Fraction Work

Level 6-9

ETC MONTESSORI

Fraction Sequence

1st level

Naming and Composing Fractions

These task cards are to be introduced after the initial lesson with the fractional insets. They provide practice in composing and labeling fractions with denominators from 1 to 12. This set uses two sided discs to illustrate that there can be fractional sets within a given quantity.

Fraction Not a Fraction Dominos

This activity contains dominos in two sets; one with photographs of real objects depicting wholes, fractional parts and non fractional parts; set two has drawings of geometric figures depicting wholes, fractional parts, and non fractional parts.

Sets 1 & 2– Child makes and identifies sets and labels them with fractional labels. This is indirect preparation for patterning and equivalent fractions.

Sets 3 & 4 Child makes fractional parts of a set using the two sided discs. This is indirect preparation for making equivalent fractions.

Operations with Fractions

This sequence of addition, subtraction, multiplication and division fraction task cards are to be used either with the fractional insets or the fractional parts in a box. Introduce each operation after the child has been introduced to formation and naming of fractions. The sequence within the task cards provides experiences in the following:

- Operations with like denominators
- Operations with sums equaling one whole
- Subtracting from one whole
- Operations indirectly leading to equivalent fractions

2nd Level

Fractions on a Number Line

This activity allows children to place fractions in relationship to one another on a number line.

Number Line 1 (red) task cards ask children to place fractions of circle, triangles, and squares where the numerator is 1 on the number line in relationship to one another. The final task card asks the child to place the fractional labels on the number line and write a statement regarding the denominator and the size of the fractional piece.

Number Line 2 (white) asks children to place the numerical fractions on the number line starting with proper fractions and then moving to mixed numbers.

3rd Level

Area of Shapes Using Grids

This set of task cards places figures on square grids to calculate the area. The initial cards use whole squares, while subsequent task cards ask the child to calculate the area using halves of squares. The task cards progress to asking children to calculate the area of an irregular shape by "drawing" a perimeter around the shape and subtracting the half squares. The final set of task cards asks children to record the area of an irregular polygon set within a larger quadrilateral in fractional form.

What's My Fraction

A game played with cue cards, "tents" with fractiions, and a recording sheet. The object of the game is to use the answers to the clues to deduce your fraction "tent" without seeing it. Children are exposed to fractions, whole numbers, improper fractions, and prime numbers.

Fraction, Not a Fraction Dominos

Age

6 years

Aim

Direct: to identify a fraction as an equal division of a whole

Indirect: to understand that fractions may be represented in many ways

Materials

A set of dominos with pictures of fractions and non-fractions

Presentation

1. Invite a group of children to a lesson.
2. "Today we are continuing to work with fractions. You have used the fractional insets to name fractions, but this will be a little different."
3. "Remember, we said that in order for a fraction to be called a fraction the whole must be cut into equal portions. Let's look at these dominos."
4. "On one of these dominos you see the word fraction; on another domino you see the words not a fraction. Let's play a domino game where we can match the correct picture to the words."
5. Pass out 5 domino cards to each child. Place the remaining dominos in a pile on the rug.
6. Turn the top domino face up and place it in the center of the rug.
7. Look at your dominos (you may have all of your dominos face up for demonstration purposes) and match either a corresponding label to the picture domino, or a picture to the words on the domino.
8. After your domino is placed, take the top domino card from the face down pile.
9. Ask the child to your left to play the next domino.
10. The game is over when all of the cards have been placed.

Follow Up

1. Have the children play with set two where there are graphics of fractional parts of a circle, triangle, and square.

Fractional Sets

Age

6 years

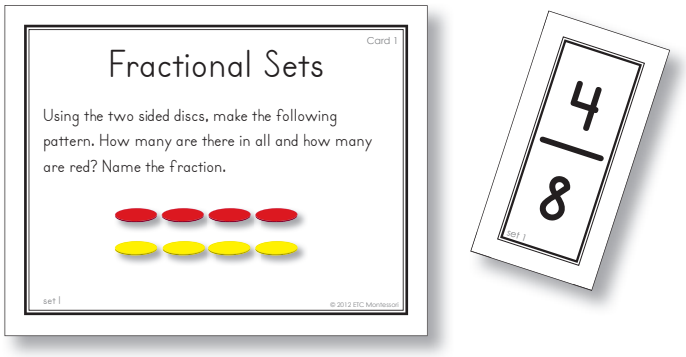
Aim

Direct: to name part of a set in a fractional form

Indirect: to understand that fractions are parts of a whole

Materials

A set of task cards, two sided counting discs, fraction labels for set I



Presentation I

1. Invite a child to the lesson.
2. "Today we are continuing to work with naming fractions. You have used the fractional insets to name fractions, but this will be a little different."
3. Place task card I from set I in front of the child and ask them to build the set of colored counters pictured on the card.
4. "How many discs are there all together in the picture? (8) How many of the eight discs are red? (4) What fraction of all of the discs are red?" (four-eighths)
5. "Find the label that says four-eighths and place it next to card I."
6. Have the child continue making the sets with the discs and labeling them with the fractional labels.

Follow Up

1. Have the child continue with set two which asks them to name the fractional set of yellow colored discs.

Presentation 2

1. Invite a child to the lesson.
2. "Today we will work with our fractional sets in a different way."
3. Place a task card from set 3 in front of the child.
4. "Look at the first fraction, what is the name of this fraction? (two-thirds) This time you will build the set of two-thirds with the red side showing the numerator."
5. "How many discs are there all together? (3) How many are red? (2) Please build this set."
6. Encourage the child to draw each fractional set.

Follow Up

1. Have the child continue with set four which asks them to make a set with the yellow disc representing the numerator.
2. Discuss any fractional sets that may "look the same" in preparation for equivalent fractions.

Fraction Number Lines

Age

6-7 years

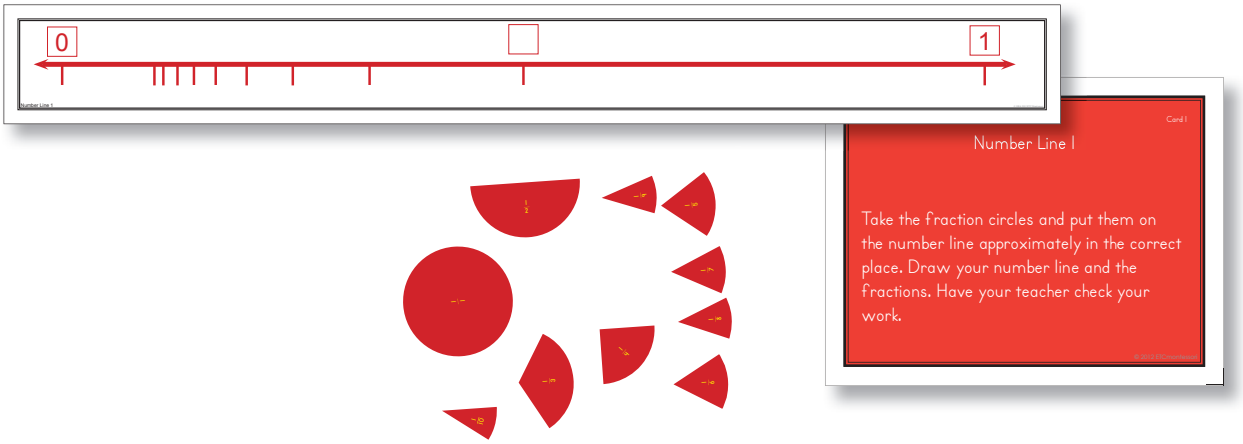
Aim

Direct: to place fractions in relationship to each other on a number line

Indirect: to develop a sense of proper, equivalent and mixed fractions

Materials

A number line with indicators for fractions, fractional parts, task cards



Presentation I

1. Invite a child to the lesson.
2. "Today we are going to work with placing our fractional pieces on a number line."
3. Take a circular paper fractional piece as indicated on card one.
4. Ask the child to name the fractional piece and place it on the number line.
5. Continue until all of the fractional pieces are placed approximately on the number line.
6. "What do you notice about the fractions?"
7. Encourage the child draw each fractional placement on a number line.

Follow Up

1. Have the child continue to place the fractional squares and fractional triangles on the number line.
2. Have the child place the fraction numbers (where the numerator is always one) on the number line.

Presentation 2

1. Invite a child to the lesson.
2. "Today we are going to work with placing our fractional pieces on a number line. You will notice that this time our numerator is more than one."
3. "You have worked with the equivalent fraction research and this time you will be placing equivalent fractions on the number line."
4. Take a circular paper fractional piece and its corresponding label and place it on the number line.
5. Continue until all of the pieces and labels have been placed.
6. Ask the child to discuss why they placed the fractions as they did.
7. Encourage the child draw each fractional placement on a number line.

Follow Up

1. Have the child continue to place the equivalent fractional squares and labels on the number line.
2. Have the child place the mixed fractional labels on the number line.

What's My Fraction?

Age

7-8 years

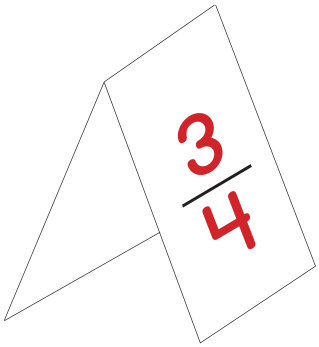
Aim

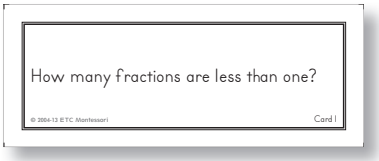
Direct: to identify a fraction

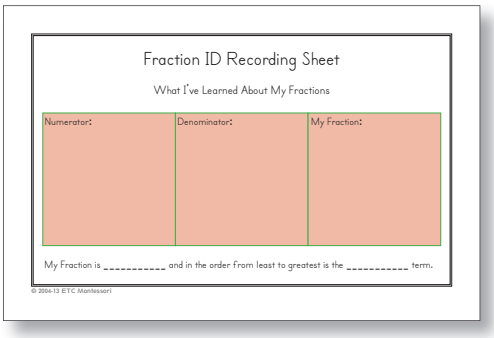
Indirect: to develop logical thinking skills based on given clues

Materials

A set of fraction "tents", clue cards, What's my fraction? recording sheet







Presentation

1. Invite children to a group lesson.
2. "Today we are going to play a game with fractions."
3. Each child will choose a fraction tent, placing it in front of them without seeing the fraction.
4. "We have a set of clues that will give us information about our fraction. I cannot see my fraction but based on the answers that people give to the clues, I will guess what my fraction is."
5. "The denominators are never more than 5, but the numerators can be many different numbers."
6. Place the clue cards in numerical order face down. Draw the first card which says, "How many fractions are less than one?"
7. Look at all of the fractions tents that you can see and answer according to the number of tents visible to you.
8. Ask the child to your left to turn over the next card, "How many fractions are equal to one?" and have them answer the question according to the fraction tents that are visible to them.
9. Use the recording sheet to make notes and to discover which fraction tent is in front of you.
10. When you know your fraction, say it aloud to the group.
11. On the recording sheet, note where your fraction is in relationship to the other fraction tents. Record this on your recording sheet.

Calculating Area using Squares and Fractional Squares

Age

8 years

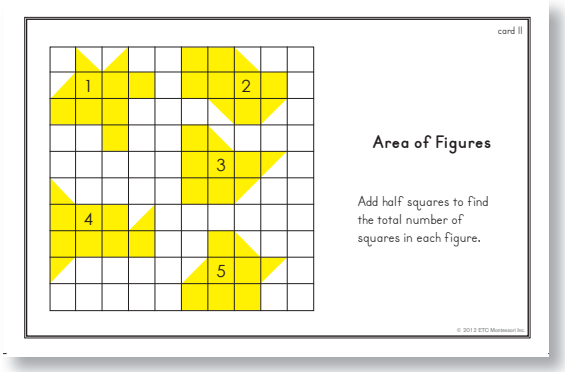
Aim

Direct: to calculate the area of a given figure placed on a grid

Indirect: use addition and subtraction of fractional squares

Materials

A set of task cards



Presentation

1. Invite a child to the lesson.
2. "Today we are continuing to work with calculating the area of different figures."
3. Introduce the task cards to the child by reading the directions on the card.
4. Ask the child to complete the activity and then check have them check their work with the answer key.

Follow Up

1. Have the child continue with remaining task cards

Fraction ID Recording Sheet

What I've Learned About My Fractions

Numerator:	Denominator:	My Fraction:

My Fraction is _____ and in the order from least to greatest is the _____ term.

Fraction ID Recording Sheet

What I've Learned About My Fractions

Numerator:	Denominator:	My Fraction:

My Fraction is _____ and in the order from least to greatest is the _____ term.

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Answer Key for Area of Quadrilaterals

Card 1

1. 9 squares
2. 24 squares
3. 8 squares
4. 14 squares
5. 6 squares

Card 2

1. 10 squares
2. 24 squares
3. 1 square
4. 5 squares
5. 15 squares

Card 3

1. 8 squares
2. 16 squares
3. 7 squares
4. 9 squares
5. 6 squares

Card 4

1. 9 squares
2. 7 squares
3. 10 squares
4. 10 squares
5.

Card 5

1) $\frac{4}{8}$

2) $\frac{4}{8}$

3) $\frac{5}{10}$

4) $\frac{7}{10}$

Card 6

1) $\frac{5}{9}$

2) $\frac{6}{9}$

3) $\frac{8}{12}$

4) $\frac{6}{12}$

Card 7

1) $\frac{14}{20}$

2) $\frac{9}{20}$

3) $\frac{7}{15}$

4) $\frac{8}{15}$

Card 8

1) $\frac{4}{12}$

2) $\frac{4}{12}$

3) $\frac{3}{9}$

4) $\frac{5}{15}$

Card 9

1. 7 squares
2. 8 squares
3. 3 squares
4. 8 squares
5. 5 squares

Card 10

1. 7 squares
2. 10 squares
3. 8 squares
4. 10 squares
5. 7 squares

Card 11

1. 8 1/2 squares
2. 8 1/2 squares
3. 7 1/2 squares
4. 8 1/2 squares
5. 7 1/2 squares

Card 12

1. 7 1/2 squares
2. 7 1/2 squares
3. 8 squares
4. 5 1/2 squares
5. 6 1/2 squares

Card 13

1. 4 x 4 = 16; 16 -4 = 12 squares
2. 3 x 3 = 9; 9 - 3 = 6 squares
3. 4 x 4 = 16; 16 - 5 = 11 squares
4. 5 x 4 = 20; 30 - 3 = 17 squares

Card 14

1. 4 x 4 = 16; 16 -4 = 12 squares
2. 4 x 3 = 12; 12 - 5 = 7 squares
3. 5 x 6 = 30; 30 - 7 1/2 = 22 1/2 squares
4. 3 x 5 = 15; 15 - 6 1/2 = 8 1/2 squares

ETC Montessori®

979 Reseda Dr. • Houston • TX • 77062

T: 877 409 2929 • F: 877 409 7402
Intl: 281 984 7213

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