Instructional Plan
Representational/Drawing Level

Name of Math Skill/Concept: Adding Fractions with Mixed Numbers (Like Denominators)

Prerequisite Skills Needed:

1. Ability to identify concrete representations of fractional parts and wholes.
2. Ability to add common fractions with like denominators.
3. Ability to add fractions with mixed numbers using concrete materials.

Learning Objectives:

1.) Add fractions with mixed numbers by drawing pictures that represent concrete materials.

2.) Use the FASTDRAW Strategy to solve story problems and equations that involve addition of fractions with mixed numbers by drawing solutions.

Important Ideas for Implementing This Teaching Plan:

1.) Teaching students to draw solutions is a very important step for moving from the concrete level of understanding to the abstract level. Multiple practice opportunities with drawing solutions help students to solidify their concrete conceptual understanding of the skill/concept while also helping them build memory for the process/procedure needed to eventually solve problems at the abstract level. Some students will need more drawing practice opportunities than others. Students may periodically need to use drawings to solve problems at the abstract level as a "back-up" strategy.

2.) This plan also describes how to teach students to solve story problems involving addition of fractions with mixed numbers by using the FASTDRAW Strategy. Students with learning problems need systematic instruction for solving story problems. Teaching students a strategy for both finding the important information and then setting up and solving an equation to answer the story problem is an essential step. By teaching students to solve story problems, you also provide meaningful contexts for learning the math skill. However, unless students receive explicit instruction for how to solve such problems, story problem solving will become a frustrating barrier for these students rather than an instructional aide.

Instructional Phase 1: Initial Acquisition of Skill/Concept – Teacher Directed Instruction

Teach Skill/Concept within Authentic Context

Description:
Continue to link adding fractions with mixed numbers by drawing to meaningful contexts such as the Pizza Party example described in the Concrete Level Instructional Plan. This is especially important

as you teach students to solve story problems by drawing using the FASTDRAW Strategy. Additionally, make explicit links to concrete experiences when teaching the drawing process.

Build Meaningful Student Connections

Purpose: to assist students to build meaningful connections between what they know about adding fractions with mixed numbers using concrete materials to adding fractions with mixed numbers by drawing.

Learning Objective 1: Add fractions with mixed numbers by drawing pictures that represent concrete materials.

Materials:
Teacher –

- appropriate concrete materials to solve a pre-determined equation involving addition of fractions with mixed numbers.
- a platform for visually displaying the equation and concrete materials so all students can see.
- the written objective: "add fractions with mixed numbers by drawing." (*Highlight "by drawing" to cue students.)
- chalkboard/dry-erase board/overhead to show examples of drawing solutions to other types of problems based on student suggestions

Description:

1.) **L** ink to students' prior knowledge of adding fractions with mixed numbers using concrete materials.

For Example:
We've learned to add fractions that have mixed numbers using concrete materials. Let's review this process. (Display an appropriate equation and prompt students to direct you as you solve the equation together using concrete materials.)

2.) **I** dentify the skill students will learn: Adding fractions with mixed numbers by drawing pictures that represent concrete materials.

For Example:
Today, we're going to learn how to solve equations where we need to add fractions with mixed numbers by drawing pictures rather than using concrete materials. (Display the written objective, "add fractions with mixed numbers by drawing.") What are we going to learn today? (Point to the written objective and elicit the response, "add fractions with mixed numbers by drawing.") Excellent! We are going to learn how to add fractions with mixed numbers by drawing pictures instead of using concrete materials.

3.) **P** rovide rationale/meaning for adding fractions with mixed numbers by drawing pictures that represent concrete materials.

For Example:
You may already know of ways to draw pictures to solve other kinds of problems. (Elicit student knowledge about drawing pictures to solve other kinds of problems – e.g. addition, subtraction, multiplication, and division of whole numbers; drawing circles/rectangles with partitions to represent fractions; etc.) Being able to draw pictures to solve a problem can be very helpful when you don't have concrete materials available to you. Drawing is kind of like using concrete materials except that you draw pictures that represent the concrete objects instead of using the concrete objects themselves. It provides you a faster way to solve these kinds of problems. Since you already know how to use concrete materials to solve problems that involve addition of fractions with mixed numbers, drawing solutions to these problems is a natural next step for you.

Provide Explicit Teacher Modeling

Purpose: to provide students a clear teacher model of drawing pictures to solve story problems and equations involving addition of fractions with mixed numbers.

Learning Objective 1: Add fractions with mixed numbers by drawing pictures that represent concrete materials.

Materials:
Teacher –

- a visual medium for writing and drawing (e.g. chalkboard, dry-erase board, chart paper.)
- markers/pens for writing and drawing.
- prepared equations that represent addition of fractions with mixed numbers. Color code whole numbers and fractions consistent with color-coding used to identify these concepts in story problems/equations used at the concrete level of understanding (e.g. 3 1/3 + 1 2/3 = __.)

Description:

A. Break down the skill of adding fractions with mixed numbers by drawing pictures that represent concrete materials.

1. Discover the sign/operation
2. Read the problem and identify the wholes and fractional parts represented by the problem.
3. Draw the wholes and fractional parts.
4. Combine the "wholes" by counting them.
5. Combine the fractional parts into "wholes" by circling them.
6. Add the pictures that represent the "wholes."
7. Add the pictures of the fractional part that remains and say what they represent.
8. Say what the total/sum means and write the answer.

B. Explicitly describe and model how to add fractions with mixed numbers by drawing that represent concrete materials.

- e.g. 4 2/4
  + 2 ¾

1.) Discover the sign/operation.

- Think aloud
- Skim problem with finger
- Point to sign
- Circle sign

For Example:

When I have an equation to solve, the first thing I need to do is to decide whether I am adding, subtracting, multiplying, or dividing. I can decide this by finding the operation sign. Hmm, I wonder where the operation sign in this equation is (run your finger along the length of the equation). Oh, here it is. (Point to the "+" sign.) This sign tells me to add, so I know I need to add these mixed numbers. I'll circle the "plus/addition" sign to help me remember I need to add.

2.) Read the problem and identify the wholes and fractional parts represented by the problem. Color-code the whole numbers and fractions according to the same color-coding used when you introduced story problems at the concrete level of understanding. Color-coding can assist students with visual processing difficulties and attention problems to discriminate whole numbers from fractions when they draw.

- Think aloud
- Point to numbers/symbols
- Prompt student thinking

For Example:

When I've discovered the operation I need to use, the next thing I need to do is read the problem. Reading the problem will help me determine what whole numbers and fractions I am working with. I'll read the problem aloud first and then I want you to read it with me a second time. (Read the problem aloud, pointing to each whole number and fraction as you read, then repeat the same process a second time when reading aloud with your students.) By reading the problem, I know I am adding, or combining, whole numbers with fractions. (Point to each whole number and fraction.)

Now that I've read the problem and know that I am adding whole numbers with fractions, I need to identify the wholes and the fractional parts the written numbers and fractions represent. Hmm, what is it that I am combining or adding? Well my first group is "four and two-fourths." The number "four" represents four wholes and the fraction "two-fourths" represents two-fourths of a whole. Another way to say this is that "two-fourths" equals two out of four equal parts. What does the number "four" represent? (Point to the "4" and elicit the response, "four wholes.") Yes, the number "four" equals four wholes. What does the fraction "two-fourths" represent? (Point to "2/4" and elicit the response, "two-fourths of a

whole," or "two of four equal parts.") Great thinking! The fraction "two-fourths" means two-fourths of a whole or two of four equal parts. (Repeat this same process for the second "group"/mixed number set - 2 ¾.)

3.) Draw the wholes and fractional parts.

- Introduce drawing pictures and model thinking of appropriate pictures to draw to represent fractions.
  - Think aloud
  - Cue numbers with finger
  - Relate drawings to concrete materials

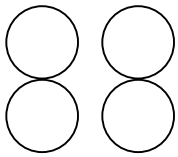
For Example:
Now that I know what it is I need to add or combine, I now need to represent them in a way that will help me do this. You have already learned how to use concrete materials like circles and circle pieces to do this. Today, I am going to show you how to draw pictures that will help you do this. I will draw pictures instead of use concrete materials.

Just like we have done with circles and circle pieces, I need to represent each whole and each fractional part in the problem. The first whole I need to draw is "four." (Point to the "4" in the problem.) It is helpful to draw a picture that is similar to a concrete material I have used to solve the same kind of problem. Since I am working with fractional parts, I need to think of a concrete material I have used that represents fractional parts. We've used several different kinds of objects that represent fractions: circles and circle pieces, cuisenaire rods, fraction strips, etc. I think I will draw circles and circle pieces.

- Model drawing circles for whole numbers and fractional parts for fractions.
  - Think aloud as you draw

For Example:
Now, I need to draw four wholes because the number "four" means four wholes. I know a circle represents a whole, so I can draw four circles. I'll do that now. (Draw four circles beneath "4 2/4" in the problem.)

4 2/4

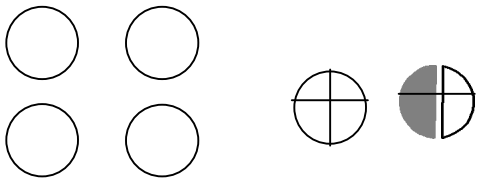


\+ 2 ¾

I've drawn pictures to represent the number "four," now I need draw pictures to represent "two-fourths." (Point to "2/4.") Hmm, I wonder how I can do this. Well, I know that circle pieces represent fractional parts of a circle. I could draw a circle and then shade in the fractional parts. That would show the fractional part. Let's see, I need to draw "two-fourths." "Two-fourths" means two of four equal parts. Since I am drawing circles to represent a whole,

that would mean I could draw a circle and separate it into four equal parts. Then I can shade in two of those parts to represent "two-fourths." I'll do that now. (Model drawing a circle, separating the circle into four equal parts and then shading two of the parts.)

4 2/4



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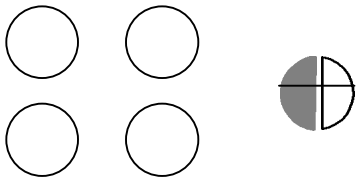
*Continue this process for "2 ¾."

4 2/4



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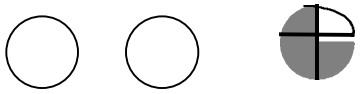


4.) Combine the "wholes" by counting them.

- Think aloud
- Cue drawings with finger
- Prompt student thinking – "How many?"

For Example:

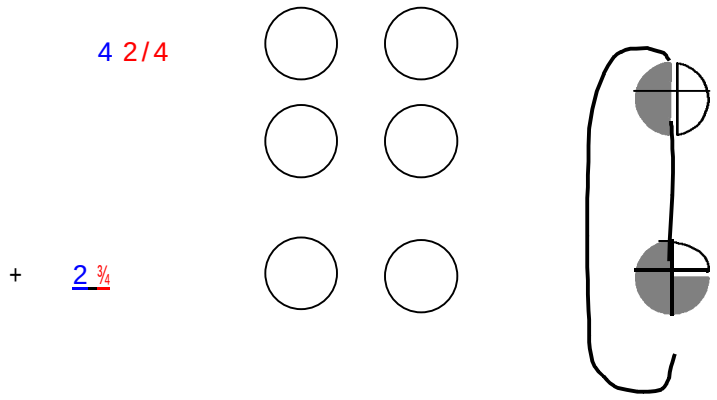
Now that I have drawn pictures that represent my wholes and my fractional parts, I need to combine my wholes first. This is the same thing we did with our circle pieces. I want to add them or combine them because the problem is an addition problem. I can add my whole circles by counting them. I'll do that now. (Point to each whole circle and count them aloud.) I have six whole circles. How many whole circles do I have? (Elicit the response, "six.") Yes, I have six whole circles. (Point to each whole circle and count them aloud again.)

5.) Combine the fractional parts into "wholes" by circling them.

- Think aloud
- Circle drawings of fraction pieces that make a whole
- Cue with finger
- Prompt student thinking – "How many fractional pieces make a whole?"

For Example:

Now I need to combine the fractional parts. When we did this with circles and circle pieces, we placed the circle pieces side-by-side until we made a whole circle. Sometimes we made one or more whole circles when we did this and sometimes we did not have enough fraction pieces to make a whole. Sometimes we had fractional parts left over. To draw this, we simply need to know how many fractional parts make a whole. Then we can draw a line around each group of fractional parts that make a whole. Let me show you what I mean. What are our fractional parts? (Point to "2/4" and "¾" and elicit the response, "two-fourths" and "three-fourths.") Good. And how many "fourths" make a whole circle? (Point to each fractional part in one of the circles separated into fourths and elicit the response, "four.") That's right, "fourths" means four equal parts make up a whole. Now that I know this, I know how many drawings that represent "fourths" I need to group together with a line. I can count four drawings that represent a fourth and then draw a line around them. I'll do that now. (Point to and count aloud the two shaded circle pieces representing "two-fourths" and then two of the shaded pieces representing "three-fourths.")



I have circled four "one-fourth" pieces. I now need to count four more. Hmm, I only have one more shaded "one-fourth" piece left. That is not enough to group, so I have one "one-fourth" piece left over. I made one whole by combining four "one-fourth" pieces and have one "one-fourth" piece left over. (Point to the four "combined" one-fourth pieces and then point to the remaining one-fourth piece as you say this.)

6.) Add the pictures that represent the "wholes."

- Think aloud
- Point as you count drawings

- Prompt student thinking – "How many"

For Example:
After I have combined the fractional parts into as many wholes as is possible, I now need to count the total number of wholes I have. I'll do that now. (Count aloud each whole circle including the newly made whole circle represented by the circled fraction pieces.) I have seven wholes. How many wholes do I have? (Elicit the response, "seven.") Yes, I have seven wholes. Six wholes are represented by these pictures of whole circles. (Point to the six whole circles.) The seventh whole is represented by the newly grouped four one-fourth circle pieces. (Point to the circled shaded in one-fourth pieces.)

1.) Add the pictures of the fractional part that remains and say what they represent.
- Think aloud
- Cue shaded in fraction pieces with finger
- Prompt student thinking – "What fraction left?"

For Example:
I know I have a total of seven wholes. Now I need to determine the fractional part I have left. I have one shaded in one-fourth-circle piece left over. (Point to the remaining shaded in "one-fourth"-circle piece.) What fractional part do I have left? (Elicit the response, "one-fourth.") That's right I have "one-fourth" remaining.

8.) Say what the total/sum means and write the answer.
- Think aloud
- Cue shaded in fraction pieces with finger
- Prompt student thinking – "What fraction left?"

For Example:
Now that I have combined, or added, all the wholes and fractional parts, its time to answer the problem. The total or sum is seven wholes and one-fourth. (Point to the pictures of the wholes and the fractional part.) I will write my answer here. (Point to the appropriate space to write the solution and then write the solution.) (Point to the equations and ask the question, "What is the answer to the problem, "four and two-fourths plus two and three-fourths?") (Elicit the response, "seven and one-fourth.") Yes, the answer or solution is "seven and one-fourth." (Write 7 ¼ below the equation.)

9.) Repeat steps 1-8 for at least three more examples.

Learning Objective 2: Use the FASTDRAW Strategy to solve story problems and equations that involve addition of fractions with mixed numbers by drawing solutions.

Materials:
Teacher –
- a visual display of the FASTDRAW and DRAW Strategy.

F ind what you are solving for.
A sk yourself, “What is the important information?”
S et up the equation.
T ie down the sign.

D iscover the sign.
R ead the problem.
A nswer the problem, or draw and check.
W rite the answer.

- a visual medium for writing and drawing (e.g. chalkboard, dry-erase board, chart paper.)
- markers/pens for writing and drawing.
- prepared story problems and/or equations that represent addition of fractions with mixed numbers. Color code whole numbers and fractions consistent with color-coding used to identify these concepts in story problems/equations used at the concrete level of understanding (e.g. 3 1/3 + 1 2/3 = __.)

A. Break down the skill of using the FASTDRAW Strategy to solve story problems and equations that involve addition of fractions with mixed numbers by drawing solutions.

1.) Introduce story problem.
2.) Read the story problem aloud and then have students read it with you.
3.) Teach finding the important information in the story problem and setting up an equation using the steps “FAST” from the “FASTDRAW” Strategy.
3a. Find what you are solving for.
3b. Ask yourself, what is the important information (circle it).
3c. Set up the equation.
3d. Tie down the sign.
4.) Teach drawing solutions using the steps “DRAW” from the “FASTDRAW” strategy.
4a. Discover the sign.
4b. Read the problem.
4c. Answer, or draw and check.
4d. Write the answer.
5.) Model how to solve the story problem by relating the “answer” to the equation back to the story problem context.
6.) Model how to draw solutions to equations by repeating the steps in#4 and #5 at least two or three more times with different division equations.

B. Explicitly describe and model how to solve story problems representing addition of fractions with mixed numbers using the FASTDRAW Strategy and how to solve addition equations involving fractions with mixed number using the DRAW Strategy.

*Use the same process as described for using FASTDRAW and DRAW to solve story problems and equations involving the division process and division with remainders (See the

Representational/Drawing instructional plan for the "Division Process and Division with Remainders"/SOL 5.5) For the "A" step of DRAW, use the same process as described above for drawing solutions to equations involving addition of fractions with mixed numbers.

Scaffold Instruction

Purpose: to provide students the opportunity to build their initial understanding of how to add fractions with mixed numbers by drawing, and to provide you the opportunity to evaluate your students' level of understanding after you have initially modeled this skill.

Materials:
*Dependent on the skill you are Scaffolding Instruction for (See the materials listed for the specific skill you want to scaffold under Explicit Teacher Modeling).

Description:

*Scaffolding at the representational/drawing level of instruction should occur using the same process as scaffolding instruction at the concrete level of instruction (See the description of Scaffolding Instruction for, "combining sets of concrete materials that represent fractions with mixed numbers," in the Concrete Level Instructional Plan.). The steps used during Explicit Teacher Modeling should be used as structure for scaffolding your instruction.

*To see a description of scaffolding instruction for the FASTDRAW Strategy, see the Representational/Drawing Level instructional plan for the math concept, "Division Process and Division with Remainders/SOL 5.5.

A. Scaffold instruction using a high level of teacher direction/support. Dependent on the needs of your students, you may want to continue to associate concrete materials with drawings at this level as described under Explicit Teacher Modeling. Move to the next phase of scaffolding only when students demonstrate understanding and ability to respond accurately to your prompts.

B. Scaffold instruction using a medium level of teacher direction/support If you associated concrete materials with drawings while scaffolding using a high level of teacher direction/support, then do not include concrete materials during this phase of scaffolding. Move to the next phase of scaffolding only when students demonstrate understanding and ability to respond accurately to your prompts.

C. Scaffold instruction using a low level of teacher direction/support Students should actually draw as you prompt during this phase of Scaffolding Instruction. Move students to independent practice of the skill only after they demonstrate the ability to perform the skill with limited prompting from you.

Instructional Phase 2: Facilitate Acquisition to Mastery – Student Practice

1. Receptive/Recognition Level

Purpose: to provide students multiple opportunities to practice choosing drawings that represent solutions to equations involving addition of fractions with mixed numbers.

Learning Objective 1: Add fractions with mixed numbers by drawing pictures that represent concrete materials.

Instructional Game – Board Game

Materials:

Teacher –

- develop a master set of prompts for cards: Each prompt consists of an equation involving addition of fractions with mixed numbers and three drawings depicting possible solutions. Each example is designed to fit one side of a 4 x 5 note-card. A master set of "drawing solutions" is also developed that includes the correct solution for each example. Each "correct" drawing should also fit one side of a 4 x 5 note-card. *Each prompt should be numbered so you can determine which prompts individual students respond to and evaluate their performance/understanding (*Students write number of card they respond to on a sheet of paper as they play the game). This "master" serves as an "Key" for evaluating student responses.
- Multiple decks of cards with prompts on one side and answers on the other side. 4x5 note-cards can be used and prompts and corresponding answers can be glued/pasted on opposite sides of a card. Cards can be laminated for protection. *Make copies of the masters described above to make as many decks needed for your class.
- appropriate number of generic game boards (e.g. manila folders or tag-board with multiple spaces that have "start" and "finish" spaces. *Provide enough spaces so all students playing the game have multiple response opportunities.
- appropriate number of die or spinners and game pieces for students.

Students –

- Each group playing game needs a game board, die or spinner, appropriate number of game pieces, and one deck of response cards.
- Each student needs a sheet of notebook paper to record the card number they responded to and whether they got it correct or not.

Description:

Activity

Students play in small groups. Each player has a game piece to move along the path of the game board. Students roll a die or spin a spinner. To move, students must pull a card from the deck and choose the appropriate drawing that solves the given equation. The card is turned over to reveal the answer. The student who gets to the finish space wins. *To include some "suspense" to the game, several cards in the deck could be "bonus" cards where students move additional spaces if they respond correctly. Several spaces on the game board could also direct students

to “move forward” or “move back” a certain number of spaces if landed on. Each card in the deck is numbered and students record the number card they respond to as well as whether they answered it correctly or not on a sheet of notebook paper. The teacher monitors students’ social and academic behavior as they work, providing positive reinforcement, specific corrective feedback, and answering questions as appropriate. Students turn in their individual response sheets at the end of the game. The teacher reviews individual response sheets using the master key to evaluate individual student understanding.

Instructional Game Steps:

1.) Introduce game.
2.) Distribute materials.
3.) Provide directions for game, what you will do, what students will do, and reinforce any behavioral expectations for the game.
4.) Provide time for students to ask questions.
5.) Model how to respond to the card prompts.
6.) Provide time for students to ask questions about how to respond.
7.) Model how students can keep track of their responses.
8.) Play one practice round so students can apply what you have modeled. Provide specific feedback/answer any additional questions as needed.
9.) Monitor students as they practice by circulating the room, providing ample amounts of positive reinforcement as students play, providing specific corrective feedback/ re-modeling skill as needed.
10.) Play game.
11.) Encourage students to review their individual response sheets, write the total number of “correct” responses under the “C” (Correct) column and do the same for the “H” (Help) column.
12.) Review individual student response sheets to determine level of understanding/proficiency and to determine whether additional modeling from you.

2. Expressive Level

Learning Objective 2: Use the FASTDRAW Strategy to solve story problems and equations that involve addition of fractions with mixed numbers by drawing solutions.

Structured Peer Tutoring

Purpose: to provide students multiple opportunities to practice solving story problems involving addition of fractions with mixed numbers.

Materials:
Teacher –

- develop a master “Learning Sheet”: Each “learning sheet” has multiple story problems with the prompts “FAST” and “DRAW” beneath each story problem. Appropriate space is provided under “FAST” for student to write the equation and appropriate space is provided under “DRAW” for students to draw their solutions and write the answer. (Students

highlight important information and set up the equation for "FAST" while they draw the solution and write the answer for "DRAW.") *Advanced students can assist making up story problems that reflect addition of fractions with mixed numbers.

- A master "Answer Key" for the learning sheet.
- Make appropriate number of copies for the learning sheet and answer key. (*These can be laminated and students can use dry-erase pens to save copying time/expense if you use this activity multiple times.)
- FASTDRAW Strategy poster or master cue sheet (Lists the steps of the FASTDRAW Strategy. *An example of how to apply the strategy to story problems involving addition of fractions with mixed numbers can be included as a cue for students – show story problem with important information highlighted appropriately, the equation written, drawings, and the answer written.)

Students –

- each student receives one learning sheet.
- each student pair receives one answer key.
- each student has one sheet of notebook paper for recording points.
- pencils for writing and drawing.
- *FASTDRAW Strategy Cue sheets for each student

Description:

Activity

Students work in pairs by responding to learning sheets. The learning sheet has multiple story problems that involve adding fractions with mixed numbers. For each problem, students have to do two things. First, they must use FAST to find the important information in the story problem and set up the equation. Second, they must use DRAW to solve the equation and answer the story problem. The period is divided into two equal times frames. One student in each pair is the "coach" for the first period while the other student is the "player." Students switch roles for the second time period. The "coach" reads the story problem and prompts the "player" to use FAST to find/highlight the important information and set up an equation. Then, the coach prompts the player to use DRAW to solve the equation and answer the story problem. The coach checks the player's responses using the answer key after the player completes each example, providing positive reinforcement and specific corrective feedback. *The coach can also award points based on student responding - "2 pts." for getting each part of the example correct (FAST & DRAW); "1 pt." for re-working the example based on feedback and solving it correctly. Tallies can be made on a sheet of notebook paper that serves as a scoring sheet. The teacher signals when students switch roles and monitors student social and academic behavior as they work, providing positive reinforcement, specific corrective feedback, and answering questions as appropriate. Students turn in their individual learning sheets and point sheets at the end of the activity. The teacher reviews individual student learning sheets and point sheets to evaluate their understanding.

Structured Peer Tutoring Steps:

1.) Select pair groups and assign each pair a place to practice (try to match students of varying achievement levels if possible).
2.) Review directions for completing structured peer tutoring activity and relevant classroom rules. Practice specific peer tutoring procedures as needed (see step #4).
3.) Model how to perform the skill(s) within the context of the activity before students begin the activity. Model both what the coach does (e.g. reads the questions/prompts on the learning sheet; checks answers using answer key; provide corrective feedback; record points) and how the player responds (e.g. highlighting important information; setting up equation, drawing solution, writing answer).
4.) Divide the practice period into two equal segments of time. One student in each pair will be the player and will respond to the questions/prompts given by the coach. The other student will be the coach and will say each question or prompt on the learning sheet. The coach will check the answer key, and provide feedback regarding the player's response (e.g. positive verbal reinforcement for accurate responses and corrective feedback for inaccurate responses.) For inaccurate responses, the coach provides feedback and the player attempts the question a second time. The first response is crossed out and the second response is recorded. The coach records two points for correct responses on the first attempt and one point for correct responses on a second attempt.
5.) Provide time for student questions.
6.) Signal students to begin.
7.) Signal students when it is time to switch roles.
8.) Monitor students as they work in pairs. Provide positive reinforcement for both "trying hard," responding appropriately, and for students using appropriate tutoring behaviors. Also provide corrective feedback and modeling as needed.
9.) Students turn in learning sheets and point totals.
10.) Teacher reviews learning sheets/point totals to evaluate student understanding.

Instructional Phase 3: Evaluation of Student Learning/Performance (Initial Acquisition through Mastery/Maintenance)

Continuously Monitor & Chart Student Performance

Purpose: to provide you with continuous data for evaluating student learning and whether your instruction is effective. It also provides students a way to visualize their learning/progress.

Materials:

Teacher –
- appropriate prompts if they will be oral prompts
- appropriate visual cues when prompting orally

Student –
- appropriate response sheet/curriculum slice/probe
- graph/chart

Description:

Steps for Conducting Continuous Monitoring and Charting of Student Performance:
1.) Choose whether students should be evaluated at the receptive/recognition level or the expressive level.
2.) Choose an appropriate criteria to indicate mastery.
3.) Provide appropriate number of prompts in an appropriate format (receptive/recognition or expressive) so students can respond.

- Based on the skill, your students' learning characteristics, and your preference, the curriculum slice or probe could be written in nature (e.g. a sheet with appropriate prompts; index cards with appropriate prompts), or oral in nature with visual cues (e.g. teacher shows drawings and choices on overhead and then prompts students to say which written fractional answer is correct,) or a combination of written curriculum slices/probes and oral prompts with visual cues (e.g. teacher shows equation or drawings on overhead and then prompts students to draw solution or write fraction that is the solution on a sheet of papered numbered 1-8).

4.) Distribute to students the curriculum slice/probe/response sheet/.
5.) Give directions.
6.) Conduct evaluation.
7.) Count corrects and incorrects/mistakes (you and/or students can do this depending on the type of curriculum slice/probe used – see step #3).
8.) You and/or students plot their scores on a suitable graph/chart. A goal line that represents the proficiency (for representational level skills, this should be 100% – 8-10 out of 8-10 corrects) should be visible on each students' graph/chart).
9.) Discuss with children their progress as it relates to the goal line and their previous performance. Prompt them to self-evaluate.
10.) Evaluate whether student(s) is ready to move to the next level of understanding using the following guide:

> Representational Level: demonstrates 100% accuracy of (given 8-10 response tasks) over two to three consecutive days.

11.) Determine whether you need to alter or modify your instruction based on student performance.

Instructional Phase 4: Maintenance – Periodic Practice to Maintain Student Mastery of Skills

Problem of the Day

Purpose: to provide students periodic opportunities to maintain mastery of a skill previously learned and mastered.

Materials:

Teacher –

- visual platform to display drawings depicting addition of fractions with mixed numbers (e.g. chalkboard/dry-erase board, overhead projector).
- one or more drawings of addition of fractions with mixed numbers

Students -

- pencil and paper for writing.

Description:

Students respond to the "Problem of the Day" when they first arrive or at the beginning of math time.

Display drawings that represent addition of fractions with mixed numbers. A variety of prompts or questions could be written that students respond to:

What equation is drawn?
What is the solution?

Students can respond in writing or they can respond orally to the teacher on an individual basis (if writing is a difficult process for them). The teacher can take a minute or two after students have had the opportunity to respond to discuss the "Problem" and elicit student ideas and provide corrective feedback and modeling.