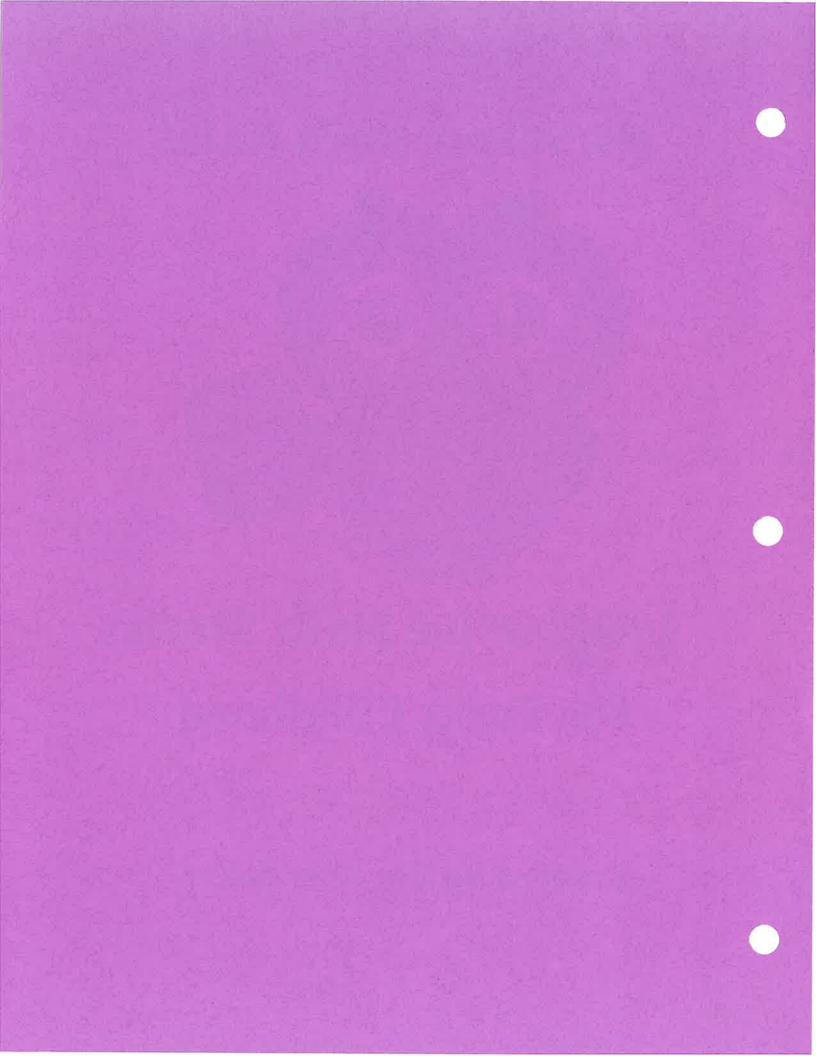
## Marvelous Math Mats!



# Imaginative Math Stories for Early Childhood

Created by Dr. Jane Baker



# Why Use Story Mats?

- 1. Add interest to math lessons
- 2. Ignite children's imaginations
- 3. Connect to children's literature
- 4. Develop oral and written language
- 5. Mix language arts and math in meaningful, productive ways
- 6. Practice mathematical vocabulary
- Develop concepts of comparison, number, addition, and subtraction
- 8. Develop understanding of problem structure
- 9. Model math story writing
- 10. Practice stating or writing mathematical equations
- 11. Serve as an informal assessment tool

# "Side by Side" Stories

### Creation/Recognition of a Set

Given a number, the child will build a set to represent the number, or given a group of objects, the child will count the members of the set.

### Comparison of Sets

The concepts of more, less, and the same as are basic relationships that are essential to develop meaning in operations. The child should construct sets to show these relationships using manipulatives, as well as make comparisons or choices between two given sets.

### Subtraction: Comparison Model

The child creates two sets, compares them, and then identifies the difference between them.

# "Altogether" Stories

Composition of Sets (Part-Part-Whole)
Children build a quantity in two or more parts.

Addition of Sets: Combining (Part-Part-Whole)
The child manipulates two or more sets of objects
and combines to make a whole set.

### Addition: Comparison Model

When the smaller of two sets and the difference between them is known, then addition tells how many in the larger set.

# "Something Happens" Stories

Subtraction: Take Away model (Whole-Part-Part)
The child creates a set of a designated amount (the whole) and is asked to take away an amount (a part) and identify what is left (a part).

### Missing Addend (Whole-Part-Part)

The child creates a set (the whole) and must cover up or hide some of the set (a part). The child is encouraged to "think addition," and answer the question: "What goes with the remaining pieces (a part) to make the whole amount?"

## Teacher Talk

- "Clear your mat so we can tell a different story."
- · "What do you see on the story mat?"
- "Who would like to share their story?"
- "Do you see a pattern in our stories?"
- "How do I write that equation?"
- "Let's read the equation together."
- "What numbers would we use to write this story the short way?"
- "How did you know when to add or subtract?"
- "How did you know how many (objects) to use?"
- "How do you know if this true or not true?"
- "Let's write the equation for that on our record sheets. You write along with me."
- "What pattern can we make with the (objects)?"

### More Ideas

- Don't forget zero. Make up stories in which zero objects are added or removed.
- Have partners take turns telling their own stories to one another.
- Children write and illustrate their stories with corresponding equations in their journals.
- Encourage children to use transition words in their stories such as "first", "then", "next", and "finally".
- Children roll a die or spin a spinner to determine the number of objects to combine or remove.
- Practice skip counting and introduce multiplication by having children count objects into sets of 2s, 3s, or more.

- Use overhead transparencies to model use of the mat to the whole group.
- Assess individual children's comprehension with story mats.
- Create equation cards for children to solve using the story mat as a center activity.
- Invite children to take two story mats and corresponding manipulatives home overnight to "teach" family members. Include a journal so children can write about what they did at home.
- Parent volunteers to prepare/color the story mats and manipulatives.
- Laminate mats to last for years.
- Place individual mats and corresponding manipulatives in zip-lock baggies.

# Management Issues

Problem: Children playing with manipulatives during the lesson.

Solution: Provide exploration/play time with the manipulatives before and after the lesson.

Problem: Children eating edible manipulatives during the lesson.

Solution: Anticipate trouble and lessen anxiety by stating that they can eat their manipulatives after the lesson.

Problem: Not enough story mats or manipulatives for each child to work alone.

Solution: Introduce story mat and place in center for individual or partner practice.

# Resources for Materials and Ideas

- Novelty resource catalogs
- Dollar stores
- Hobby stores
- Grocery stores
- Party supply stores
- Online auction websites
- Science education supply catalogs
- Math education supply catalogs

#### Crazy Hair Day



#### Introduction

Sally's kindergarten class is having Crazy Hair Day at school today. Sally is so excited! She has many big and small barrettes that she wants to put in her crazy hair.

#### Possible Manipulatives

big and small barrettes for girls bobby pins small hair bows

#### "Side-by-Side" Story

How many barrettes do you have? Put some barrettes in Sally's hair and leave some in your hand. Are there more in Sally's hair or in your hand? Tell your partner about your story mat.

#### "Altogether" Story

Sally put two small barrettes in her hair and three big barrettes in her hair. How many barrettes did she have altogether?

#### "Something Happens" Story

Sally had nine barrettes in her hair.
She played outside at recess and four barrettes fell out. How many barrettes did she have left in her hair?

#### Related Children's Literature

Crazy Hair Day by Barney Saltzberg
Crazy Hair by Neil Gaiman
Chelsea's Crazy Hair by Joanne Potts
BedHead by Margie Palatini
Bad Hair Day by Susan Hood
The Unexpectedly Bad Hair of
Barcelona Smith by Keith Graves
Stephanie's Ponytail by Robert
Munsch
Baghead by Jarrett J. Krosoczka

#### Tips and Ideas

In place of a story mat, you could use a doll with long hair.

Students can work with a partner and compare amount of barrettes in Sally's hair. Who has the most? Who has the least? What is the difference?



#### Shecky the Shark



#### Introduction

Shecky the Shark has many sharp teeth, but he keeps losing them and growing new ones!

#### Possible Manipulatives

fossilized shark teeth triangle-shaped crackers mini-marshmallows

#### "Side-by-Side" Story

Shecky has six teeth on the top row of his mouth and eight teeth on the bottom row of his mouth. Are there more teeth on the top or bottom of his mouth? How many more?

#### "Altogether" Story

Shecky has eight teeth on the top row of his mouth and three teeth on the bottom row of his mouth? How many teeth does Shecky have altogether?

#### "Something Happens" Story

Shecky had four teeth on the top row of his mouth and seven teeth on the bottom row. After a really big lunch, Shecky lost five teeth. How many teeth were left in Shecky's mouth?

#### Related Children's Literature

Sharks Keep Losing Their Teeth and
Other Amazing Facts about Sharks by
Claire Llewellyn
Big Shark's Lost Tooth by Steve Metzger
and Michelle Barbera
The Great White Man-Eating Shark: A
Cautionary Tale by Margaret Mahy and
Johnathon Allen

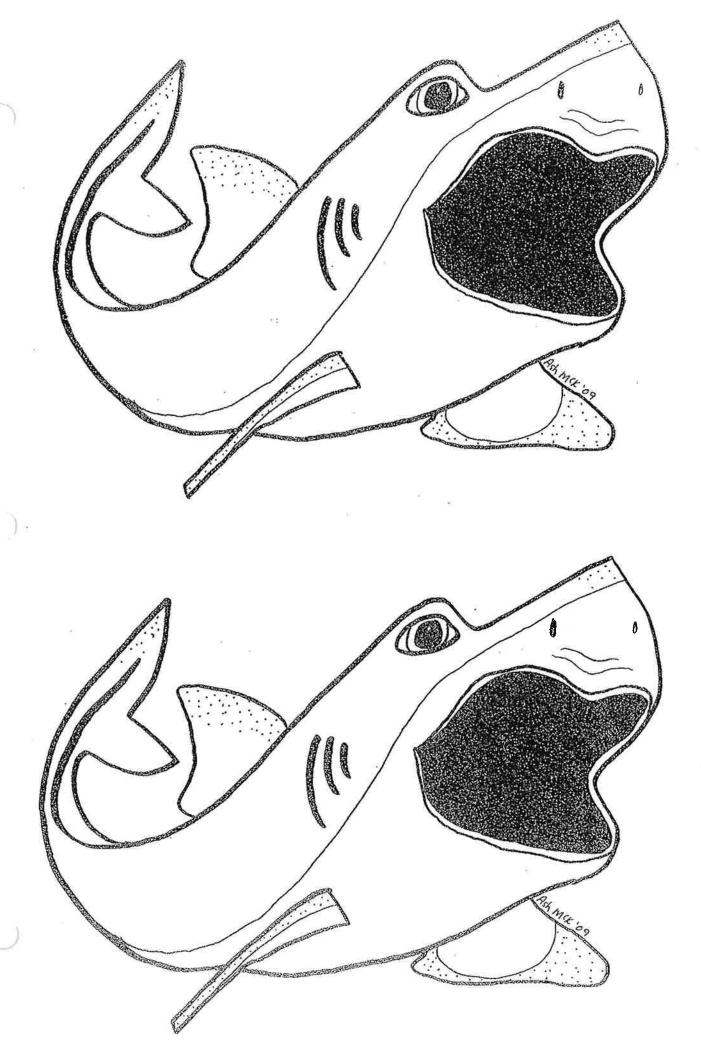
#### Tips and Ideas

If using genuine shark teeth, anticipate trouble and explain that you do not allow children to poke each other with the teeth or place the teeth in their own mouths.

Before using the shark teeth on the story mat, have students sort and classify their shark teeth.

Share some shark tooth facts. Most sharks have 5 to 15 rows of teeth in each jaw. Unlike human teeth, shark teeth don't have roots to hold them in place, so their teeth are easily broken off. A tooth usually lasts about a week before it falls out. When this happens, the tooth behind it moves up to replace it. A new tooth can be replaced in as little as 24 hours.

You can purchase fossilized shark teeth at online auction websites or from science education catalogs.



#### Ladybugs on a Log



#### Introduction

Our lovely ladybugs love to leisurely lounge on their large log.

#### Story Mat

toilet paper tube

#### Possible Manipulatives

red lima beans with ladybug spots red buttons red Tiddly-Winks red Bingo markers

#### "Side-by-Side" Story

If you put six ladybugs in the log and four on top of the log, will there be more ladybugs in or on top of the log? How do you know?

#### "Altogether" Story

Jenny placed four ladybugs inside the log, two ladybugs on top of the log, and three ladybugs beside the log. How many ladybugs did she have altogether?

#### "Something Happens" Story

George had five ladybugs. Two were on top of the log. The rest went

inside the log. How many were inside the log?

#### Related Children's Literature

Ladybug Girl by Jackie Davis and
David Soman
The Grouchy Ladybug by Eric Carle
Ten Little Ladybugs by Melanie Gerth
and Laura Huliska-Beith
Five Little Ladybugs by Melanie Gerth
and Tony Griego

#### Tips and Ideas

Assess positional word comprehension by having children place ladybugs beside, inside, on top, behind, near, far, or in front of the log.

Instead of ladybugs, use green lima beans with frog faces.

#### My Messy Closet Floor



#### Introduction

My closet is such a mess! I just throw all my shoes on the floor and I can't find the ones I need. I really must straighten it up!

#### Possible Manipulatives

fashion doll shoes fashion doll clothes

#### "Side-by-Side" Story

How many shoes do you have? Put some of the shoes on the floor of the closet and leave some in your hand.

Are there more on the floor or in your hand?

#### "Altogether" Story

I had three pairs of shoes on the floor of my closet. I threw in two more pairs of shoes. How many shoes do I have altogether? How many pairs of shoes do I have?

#### "Something Happens" Story

There were ten old shoes lying on the floor of my closet. I took four of the shoes out. How many shoes were left? Then I bought two more shoes and threw them in my closet. How many shoes do I have now?

#### Related Children's Literature

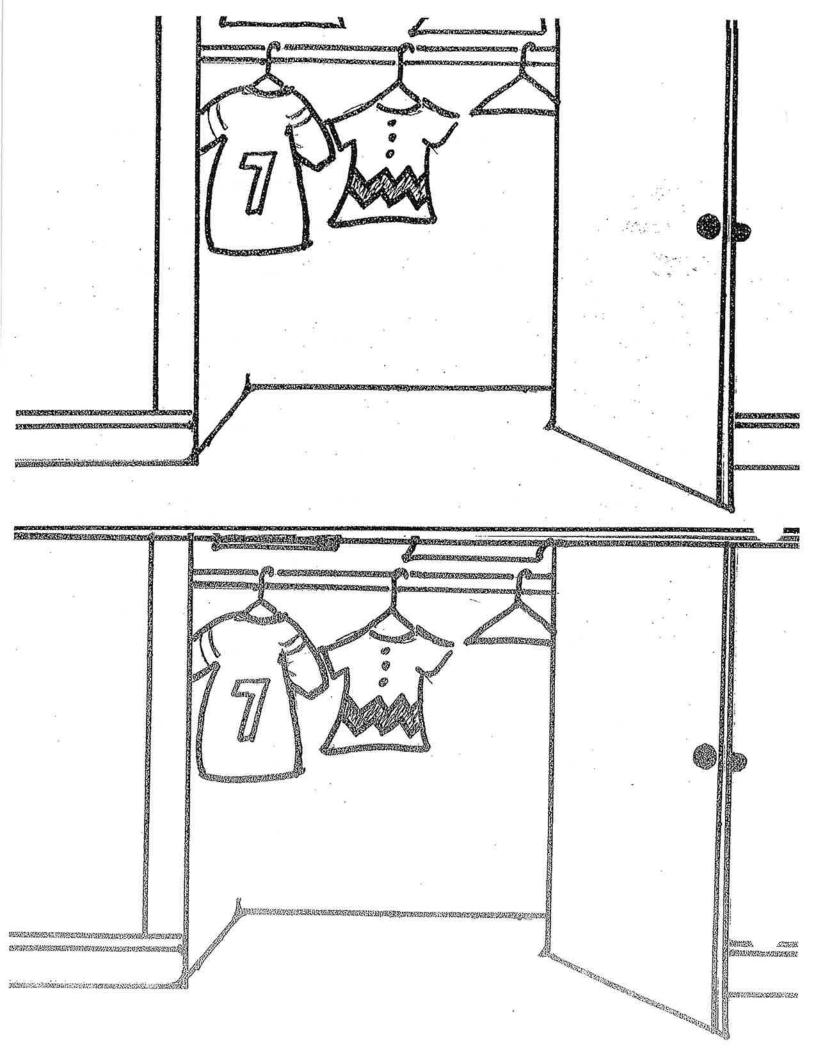
Messy Bessie's Closet by Pat McKissack Birdie's Big Girl Shoes by Sujean Rim Shoes, Shoes, Shoes by Ann Morris Too Many Shoes by Brainwaves

#### Tips and Ideas

Develop matching skills and one-toone correspondence by telling children to match up like shoes into pairs.

Develop the concept of even and odd by comparing even sets of shoes to odd sets and discussing what happens to the shoe without a partner.

You can purchase inexpensive fashion doll shoes through online auction websites.





#### King Kong

#### Introduction

King Kong has climbed to the top of a skyscraper and he's mad! Whenever an airplane flies near, he tries to swat it like a fly!

#### Possible Manipulatives

novelty airplane toys in two or more colors Runt candy bananas

#### "Side-by-Side" Story

Five yellow airplanes fly around King Kong. Seven red airplanes join them. Are there less yellow or red airplanes? How many less?

#### "Altogether" Story

Three yellow airplanes are circling King Kong. Two red airplanes join them. One blue airplane begins circling too. How many airplanes are there altogether?

#### "Something Happens" Story

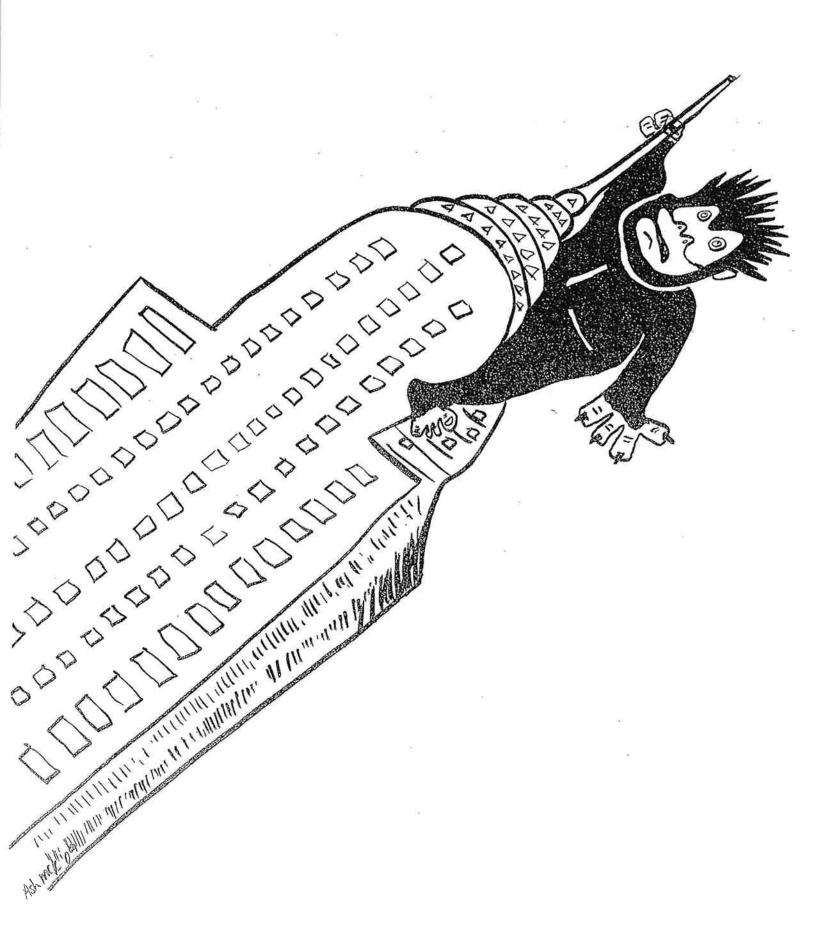
There are ten airplanes circling King Kong and he's madl King Kong swats seven airplanes out of the sky. How many airplanes are left?

#### Related Children's Literature

Meet King Kong (Famous Movie
Monsters) by James Fiscus
King Kong: Meet Kong and Ann by
Jennifer Frantz, Peter Bollinger, and
Robert Papp
King Kong by Anthony Browne
Kat Kong by Dav Pilkey

#### Tips and Ideas

You can find a clip of the Empire State Building scene from the original 1933 movie on You Tube. Consider the age and sensitivity of your children before showing it.



#### Flip Flop Fun



#### Introduction

Everyone loves flip flops! And the best place to wear flip flops is at the beach. But a lot of people lose their flip flops at the beach.

#### Possible Manipulatives

novelty flip flop toys or erasers seashells

#### "Side-by-Side" Story

Chase dug up six flip flops out of the sand. Rita found nine flip flops. Who has more flip flops? Chase or Rita? How many more?

#### "Altogether" Story

How many flip flops will Chase and Rita have if they put their flip flops together?

#### "Something Happens" Story

There were eight flip flops on the beach. A very large wave came on shore and washed three of the flip flops into the water. How many flip flops are left on the beach? How many are now in the water?

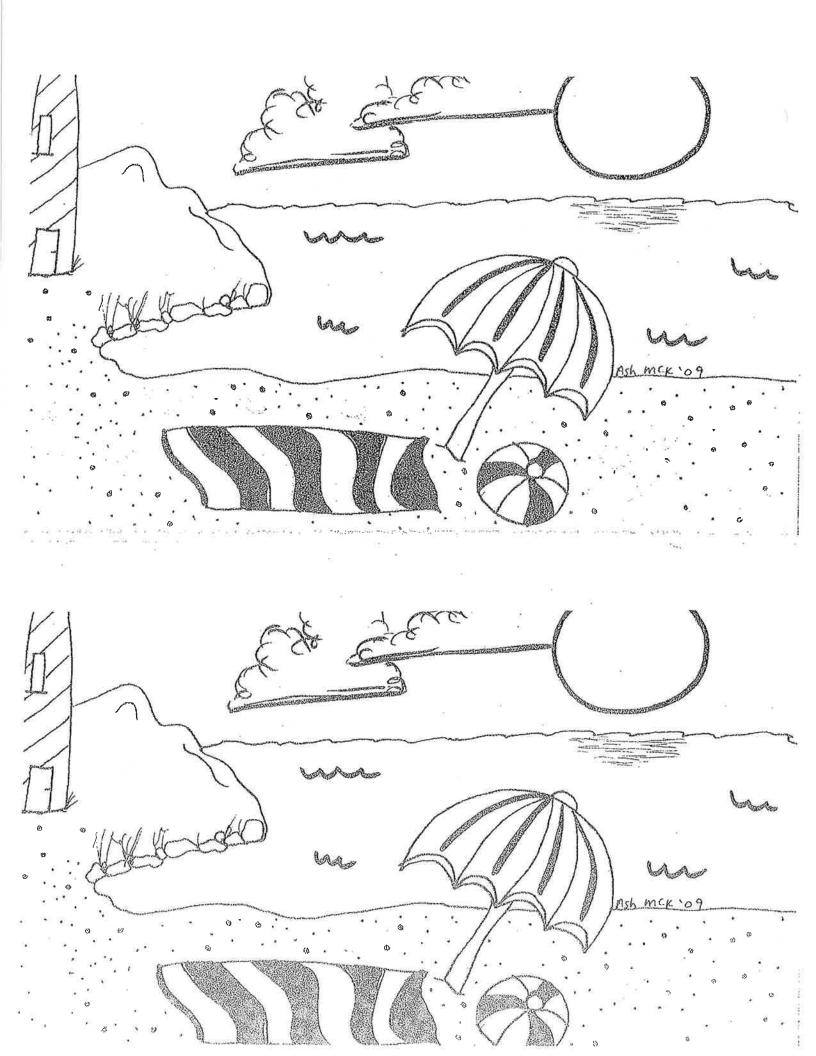
#### Related Children's Literature

Flip Flops by Nancy Cot
Flip Flop Bop by Matt Novak
Clothing Creations: From T-shirts to
Flip Flops by Jacqueline A. Ball
Beaches and Bicycles: A Summer
Counting Book by Davis and Rebecca F.

#### Tips and Ideas

Develop matching skills and one-toone correspondence by telling children to match up like flip fops into pairs.

Develop the concept of even and odd by comparing even sets of flip flops to odd sets and discussing what happens to the flip flop without a partner.



#### Ant Hill



#### Introduction

Have you ever watched ants crawling in and out of ant hills? Have you ever wondered what the inside of an ant hill looks like?

#### Possible Manipulatives

raisins
novelty ant toys
red lima beans
red pom-poms
red *Unifix* cubes

#### "Side-by-Side" Story

There were six ants inside the ant hill and the same number was outside the ant hill working in the sun. How many ants were working outside?

#### "Altogether" Story

On Monday, one happy ant worked outside the hill while one sleepy ant was asleep in the tunnel. On Tuesday, another happy ant came to work outside. The same number of sleepy ants was asleep in the tunnel. On Wednesday, two more happy ants came to work with the two outside,

and the same number were asleep in the tunnel. "Wake up!" said the happy ants. The sleepy ants woke up and joined their happy friends outside. How many ants are working outside now?

#### "Something Happens" Story

Twelve ants stood in a line. The first and second and third ants crawled into the ant hill. How many ants were left outside?

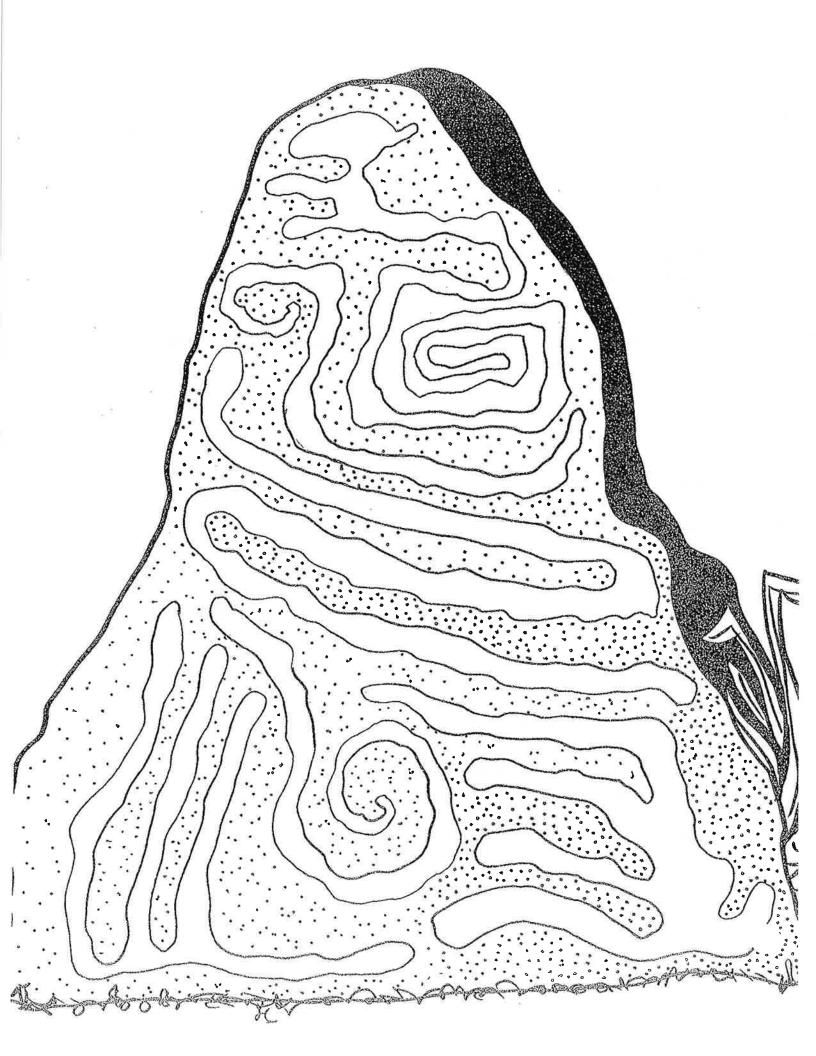
#### Related Children's Literature

The Life and Times of the Ant by
Charles Micucci
Ant Cities by Arthur Dorros
Hey, Little Ant by Phillip Hoose
One Hundred Hungry Ants by Elinor
Pinczes
Two Bad Ants by Chris Van Allsberg

#### Tips and Ideas

Have a child retell a story as you or another child manipulates the ants.

Have children place ants in a row and focus on ordinal numbers.



#### Robot Restaurant



#### Introduction

Rodney the Robot just opened his own restaurant for robots. He is serving Robot Doughnuts (nuts), Robot Pizza (washers), and Robot Hot Dogs (bolts).

#### Possible Manipulatives

nuts bolts washers

#### "Side-by-Side" Story

On Monday, Rodney served five doughnuts and seven hot dogs. Did he serve more doughnuts or hot dogs? How many more?

#### "Altogether" Story

On Tuesday, Rodney served six pizzas. He also served the same number of hot dogs plus two more. How many hot dogs did Rodney serve? How many did Rodney serve altogether?

#### "Something Happens" Story

Rex the Robot was really hungry and ordered seven doughnuts. He ate five doughnuts but was too full to eat the rest. How many doughnuts are left?

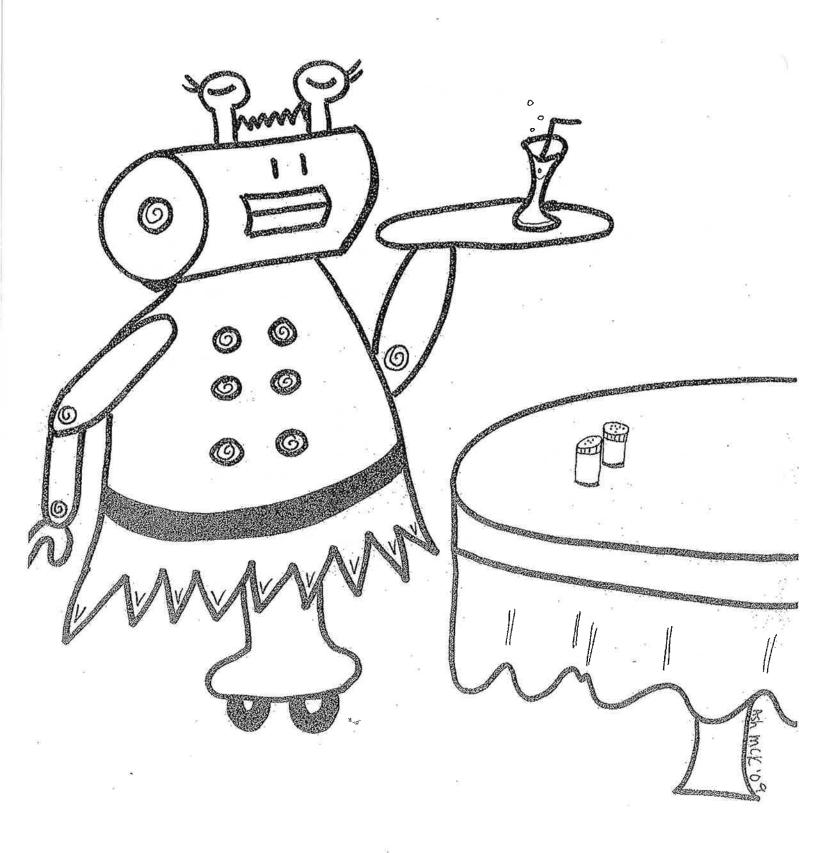
#### Related Children's Literature

Robot Zot! by Jon Scieszka
Robot Dreams by Sara Varon
Me and My Robot by Tracey West
The Robot and the Bluebird by David
Lucas

#### Tips and Ideas

Ask parents to donate the nuts, bolts, and washers.

Build fine motor skills and one-to-one correspondence by having children attach the nuts to the bolts.





#### Flower Arranging

#### Introduction

I love to mix and arrange flowers.

Just looking at a flower arrangement makes me feel cheerful.

#### Story Mat

cube of floral foam

#### Possible Manipulatives

Two kinds of silk flowers with plastic stems

#### "Side-by-Side" Story

Place some daisies and tulips in your floral foam. Do you have more daisies or tulips? Do you have less daisies or tulips? Do you have the same number of daisies and tulips? (answers will vary)

#### "Altogether" Story

Sally placed four daisies in her floral foam. Then she added three tulips. How many flowers did she arrange? How could we write this story as an equation?

#### "Something Happens" Story

Jenny had a floral arrangement of eight flowers. Some of the flowers wilted and Jenny through them out. There were five flowers left in the floral arrangement. How many flowers did Jenny throw out?

#### Related Children's Literature

The Reason for a Flower by Ruth
Heller
Flower Garden by Eve Bunting
The Boy Who Grew Flowers by
Jennifer Wojtowicz
The Flower Alphabet Book by Jerry
Pallotta
Flowers and Showers: A Spring
Counting Book by Davis and Rebecca F.

#### Tips and Ideas

Plan a field trip to a florist shop.
Children can interview the florist
about flower arranging techniques.
Many floral shops will donate old or
wilting flowers to your classroom for
authentic flower arranging
experiences. Children can brighten
the classroom by placing their flower
arrangements on the tables.



#### Monkeys on the Bunk Beds

#### Introduction

These silly monkeys are jumping on the bed. I hope none fall off!

#### Possible Manipulatives

brown lima beans with monkey faces brown *Unifix* cubes

#### "Side-by-Side" Story

Five monkeys are on the top bunk.

More monkeys are on the bottom

bunk. How many are on the top bunk?

How many are on the bottom bunk?

(answers will vary)

#### "Altogether" Story

Three monkeys are on the top bunk. Two monkeys are on the bottom bunk and one monkey is beside the bunk beds. How many monkeys are there altogether?

#### "Something Happens" Story

Ten monkeys were jumping on the beds. Two fell off and bumped their heads. Mama called the doctor and the doctor said "How many monkeys are still jumping on the bed?"

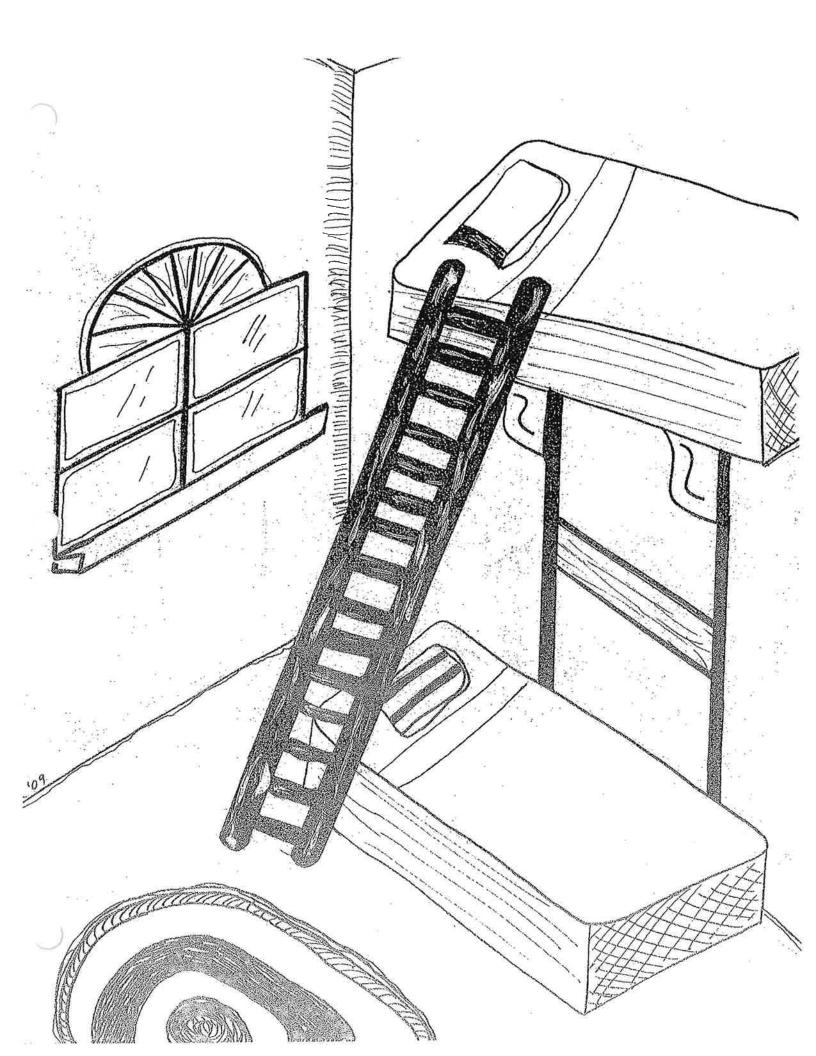
#### Related Children's Literature

No Jumping on the Bed by Tedd Arnold
Five Little Monkeys Jumping on the
Bed by Eileen Christelow
Ten Little Monkeys Jumping on the
Bed by Tina Freeman

#### Tips and Ideas

Don't forget to include stories in which zero monkeys are added or subtracted.

Assess positional word comprehension by having children place monkeys beside, under, on top, near, far, or in front of the bunk beds.





#### The Playground

#### Introduction

There's so much to do on this playground! Let's make up some math stories about children playing on the playground.

#### Possible Manipulatives

lima beans with kid faces
Unifix cubes

"Side-by-Side" Story

Put a matching number of children on the slide and in the sandbox.

#### "Altogether" Story

There were four children playing in the sand box. They saw that Freddy looked lonely, so they asked him to play with them. Freddy said "Yes!" Now how many children are playing in the sandbox?

#### "Something Happens" Story

Ten children were playing on the playground. Jeff and Susie left to talk to their teacher. How many were left on the playground?

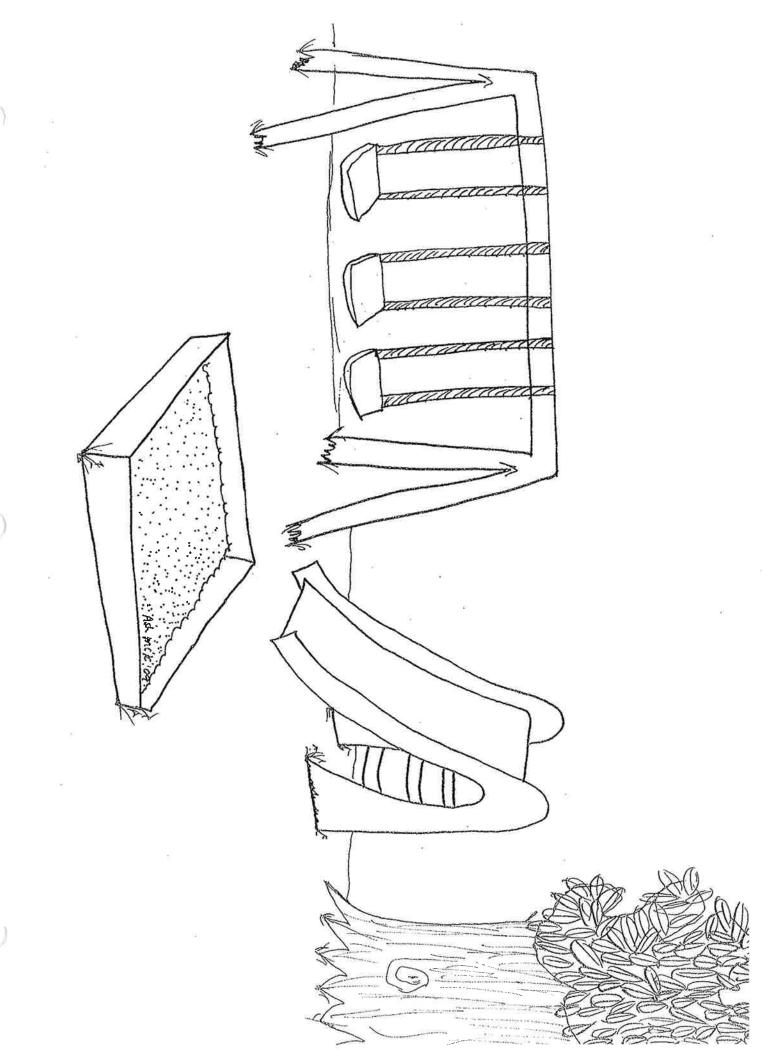
#### Related Children's Literature

King of the Playground by Phyllis
Reynolds Naylor
Playground Day by Jennifer Merz
Maisy Goes to the Playground by Lucy
Cousins
The Playground Problem by Margaret
McNamera
Manners on the Playground by Finn,
Carrie, Lensch, and Chris

#### Tips and Ideas

Reduce, photocopy, and laminate school pictures of your students for personal manipulatives.

Assess positional word comprehension by having children place manipulatives beside, under, on top, behind, near, far, or in front of the playground equipment.



#### Birds on a Wire



#### Introduction

Have you ever noticed birds sitting on wires between telephone poles? I wonder if they're visiting with each other or maybe they just like to watch us.

#### Possible Manipulatives

multi-colored lima beans with bird faces

#### "Side-by-Side" Story

Four blue birds were sitting on the telephone wire. Two green birds flew up and sat on the wire too. Are there more blue birds or green birds? How many more?

#### "Altogether" Story

There were seven blue birds sitting on the telephone wires. Three green birds joined them. How many birds are there altogether?

#### "Something Happens" Story

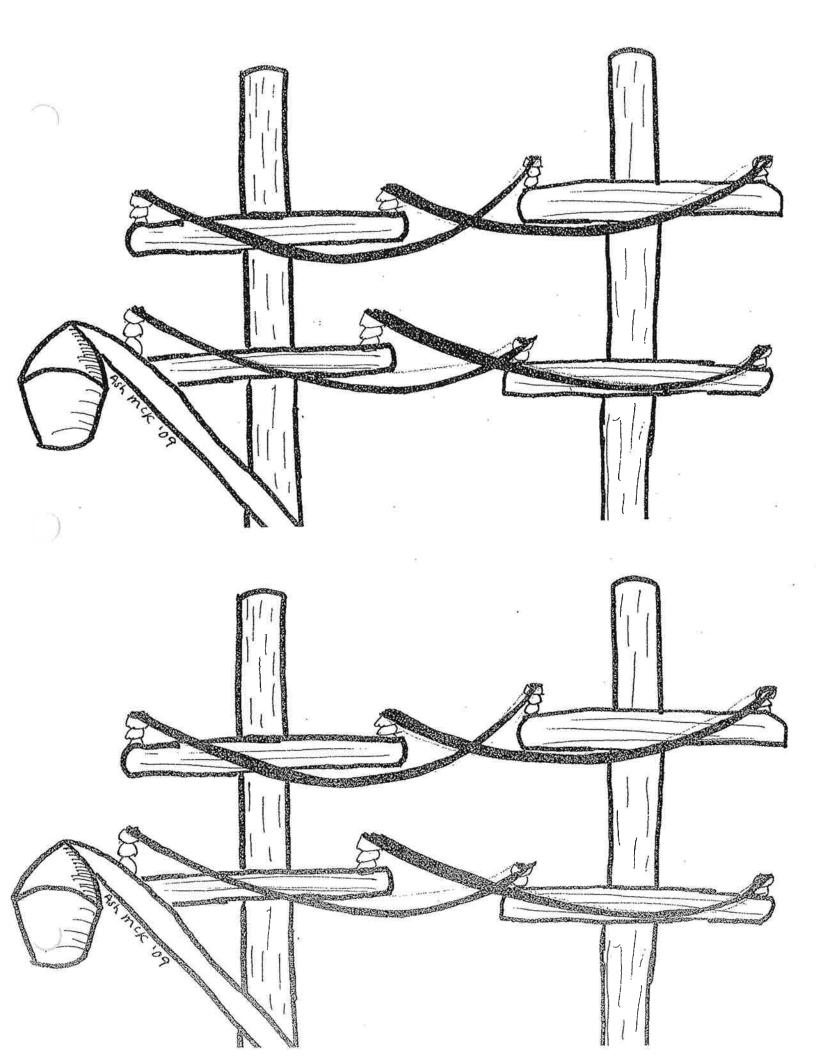
There were ten birds in all sitting on the telephone wire. Six of the birds were blue. The rest were green. How many birds were green?

#### Related Children's Literature

Birds by Kevin Henkes
Bird Watch by Jane Yolen
Wild Birds by Joanne Ryder
The Boy Who Drew Birds: A Story of
John James Audubon by Jacqueline
Davies

#### Tips and Ideas

The story mat permits a focus on left and right. Place some birds on the left telephone pole and some birds on the right.



#### Game Day



#### Introduction

Today's the big game between the \_\_\_\_ and the \_\_\_\_. The football coaches want to make sure they have enough footballs.

#### Possible Manipulatives

brown lima beans brown *Unifix* cubes

#### "Side-by-Side" Story

If you put six footballs by the left goal post and four footballs by the right goal post, will there be more footballs by the left or right goal post?

#### "Altogether" Story

Charlie kicked two balls onto the field. Susan kicked three balls onto the field. George kicked four balls onto the field. How many footballs are on the field now?

#### "Something Happens" Story

Eight footballs are lined up on the football field ready for kicking practice. The kicker kicks four

footballs over the goal post and out of the stadium. How many footballs are left on the field?

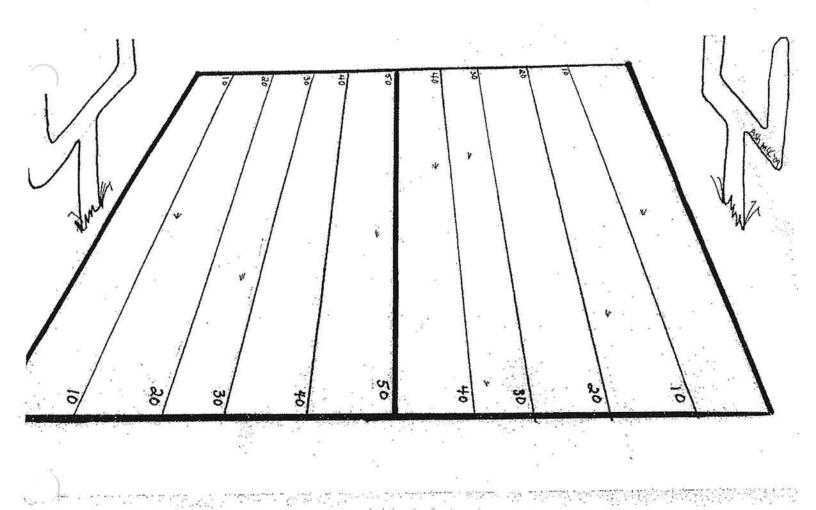
#### Related Children's Literature

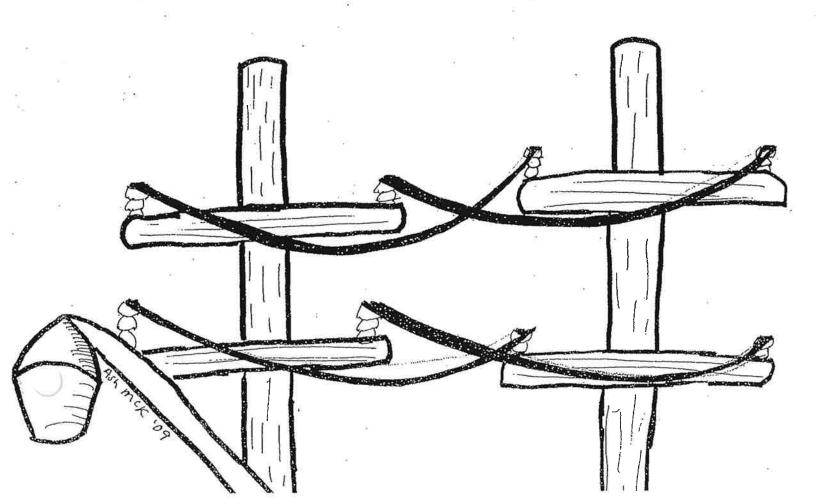
Touchdown! My Football Book by
David Diehl
Kick, Pass, and Run by Leonard Kessler
Football and Falling Leaves: A Fall
Counting Book by Davis and Rebecca F.
T is for Touchdown: A Football
Alphabet by Sleeping Bear Press
Little Granny Quarterback by Bill
Martin Jr., Michael Sampson, and
Michael Chesworth
The Football That Won by Michael
Sampson and Ted Rand
Touchdown! You Can Play Football by
Nick Fauchald

#### Tips and Ideas

The story mat lends itself to a focus on left and right. Place some of the footballs under the left goal post and some of the footballs under the right goal post.

Practice recognition of tens by having students move their footballs to the 10 yard line, 20 yard line, etc.





#### Get Your Ticket



#### Introduction

The big movie "Once Upon a Dirt Bike" is coming to the movie theater and the kids can't wait to go see it!

#### Possible Manipulatives

carnival tickets
construction paper pieces

"Side-by-Side" Story

Susan buys three tickets for herself and her friends. Sam buys one ticket for himself. Who has fewer tickets?

#### "Altogether" Story

George buys four tickets. Rita buys five more tickets than George. How many tickets does Rita buy?

#### "Something Happens" Story

Mom buys ten tickets and gives six to the children waiting in line. How many tickets does Mom have left?

#### Related Children's Literature

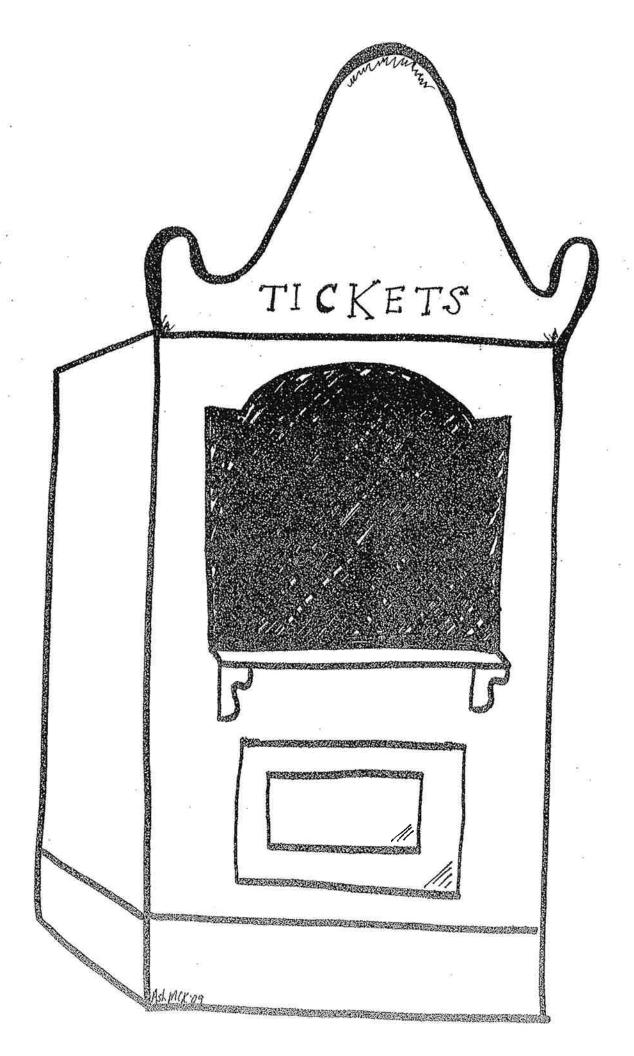
Pete's Tickets by Lynn Salem and Josie Stewart

The Ticket by Trisha Speed Shaskan

If You Take a Mouse to the Movies by Laura Numeroff

#### Tips and Ideas

You can purchase inexpensive rolls of carnival tickets at novelty or office supply stores.



# Weather Forecast



#### Introduction

What's the weather going to be like today? Let's tune into News Channel 5 and find out.

### Possible Manipulatives

cotton balls popcorn

# "Side-by-Side" Story

Well folks, it looks like it's going to be a cloudy day across the country. Five large clouds are moving in across the north and eight large clouds are moving in across the south. Which do you think will be cloudier the north or the south? Why?

# "Altogether" Story

The weather sure is nasty today. If we look at the weather map we can see four clouds moving in from the west and three clouds moving in from the east. How many clouds is that all together?

## "Something Happens" Story

Today started out cloudy with six clouds in the sky over the U.S. The sun came out and chased away five clouds. How many clouds are left?

#### Related Children's Literature

Oh Say Can You Say What's the
Weather Today: All About Weather
by Tish Rabe
What Will the Weather Be? By Linda
DeWitt and Carolyn Croll
Wild Weather Soup by Caroline
Formby
Weather Words and What They Mean
by Gail Gibbons

### Tips and Ideas

Add cardinal directions (N,S,E,W) to your story map for added map-reading practice.

Have children speak into a toy microphone and report the weather forecast.



### Boo Boos!



#### Introduction

Bobby is always falling down and getting scrapes or boo boos! He uses a lot of bandages.

# Possible Manipulatives

mini bandaids

## "Side-by-Side" Story

Bobby has seven bandages on his legs, two bandages on his head, and three bandages on his arms. Where does he have the most bandages? Where does he have the least bandages?

# "Altogether" Story

Bobby had a rough day. First he tripped on the way to the bus stop and had to get one bandage on each knee. Then he slid during baseball and needed one bandage on each elbow. Then he got a rug burn on his nose (don't ask how) and needed one bandage on his nose. How many bandages does Bobby have on?

# "Something Happens" Story

Bobby had seven bandages on his legs and arms. He took a long hot bath and five bandages fell off. How many bandages are still left on his body?

#### Related Children's Literature

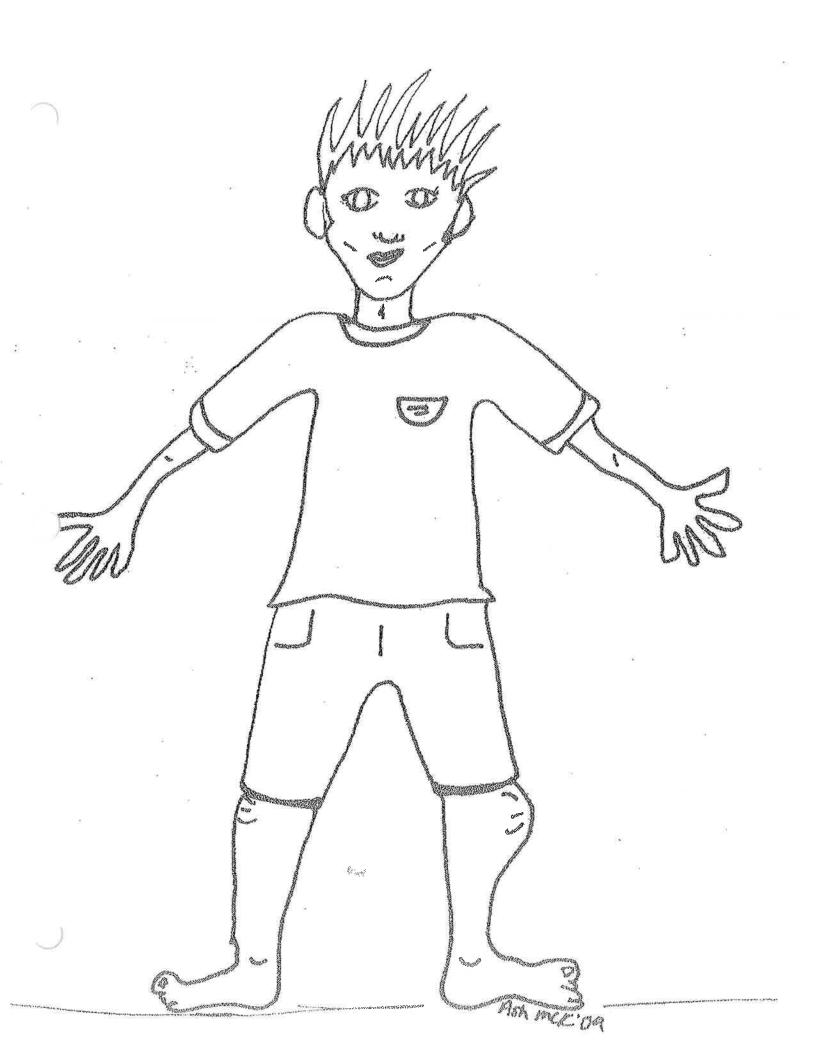
Buzzy's Boo Boo by Harriet Ziefert
The Prince Has a Boo Boo by R. W.
Alley
Arthur's Boo Boo Book by Marc Brown
Boo Hoo Boo Boo by Marilyn Singer
Kiss Away My Boo Boo by Margarita
Robleda

<u>Go Away Boo Boo</u> by Liliane Grenier <u>Doctor Dan the Bandage Man</u> by Helen Gaspard

# Tips and Ideas

The story mat lends itself to stories related to body parts, left and right and safety.

Actual tiny bandages make great maniplatives. Peel off the plastic and place them on an old manila folder.
Cut the manila folder into individual bandages.





# Package in the Mail

#### Introduction

I went to the post office yesterday to mail a package. A big package takes a lot of stamps, but I wasn't sure how many stamps to put on the package.

## Possible Manipulatives

canceled stamps
square-shaped crackers
Unifix cubes

## "Side-by-Side" Story

Let's place five big stamps in the upper right-hand corner of the package and fewer small stamps. How many big stamps did you use? How many small stamps did you use? (answers will vary).

# "Altogether" Story

I had a really heavy package so I placed four stamps on my package. I hoped that would be enough. The woman at the post office said that wasn't enough and I needed to place five more stamps on the package. How many stamps did I need?

# "Something Happens" Story

There were eleven stamps on the package. Six of the stamps fell off. How many stamps were left on the package?

#### Related Children's Literature

The Post Office Book: Mail and How it Moves by Gail Gibbons
The Postage Stamp by Jennifer
Fandel

## Tips and Ideas

Have your advanced students add or subtract the actual cost of the postage.

Have students sort and classify their stamps.

You can purchase canceled stamps online from auction websites or stamp collecting websites.

