

Discipline: Mathematics

Standard Category: Computation and Estimation

Lesson Focus: To solve word problems that involve adding mixed numbers with and without renaming

PA Standard(s):	Related TESOL Standard(s):
2.2.5B: Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with decimals with and without regrouping.	Goal 2: To use English to achieve academically in all content areas. Standard 2: Students will use English to obtain, process, construct, and provide subject matter information in spoken and written form.

Key Objectives in Accordance with TESOL Level:

Pre-Conversational/ Beginning	Intermediate	Advanced
Students will be able to: <ul style="list-style-type: none">•Use given information to set up a math question to be solved using the addition of mixed fractions with like or unlike denominators.•Solve the math question.•Show all work involved.	Students will be able to: <ul style="list-style-type: none">•With a partner, identify the key information in a word problem and set up a problem to be solved using the addition of mixed fractions with like or unlike denominators.•Solve the math question.•Show all work involved and explain orally how the problem was completed.	Students will be able to: <ul style="list-style-type: none">•Identify the key information in a word problem, set up the math problem to be solved using the addition of mixed fractions with like or unlike denominators.•Solve the math question.•Show all work involved and explain orally and in writing how the problem was completed.

Materials:

1. Copies of problem card
2. Copies of recipe card
3. Scratch paper
4. Pencils
5. Math journals

Suggested

Level:

Intermediate

Lesson Focus:

To solve word problems that involve adding mixed numbers with and without renaming

Teaching

Strategies:

Application of concepts

Cooperative learning

Teacher modeling

Writing to display thinking

Whole group instruction

Assessment

Strategies:

Multiple-choice response

Open-ended response

Trail Mix

2 $\frac{1}{2}$ cups Raisins
1 $\frac{1}{4}$ cup Dried Apples
1 $\frac{1}{4}$ cup Dried Pineapple
 $\frac{3}{4}$ cup Chocolate Chips
 $\frac{2}{3}$ cup Cashews
1 $\frac{1}{3}$ cup Peanuts

Problem Card

1. How many cups of fruit are in the recipe?
2. How many cups of nuts are in the recipe?
3. If each person eats 1 $\frac{1}{4}$ cup of Trail Mix, is there enough for 6 people? Explain.
4. Are there more than 3 cups of fruit in the recipe? Explain.

Procedures: (ESL Suggestions are in italics)

1. Pose these questions: "How many of you like to eat? How many of you like to go to parties? Who likes to give parties?" Tell the students, "Today's lesson will teach us how much food to prepare when we have a party."
2. Model adding mixed numbers vertically. Demonstrate lining up whole numbers with whole numbers, and fractions with fractions. Model few examples using mixed numbers with like and unlike fractions.

$$\begin{array}{r} \text{Ex.} \quad 7\frac{2}{5} \\ + \quad 1\frac{1}{5} \\ \hline 8\frac{3}{5} \end{array} \quad \begin{array}{r} 3\frac{1}{3} \times \frac{3}{3} = 3\frac{3}{6} \\ 4\frac{1}{3} \times \frac{2}{2} = 4\frac{2}{6} \\ \hline 7\frac{5}{6} \quad 7\frac{5}{6} \end{array}$$

3. Model the examples step by step asking the following questions:
 - How can I find a common denominator for the fractions?
 - Do I need to simplify the answer?
 - What if the fractional part of my mixed number is improper?
What do I do? (regroup)*Explain new vocabulary very simply (common denominator, simplify, mixed number). Provide sample cards for students to use as reinforcement of the concepts. If available use another student to translate, if possible.)*
4. Distribute a copy of the problem card and the recipe. *Allow beginner students to work in teams, and intermediate and advanced students to work with partners.*
5. Read aloud each question on the problem card. Identify important information needed to solve the each question, and its location on the recipe card.
6. Students solve each problem and record answers in their math journals.
7. *Intermediate and/or advanced students explain to the class how*

they solved the problem.

8. *Advanced students write explanations in their Math journals.*

Assessment: (All Levels)

Multiple-Choice Option:

BROAD JUMP RESULTS:

Jumper A..... $4\frac{1}{2}$ feet

Jumper B..... $5\frac{1}{2}$ feet

Jumper C..... $4\frac{3}{4}$ feet

Jumper D..... $5\frac{1}{4}$ feet

How far did jumpers A and B jump together?

a. $9\frac{1}{2}$ feet

b. $9\frac{2}{4}$ feet

c. 1 foot

d. 10 feet

Open-Ended Option:

Using the chart above, determine how much farther the first place winner jumped than the last place winner. Show all work and explain.

For the open-ended assessment, assess the student based on his or her language level.

Beginning

Beginning students simply complete the problem. This shows understanding of the concept and of what instructions he or she was given.

Intermediate

Intermediate students complete the problem and explain orally to a partner how it was solved.

Advanced

Advanced students do all of the above including a written explanation of the problem solving process.

Extension: Using the Broad Jump Results chart above, students determine total distance jumped. Explain and record responses in math journals.