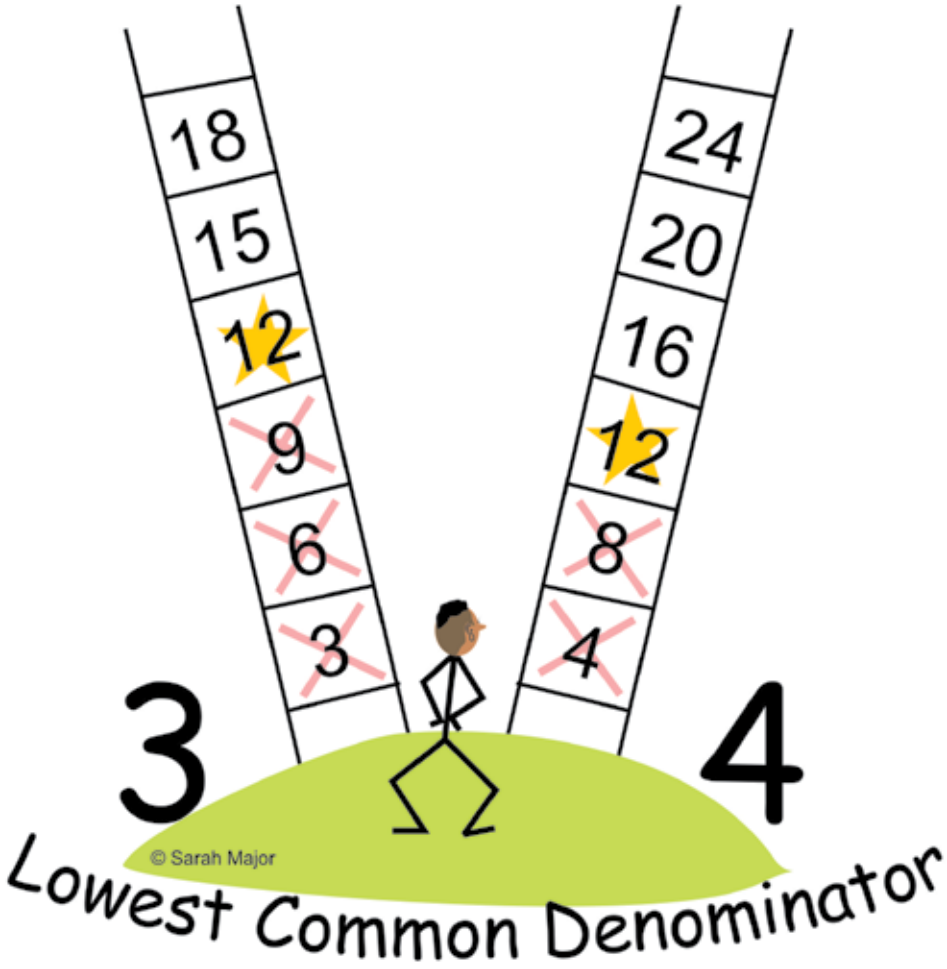
Right-Brained Fractions

a Forget Memorization book

Effortless learning through images, stories, hands-on activities, and patterns



by Sarah K Major

Another great resource for right-brained learners from Child1st Publications

TABLE OF CONTENTS

3 NUMERATOR & DENOMINATOR

Goals for This Chapter:

1. To read and write "numerator" and "denominator."
2. To understand the meaning and function of each.
3. To create a fraction with numerator and denominator from a model.
4. To turn a word problem into a fraction with numerator and denominator.

I. Meet Brothers Num & Nom Ators

Show the students the Ator Brothers on the next page. Num Ator is all about numbers and counting. He loves to count. Point out that the word "number" is almost all there inside "numerator." All that is lacking is the letter B. Num Ator counts, thinks about counting, and dreams about counting.

Next, introduce Nom Ator. Nom is all about names and naming things. "Nom" sounds a tiny bit like "name." Beyond that, the word NOMBRE means NAME in Spanish. NOME is NAME in Italian and in Portuguese. So Nom, with his wide open mouth, is all about naming things.

Believe me when I say that this is not just a silly story with sillier pictures. The Ator Brothers bring great significance to the study of fractions. This duo might even be the missing link for students who struggle with fractions.

The Ator Brothers' last name has a special meaning also. ATOR means "one who." So Num Ator is "the one who counts," while Nom Ator means "the one who names."

Share with your students other ATOR family members:

Activator	One who activates
Agitator	One who agitates
Allocator	One who allocates
Aviator	One who flies
Calculator	One who calculates
Creator	One who creates
Decorator	One who decorates
Cultivator	One who cultivates

Find photos of Num and Nom on the next page.

Challenge your students to get online and do a search for "words ending in ator" and then have them look up the meaning of words they find. There is a pattern there!

Remind them these characters they find are all relatives of the Ator Brothers, Nom and Num.

The Ator Brothers:

II. Let's put Num & Nom in their places

The Ator Brothers share a house. Num lives upstairs while Nom lives downstairs. Nom is the one who NAMES the fractional part we are using (how many parts the whole was cut into), while Num is the one who COUNTS how many fractional parts we are going to use. First we enter the house downstairs where we name the fractional part, then we climb the stairs where we count how many parts we will use. (*See a photo of the Ator Brothers at home on the next page*).

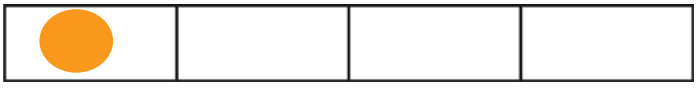
Characters:

I COUNT the fractional parts we will use.

I NAME the fractional parts in the whole.

*For a reminder, explain to students that a very young child first learns to **name** things before he learns to **count** things.*

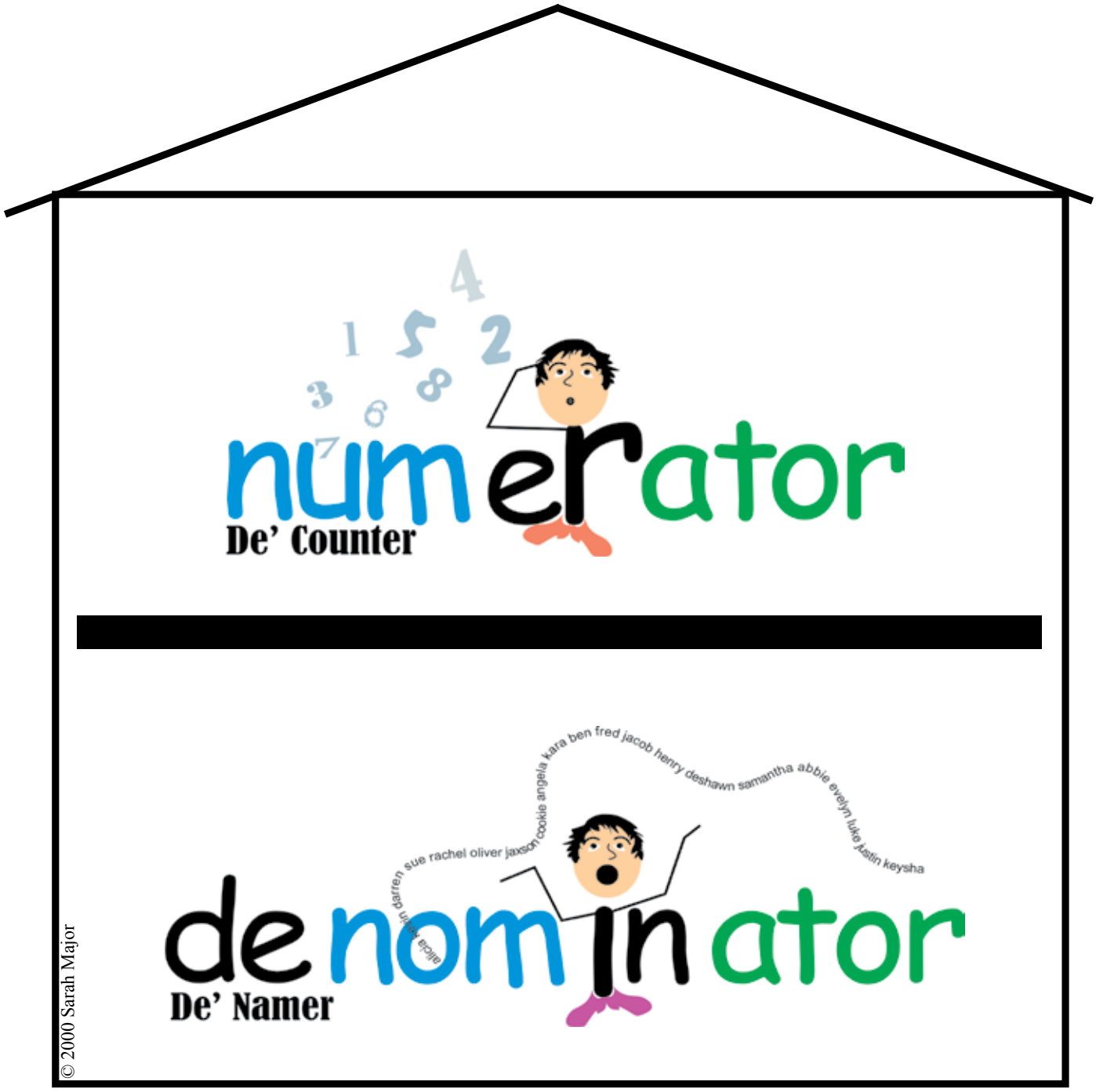
Now look at the model below. Models of Fractions show how many parts the whole was cut into, and the orange dots tell us how many of the parts we are actually going to use. There is only one orange dot on each model, so the **numerator** will be 1 in each fraction. The Symbols show "how many" on top and "of what" on the bottom. Point out that the more pieces the whole is cut into, the bigger the **denominator** becomes!

Models of Fractions:	**Words:**	**Symbols:**
	One Half	$\frac{1}{2}$
	One Third	$\frac{1}{3}$
	One Fourth	$\frac{1}{4}$
	One Fifth	$\frac{1}{5}$

Hands On:

Use Resource 3-1 to practice the names and roles of the Ator Brothers.

The Ator Brothers at home:



Hands On:

Give students Resource 3-2 to use for Section III.

III. Let's put Num & Nom to work

After you have had time to thoroughly become acquainted with Num and Nom, let's get to the fun part of fractions! We are going to make models of fractions first and then will put that information into fractions using symbols. Before we do that, be sure each child can write the terms correctly, and make sure they know that ATOR means "one who...", that NUM deals with counting, while NOM names the fractional parts. Use Resource 3-1 again if needed.

Example from real life: You have 12 tools in your toolbox, but for this job you will only use 3.
So you will use 3/12 of your tools.

Working orally, go through the following models. **First** ask for the word that names the fractional part. Write that word under the line. **Next**, count the number of fractional parts that are orange. Write that number above the line. Finally, change the words to symbols as shown below.

The students' copy has an additional problem not shown here.

COUNT how many are used.

NAME the fractional part (or how many parts in all).

1 / Half

1 / 2

2 / Thirds

2 / 3

1 / Fourth

1 / 4

4 / Fifths

4 / 5

2 / Sixths

2 / 6

3 / Sevenths

3 / 7

Hands On:

Use Resource 3-3 From models to fractions. Next, using real materials, pair the students up. They will take turns making a fraction model for their partner to represent using numbers.

IV. From word problems to fractions

In order for children to really understand fractions, they will have to be able to use them in real life situations. In this section, we are going to create word problems, use real materials, and we are going to work through turning each mini-story into a fraction that just uses symbols.

To begin with, copy Resource 3-4 so that each student has a copy. Share that in a word problem, there are usually three parts: the story, the question, and the answer.

Here are word problems:

1. Our dog had a litter of 8 puppies.
All the puppies were black except for three who have white feet.
How would you write a fraction that shows how many puppies have white feet?

$\frac{3}{8}$

Ask: "What kind of "whole" is this?" [Set - a set of puppies]

Ask: "What is the fractional part?" [Eighths - 8 pups in all]

Ask: "Where does this number go? Above or below the line?" [Eighths is the name of the fractional part, the denominator, so it goes below the line. Remember we name first.]

Ask: "How many puppies have white feet?" [3. We have gone upstairs to count.]

Ask: "Where do we write this number?" [This answers the question "how many are we talking about, so it is the numerator and goes upstairs or above the line.]

We want the students to picture what is happening in each story. They will be looking for three things: two numbers and a question. In the puppy story, the first number is 8 puppies in all, the second number is 3 have white feet, and the question is going to direct your attention to what we are talking about.

2. I have a huge chocolate chip cookie that I cut into six pieces.
Two of my friends came over and all 3 of us want to eat a piece of cookie.
How would you write a fraction to show how many pieces of cookie will be eaten?

$\frac{3}{6}$

Ask: "What kind of "whole" is this?" [Area - one cookie]

Ask: "What is the fractional part?" [Sixths - cookie was cut into 6 pieces]

Ask: "Where does this number go? Above or below the line?" [Sixths is the name of the fractional part, the denominator, so it goes downstairs, or below the line.]

Ask: "How many pieces of cookie will get eaten?" [3 - one for me and 2 for my friends]

Ask: "Where do we write this number?" [This answers the question "how many are we talking about, so it is the numerator and goes upstairs, or above the line.]

Hands On:

Use Resource 3-5 From stories to fractions. Take it further by asking kids to make up word problems for a partner to write in fraction form.

Here are more word problems:

Use these word problems to cement the meaning of fractions in your students' heads. Enlist students to make up word problems to pose to the others. Encourage the students to use real materials or to draw little pictures if this will help them work out what is happening in each story. For each story, ask what kind of whole we are dealing with and how to write the fraction.

1. Main Street is 12 blocks long. Both my friend and I live on that street. When I go to his house, I have to walk 5 blocks. How would you write a fraction that shows how many blocks I have to walk?
[Whole is LENGTH. Fraction is 5/12]

2. We ordered a pizza cut into 8 pieces. Three of us ate one piece each. How would you write a fraction that shows how many pieces of pizza were eaten?
[Whole is AREA. Fraction is 3/8]

3. I have 15 cousins. 7 of them live in my town and are coming over for the 4th of July. Write a fraction that shows how many of my cousins are coming over on the 4th of July.
[Whole is SET. Fraction is 7/15]

4. My brother has 10 baseball caps. Mom said he has to get rid of 4 of them, which he is not happy about. How would you write a fraction that shows the hats my brother has to get rid of?
[Whole is SET. Fraction is 4/10]

5. Mom cut the lasagne into 15 pieces. We ate 7 of the pieces. How would you show the number of pieces we ate in a fraction?
[Whole is AREA. Fraction is 7/15]

6. The track at school is 4 miles long. I ran 1 mile and walked the rest of the way. How would you write a fraction that shows how many miles I ran?
[Whole is LENGTH. Fraction is 1/4.]

Hands On:

Use Resource 3-6 Assessment

3-1 Writing names and describing jobs **Name**_____

1. Write Nom's full name _____.

2. What is Nom's job? _____.

3. Write Num's full name _____.

4. What is Num's job? _____,

5. Who lives upstairs in the house the brothers share? _____.

6. Who lives downstairs in the house the brothers share? _____.

7. What does "ator" mean? _____.

8. First figure out the fractional part, and then write a fraction for each model. The dot shows how many we are going to use.

Models of Fractional Parts: Fractions:

___

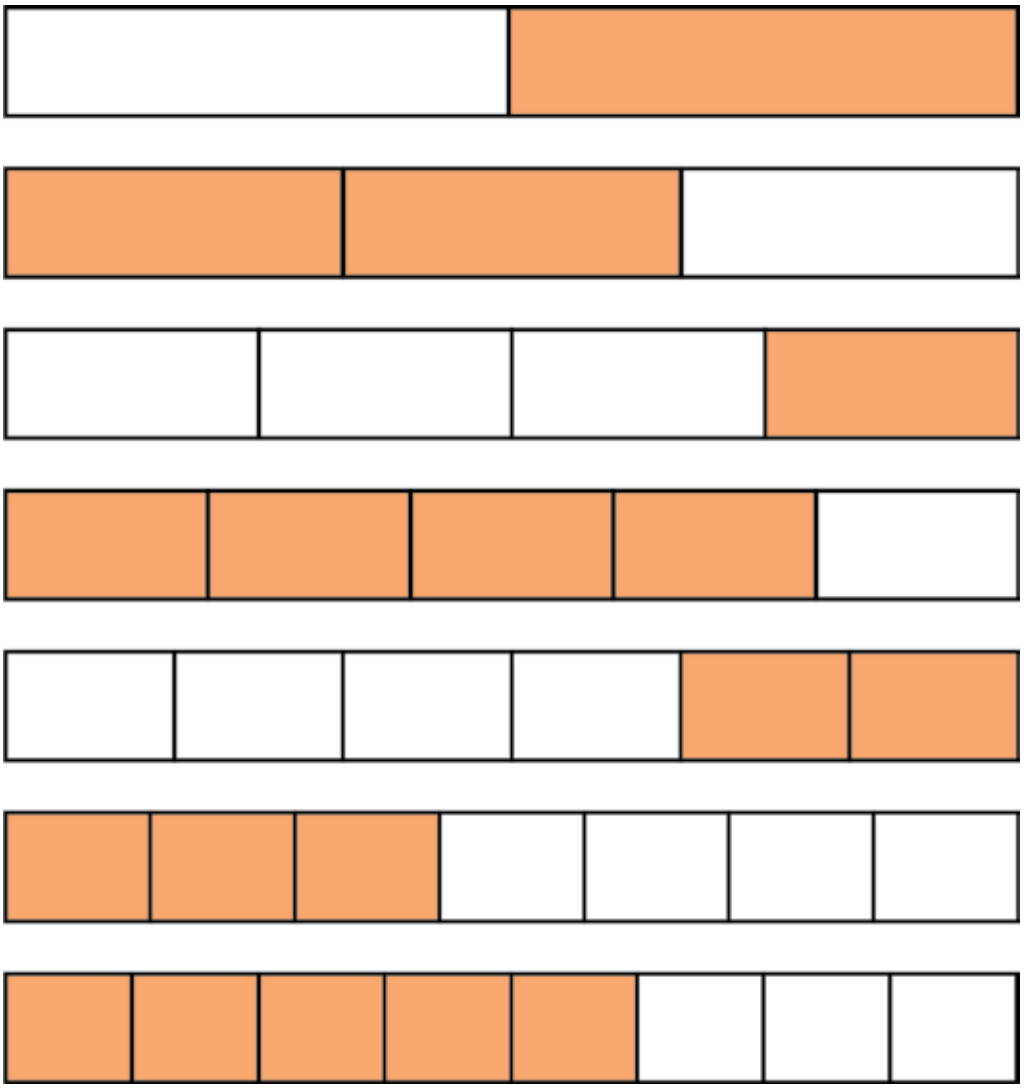
___

___

___

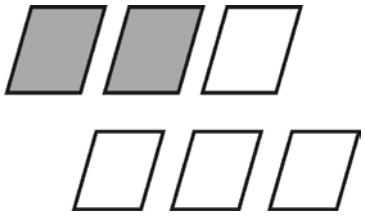
3-2 Models of fractional parts **Name**_____

First, write the word that names the fractional part under the line by each model. Next, count the number of fractional parts that are orange. Write that number above the line. Finally, change the words to symbols.



3-3 From models to fractions **Name**_____

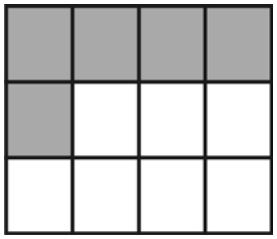
1. Write a fraction showing the number of fractional parts that are shaded.



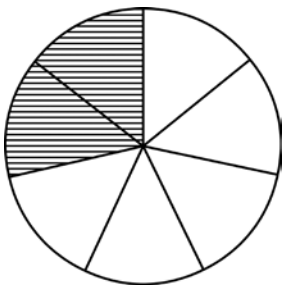
2. Write a fraction showing the number of fractional parts that are white.

3. Write a fraction showing the number of fractional parts that are circled.

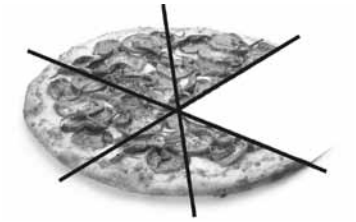
4. Write a fraction showing the number of fractional parts that are shaded.



5. Write a fraction showing the number of fractional parts that are shaded.

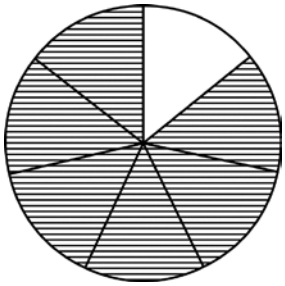


6. Write a fraction showing the number of fractional parts that were eaten.



7. Write a fraction showing the number of fractional parts that are white.

8. Write a fraction showing the number of fractional parts that are white.

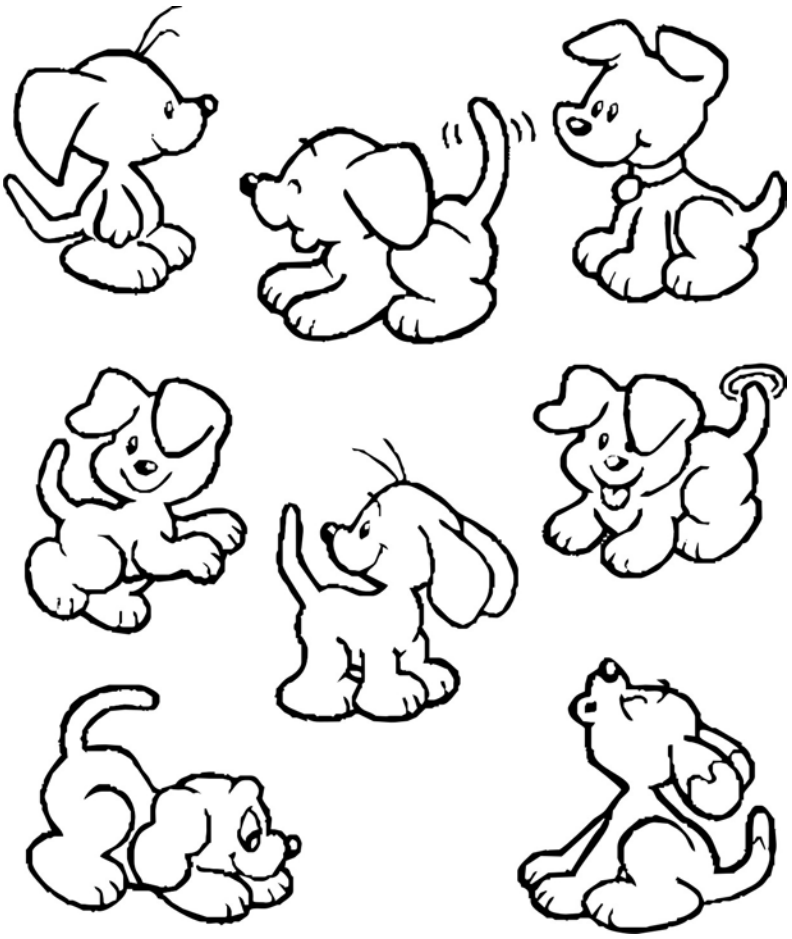


9. Write a fraction showing the number of fractional parts that are circled.

10. Write a fraction showing the number of fractional parts that are white.

3-4 Story problems 1 **Name**_____

Color the puppies to match the story. Now, write a fraction to show how many have white feet.



Cut the cookie into six pieces or draw lines to show 6 pieces. Next cross out the ones you and your friends ate. Write a fraction that shows the pieces that were eaten.

3-5 From stories to fractions **Name**_____

Read each story below. Draw a picture of what is happening. Next, write a fraction that answers the question in the story.

1. My family has five bikes. Two are red and three are blue. Write a fraction that shows how many bikes are blue.

2. The park is an 8 acre rectangle. 3 of the acres are covered by a pond, while 5 acres are grassy. Write a fraction that shows how many of the acres are grassy.

3. The relay team has five runners. Three of the runners are boys and two are girls. Write a fraction that shows how many of the runners are girls.

4. Mom cut a pan of brownies into 12 pieces. We ate 7 of them for dinner. Write a fraction to show how many pieces we ate.

5. My class went on a field trip. There were 10 of us; six boys and four girls. Write a fraction to show how many of us are girls.

6. We have a roll of wrapping paper that is 100 feet long. We wrapped a lot of presents and used up 25 feet of paper. Write a fraction that shows how many feet of paper we used.

7. Darrah has bubble gum to share with her friends. She has 13 pieces to begin with. She gave away 3 pieces. Write a fraction to show how many pieces she gave away.

8. Melissa cut her apple into four pieces. She gave her friends three of them. Write a fraction to show how many pieces she kept.

9. We ordered a pizza which was cut into 8 pieces. We ate five pieces. Write a fraction to show how many pieces were left.

10. It is 12 blocks to Jaylen's house. I had walked five blocks when it started to rain. White a fraction that shows how many blocks I walked before I got wet!

3-6 What I know about writing fractions **Name**_____

1. Write the real names of the Ator Brothers under each picture.

_____ _____

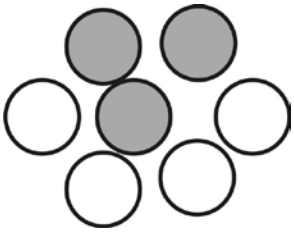
_____ _____

2. Under each name, write what that brother does.

3. Write a fraction for this model in the box:

4. Write a fraction for this model in the box:

5. Write a fraction for this model in the box:



6. Color the model to show this fraction: $\frac{6}{8}$

7. Color the model to show this fraction: $\frac{2}{5}$

8. Color the model to show this fraction: $\frac{4}{7}$

9. I blew 9 bubbles and all of them popped except for 3. Write a fraction that shows how many bubbles did not pop.

10. I cut a long piece of string into 10 pieces. I used 7 of them to tie leaf bags shut. Write a fraction that shows how many pieces of string I used.

11. Draw a picture of a set of cookies and decide how many you will eat. Mark these with an X. Now write a fraction showing how many cookies you ate.