A Family of Facts

Summary
Activities help students learn to write number sentences.

Group Size
Large Groups

Materials
Invitation to Learn
- *Family*
  Boy and girl figures

My Family
- *My Family*
  Drawing tools
  Large numbers from 2-10

Family Number Sentence
  Sentence strips
- *Boy Die Cuts*
- *Girl Die Cuts*
  Pencils
  Glue sticks

House of ...
  Chart paper
  Markers
  Boy and girl figures
- *House of... Journal*

Family Chain
- *Houses of...*
  Construction paper
- *Family Chain Pattern*
  Dry erase markers and erasers

Fact Family Triangles
  Chart paper
- *Fact Family Triangles*
- *Fact Family - Roof Pieces*
- *Fact Family - Roof Pieces II*
- *Blank Fact Family*
  Containers

Additional Resources

Books

Love is a Family, by Roma Downey; ISBN 9780060393748

Background for Teachers
Students need to understand that addition and subtraction are inverse operations. That is, when you add numbers, you can then subtract those same numbers from the sum to show equality in the number sentence.

<u>Intended Learning Outcomes</u>
1. Demonstrate a positive learning attitude.

<u>Instructional Procedures</u>
Invitation to Learn
Read *Family* poem by Mary Ann Hoberman. After reading the poem have students discuss what makes up a family. Then, using boy and girl figures, tell a story about your family. For example: I have five in my family. There is a dad (put a boy on board), A mom (put a girl on board), one brother (put another boy on the board), and two girls in my family (put two more girls on the board). This is how my family makes up five people. Leave your family representation on the board, and tell a story about a student in your classroom with a different number in their family. Then chose another student; one that has the same amount of people only with a different amount of boys and girls.
Instructional Procedures
My Family
> Give each student a copy of the *My Family worksheet.*
> Instruct students to draw their family using their markers, crayons or colored pencils.
> In the upper right hand corner of the paper, the students will write how many are in their family. They will also write how many boys and how many girls.
> On the board, place large numbers from two-ten (Place numbers according to sizes of families. If you know your students do not have ten in their family, or if there are families with more, place that amount of numbers on the board.)
> Students will take turns bringing their family pictures to the board and placing them under the number that they have in their family.
> Explain to students that we have many different sizes of families.
> Point out that a family of five might have two girls and three boys, or four boys and one girl, but it is still a family of five.
> Go through the other numbers and point out the different combinations of boys and girls in a family.

Family Number Sentence
> Demonstrate to students how to write a number sentence about your family. The number sentence will be illustrated with the *Boy and Girl Die Cuts* (e.g. 2+3=5 in my family, two boy die cuts are placed beside the number two and three girl die cuts are placed beside the number three.)
> Give each student a sentence strip and *Boy and Girl Die Cuts.*
> Students will now write their own family number sentence, gluing on die cuts to represent boys and girls in their family.
> After students have completed their number sentences have them replace the pictures on the board of their families with their family number sentence.
> Again point out the different combinations of boys and girls that equal five and the different combinations that equal six, etc.

House of ...
> On chart paper draw a large house and write the numeral one at the point of the roof, add a line to separate the roof from the house. Make sure students understand that a house of zero would be empty.
> Explain to students that you are going to make a house of one.
> Using boy and girl figures, show representations of ways to make one. (e.g. one boy or one girl)
> Write number sentence on chart paper house. (1+0=1, 1-0=1)
> Students will make their own Families of... in their *House of ... Journal*. As you write the number sentences on the chart paper, students will write the number sentence in their journal.

On next large house write the numeral two at the point of the roof.

Explain that you are now making a house of two.

Using boy and girl figures, show representations of ways to make two. (e.g. two boys and zero girls, one girl and one boy, etc.)

Write number sentences (2+0=2, 1+1=2) on house.

Using story form, start by telling that there were two people in the house and one brother went to play with his friends, now there is only mom left at home. Show number sentences (2- 1=1, 2-0=2)

Continue making Families of...through nine using all related math facts. (e.g.3+0=3, 2+1=3, 1+2=3, 0+3=3, 3-0=3, 3-1=2, 3- 2=1, 3-3=0)

When incorporating the zero concept, you can simply state that all families are not alike, and in some families there might be all girls and no boys or visa versa.

Family Chain

Charts of *Houses of...* will be on the board.

Explain to students that we will now take a family from the *House of...* two.

Take out the *Family Chain*. This is a paper doll chain, with 5 people in the chain made from 12X18 construction paper.

On the head of the first person in the paper chain, write the number in your family. On one arm write the number of boys and on the other arm write the number of girls.

Explain to students that we now have the numbers needed to make a fact family. The fact family will have two addition problems and two subtraction problems.

Show students on the *Family Chain* the ways to make the fact family. On the second person, write the first addition fact. On the third person write the second addition fact. On the fourth person write the first subtraction fact, and on the fifth person write the second subtraction fact.

Students will now use their own *Family Chain*.

Have *Family Chains* already made and laminated.

Give each student a *Family Chain* and dry erase marker.

Tell them to take their own family from the house and show the facts that belong to their family. After they have represented their own family, tell them to take another family from the house and show the facts that belong to that family.

Have students do at least one fact family from each house.

Fact Family Triangles

Using chart paper, draw a large house; in the roof write 3 numbers to use in number sentences that make up a fact family. As a class, develop the fact family number sentences and write them in the house. Practice until students see the pattern.

Give each student a copy of the Fact *Family Triangles worksheet*.

it students in groups to share the containers of the *Fact Family - Roof Pieces*. Students will work independently, by taking a roof piece and placing it on top of a house on the *Fact Family Triangles* worksheet, they will then write the addition and subtraction sentences that go with that fact family on their *Fact Family Triangles worksheet*.

After they have completed a fact family they will put the roof piece back in the container and take out another.

Students will continue to fill in each of the houses on their worksheet with different roof pieces.

Extensions

Curriculum Extensions/Adaptations/ Integration

Advanced learners can develop problem solving questions about families.

For advanced learners, put the numbers on the sides of the fact family triangles and then they chose the appropriate places for the numbers to go in the number sentences.

Advanced learners can make their own fact family triangles and use them to make a game.
Adaptations for learners with special needs would be to let the student use the die cuts to develop fact families.
Another adaptation would be to, write one of the numbers in the fact family number sentences for the student.
This activity could be used along with a unit on families.
As a lesson in language arts, write about why the fact family numbers are together (focus on the patterns.)

Family Connections

Take home *Family Chain* and have family help them make up a variety of fact families.
Send home a blank *Fact Family Triangles worksheet* for the family to do. Write a letter asking parents to talk about relatives or neighborhood families and make their fact families like their relatives or neighborhood families.
Have students teach their family how to make a fact family.

Assessment Plan

- *Fact Family Triangles worksheet*
  Completion of *Families of... Journals*
  Use *Family Chains* to assess understanding of various fact families.

Bibliography

Research Basis
Hudson, P., Miller, S.P., (2006). *Designing and Implementing Math Instruction for Students with Diverse Learning Needs*. p.200-220.
Because of the hierarchical nature of mathematics, it is very difficult for students who lack competence in addition and subtraction to advance their mathematical ability. Understanding the relationship between addition and subtraction helps build declarative knowledge.
Miller, S.P., Hudson, P.J., (2006). Helping students with disabilities understand what mathematics means. *Teaching Exceptional Children*, Sept./Oct. 2006, Vol. 39. No.1, pp.28-35.
The importance of conceptual understanding of mathematics is explained in this article. Students that have developed a conceptual knowledge understand the deep meaning of abstract mathematical symbols and operations. Providing a variety of ways to represent concepts will encourage meaningful understanding and the students should be able to generalize the skill.

Authors

Utah LessonPlans