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DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for Mathematics

Quarter 3
Lesson
5

Lesson Exemplar for Mathematics Grade 4
Quarter 3: Lesson 5 (Week 5)
SY 2024-2025

Development Team

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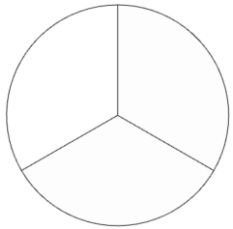
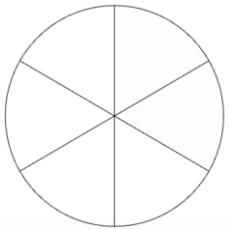
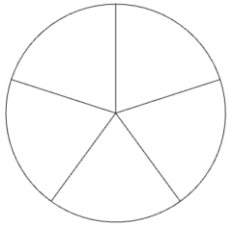
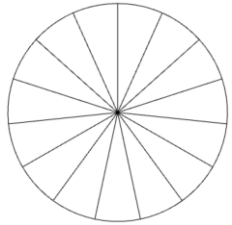
MATHEMATICS / QUARTER 3 / GRADE 4

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	The learners should have knowledge and understanding of the addition of dissimilar fractions.
B. Performance Standards	By the end of the quarter, the learners are able to represent, compare, and order dissimilar fractions. (NA)
C. Learning Competencies and Objectives	1. Add dissimilar fractions using models. 2. Add dissimilar fractions: 2.1. two proper fractions, 2.2. two mixed numbers, and 2.3. a mixed number and a proper fraction.
D. Content	Addition of Dissimilar Fractions
E. Integration	NA

II. LEARNING RESOURCES
TeachableMath. (2022, May 6). Fraction Shape Maker - TeachableMath. https://teachablemath.com/apps/fraction-shape-maker/ The Math Learning Center. (n.d.). Fractions by the Math Learning Center. https://apps.mathlearningcenter.org/fractions/ Toy Theater. (2022, April 29). Fraction bars. Toy Theater | Learn • Create • Play. https://toytheater.com/fraction-bars/

III. TEACHING AND LEARNING PROCEDURE		NOTES TO TEACHERS
A. Activating Prior Knowledge	**DAY 1** **1. Short Review** Activity 1. Modeling Equivalent Fractions Let learners review equivalent fractions via modeling. *Sample Activity (Individual or Group)* Instructions. Using the fraction models, shade the part that corresponds to the fraction. Also, shade the corresponding part that is equivalent to the fraction on the left.	Activity 1 will be given to learners to elicit their conceptual understanding of equivalent fractions using models. The concept of equivalent fractions is essential in adding/subtracting fractions. It is advisable that this concept must be mastered so that they can connect this to

Fraction	Fraction Model	Equivalent Fraction Model
$\frac{2}{3}$		
$\frac{3}{5}$		
$\frac{3}{4}$		

Activity 2 (Drill)
Let learners recall equivalent fractions by multiplying or dividing the numerator and denominator of the fraction by the same number.

Sample Activity (Individual)
Instructions. Identify the fraction equivalent to the given fraction.

1. $\frac{2}{7}$	$\frac{4}{16}$	$\frac{4}{14}$	$\frac{10}{28}$
2. $\frac{6}{8}$	$\frac{2}{4}$	$\frac{3}{4}$	$\frac{12}{18}$
3. $\frac{4}{5}$	$\frac{5}{6}$	$\frac{8}{10}$	$\frac{12}{14}$

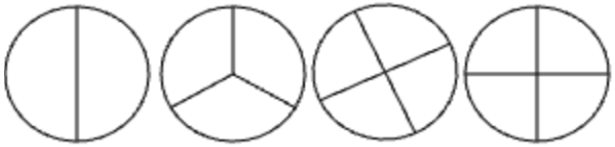
adding similar fractions to be able to use this on adding/subtracting dissimilar fractions. Note that conceptual understanding and procedural fluency must always go hand-in-hand so that learners have a full understanding of adding/subtracting dissimilar fractions.

(NOTE: This Activity 1 should be used only if you think students need further assistance on this topic. WEEK 1 and WEEK 2 have lessons focused on equivalent fractions. So, you may proceed directly to the next activity under this section as needed).

Important Note. In the modeling part, emphasize that the whole is cut further into several parts. For example, in the fraction model of ⅔, the whole is cut into 3 equal parts. Now, ask learners what happened to the whole of the equivalent fraction model. They have to realize that from 3 equal parts, the whole is now cut into 6 equal parts and so from ⅔ they can see that it becomes 4/6.

*Add more items on Activity 1 using different polygons (squares, triangles, etc.). Make sure that the fraction models

	DAY 3 Activity 3 *Think-Pair-Share.* Let learners communicate and collaborate with a partner on explaining and identifying equivalent fractions. *Sample Activity (Pair Activity)* A. With your assigned partner, give three fractions equivalent to the given fraction. 1. $\frac{3}{6} = \frac{?}{?} = \frac{?}{?} = \frac{?}{?}$ 2. $\frac{2}{8} = \frac{?}{?} = \frac{?}{?} = \frac{?}{?}$ 3. $\frac{12}{36} = \frac{?}{?} = \frac{?}{?} = \frac{?}{?}$ B. Find the missing number to complete the pairs of equivalent fractions. 1. $\frac{3}{12} = \frac{?}{4}$ 2. $\frac{6}{8} = \frac{18}{?}$ 3. $\frac{45}{81} = \frac{?}{9}$ Activity 4 (Drill) *Similar Fraction Facts.* Using flashcards, let learners recall how to add similar fractions (two proper fractions, two mixed numbers, a mixed number and a proper fraction, a whole number and a proper fraction, and a whole number and a mixed number) **2. Feedback (Optional)**	and equivalent fraction models are of the same size and shape. Activity 2 automates the conceptual understanding of equivalent fractions by creating equivalent fractions by multiplying or dividing the numerator and denominator of the fraction by the same number. *Add more items to Activity 2. Activity 3 is intended not only to expand conceptual understanding and procedural fluency but also to be able to talk mathematically thereby checking on disposition and also adaptive reasoning. *Add more items to Activity 3. Activity 4 is intended to automate the procedures for adding similar fractions. ***Important Note.*** It is advisable to have examples of adding similar fractions that will not lead to improper fractions. The intention is to automate the procedure. Make deliberate examples in the flashcards. In the group activity, constantly monitor and give feedback after hearing each member communicating mathematically with their peers.

B. Establishing Lesson Purpose	**DAY 1** **1. Lesson Purpose** Activity 5 (for sub-topic 1). Sharing My Piece of Pie Let learners study the problem below. Materials. Four cut-outs of fraction disks (see figures below for reference), a ruler, a pencil, and crayons  *Situation.* Ana, Ben, Claire, and Dan each have a whole pie. They decided to cut their pies. Ana cuts it into 2 equal parts, Ben into 3 equal parts, and Claire and Dan into 4 equal parts. Ana will share $\frac{1}{2}$ of her pie, Ben will share $\frac{1}{3}$ of his pie, Claire will share $\frac{1}{4}$ of her pie, and Dan will share $\frac{2}{4}$ of his pie. Instructions. Let learners model the fractions in the situation above by shading the parts in the cut-outs. **Guide Questions:** 1. Arrange the shares from least to greatest. 2. Which of them has equivalent shares? Why? 3. What will be the total parts of the pie that Claire and Dan will share? 4. What will be the total parts of the pie that Ana and Dan will share? 5. What will be the total parts of the pie that Ana and Ben will share? 6. What will be the total parts of the pie that Ben and Claire will share?	The intention of Activity 5 is to reinforce conceptual understanding via modeling. Also, it checks the conceptual understanding of the ordering of dissimilar fractions and equivalent fractions. ***Important Note.*** As learners activate prior knowledge on adding similar fractions (Question 3), elicit to them how they will be able to get the total parts of the pie. Do not introduce the concept of *least common denominator* (LCD) yet. Emphasize that they can only add fractions if they are similar. Let learners further divide into equal parts the pie model using a ruler and pencil so that the dissimilar fractions will be transformed into similar fractions.
	DAY 3 Activity 6 (for sub-topic 2). Least Common Multiple Let learners review the concept of multiples of a number using the concept of skip counting and using the definition of a multiple of a number. *Sample Activity (Pair)* Instructions. Given the following number pairs, list down 10 multiples of each number in increasing order, then circle all common multiples and write them in the "Common Multiples" column. The first item is done for you.	Activity 6 is intended to introduce the concept of common multiples and the least common multiple of two natural numbers. This is important in procedural fluency of adding dissimilar fractions. *Add more items in Activity 6.

Number Pair	First 10 Multiples	Common Multiples
2 and 3	Multiples of 2: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 Multiples of 3: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30	6, 12, 18
3 and 4		
2 and 5		
3 and 5		
4 and 8		

Guide Questions:

1. In the number pair 2 and 3, which common multiple is the least?
2. Which common multiple of 3 and 4 is the least? How about 2 and 5? 3 and 5?
3. Can you explain how we were able to get the least common multiple of 2 and 3 without listing their common multiples? 3 and 4? 2 and 5? 3 and 5?
4. What is the least common multiple of 4 and 8?

*After asking Guide Questions 1 and 2, you may now unlock the meaning of "least common multiple" to add to learners' vocabulary.

2. Unlocking Content Area Vocabulary

DAY 3

For sub-topic 2.

Least Common Multiple. Least Common Multiple or LCM is the smallest number that is both a multiple of two given numbers.

C. Developing and Deepening Understanding

DAY 1-2

SUB-TOPIC 1: Adding Dissimilar Fractions Using Models

1. Explicitation

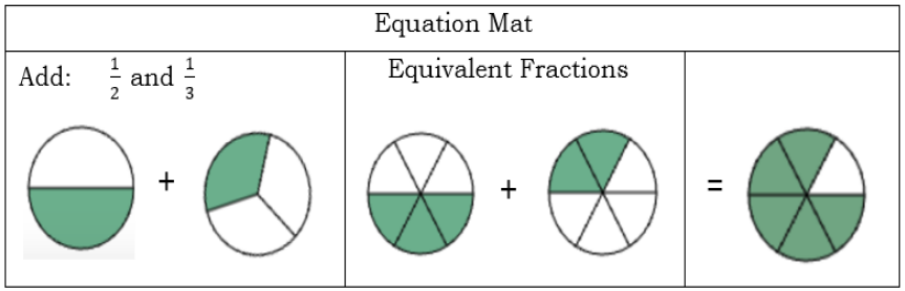
After doing Activities 1 and 5, let learners further build on adding dissimilar fractions using the concepts of equivalent fractions and similar fractions. Using fraction discs/strips in adding dissimilar fractions, guide learners in dividing equal parts of the model by reinforcing that the two fractions must be transformed into similar fractions (with the same denominator).

Important Note. Do not introduce yet the concept of LCD. It must be intuitive. It will be formalized in the next topic. The intention is to make this conceptual. Start with common fractions (with denominators of 2, 3, 4, and 5). It is suggested to

2. Worked Example

Example 1. What is the sum of $\frac{1}{2}$ and $\frac{1}{3}$?

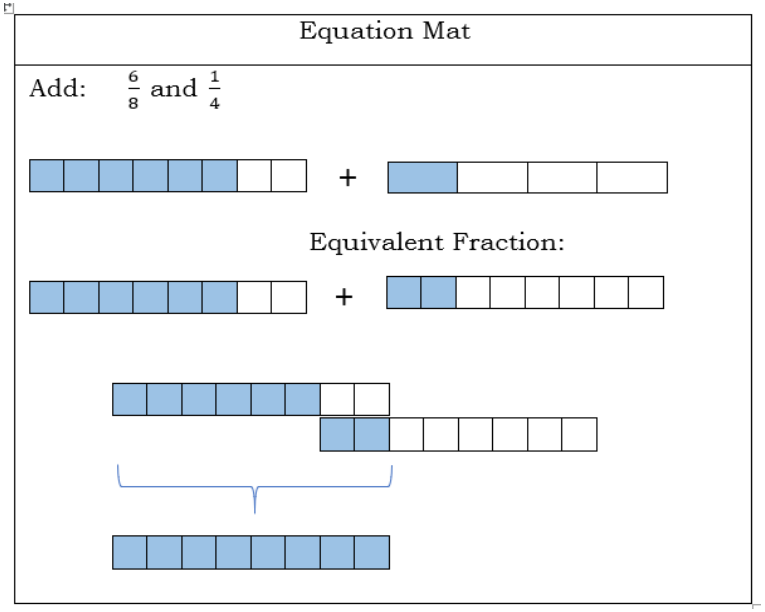
Solution:



Answer: $\frac{5}{6}$

Example 2. Add: $\frac{6}{8}+\frac{1}{4}$

Solution:



Answer: $\frac{8}{8}$ or 1

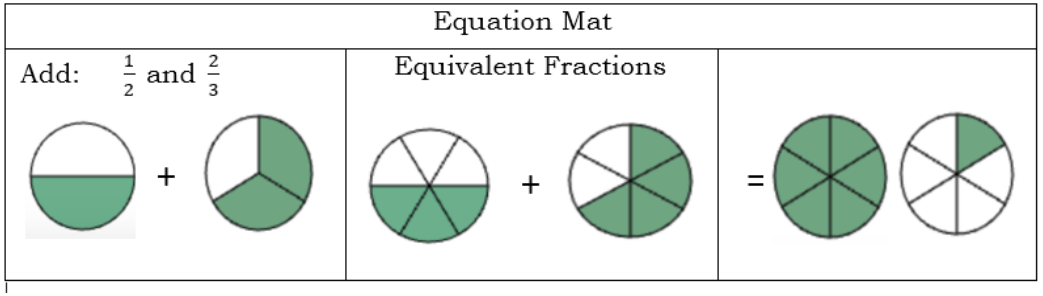
give learners ample time to understand the addition of dissimilar fractions through modeling repeatedly.

Ask questions like (for worked example 1), "In how many smaller equal parts will we divide the circle so that ½ and ⅓ will have the same denominator?" After dividing the model into smaller equal parts, let learners attend to equivalent fractions made, e.g. ½ is equivalent to 3/6, and ⅓ is equivalent to 2/6. Note also that when they are adding fractions, they are *combining or putting together equal parts*.

For worked examples 2 and 3, let learners focus their attention on how many equal parts are needed to make a whole using the models provided. *You can also incidentally review how to convert improper fractions to mixed numbers and vice versa.*

Example 3. What is the sum of $\frac{1}{2}$ and $\frac{2}{3}$?

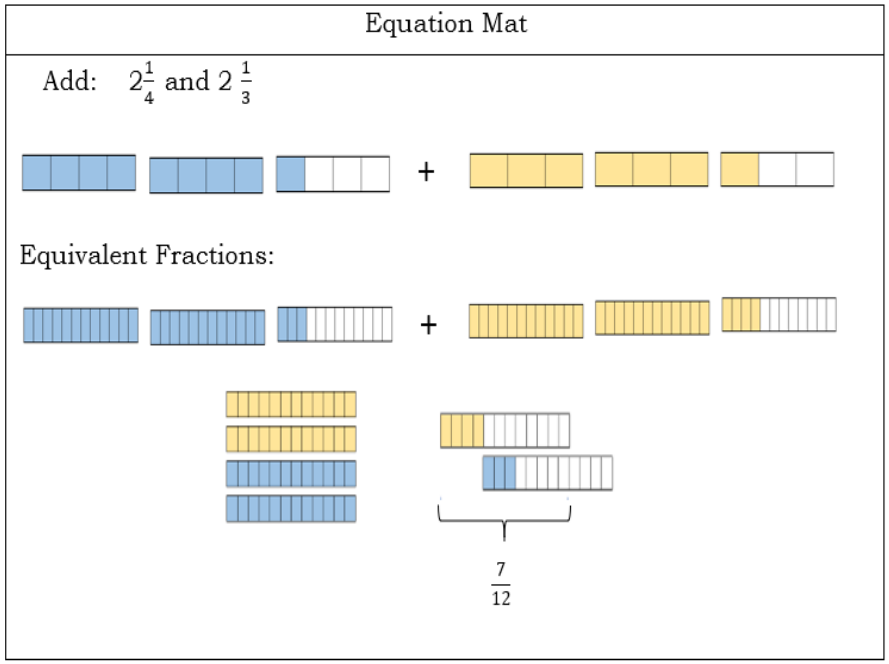
Solution:



Answer: $1\frac{1}{6}$ (or $\frac{7}{6}$)

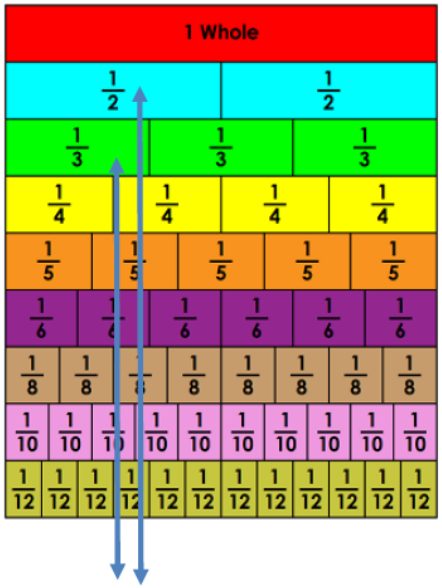
Example 4. What is the sum of $2\frac{1}{4}$ and $3\frac{1}{3}$?

Solution:



Answer: $4\frac{7}{12}$

For Example 4: This can be used as a guide in finding equivalent fractions.

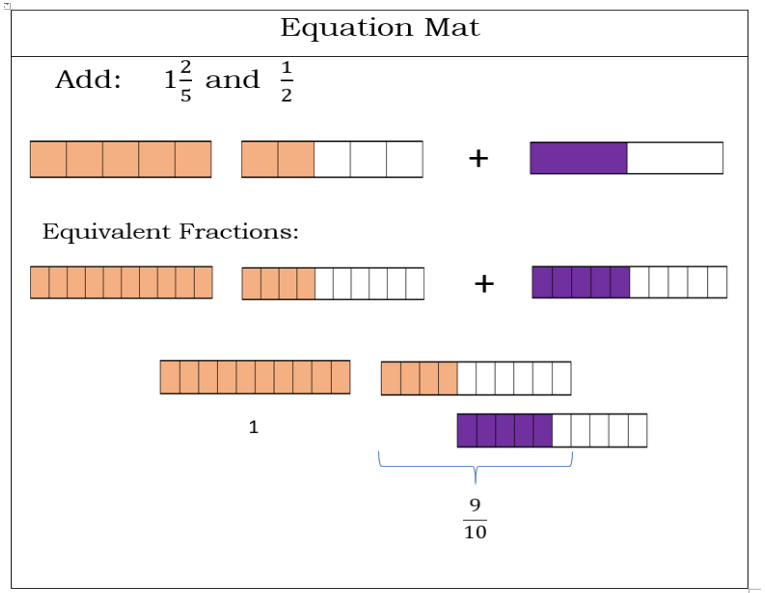


(The blue vertical line is used as a guide to locate the equivalent fractions. It is in the last row that 14 and 13 could be renamed using the same denominator.)

Source of the fraction strip table: https://www.superteacherworksheets.com/fraction-strips.html

Example 5. Add: $1\frac{2}{5}+\frac{1}{2}$

Solution:



Answer: $1\frac{9}{10}$

3. Lesson Activity

Let learners do Activity 1 of Q3 Week 5 Learning Activity Sheet.

Answer Key:

1. $\frac{13}{15}$
2. $\frac{5}{6}$
3. $2\frac{6}{10}$
4. $8\frac{1}{8}$

DAY 3-4

SUB-TOPIC 2: Adding Dissimilar Fractions (Two Proper Fractions, Two Mixed Numbers, and a Mixed Number and a Proper Fraction)

1. Explicitation

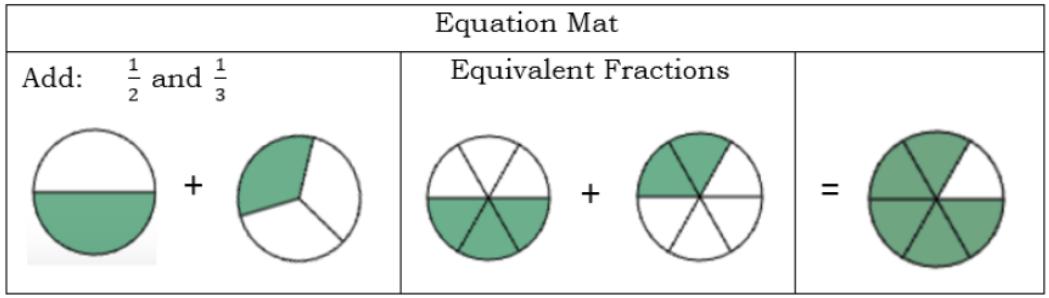
Check the prior knowledge of learners by doing Activities 2, 3, and 6. Process and let learners abstract these concepts.

2. Worked Example

Example 1. What is the sum of $\frac{1}{2}$ and $\frac{1}{3}$?

Using Modeling:

Solution:



Answer: $\frac{5}{6}$

Guide Questions:

1. What is the least common multiple of 2 and 3?
2. Observe the sum of $\frac{1}{2}$ and $\frac{1}{3}$, $\frac{5}{6}$. How is the denominator of the sum related to the LCM of 2 and 3?

Using LCM of the denominators or Least Common Denominator:

Add: $\frac{1}{2} + \frac{1}{3}$

Solution:

Step 1. Determine the LCD of the given fractions.

LCD: 6

Step 2. Use the LCD to make the given fractions similar.

$$\frac{1}{2} = \frac{?}{6} \qquad \frac{1}{3} = \frac{?}{6}$$
$$\frac{1}{2} = \frac{3}{6} \qquad \frac{1}{3} = \frac{2}{6}$$

Step 3. Add the similar fractions.

$$\frac{1}{2} + \frac{1}{3} = \frac{3}{6} + \frac{2}{6}$$
$$= \frac{3+2}{6}$$

Answer: $\frac{5}{6}$

It is advisable to use the previously worked examples in modeling to be able to present the concept and later the procedures.

Note. You can unlock the meaning of "least common denominator" or LCD after asking the Guide Questions.

Note. Help learners be familiar with the procedure by modeling how to "Think Aloud". Read the steps, and let them repeat. *Model how to cognitively encode the procedure in their working memory.*

Example.

Step 1 Find LCD.

Step 2 Make fractions similar.

Step 3 Add.

Example 2. Add: $\frac{6}{8}+\frac{1}{4}$

Solution:

Step 1. Determine the LCD of the given fractions. LCD: 8

Step 2. Use the LCD to make the given fractions similar.

$$\frac{6}{8}=\frac{?}{8} \qquad \frac{1}{4}=\frac{?}{8}$$
$$\frac{6}{8}=\frac{6}{8} \qquad \frac{1}{4}=\frac{2}{8}$$

Step 3. Add the similar fractions: $\frac{6}{8}+\frac{1}{4}=\frac{6}{8}+\frac{2}{8}$

$$=\frac{6+2}{8}$$

Answer: $\frac{8}{8}$ or 1

Example 3. What is the sum of $\frac{1}{2}$ and $\frac{2}{3}$?

Solution:

Step 1. Determine the LCD of the given fractions. LCD: 6

Step 2. Use the LCD to make the given fractions similar.

$$\frac{1}{2}=\frac{?}{6} \qquad \frac{2}{3}=\frac{?}{6}$$
$$\frac{1}{2}=\frac{3}{6} \qquad \frac{2}{3}=\frac{4}{6}$$

Step 3. Add the similar fractions: $\frac{1}{2}+\frac{2}{3}=\frac{3}{6}+\frac{4}{6}$

$$=\frac{3+4}{6}$$
$$=\frac{7}{6}$$

Answer: $1\frac{1}{6}$

Example 4. What is the sum of $2\frac{1}{4}$ and $3\frac{1}{3}$?

Solution:

Step 1. Determine the LCD of the given fractions. LCD: 12

Step 2. Use the LCD to make the given fractions similar.

$$\frac{1}{4}=\frac{?}{12} \qquad \frac{1}{3}=\frac{?}{12}$$
$$\frac{1}{4}=\frac{3}{12} \qquad \frac{1}{3}=\frac{4}{12}$$

Step 3. Add the similar fractions: $2\frac{1}{4}+3\frac{1}{3}=(2+3)+(\frac{1}{4}+\frac{1}{3})$

Important Note. Many teachers teach addition/subtraction of dissimilar fractions in too mechanical way. For example, after identifying the LCD, teachers will proceed with by doing this procedure.

Say, $\frac{1}{2}+\frac{1}{3}$

LCD: 6

$\frac{1}{2}+\frac{1}{3}=\frac{?\ +\ ?}{6}$

Then will introduce the procedure like 6 divided by 2 times 1, thus getting the new numerator 3. Proceeding with the second fraction, 6 divided by 3 times 1, getting the new numerator 2.

These pedagogical strategies do not help students to connect the concept of equivalent fractions in adding/subtracting dissimilar fractions.

Let them individually transform the fractions into similar fractions using the LCD and equivalent fractions concept.

*Reinforce the procedure for converting improper fractions to mixed numbers.

$= (2 + 3) + (\frac{3}{12} + \frac{4}{12})$

$= 5 + (\frac{3+4}{12})$

$= 5 + \frac{7}{12}$

Answer: $5\frac{7}{12}$

Example 5. Add: $1\frac{2}{5} + \frac{1}{2}$

Solution:

Step 1. Determine LCD of the given fractions. LCD: 10

Step 2. Use the LCD to make the given fractions similar.

$\frac{2}{5} = \frac{?}{10}$ $\quad \frac{1}{2} = \frac{?}{10}$

$\frac{2}{5} = \frac{4}{10}$ $\quad \frac{1}{2} = \frac{5}{10}$

Step 3. Add the similar fractions: $1\frac{2}{5} + \frac{1}{2} = 1 + (\frac{2}{5} + \frac{1}{2})$

$= 1 + (\frac{4}{10} + \frac{5}{10})$

$= 1 + (\frac{4+5}{10})$

$= 1 + \frac{9}{10}$

Answer: $1\frac{9}{10}$

*Add more worked examples.

3. Lesson Activity

Let learners be more familiar with the procedures for adding dissimilar fractions (two proper fractions, two mixed numbers, and a mixed number and a proper fraction).

Sample Activity. Find the sum of the following. *If the sum is an improper fraction, convert it to a mixed number.*

1. $\frac{1}{4} + \frac{3}{8}$
2. $\frac{2}{5} + \frac{1}{3}$
3. $\frac{3}{6} + \frac{2}{18}$
4. $2\frac{1}{2} + 3\frac{2}{5}$
5. $3\frac{2}{3} + 2\frac{4}{5}$
6. $3\frac{1}{4} + \frac{3}{5}$
7. $\frac{1}{3} + 4\frac{3}{12}$
8. $\frac{3}{8} + 2\frac{2}{3}$
9. $6\frac{1}{2} + \frac{4}{7}$
10. $1\frac{3}{4} + 4\frac{4}{12}$

Answer Key:

1. $\frac{5}{8}$
2. $\frac{11}{15}$
3. $\frac{11}{18}$
4. $5\frac{9}{10}$
5. $6\frac{7}{15}$
6. $3\frac{17}{20}$
7. $4\frac{7}{12}$
8. $3\frac{1}{24}$
9. $7\frac{1}{14}$
10. $6\frac{1}{12}$

D. Making Generalizations

1. Learners' Takeaways

DAY 2

For Sub-topic 1:

Ask learners 3 important concepts they have learned in adding dissimilar fractions using fractions strips or disks. Let them start with the phrase…

"***I learned that in adding dissimilar fractions …***"

DAY 4

For Sub-topic 2:

Give this activity to test the conceptual and procedural understanding of learners in adding dissimilar fractions.

Fill Me Up!

Instructions. Fill up the following to make the procedures correct.

1. $\frac{12}{15} + \frac{2}{5}$ Solution: LCD: ____ $\frac{12}{15} + \frac{2}{5} = \frac{12}{15} + \frac{\quad}{15}$ $= \frac{12 + \quad}{15}$ $= \frac{18}{15}$ $= \_\_\_\_\frac{3}{15}$	2. $8\frac{3}{7} + 3\frac{3}{5}$ Solution: LCD: ____ $8\frac{3}{7} + 3\frac{3}{5} = (8 + 3) + (\frac{3}{7} + \frac{3}{5})$ $= 11 + (\frac{\quad}{35} + \frac{\quad}{35})$ $= 11 + (\frac{+ 21}{35})$ $= 11 + \frac{36}{35}$ $= 11 + 1\frac{\quad}{35}$ $= \_\_\_\_\frac{1}{35}$

2. Reflection on Learning (Homework)

DAY 2

For sub-topic 1. Regine added $2\frac{3}{10}$ and $3\frac{4}{5}$. She got a sum of $6\frac{1}{10}$. Is she correct? Show using fraction strips that Regine's answer is correct.

Homework is optional.

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION

A. Evaluating Learning

DAY 4

1. Formative Assessment

Worksheet: Activity 2: Riddle Time! (See attached copy of the worksheet)
Total points: **30 points**
Solution part: *2 points each*
Rubric.

0	Did not attempt to solve the problem.
1	With solution but has incorrect procedures still arrived at the correct answer; No solution provided but arrived at the correct answer
2	Provided a complete solution, no incorrect procedures, and arrived at the correct answer.

Riddle part: *4 points*
Rubric.

0	Did not attempt to decode the riddle.
2	Able to decode the riddle but the solutions provided were incorrect. Guessed some of the items.
4	Decoded the riddle properly according to the correct solution provided.

2. Homework (Optional)

Answer Key:

1. $\frac{31}{40}$
2. $\frac{19}{21}$
3. $\frac{31}{40}$
4. $3\frac{17}{30}$
5. $3\frac{38}{45}$
6. $\frac{31}{40}$
7. $\frac{19}{21}$
8. $6\frac{1}{6}$
9. $8\frac{5}{12}$
10. $3\frac{17}{30}$
11. $1\frac{1}{6}$
12. 5
13. $\frac{39}{40}$

Riddle: **A GARBAGE TRUCK**

B. Teacher's Remarks

Note observations on any of the following areas:	**Effective Practices**	**Problems Encountered**
strategies explored		
materials used		

The teacher may take note of some observations related to the effective practices and problems encountered after utilizing the different strategies, materials used, learner engagement, and other related stuff.

	learner engagement/ interaction			Teachers may also suggest ways to improve the different activities explored/lesson exemplar.
	others			
C. Teacher's Reflection	*Reflection guide or prompt can be on:* • *principles behind the teaching* *What principles and beliefs informed my lesson?* *Why did I teach the lesson the way I did?* • *students* *What roles did my students play in my lesson?* *What did my students learn? How did they learn?* • *ways forward* *What could I have done differently?* *What can I explore in the next lesson?*			Teacher's reflection in every lesson conducted/facilitated is essential and necessary to improve practice. You may also consider this as an input for the LAC/Collab sessions.