

Galactic Bake-Off: Conquering Improper Fractions in the Kitchen Cosmos

Materials Needed:

- **'Cosmic Cookie' Recipe Card:** A simple sugar cookie or shortbread recipe with ingredient amounts written as improper fractions (e.g., $\frac{5}{4}$ cup flour, $\frac{6}{4}$ cup sugar, $\frac{3}{2}$ sticks butter [note different denominator for potential extension]).
- **Baking Ingredients:** As listed on the recipe card (flour, sugar, butter, eggs, vanilla extract, salt, baking powder/soda).
- **Kitchen Equipment:** Mixing bowls, measuring cups (ensure clear markings), measuring spoons, electric mixer or whisk, spatula, baking sheets, parchment paper or non-stick spray, oven, cooling rack.
- **Calculation Station:** Whiteboard/large paper, markers/pencils, eraser.
- **Creative Station (Optional):** Frosting, food coloring (blue, black, white, yellow), sprinkles (star-shaped, silver), edible glitter.
- **Timer:** For managing activity segments and baking time.

Lesson Procedure:

1. Mission Briefing (5-10 mins):

- "Commander! Today's mission takes us to the Kitchen Cosmos! We're going to bake some amazing space-themed treats, like Moon Rocks or Planet Cookies. But there's a challenge... our recipe is written in secret astronaut code – using improper fractions!"
- Show the recipe card. Point out the improper fractions (where the top number is bigger than or equal to the bottom number, like $\frac{5}{4}$). Ask: "What do you notice about these numbers? What makes $\frac{5}{4}$ different from $\frac{1}{4}$?" Briefly explain what an improper fraction is.

2. Calculate Your Fuel (Addition - 15 mins):

- "First, Mission Control needs to know the total amount of dry ingredients. Our recipe needs $\frac{5}{4}$ cups of flour. Let's say we want to make an extra small batch for the space aliens, needing another $\frac{2}{4}$ cups of flour. How much flour do we need *in total*?"
- Guide the student to the Calculation Station. Write the problem: $\frac{5}{4} + \frac{2}{4} = ?$.
- Explain adding fractions with the *same* bottom number (denominator): "The bottom number tells us the *size* of the pieces. It stays the same! We just add the top numbers (numerators). So, 5 pieces plus 2 pieces equals..." (7 pieces). "So the answer is $\frac{7}{4}$ cups!"
- Do another addition example with a different ingredient from the recipe (e.g., sugar: $\frac{6}{4}$ cups needed, plus maybe $\frac{3}{4}$ cups for extra sweetness = $\frac{9}{4}$ cups).
- **ADHD Tip:** Keep calculations brief and focused. Use large writing on the whiteboard. Allow the student to write the answer.

3. Supply Check (Subtraction - 10-15 mins):

- "Okay, Commander, great calculations! Now, let's check our supplies. We know we need $\frac{7}{4}$ cups of flour total. Let's pretend our supply canister *already* has $\frac{11}{4}$ cups of flour. How much flour will be *left over* after we take what we need?"
- Write the problem: $\frac{11}{4} - \frac{7}{4} = ?$.
- Explain subtraction with like denominators: "Again, the bottom number (the size of the pieces) stays the same. We just subtract the top numbers. 11 pieces minus 7 pieces equals..." (4 pieces). "So we'll have $\frac{4}{4}$ cups left!" (You can briefly mention this equals 1 whole cup).
- Do one more subtraction example (e.g., with sugar).
- **Movement Break (3-5 mins):** "Time for a quick orbit! Let's walk/float around the

kitchen 'space station' three times!"

4. Galactic Bake-Off (20-30 mins + Baking Time):

- "Alright, calculations complete! Time to bake! Let's gather our ingredients using the *original* recipe amounts (like $\frac{5}{4}$ flour, $\frac{6}{4}$ sugar)."
- Guide the student through the recipe steps: measuring (emphasizing the improper fractions - "Find the $\frac{1}{4}$ cup measure. How many scoops make $\frac{5}{4}$?"), mixing, preparing the dough, shaping (use hands for 'moon rocks' or space cutters), and placing on baking sheets.
- Emphasize reading and following each step carefully.
- Set the timer for baking.
- **ADHD Tip:** Break down instructions into single steps. Provide verbal and visual cues. Let the student do as much of the hands-on work as possible.

5. Cosmic Cookie Creation (15 mins - while cookies cool):

- "While our treats are baking or cooling, let's prepare our decorating station! Think about how you want your planets, stars, or moon rocks to look."
- If using frosting, mix colors. Lay out sprinkles and glitter.
- Once cookies are cool, let the student decorate creatively. Encourage space themes.
- **ADHD Tip:** This allows for creative expression and a less structured activity after focused tasks.

6. Mission Debrief & Taste Test (5-10 mins):

- Gather back at the Calculation Station.
- Review: "What kind of fractions did we use today? (Improper) What did we do with them? (Add and Subtract) How do we add or subtract fractions when the bottom numbers are the same? (Keep bottom number, add/subtract the top numbers)."
- "You've successfully completed your mission, Commander! Time to taste your cosmic creations!" Enjoy the cookies together.

Differentiation/Support:

- **Support:** Use visual aids for fractions (pie charts, fraction bars). Pre-measure some ingredients if needed. Focus only on addition *or* subtraction if both are too much. Use simpler fractions (e.g., $\frac{3}{2}$).
- **Challenge:** Introduce adding/subtracting with *unlike* denominators (like the $\frac{3}{2}$ butter example). Ask the student to convert improper fractions to mixed numbers (e.g., $\frac{5}{4} = 1$ and $\frac{1}{4}$). Have the student calculate ingredient amounts needed to double or triple the recipe.