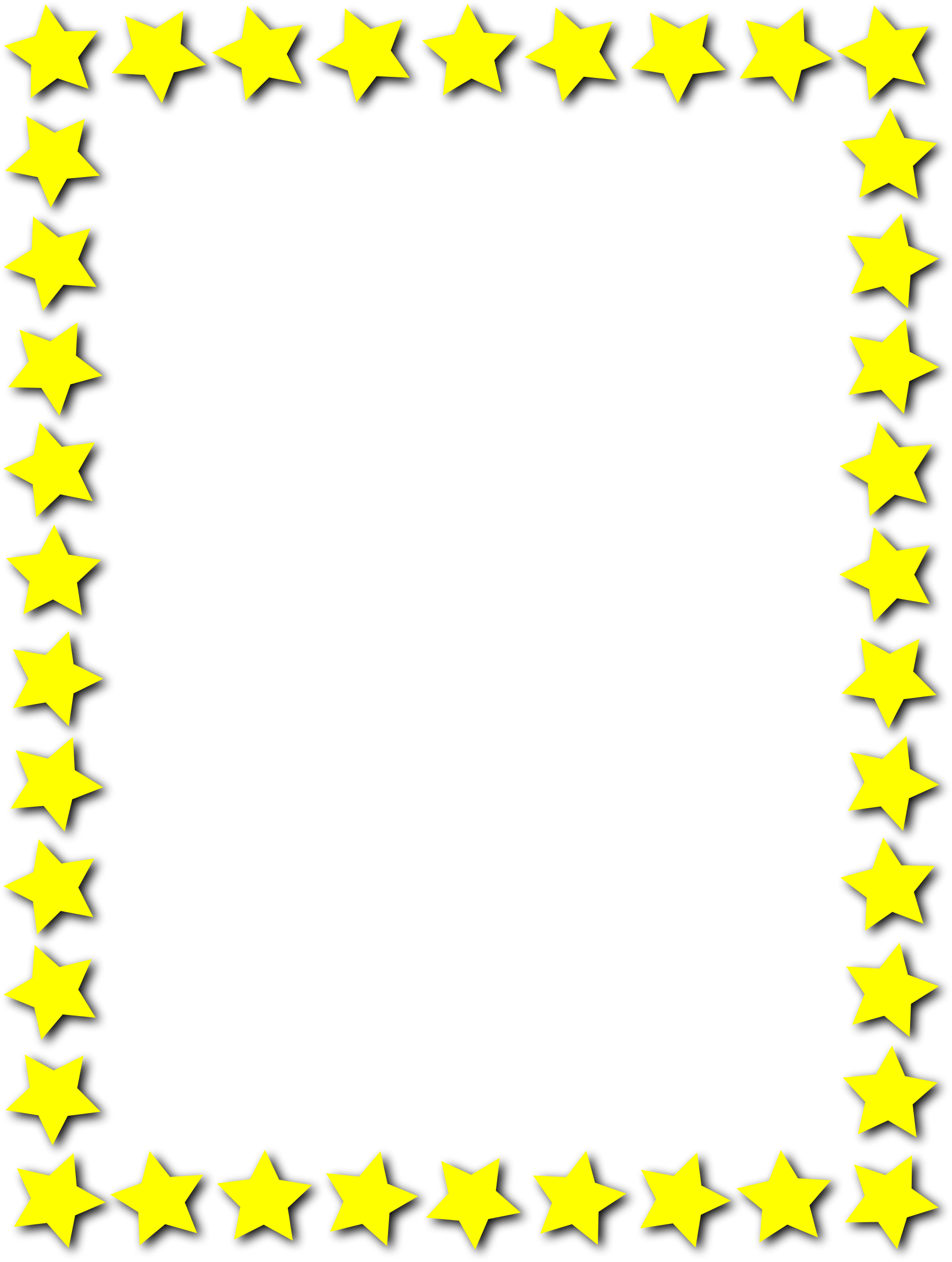
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| **Synopsis of high-quality task:**  This task asks students to work with mixed numbers in the context of mixing punch for a party. Students need to add mixed numbers with like denominators and also to convert a mixed number to a whole number and to understand that 8/8 = 1 whole.  **Mom’s Secret Party Punch**  3 ⅜ gallons of fruit juice  5 ⅝ gallons of sparkling water  Pour juice and sparkling water into large punch bowl.  Add ice.  Add frozen fruit or fresh fruit.  Stir and serve!  **Anticipated student time spent on task:** 30-45 minutes  **Student task structure(s):** partner work |
| [**Math Content Standards and Practices:**](http://www.doe.mass.edu/frameworks/math/2017-06.pdf)  **4.NF.B.3.c** Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.  **4.NF.B.3.d** Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using drawings or visual fraction models and equations to represent the problem.  **SMP 1** Make sense of problems and persevere in solving them.  **SMP 2** Reason abstractly and quantitatively.  **SMP 3** Construct viable arguments and critique the reasoning of others. |
| **Prior Knowledge:**  **3.NF.A.3.c** Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.  **4.NF.B.3.a** Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. (The whole can be a set of objects.) |
| **Connections to the Real-world:**  Many students have prior knowledge and background experience with parties - birthday parties, family gatherings, holidays, etc. Children do understand the planning part of throwing a party and how it is important to take into account the number of people attending and also the size of bowls and plates that you will be using at the party. You don’t want to over plan and not have enough space in bowls and plates (or enough food/drink for people).  Also, many students will understand the connection between this task, following a recipe at home, and how it is important to consider how much of each ingredient you will have and what size bowl you will need to mix everything up (many of us deal with this when we cook and bake). |
| **Mastery Goals:**  **Learning Objective:**  Students will solve word problems involving addition of mixed numbers.  Students will compare fractions and mixed numbers.  Students will determine whether a fraction is equal to, less than, or greater than one whole.    **Language Objective:**  Students will develop an argument, in writing, that shares at least two reasons why one person is incorrect or correct compared to the other person, with a partner. |
| **Teacher Instructions**  **Instructional Tips/Strategies/Suggestions:**   1. Ask students what they know about recipes. Chart anything and everything they say. Guide them to discussing mixed numbers, fractions, doubling or halving a recipe, etc. 2. Review adding fractions with like denominators. “If I have a recipe that calls for ⅜ cup of flour, and I want to make two batches of the recipe, I would have to do ⅜ + ⅜. How do I add fractions with like denominators?” 3. Pose one more question: “What if the recipe calls for 4/6 cups of flour and 2/6 cup of baking soda. How much is that together? I would have to add 4/6 + 2/6 and get 6/6. What do you notice about 6/6?” (6/6 is equal to one whole) 4. Introduce today’s task. Read the “scenario” and the punch recipe. 5. Explain that in partners, they are going to solve the problem on separate paper. They must show their work by drawing a picture, using numbers, and/or using words. 6. Students go off with partners to start working. Teacher circulates to scaffold students. If students are stuck, ask questions such as:    1. What do you know already?    2. What information is missing?    3. How can you draw a picture to represent that information?    4. What are you trying to find out? 7. After students begin to form their arguments (part D), have them team up with another partner pair to share out their ideas and argument. 8. Once class is complete (or close to), pull back together and do a “share session” -- remind students that it’s all about the PROCESS, not just the product. You want them to double check that they showed all their thinking for each part of the problem.   Students share their work.  \*\*NOTE: For question D - this is a time for students to develop an argument with mathematical reasoning to back up their argument. There is no 100% CORRECT answer for this question. It is a time for students to develop that mathematical argument by drawing a model or using equations. |
| **Instructional Materials:**  Chart paper, markers, student sheet (see below), reference chart on adding mixed numbers, reference chart on decomposing fractions (or fractions that equal 1 whole).  (reference charts are not necessary, but may be helpful if the group you are working with needs that scaffold)  **RUBRIC**  3 - Student was able to add mixed numbers with like denominators using numbers or a model. Student was able to develop a brief argument that captures at least 2 reasons why one of the two people were correct (or incorrect).  2 - Student was able to add mixed numbers with like denominators using models. Student was able to develop a brief argument that captured at least 1 reason why one of the two people were correct (or incorrect).  1 - Student added mixed numbers with the assistance of the teacher. Student developed a brief argument with the assistance of the teacher.  0 - Student was unable to complete the assignment. |
| **Accessibility and Supports:**  **Potential sentence starters:**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ was correct/incorrect because \_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Key academic vocabulary:** Mixed numbers, fraction, part, whole, numerator, denominator, add, equivalent fraction |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Student Page - Mom’s Secret Punch**

Mallory is having a holiday party with her friends. She wants to make her mom’s famous party punch, but since her mom is away on business, she can’t ask her to help out. First, Mallory finds a 10 ½ gallon punch bowl in the cabinet. Next, she finds her mom’s recipe which reads...



**Mom’s Secret Party Punch**

**3 ⅜** gallons of fruit juice

**5 ⅝** gallons of sparkling water

Pour juice and sparkling water into large punch bowl.

Add ice.

Add frozen fruit or fresh fruit.

Stir and serve!

1. If Mallory follows the directions, will there be enough room in the punch bowl for what the recipe states?

B. At the store, the juice comes in 1 gallon bottles. How many bottles will Mallory have to purchase? Will

there be juice left over? If so, how much?

C. At the store, the sparkling water comes in ½ gallon bottles. How many bottles will Mallory have to

purchase? Will there be water left over? If so, how much?

D. Mallory thinks if she uses ALL the liquid she purchased plus adds the fruit, she could still get it to fit in the 10 ½ gallon bowl. Her best friend, Amy, says that the bowl will overflow once the liquid and fruit is put

in. Who is correct? How do you know? Explain your answer using words, numbers, and/or pictures.

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| **Sample Student Work:**  **Student solution for the "Mom's Secret Punch" task** |