Name: _____ Date: _____

Situational Problem

- **To develop Competency 1:** Solves a situational problem

Cutting Cake and Calories

You own a local bakery and must prepare cakes for a community banquet. Some people attending the banquet have asked that their dessert fit certain criteria. Use the list of cakes described in Appendix A, made from a variety of ingredients, and the number of calories contained in each serving. Decide what fraction of a standard serving of each type of cake can be eaten under each of the given conditions.

? What size piece of cake can you eat?

Your task is to use the given criteria to decide what fraction of a standard serving of each type of cake (using the cakes described in Appendix A) each banquet guest could eat.

- Guest 1: Is allergic to chocolate and wants cake with icing and ice cream for no more than 460 calories.
- Guest 2: Wants a piece with no more than 130 calories, but wants a cake with icing.
- Guest 3: Wants 450 calories or less, does not want icing but wants ice cream with his cake.
- Guest 4: Wants cake with icing and ice cream, for no more than 725 calories and does not like angel food cake.
- Guest 5: Likes only chocolate cake, wants icing, and can eat only 133 calories.
- Guest 6: Wants ice cream and cake without icing for no more than 600 calories.
- Guest 7: Wants cake only with no more than 350 calories.
- Guest 8: Wants cake with icing, with no more than 420 calories.
- Guest 9: Wants cake with icing for no more than 195 calories and does not like Angel Food cake.
- Guest 10: Wants cake without icing with ice cream for no more than 365 calories.
- Ice cream servings come in only one size.
- The fraction of a standard serving you state can be approximate but cannot be larger than the criteria for a guest would allow.

There are also three colours of icing that have been used to decorate the pieces of cake. (The decorative icing is included in the standard serving size and is already included in the calorie information provided in Appendix A.) There is twice as much blue icing as there is red. The amount of blue icing is 5 mL less than half the amount of yellow icing. The total amount of blue, red, and yellow decorative icing is 500 mL. How much icing of each colour is there that is available to decorate the cakes?

Name: _____ Date: _____

A. Think of a plan

What do you plan to do to complete this task? What ideas, strategies, and steps do you have in mind for determining the fraction of a standard serving of each type of cake that matches each guest's preferences? How can you determine the amount of each colour of decorative icing?

B. Carry out your plan

Use the table below to identify the fraction of a standard serving of each type of cake the guest can eat based on the given criteria.

Guest	Chocolate	Pound	Banana	Angel Food	Lemon-Chiffon
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

How much decorative icing of each of the colours blue, red, and yellow is there?

Name: _____ Date: _____

C. Evaluate your plan

Now that you have a solution, you know whether your plan helped you.
Did you follow your plan? While calculating the calories in each piece of cake, did you change your strategies and/or steps?

_____

_____

_____

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_____

D. Evaluate your solution

Explain what you did to determine the scenarios that would work for each guest. How do you know that the fraction of a standard serving of cake you selected will fit the given criteria? How can you tell if your answers for the amounts of decorative icing are correct?

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Evaluation Criteria Checklist

- ☐ You have selected fractions of a standard serving of cake that meet each guest's preferences.
- ☐ You have identified every possible choice (from those given) for each of the 10 guests.
- ☐ You have marked any cake choices that are not possible for a guest with an X.
- ☐ You have determined how much of each of the three colours of decorative icing there is.