Fractions

Supplies

Circular and rectangular fraction tiles; spinner or number cards; paper; markers.

The Activity

The student will work on fractions. Because many students may have a negative mental block for fractions, explain that a fraction just means small parts, or little pieces of something that are all exactly the same size, and that you are just going to figure out how many equal small parts there are in a whole. Also explain that something, for instance a square, can be broken down into different small parts, for instance 2 (1/2) or 3 (1/3) and that when the small pieces are all put together, they form the whole. Use the correct fraction terminology, for instance, one out of three is called one third, or one out of four can be called one fourth or one quarter.

Introduce the terms "**n**umerator" (the number that is **up**), and "**d**enominator" (the number that is **down**).

Variations

- The student can make pieces of "fruit" with the play-doh according to the number on the number/dot card.
- The student can line up the sets in the same pattern as the dot cards.
- The student creates dot and/or numeral cards.

Focus:

Encourage the student to focus their attention on the task at hand. Allow the student to get acquainted with the supplies by touching, holding, and talking about them. Then explain what you will do. Formulate a plan with the student.

Questions: What is the plan? What will we do first? Next? And then?

Act:

The student will divide the square or the bar into different sized pieces and record the fraction.

Questions: If you divide this square into 2 (4, or 9) parts, what could we call one of those parts? What would happen if we put these parts together? What could we call it now? What happens when I have a whole square and split it into 2 (4 or 9) parts, and then I take away one part? If a circle is split into 5 parts, how many parts do I need to take away so that I have only 1 part left? How come?

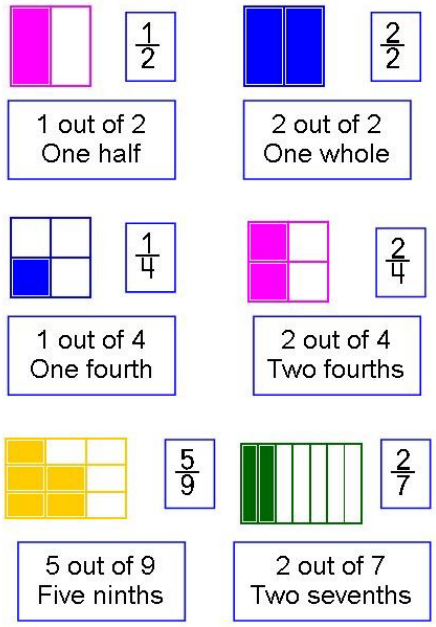
Reflect:

During and after the activity, reflect on what the student is doing/has done.

Questions: What did you do? How can you tell which number is the numerator? The denominator? What happened when you divide a circle (pizza)?

Math Observation Checklist:

This activity will give insight into the student's ability to understand whole numbers; fractions; systematic exploration; attend to more than one piece of information, and attend to relevant information.



Fractions
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Supplies
Circular and rectangular fraction tiles; paper strips; spinner or number cards; paper; markers.

The Activity
The student will work on equivalent fractions, fractions that look different but have the same value. Explain that something, for instance a rectangle, can be broken down into different small parts, for instance 2 (1/2), 4 (1/4), or 8 (1/8) and that when the small pieces are all put together, they form the whole. Ask the student to fold a strip of paper in half (2 segments); the next strip of paper in half, then again in half (4 segments); the next strip gets folded 3 times (8 segments). The student will color each strip in a different color and line up the strips under one another. Discuss how many segments of the strip that was divided into 4 (8) are needed to match on segment of the strip that was folded in half. 1/2 = 2/4 = 4/8. These are called "equivalent fractions" because they are equal (the same). The student will record the results. Repeat this with different fractions and point out how the numerator and denominator changes are related (i.e. multiplied, or divided by the same number.)

Variations
- Ask the student to divide different shapes into fractions. for instance a circle or a square, and make equivalent fractions.

Focus:
Encourage the student to focus their attention on the task at hand. Allow the student to get acquainted with the supplies by touching, holding, and talking about them. Then explain what you will do. Discuss rows and columns with the child. Formulate a plan with the student.

Questions: What is the plan? What will we do first? Next? And then?

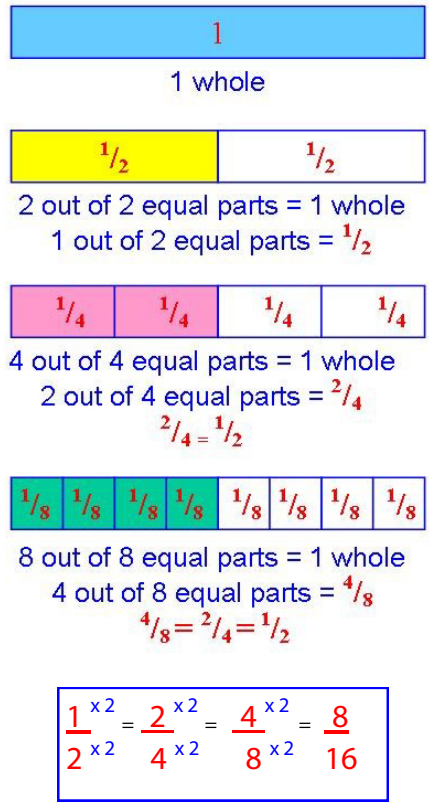
Act:
The student will divide the strips of paper into different sized equal pieces and record the fractions, and the equivalent fractions.

Questions: If you divide this strip into 2 (4, or 8) parts, what could we call one of those parts? How many parts from the strip divided into 8 parts do you need to match one part of the strip divided into 2 parts? What could you call it now? If a circle is split into 6 parts, how many parts do I need to take away so that I have 1/3 left? How come?

Reflect:
During and after the activity, reflect on what the student is doing/has done.

Questions: What did you do? What happened to the numerator when the denominator got bigger?

Math Observation Checklist:
This activity will give insight into the student's ability to understand whole numbers; fractions; attend to more than one piece of information, systematic exploration, and attend to relevant information.



MILE
Math Interactive
Learning Experience

Fractions
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Supplies
Circular and rectangular fraction tiles; paper strips; spinner or number cards; paper; markers.

The Activity
The student will work on adding and subtracting like fractions (with the same denominator.) The student can make up the fractions by rolling a number die, or using a spinner.

Show the student that when adding fractions with the same denominator, they just needs to "add the little pieces". For instance, if a pizza is cut into 8 equal slices and one person eats 1 slice (1/8) and another person eats 3 (3/8), 4 pieces out of 8 were eaten. So, 1/8 + 3/8 = 4/8, or one eighth plus three eights equals 4 eights.

The student will then further reduce the fraction: 4/8 = 2/4 = 1/2. The same holds true for subtracting. If a pizza was cut into 8 equal slices and one person ate 2/8 (two slices out of 8), how much was left? 8/8 - 2/8 = 6/8. Reduce 6/8 to its simplest form by dividing the numerator and denominator by the same number (2). The answer is: 3/4.

Variations
- Instead of using manipulatives, have the student draw a model of the fractions, showing the parts to be added in different colors, or crossing out the parts to be subtracted.

Focus:
Encourage the student to focus the student's attention on the task at hand. Allow the student to get acquainted with the supplies by touching, holding, and talking about them. Formulate a plan with the student.

Questions: What is the plan? What will we do first? Next? And then?

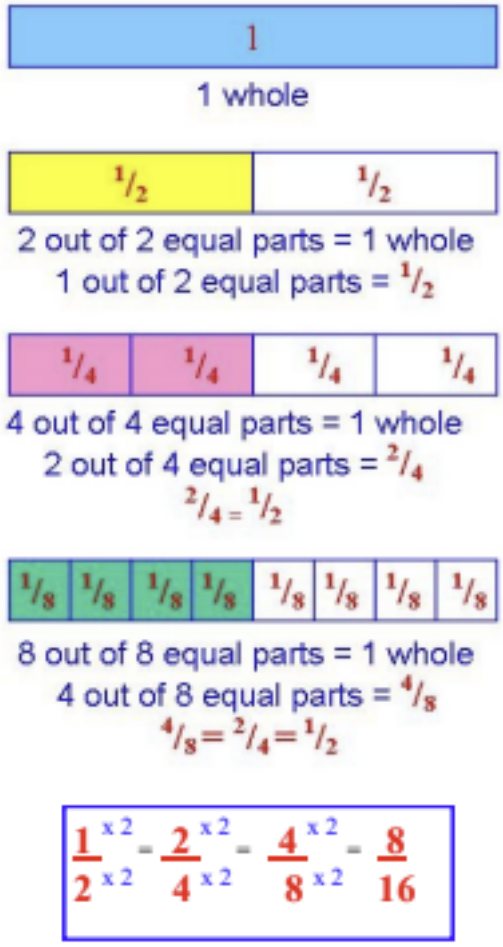
Act:
The student will make up fractions and add and subtract them. The student will also record the fractions, and reduce them to the simplest form.

Questions: If you divide this circle (pizza) into 2 (4, or 8) parts, what could we call one of those parts? What do you need to do to add fractions? How can you subtract fractions?

Reflect:
During and after the activity, reflect on what the student is doing/has done.

Questions: What did you do? What happened to the numerator when the you added two fractions? What happened when you subtracted? Did anything happen to the denominator?

Math Observation Checklist:
This activity will give insight into the student's ability to understand whole numbers; fractions; attend to more than one piece of information, and attend to relevant information.



Fractions

Supplies

Circular and rectangular fraction tiles; paper strips; spinner or number cards; paper; markers.

The Activity

The students will work on adding and subtracting fractions with different denominators. They can make up the fractions by rolling a number die, or using a spinner. Show the student that when adding fractions with different denominators, thet first needs to make the denominators equal (multiply by the same number.) If the student has difficulty with this, go back to the lesson on equivalent fractions.

For instance, if a pizza is cut into fourths and eighths and one person eats 1/8 and another person eats 1/4, how much of the pizza was eaten?

Wherever possible, the student will further reduce the answer to its simplest form by dividing the numerator and denominator by the same number.

Variations

- Instead of using manipulatives, have the student draw a model of the fractions, showing the parts to be added in different colors, or crossing out the parts to be subtracted.

Focus:

Encourage the student to focus their attention on the task at hand. Allow the student to get acquainted with the supplies by touching, holding, and talking about them. Formulate a plan with the student.

Questions: What is the plan? What will we do first? Next?

Act:

The student will make up fractions and add and subtract them. They will also record the fractions, and reduce them to the simplest form.

Questions: If you divide this circle (pizza) into 2 (4, or 8) parts, what could we call one of those parts? What do you need to do to add fractions? How can you subtract fractions? What is a larger part 5/10 or 1/2? How did you do that?

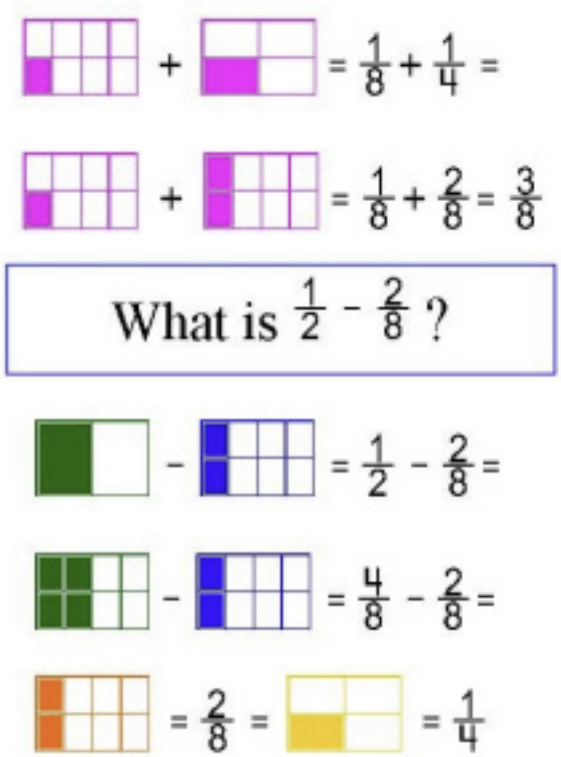
Reflect:

During and after the activity, reflect on what the student is doing/has done.

Questions: What did you do? What happened to the numerator when the you added two fractions? What happened when you subtracted? Did anything happen to the denominator?

Math Observation Checklist:

This activity will give insight into the student's ability to understand whole numbers; fractions; systematic exploration; attend to more than one piece of information, and attend to relevant information.



Fractions
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Supplies
Circular and rectangular fraction tiles; paper strips; spinner or number cards; paper; markers.

The Activity
The student will work on adding mixed numbers (whole numbers and fractions), and on converting mixed numbers to an improper fraction. You and your student can make up the numbers and the fractions by rolling a number die, or using a spinner.

Show the student that when adding fractions to a whole number you get that number "plus a little bit". For instance, two apples and a 1/4 of an apple is 21/4 apples.

Then show the student that 21/4 can be converted into a fraction and because it is not a "real" fraction, it will be called an "improper fraction". This can be done by breaking up the whole number into parts and then adding everything, or by multiplying the whole number by the denominator of the fraction and adding the numerator. Before you show the multiplication, make sure the student understands what is happening by using the addition method with manipulatives.

Variations
- Have the student draw a number line with whole numbers and then put the fractions (for instance halves and quarters) in between the numbers at the correct places.

Focus:
Encourage the student to focus the student attention on the task at hand. Allow the student to get acquainted with the supplies by touching, holding, and talking about them. Formulate a plan with the student.

Questions: What is the plan? What will we do first? Next?

Act:
The student will make up fractions and add and subtract them. They will also record the fractions, and reduce them to the simplest form.

Questions: What do you need to do to add a fractions to a whole number? How can you change a mixed number to a fraction? Show me how to do that. Why is it called an improper fraction?

Reflect:
During and after the activity, reflect on what the student is doing/has done.

Questions: What did you do? What happened to the numerator when you changed a mixed number to an improper faction? What happened to the denominator?

Math Observation Checklist:
This activity will give insight into the student's ability to understand whole numbers; fractions; attend to more than one piece of information, systematic exploration, and attend to relevant information.