LESSON 93 – Adding Unlike Denominators

This lesson offers more practice in adding fractions that have different denominators.

- In this lesson we add a mixed number and a fraction. The fractional part of the mixed number and the fraction have different denominators, which means we need to change them so they are alike.

- We remind the student to look at the fraction with the smaller denominator to see if it is a multiple of the other denominator. That's the easiest way to make the two fractions have like denominators. As in the previous lesson, all the problems have a fraction that is a multiple. Later he will learn how to change both fractions.

- We also remind the student that when we add mixed numbers and fractions, we have to line up the digits. The fractions go in one column and any whole numbers go in their respective columns (such as the ONES or TENS).

- Since we cannot add fractions with unlike denominators, we have to find the equivalent fraction first so that is has the same denominator as the other fraction. Once both fractions have the same denominator, they can be added.

- In this lesson we are only adding one mixed number and one fraction. That means there are no other digits in the ONES column to be added, and the child simply brings down that whole number to the answer. All the answers are mixed numbers except for the Challenge Question.

- The exercise includes both story problems and number problems. Your child needs to show all his work and any units. He also needs to change the fractions to their simplest form.

- The Challenge Question is a challenge only because the sum of the fractions is 24/24 or 1. That 1 must be added to the 3 that is already in the ONES column, for a final answer of 4.

LESSON 94 – Adding Unlike Denominators

Packing List:

✓ (optional) 2 copies of the brownie pan and pieces of Jody's and Jamie's brownies from the back of the Instructor's Manual

This lesson offers more practice in adding fractions that have different denominators.

- In this lesson we add two mixed numbers. In most cases, the sum of the fractions is an improper fraction, which means it has to be changed to a mixed number as well. The whole number that is part of that mixed number is then added to the other whole numbers in the problem.

- In essence, the student is carrying the excess "whole" to the ONES place since it can no longer remain in the fractions column.

- But before the child can find the sum of the fractions, he must first convert one of the fractions so that the denominators are alike.

- In some problems, the child will also need to carry to the TENS column as well.

- The exercise is a mixture of story problems and number problems using mixed numbers. The Challenge Question is a challenge only because the student must add three mixed numbers, changing two of the fractions based on multiples.

- All of the fractions in this lesson are based on multiples of the other fraction.

- If your child is still unsure of how to change an improper fraction into a mixed number, have him use the optional brownie pans and brownies to see how the brownies add up and then how they make a new "whole" and a fractional part.

- Changing improper fractions was covered in Lesson 63. Carrying with mixed numbers was covered in Lesson 69.

LESSON 95 – Adding Fractions Review

This lesson offers more practice in adding fractions that have different denominators.

- This lesson includes some of the simple drill problems found in the original *Ray's Arithmetics*.

- They are included here to let you access if your child has mastered key fraction skills: changing a fraction to another denominator, adding simple fractions, adding fractions in a story, changing an improper fraction, and adding mixed numbers (without carrying the fractions).

- If your child struggles with any portion of this lesson, DO NOT proceed. Review any corresponding lessons and use the cement mixers listed at the beginning of this unit to offer more practice.

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If your child is struggling, it's important to try to isolate the reason. Is it because he is making too many arithmetic errors? If so, then he needs to review the math facts, particularly the times table. By now he should see that they are essential to doing so many different types of problems.

Or do the errors show that he doesn't yet understand the concepts of equivalent fractions and mixed numbers? If so, then use household items such as measuring cups, recipes, woodworking, and even versions of the paper brownies to help your child see the relationships.

LESSON 96 – Subtracting Unlike Denominators

Packing List:

✓ (optional) copy of the brownie pan and pieces of Jody's and Jamie's brownies from the back of the Instructor's Manual for Lesson 91.

This lesson extends the concept of subtracting fractions to those with different denominators.

- This week's lesson will mirror the previous week, where we added fractions with unlike denominators. This time we will reverse the operation and subtract instead.

- We introduce the concept with students subtracting one fraction from another (less than one whole).

- In every case, the denominator of one of the fractions is a multiple of the other denominator. This means the student only needs to change one of the fractions to an equivalent.

- Once the fractions have the same denominator, the student simply subtracts the numerators to find the difference.

- We remind the student that at this point he can only subtract a smaller fraction from a larger one.

- We also remind the student that if he needs to subtract a fraction from a whole number, he changes the