are partially completed, partially recorded, and/or partially effective.	The process is partially complete, and/or partially developed with significant gaps in process that have to be inferred.	Answers given are primarily accurate, but are difficult to discern or locate and/or minimal justification is given.
1	The translation of the relevant information from the task is underdeveloped or uses inappropriate concepts.	Pictures, models, diagrams, symbols and/or words used to solve the task are ineffective, minimal or may conflict with the process.	Attempts to demonstrate reasonableness/sense-making are underdeveloped or inappropriate.	The process shown is unclear or underdeveloped.	Answers given are incorrect, incomplete, and/or conflict with the process.
0	The translation of the relevant information from the task is not evident.	Mathematical processes/solutions are not used to justify choices.	Reasonableness and sense-making are not explicitly addressed.	The process used is not evident.	Task questions remain unanswered or cannot be located.

Paragraph: /5

Total Score: /25