The Lion's Share: a Tale of Halving Cake and Eating It, Too
By Matthew McElligott

Activities for Students

I.   You can re-watch the video of this book being read aloud at Santa Fe Public Library YouTube channel, the City Summer Program Website (https://summersantafe.weebly.com) **and the MathAmigos website** (https://mathamigos.org/)**.**

If you have any questions about the activities (but not about the materials), please contact Michele Reich at library@santafenm.gov.

II.   Materials
Paper and pencil
Flip chart
Sheet of double-sided newspaper and some dance music
Fraction Table Handout
Dominoes
Deck of cards
Index cards
One empty bucket or wastepaper basket and a sheet of paper crumbled up into a ball
Colored chalk

III.   Activities for Sessions 1 and 2
A.   Ordering and Comparing Fractions
1. You will need a piece of paper and a pencil. Write your name, date, and "Ordering Dominoes" at the top of the paper.
2. Directions
   a. Put all of the dominoes on a table face down. Choose five dominoes and turn them face up.
   b. The number on one side of the domino is the <u>numerator</u>; the number on the other side of the domino is the <u>denominator</u>.
   c. Place the dominoes in order so that the fractions are in order from the smallest to the *greatest* by comparing the denominators.
   d. If you are having trouble figuring out, suggest they use the Fraction Table as a guide for visually making comparisons. See the examples below in the middle and right.
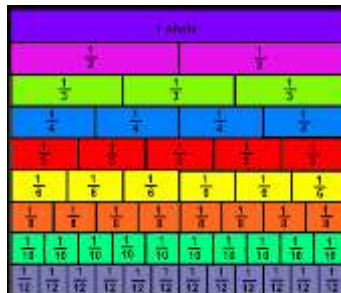
B.   Fraction Domino Feud
1.   Ask an adult family member to play Fraction Domino Feud to learn about equivalent fractions. You will need a sheet of paper and a pencil. Write your name, the date, and "Fraction Domino Feud" at the top.
2.   Both players will sit at a table on opposite sides. Place all the dominoes on the table face down and divide them equally between the players.
3.   Each player picks at random a domino and puts it in the middle of the table.
4.   The player with the greatest fraction wins both dominoes. The judge of who wins the dominoes is the adult present. If you have trouble figuring out which fraction is greater, use the Fraction Table.
5.   After 5 rounds, the player with the most dominos wins.
6.   *Taking It a Step Further*
   a.   Two players place all the dominoes in one pile on the table.
   b.   Each player takes one domino and makes equivalent fractions by multiplying the numerator and the denominator by 2, 3, and then 4; See the example below.
   c.   Write down the equivalent fractions that are generated from the dominoes selected.

**C.   Equivalent Fraction Dominoes Game**
1.   Ask a family member to play. Sit at a table on opposite sides. Place all of the dominoes face down on the table and randomly shuffle them.
2.   Each player takes 7 dominoes and places them on the table face up. The player that has the domino with the highest sum when you add the two numbers on the face together will go first.
3.   Game Rules:
   a.   Each player lays down a domino with equivalent value next to a domino that has already been placed on the table. And the equivalent values should always be touching.
   b.   If you cannot place a domino, take one from the pile. Be sure to keep the domino that you take face down so the other players cannot see its face.
   c.   If there are no more dominoes left in the pile, if a player cannot place a domino, that player must pass when it is his/her turn.
   d.   The winner of the game is the first person to run out of dominoes **or,** if neither player runs out of dominoes, neither can place a domino, and there are no more dominoes left in the pile, then the player who has the fewest number of dominoes left wins.

D.   Comparing and Adding Fractions Card Game
1. Ask a family member to play this game with you. Have a sheet of paper and a pencil handy. Write your name, the date, and "Comparing and Adding Fractions" at the top.

2. Game Rules
   a. Players sit on opposite sides of a table.
   b. First, remove all face cards (jacks, queens, and kings are face cards.) The aces will have the value of one.
   c. Next, shuffle the cards and place them face down in the middle of the table.
   d. Each player draws <u>two cards</u> from the pile and forms their own fraction by placing their cards on the sheet of paper. Draw a line between the two cards; see picture below.
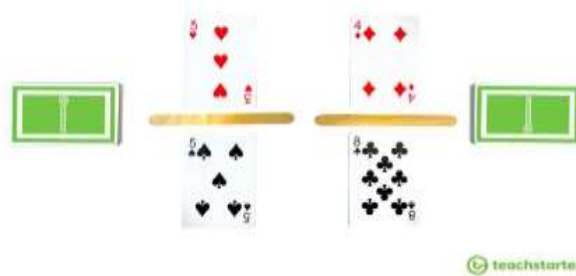
   (1) The smallest number card (*numerator*) is placed on top of the line and the larger number card (*denominator*) is placed below the line.
   (2) The players compare their fractions and decide which is the larger fraction. The player with the larger fraction wins that round and keeps the two cards. [Hint: Use the Fraction Table to help make your decision.]
   (3) Write down the fractions that each player receives. The player who loses the round puts their cards at the bottom of the pile.
   (4) The player with the most cards at the end is the winner.

E. Let's Do It Again Making Improper Fractions
   1. Team up with a family member and sit on opposite sides of a table. Have a sheet of paper and pencil.
   2. Directions:
      a. Remove face cards (jacks, kings, and queens) from a deck of cards.
      b. Shuffle the cards and place them face down in the middle of the table.
      c. Each player draws <u>two cards</u> from the pile to form their **own improper fraction** on the paper, draw a line between the two cards, like before.
      d. The card with the higher number is on top and card with the smaller number goes below the line on the bottom.
      e. Write on a sheet of paper the fraction made with these cards.
      f. Make a mixed number from the improper fraction that you just wrote. For example, 7/5 is equal to 1 2/5 as shown in the example below.

      g. Play 5 rounds and the player with the most correct mixed numbers wins. Be sure to have an adult or older sibling check your answers.

F. Create Your Own Fraction Game

    1.   Brainstorm with family members ideas for a new fraction game using a deck of cards. Some examples of fraction games: reducing fractions and subtracting/ multiplying/dividing fractions.

    2.   Steps for creating a game. Using a sheet of paper, complete the following steps.

        a.   Give the game a title.

        b.   State the objective of the game.

        c.   List the materials (deck of cards, index cards).

        d.   Include the rules to play the game.

    3.   Share your game ideas during the Zoom session to discuss the activities completed by all the students.

G. Playing Fraction Basketball

    1.   Find a bucket or wastepaper basket. You need one piece of paper and a pencil. Crumple up the paper to form a ball. Ask one or more family members to play.

    2.   Make four columns on the sheet of paper.

        a.   In the <u>first column</u>, write your name and the names of the other players.

        b.   In the <u>second column</u>, write the number of paper ball tosses that each player makes.

        c.   In the <u>third column</u> record a fraction equal to the number of paper ball shots that each player lands in the bucket or basket divided by the number of ball throws.

        d.   In the <u>fourth column</u>, represent the score as a graphic as shown below. You will show the score of each player by drawing a rectangle with lines inside it to create the same number of smaller rectangles as the number of tosses the player had.

            (1)   Put an X number of squares as the player successfully landed the ball in the basket.

            (2)   The player with the largest fraction wins! See example below.

Names of Player	Number of Tosses	Score as a Fraction	Score as a graphic				
	5	3/5	X	X	X		
	5	2/5	X	X			
	5	1/5	X				

H. Playing Fraction Hopscotch

Use chalk to draw the hopscotch pattern below on a sidewalk or driveway.

    1.   Ask an adult to time you and see how fast you can move from zero to one.

    2.   Start with both feet on zero, then hop on one foot to land on each <u>single square</u> (1/8, 3/8, 5/8, and 7/8). When you hop on the single square, say the fraction on that square.

    3.   Then hop on two feet to land on the double (1/4 and 2/8; 2/4, 1/2), say the names of these fractions.

    4.   When you hop on 4/8; 3/4 and 6/8, triple squares, say the names of the equivalent fractions (2/8 equals 1/4; 2/4 and 4/8 equal 1/2; and 6/8 equals 3/4).

ONE

$$\frac{7}{8}$$

$\frac{6}{8}$	$\frac{3}{4}$

$$\frac{5}{8}$$

$\frac{4}{8}$	$\frac{2}{4}$	$\frac{1}{2}$

$\frac{3}{8}$

$\frac{2}{8}$	$\frac{1}{4}$

$\frac{1}{8}$

I.   Writing a Reflective Story

1.   Write a story about a time that <u>your pride</u> got you into trouble because it made you promise to do something harder than you intended so that you could show your friends that you were smarter or more skillful than they were.

2.   Did you keep your promise? If so, did keeping your promise impress your friends? What did you learn from this experience? Did you ever do the same thing again?

3.   If you cannot think of an incident to write about where your pride got in the way, write a story about a time that a friend was *generous to you*. How did it make you feel? Did this change the way you treated your friend? How about the way you treated other friends or people you didn't know well at all?