Instructional Plan

Concrete Level

Name of Math Skill/Concept: Identifying and representing equivalent fractions using concrete objects

Prerequisite Skills Needed:

- Identifying and write fractions.
- Comparing fractions.
- Greater than, less than,
- Concept of equivalency

Learning Objectives:

1. Identify and represent equivalent fractions using concrete objects with an area model.
2. Identify and represent equivalent fractions using concrete objects with a measurement model.
3. Identify and represent equivalent fractions using concrete objects with a sets model.

Important Ideas for Implementing This Teaching Plan:

1. Use story problems to provide context
2. Model comparing and testing objects that are part of the same whole
3. Explicitly model and describe the concept of a whole being shared equally (the more shares in one whole, the smaller each share will be.)
4. Use area model before moving to a measurement and then to a set model
5. Color code fraction pieces
6. Provide examples and non-examples to help students discriminate the concept.

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

Teach Skill/Concept within Authentic Context

Description: A problem context of ordering and sharing pizza is used.

Build Meaningful Student Connections

Purpose: to help students make meaningful connections between what they have experienced with ordering and sharing pizza and identifying and making equivalent fractions.

*The following is a description of how you implement this instructional strategy for Learning Objective 1. A similar process can be used for the other learning objectives in this plan,

Learning Objective 1: Identify and represent equivalent fractions **using concrete objects with an area model.**

Materials:

Teacher –

- Cardboard pizzas representing a whole, halves, fourths and eighths
- Whiteboard or other visual display or word cards with half, fourth, eighth

Description:

1.) **L** ink to students' prior knowledge of identifying and representing fractions.

For Example:

How many of you like to eat pizza? What is your favorite kind of pizza? When we share a pizza with others, we are each getting a part of the whole pizza. We can divide the pizza into halves (point to word half on board) or fourths (point to word) or even eighths (point to word). We know that a half, a fourth and an eighth are called fractions. They mean that we have taken a whole, like this whole pizza and divided it equally into parts (show with cardboard pizza slices).

2.) **I** dentify the skill students will learn: Identifying and representing equivalent fractions using concrete objects.

For Example:

Today we are going to learn how to tell if each person is getting the same amount of pizza by looking at the equal parts of pizzas. We are going to look at the different parts and see which ones show the same amount. We are going to study how to identify and make Equivalent (point to word on board) parts. Equivalent parts look different but represent the same amount of a whole.

3.) **P** rovide rationale/meaning for identifying and representing equivalent fractions.

For Example:

Knowing how to do problems like this will help us when we work with fractions. It will help you when you shop to decide how to share things. When you have to share and equally divide things like pizzas, or hershey bars, you can make sure that everyone gets the same amount.

Provide Explicit Teacher Modeling

Purpose: to provide students with a clear teacher model of how to identify and make equivalent fractions using concrete objects.

Learning Objective 1: Identify and represent equivalent fractions using concrete objects with an area model.

* This skill should first be taught using an area model, then a measurement model, and then a sets model. After completing all phases of the instructional plan with an area model, and measuring student mastery, the concept should then be taught using a measurement model. After completing all phases of the instructional plan with a measurement model, and measuring student mastery, the concept would then be taught using a sets model.

Materials:

Teacher –

- Pizza boxes from different types of pizzas

- Cardboard pizzas that are divided into fourths, eighths, halves, etc.
- Visual display area

A. Break down the skill of identifying and representing equivalent fractions using concrete objects with an area model.

1.) Identify the fractional part shown by each object.

2.) Compare fractional parts.

B. Explicitly describe and model how to identify equivalent parts using concrete objects with an area model.

1.) Identify the fractional part shown by the object.

- Identify the whole.
- Cue students to compare each whole to make sure they are equal.
- Use think alouds and questions to prompt students to identify the parts that each whole is divided into.
- Use verbal and visual cues to model how to identify the number of parts that are in each fractional part.

<u>For Example:</u>

I want you to look at the pizza boxes I have up here. Each of these pizzas was an 8-inch pizza. I started out with the same size pizzas, but I cut each of them into different pieces. (Open boxes and show slices). Now I want to share some of my pizza, but I want to make sure that everyone still gets the same amount of pizza. Let's look at the first one. The first one is for a small pepperoni pizza. How many parts did I cut this pizza into? Right – 2. I had a one whole pizza and I cut it into two equal parts. I am going to give Mark one of those two parts. (Take one of the two parts and give to student). If my whole was cut into two parts, and I have given him one of those two parts, I have given him one half of the pizza. What fraction describes the part of the pizza did he get? (Right, one half). Now let's look at the next box. This is for a small cheese pizza. It is the same size as the pepperoni pizza. How many parts have I cut this pizza into? (Show pieces and count with students). Right 4. I have 4 pieces here. I am going to give Katie 2 of those 4 pieces. I had 4 pieces and I gave Katie 2 of them, so Katie has two of the four pieces. Katie has two fourths of the pizza. So, Mark has one half of this pizza, and Katie has two fourths of the pizza. Hmm, I have a third box here. It is for a mushroom pizza! Who likes mushroom? Me too!!! This pizza is the same size as the other two. This time, I have cut the pizza into 6 pieces (count with students). I am going to give 3 pieces to Rich. Rich has 3 of the 6 pieces (illustrate with pieces). What fractional part does Rich have? Right, three sixths. Mark has one half of this pizza (point to display), Katie has two fourths of this pizza (point to display), and Rich has three sixths of this pizza (point to display.) Hmm. do you think I've managed to give each person the same amount of pizza? Well, I am going to compare and make sure that each person has the same amount of pizza.

2.) Compare fractional parts.

- Cue students to area comparisons by manipulating pieces to see if they take up the same amount of space.
- Emphasize meaning of equivalence (representing the same amount of the whole)
- Label fractional parts as equivalent/nonequivalent

<u>For Example:</u>

Well, each person has a different number of pieces. Katie has 2 because I gave her two fourths of the pizza. Rich has 3 because I gave him three sixths of the pizza. Mark has 1 because I gave him one half of the pizza. (Point to, hold up each piece as you talk.)

We need to see if they are the same amount. I am going to compare these pieces by laying them on top of each other. Let's start with Mark because he has the biggest piece. He has one half of the pizza. That's a lot of pizza, isn't it? Now let me see, I am going to compare Katie's to Mark's. Katie has 2 pieces of pizza. I gave her two of the four pieces; she has two fourths of the pizza. I am going put her pieces on top of Mark's. Look, Katie's pieces cover all of Mark's piece. They take up the same amount of space. (Have students feel around the area of both). Katie has more pieces than Mark does, but her pieces are smaller. All of her pieces together cover Mark's piece. Mark and Katie have the same amount of pizza. Their fractions are equivalent (point to word). One half is equivalent to two fourths. The one half of pizza and the two fourths of the pizza are the same amount. (Show students how the pieces cover the same area.) Let's see if Rich has the same amount of pizza. I am going to take Rich's 3 pieces. I had cut up the mushroom pizza into 6 pieces, and I gave Rich 3 of them. Rich has three of the six pieces, so he has three sixths of the pizza. Now I am going to see if Rich's three sixths of the pizza is equivalent to Mark's one half. To check that, I am going to put all of Rich's pieces on top of Mark's piece. Rich has more pieces, but his pieces are smaller. All of Rich's pieces cover Mark's piece. Look they take up the same amount of space. (Have students feel around the area of both). They are equivalent. Three sixths is equivalent to one half. I wonder how Rich and Katie's pieces compare? (Elicit student response). You think they are equivalent? Let's see, I'll put Katie's pieces on top of Rich's pieces. You were right! They take up the same amount of space. Three sixths and two fourths are equivalent. And, if we add Mark's piece, we can see that three sixths (point to bottom pieces), and two fourths (point to middle pieces) and one half (point to top piece) are all equivalent. Even though Rich has more pieces of pizza than Katie or Mark, his pieces are smaller. But, if you put all of Rich's pieces together, they are the same amount of pizza as Katie or Mark.

3.) Repeat the above activity at least several times using a variety of equivalent fractional parts. Continue to show that equivalent fractional parts take up the same amount of space.

4.) After you have explicitly described and modeled several equivalent fractional parts compare two non-equivalent fractional parts. Emphasize that students can tell the fractional parts are non-equivalent because they do not take up the same amount of space.

Learning Objective 2: Identify and represent equivalent fractions using concrete objects with a measurement model.

* Identifying and representing equivalent fractions should first be taught using an area model, then a measurement model, and then a sets model. After completing all phases of the instructional plan with a measurement model, and measuring student mastery, the concept should then be taught using a set model.

Materials:

Teacher –

- Fraction strips or bars, or Cuisenaire rods
- Visual display area

Description:

A. Break down the skill of identifying and representing **equivalent fractional parts using concrete objects with a measurement model.**

1.) Identify the fractional parts shown by each object.

2.) Compare fractional parts.

B. Explicitly describe and model how to identify and represent equivalent fraction al parts using concrete objects with a measurement model.

* Follow the same process (steps 1-4) as described for Learning Objective 1B, “Explicitly describe and model how to identify equivalent parts using concrete objects with an area model”.

Key Ideas:

1. Cue students to identify and compare wholes. Have students place rods side by side to see if they are the same length. Use think alouds and questions to prompt students to identify the parts that each whole is divided into.

For Example:

We have been finding equivalent fractions using fractions circles, squares, and other materials. Now I want to see if we can do the same thing with the Cuisenaire rods. Here is a whole rod. I am going to take two of these rods and place them beside the whole rod. Do the two rods have the same length as the one whole? Yes, they do. Each of these rods is one half of this whole rod. Now let's look at these rods. This time I am going to use four rods to show the same length as the whole rod. I am going to take two of the four rods. How many rods did I take? Right! Two. I took two of the four rods, so I have two fourths here. (Continue with other equivalent fractions such as three sixths and/or four eighths).

2.) Continue to emphasize that fractional parts are equivalent if they represent the same amount of the whole (for measurement model, if they are the same length). Compare two fractional parts and then add other comparisons.

For Example:

Now I need to compare my fractional parts. Each of these rods shows a different fraction. This rod shows one half of the whole. These rods show two fourths of the whole. And these rods show three sixths of the whole. I am going to compare these pieces by placing them beside each other. Let's start with the one half because it is the longest rod. Now let me see, I am going to compare the two fourths to the one half. I am going lay these pieces beside the one half rod (place the two fourths rods beside the one half). Look, the two fourths rods match the length of the one half rod. (Have students come up and feel that rods are same length). They are the same length. That means that one half and two fourths are equivalent. Let's see if any of these other fractional parts are equivalent. I am going to take the three sixths pieces. I am going to place them on this side of the one half rod. Look they are also the same length. Three sixth is equivalent to one half. I wonder how I could check if three sixths and two fourths are equivalent. I am going to place them beside each other. The three sixths rods and the two fourths rods are the same length. Even though there are more thee sixth rods, each rod is smaller. If you put all of three sixth rods together, they are the same length as the two fourths. (Illustrate with rods). They are also the same length as this one half rod (illustrate with rods). Three sixths and two fourths and one half are all equivalent.

3. Repeat the above activity several times using a variety of equivalent as well as nonequivalent fractional parts.

Learning Objective 3: Identify and represent equivalent fractions using concrete objects with a sets model.

* This skill should first be taught after using an area model, and then a measurement model. After completing all phases of the instructional plan with an area and then a measurement model, and measuring student mastery, the concept should then be taught using a set model.

Materials:

Teacher –

- Set of mini pizzas (real or construction paper) placed in two horizontal rows of four.
- Four pepperoni slices (real or construction paper)
- String
- Visual display area

Description:

A. Break down the skill of identifying and representing **equivalent fractional parts using concrete objects with a sets model.**

1.) Identify the fractional part represented by each part of the set.

2.) Compare fractional parts.

B Explicitly describe and model how to identify and represent equivalent fractional parts using concrete objects with a sets model.

1. Identify the fractional part represented by each part of the set

- Identify the number of objects in the whole set.
- Identify the number of objects in each fractional part .
- Cue students to fractional parts (e.g. use color cues and/or string to show division of whole into fractional parts).

<u>For Example:</u>

Let's look at the table. I have some mini pizzas up here today. I want to see if you can identify equivalent fractions using these mini pizzas. Let's see, I have 8 pizzas up here. I am going to give Mark four of them. I will put these pepperoni slices on his four pieces. (Put pepperoni slices on the four pizzas on the top row of pizzas.) I wonder what fractional part of the eight pizzas Mark will have if I give him these four pizzas? (Cue students by pointing to the pizzas with pepperoni slices.) Right, if I give him four of the eight pizzas (cue students to the four pizzas), he will have four eighths of this group of pizzas. Let's say that I want to take one half of this group of pizzas and give Mark one half. Well, to give Mark one half, I'll need to divide up this whole group of pizzas into two parts. I am going to take this string and divide my pizzas up into two parts (place string between the two rows of pizzas). I want to give Mark one half of the pizzas, so I will give him one of these two parts. I divided my group of pizzas into two parts (point to string) and I am going to give Mark one of the two parts (point to top row of pizzas). We've shown four eights (point to the four individual pizzas) and one half (point to top row) of this group of pizzas, let me see if I can divide this group of pizzas a different way. I wonder what would happen if I put another string here to divide this group of pizzas into four parts (place another piece of string vertically). If I decide to give Mark two of these four parts (point to four parts and then to top two parts), what fractional part of this group of pizzas will I give him? Well, if I give him two of the four parts, I will give him two fourths of this group of pizzas

2.) Compare fractions and identify them as equivalent if they contain the same part of the total whole.

- Continue to emphasize that fractional parts are equivalent if they represent the same amount of the whole (for set model, if they contain the same number of objects).
- Compare two fractions and then add other comparisons.

For Example:

Now let's look at what happened. I know that I have eight pizzas. If I give Mark four of those eighth pizzas (point to four pizzas with pepperoni slices), I have given him four eighths of the group of pizzas. Here is the one half of the group that I want to give to Mark (point to top row). There are four pizzas in this one half. If I give Mark this one half of pizzas, how many pizzas will he have? Right! He will have four pizzas in his group (point to the sting dividing the pizzas and then point and count the four pizzas in the top row). So, if Mark has one half (point to string and top row) or if he has four eighths (point to each of the four individual pizzas on the top row) he will have the same number of pizzas. How many pizzas will he have? Right, four (count pizzas). He will have the same pizzas either way. I wonder about the two fourths (point to the two fractional parts)? Do you think the two fourths has the same number of pizzas as the one half and four eighths? Well, let's see. Here are my two fourths (point to each fourths), and if I count all the pizzas in them, I get 1,2,3,4, pizzas. So two fourths has the same number of pizzas as one half and four eighth does. All of these fractional parts are equivalent.

3.) Repeat the above activity several times using a variety of equivalent as well as nonequivalent fractional parts.

Scaffold Instruction

Purpose: to provide students an opportunity to build their initial understanding of identifying and representing equivalent fractions **using concrete objects** and to evaluate your students' levels of understanding after you have initially modeled the skill.

* The following description is for Learning Objective 1: Identify and represent equivalent fractions **using concrete objects with an** area model. A similar process could be used for the other learning objectives in this plan.

Materials:

Teacher –

- Cardboard pizzas that are divided into fourths, eighths, etc.
- Word cards with 'Equivalent' written on it
- Bags of fraction pieces – one bag has halves, another fourths, etc.
- Visual display area

Students -

- Bags of fraction pieces – one bag has halves, another fourths, etc. Each set of pieces is colored a different color
- Index cards with equivalent written on them

Description:

HIGH

MEDIUM

LOW

1.) Scaffold Using a High Level of Teacher Direction/Support

a. Choose one or two places in the problem-solving sequence to invite student responses. Have these choices in mind before you begin scaffolding instruction. (Examples of choices are shown in red.)

- Identify the fractional part shown by each object.
  - Identify the whole(s).
    - We have looking at finding equivalent fractional parts. Now, I am going to give you another problem and have you help me with it. I have two pizzas here. I have cut up one pizza into six pieces and one pizza into eight pieces. First I need to decide if these two pizzas are the same size. How do you think we could do that? Right, _____ please come up and show us whether these two pizzas are the same size. Boys and girls, _____ put all the pieces for the pizza I cut up into sixths and laid them on top of the pizza that I cut into eighths. Are they the same size? Yes, they are.
  - Identify the number of parts that are in each fractional part
    - I said I cut this pizza into eighth equal pieces, and I cut this pizza into six equal pieces. I am going to give four of the eight pieces of this pizza to Jason. If I give four of the eight pieces to Jason, I wonder what fractional part of the pizza he will have? Well, four of eight pieces will be four eighths. And I am going to give three of the six pieces to Marisa. If I give three of the six pieces to Marisa. What fractional part of the pizza does she have? Right, three sixths. So, what fractional part of this pizza does Jason have? Right, four eighths. And what fractional part of this pizza does Marisa have? Correct again, three sixths. Well, they have different fractional parts, but I wonder if they have the same amount of pizza?
- Compare fractional parts.
  - Manipulate the pieces to see if they take up the same amount of space.
    - Each person has a different number of pieces. Jason, let's put your pieces down first. 1,2,3,4 of eight pieces. Jason has four eighths of the pizza. How can we see if Marisa has the same amount? Right, we can put her pieces on top of Jason's. If they cover Jason's and take up the same amount of space, then we know that they have the same amount of pizza. Well, let's try it.
  - Label fractional parts as equivalent/nonequivalent
    - Look, Marisa's pieces cover all of Jason's pieces. They take up the same amount of space. That tells us that Jason and Marisa have the same amount of pizza. They have equivalent fractional parts (put word card next to display of pizza pieces). How did we know that Jason's four eighths were equivalent to Marisa's three sixths? Right, we put them on top of each other to see if they took up the same area, the same amount of space.

b. Maintain a high level of teacher direction/support for another example if students demonstrate misunderstanding/non-understanding; move to a medium level of teacher direction/support if students respond appropriately to the selected questions/prompts.

2.) Scaffold Using a Medium Level of Teacher Direction/Support

a. Choose several more places in the problem-solving sequence to invite student responses. Have these choices in mind before you begin scaffolding instruction.

- Identify the fractional part shown by each object.
    - Identify the whole(s).
        - For the next problem, I want you to help me even more. This time I am going to use fraction circles. Look at these bags. In this bag I have twelve pieces that make a circle. In this bag I have six pieces that make a circle. One of these circles is divided into twelve pieces and one of them is divided into six pieces. What's the first thing I need to do? Right, first I need to decide if these two circles are the same size. How do you think we could do that? Right, ______ please come up and show us how to do that. Are they the same size? Yes, they are.
    - Identify the number of parts that are in each fractional part
        - Let's see if four pieces from this circle (point to circle divided into twelfths) is the same as two pieces from this circle (point to circle divided into sixths). What fractional part is shown by these four pieces? Well, the circle is divided into twelve equal parts, and I have four of them, so that is four twelfths. What fractional part is shown by these two pieces (point to sixths). Right, two sixths, because the circle is divided into six pieces and I have two of them.
- Compare fractional parts.
    - Manipulate the pieces to see if they take up the same amount of space.
        - Now what do I need to do? Right, I need to put them on top of each other. Do they take up the same amount of space? Yes, they do.
    - Label fractional parts as equivalent/nonequivalent
        - These fractional parts take up the same amount of space, so we can say that they are equivalent (label with word card). What is the fraction here? Right, four twelfths is equivalent to___ two sixths.

b. Maintain a medium level of teacher direction/support for another example if students demonstrate misunderstanding/non-understanding; move to a low level of teacher direction/support if students respond appropriately to the selected questions/prompts.

3.) Scaffold Using a Low Level of Teacher Direction/Support

a. When students demonstrate increased competence, do not model the process. Ask students questions and encourage them to provide all responses. Direct students to replicate the process at their desks as you work together.

- Identify the fractional part shown by each object.
    - Identify the whole(s).

- For the next problem, I am going to have you do it at your desks. Each of you has two bags that have fraction circle pieces in them. One of the bags has red fraction pieces and one of the bags has blue fraction pieces. What's the first thing you need to do? Right, you need to decide if the two circles are the same size. Show me how you are going to do that? Right, you put all the red pieces down to make a circle and then put all the blue pieces down to make another circle on top of them. Each person's circles are the same size. How many red fraction pieces are there ? Right, four. How many blue fraction pieces? Right, eight.

- Identify the number of parts that are in each fractional part
  - Now I want you to pick 3 of the red fraction pieces and 6 of the blue pieces. What fractional part is shown by these three red pieces? Right, three fourths. What fractional part is shown by the six blue pieces? Right, six eighths.

- Compare fractional parts.
  - Manipulate the pieces to see if they take up the same amount of space.
    - Now what do you need to do? Right, you need to put them on top of each other. Do they take up the same amount of space? Yes, they do.
  - Label fractional parts as equivalent/nonequivalent
    - If fractional parts take up the same amount of space, we say that they are ______? Right, equivalent. Label your equivalent fraction pieces with an index card that says equivalent. Tell me what are the two equivalent fractions you have shown? Right, three fourths is equivalent to six eighths.

b. When you are confident students understand, ask individual students to direct the problem solving process or have the class direct you: Students ask questions and you and the students respond/perform the skill.

Instructional Phase 2: Facilitate Acquisition to Mastery – Student Practice

Receptive/Recognition Level

Purpose: to provide students multiple practice opportunities to identify equivalent fractions with concrete objects.

Learning Objective 1: Identify and represent equivalent fractions using concrete objects with an area model

Instructional Game/Cooperative Learning

Materials:

Teacher –

- Bell or timer
- Envelope with fraction pieces and answer sheet to model how to do activity
- Sample cue sheet and response sheet to use when introducing and modeling the activity

- Set of fraction pieces on overhead or other visual display to use when providing whole class review

Students -

- A folder with 10 numbered envelopes with 2 sets of fraction pieces and an answer sheet.
- Cue sheets with questions: "Did you place the parts together?"; " Do the parts take up the same amount of space?"
- Response sheets with two columns numbered 1-10, labeled equivalent/not equivalent.

Description:

Activity:

Students will work in pairs. Each student will have at turn being a coach and being a player. The coach will have a set of 10 envelopes with fraction pieces. The player will choose a number 1-10, take the corresponding envelope, and lay the fraction pieces from the envelope out on the table. For example, envelope # 1 might have the fraction pieces one half and two fourths. The player may manipulate the pieces if he/she needs to and then will put a check in the appropriate column on the response sheet. The coach then checks the answer sheet. If the player has checked the correct column, the coach will put a 2 next to the answer. If the player does not have the correct answer, the coach will use the cue sheet to remind the player to put the fraction pieces on top of each other and make sure that the fraction pieces take up the same amount of space. The player then can try the problem again. If he/she checks the correct column this time, the coach puts a 1 next to the answer. After the player has completed all ten problems, the coach will total the player's score and record it at the top of the page. After all pairs have completed 10 problems, the teacher will review each problem with the whole class, asking selected players to come forward and show the rest of the class the answer to a specific problem. The coaches and players then switch roles using a different set of envelopes.

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 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.

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 prompts. The other "player" will be the "coach" and will give the "player" the prompts and evaluate the player's response. The coach will also provide positive reinforcement, corrective feedback, and assign points based on the player's responses (e.g. two points for correct response the first time, one point for the correct response the second time.).

5.) Provide time for student questions.

6.) Signal students to begin.

7.) Signal students when it is time to check problems with the whole class and then 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.

Expressive Level

Purpose: to provide students multiple practice opportunities to identify and represent equivalent fractions with concrete objects.

Learning Objective 1: Identify and represent equivalent fractions using concrete objects with an area model

Instructional Game/Cooperative Learning

Materials:

Teacher –

- Bell or timer
- Sets of fraction pieces that can be visually displayed (overhead, flannel board, magnetic strips, etc.)
- Sheet/chart to record team scores

Students -

- Envelopes with fraction pieces

Description:

Activity:

Students will work in groups of 4 or 5 students. Each student will have envelopes with one or more set of fraction pieces (e.g. student A has an envelope with fourths, student B has thirds, student C has sixths, and student D has eighths). The teacher will display a fractional part (e.g. one half, three fourths, etc) and each team will need to show as many equivalent fractions as they can make in the time allotted. After the teacher rings the bell, one member of each team will share one of their solutions. Teams can earn points for each correct decision.

Cooperative Learning Groups Steps:

1.) Provide explicit directions for the cooperative group activity including what you will do, what students will do, and reinforce any behavioral expectations for the game.

2.) Arrange students in cooperative groups. Groups should include students of varying skill levels.

3.) Assign roles to individual group members and explain them:

   a. Materials manager (gets the)
   b. Time Keeper (makes sure that students are on task and complete each problem in time allotted.))
   c. Turn taker (makes sure that each member of the group gets a chance to contribute to solving problem)
   d. Encourager(s) (encourages each person)

4.) Distribute materials.

5.) Model one example of skill(s).

   a. Listen to problem.

b. Show solution(s)

c. Make sure that the team agrees with the decision before time is called.

6.) Review/model appropriate cooperative group behaviors and expectations.

a. Agree or disagree with a teammate's decision.

b. Listen while teams are sharing responses.

7.) Provide opportunity for students to ask questions.

8.) Teacher monitors and provides specific corrective feedback & positive reinforcement.

a. Circulate around the tables and check on children's responses.

b. Make sure that each child receives feedback on his/her decision.

c. Ask each child in the class to share his/her decisions at least once either with the entire class or individually with the teacher.

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

Continuous Monitoring & Charting of 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 (ask students to tell you which of several visually displayed solutions is the correct solution for a problem), or a combination of written curriculum slices/probes and oral prompts with visual cues (e.g. ask students to demonstrate solution to given oral problem).

4.) Distribute to students the curriculum slice/probe/response sheet/concrete materials.

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 concrete level skills, this should be 100% – 5 out of 5 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 or has mastered the skill at using the following guide:

Concrete Level: demonstrates 100% accuracy (given 3 to 5 response tasks) over three consecutive days.

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

Additional Assessment Activity Appropriate For This Math Skill/Concept

Flexible Math Interview

Purpose: to provide you with additional diagnostic information in order to check student understanding and plan and/or modify instruction accordingly.

Materials:

- Sets of fraction pieces envelopes

Description:

With individual students or in small groups, the teacher will have the student to solve an equivalence problem. The teacher will show the student(s) two sets of fraction pieces (e.g. one half and three sixths or one half and one third, etc.) .The teacher will ask the student(s) to identify the given fractions as equivalent or not equivalent and explain the decision. The teacher should note errors and/or misconceptions while the student is teaching, but the teacher should not stop the student for correction purposes. By having the student complete the entire explanation, the teacher will gain a better understanding of the student's thinking. The teacher should confer with the student regarding specific errors or misconceptions after the activity is over.

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

Purpose: to provide periodic student practice activities and teacher directed review of this skill after students have mastered it.

1. Problem of the Day

Materials

- Concrete objects that depict fractional parts displayed near an area that has two columns with words equivalent, not equivalent

Description:

The teacher will present a problem of the day verbally and by displaying the items in a designated area. Students will decide if the objects show equivalent or non-equivalent fractions and will record their responses by putting their initials under the appropriate column. Teacher will review the problem after all students have responded. This should initially be done each day, then 2 times/week, weekly, bi weekly, and then intermittently.

2. Classroom Routines

Materials

- Class roster

Description:

Students will be told to line up for lunch and show equivalent fractions (e.g. one half and three sixths).