Math Chants
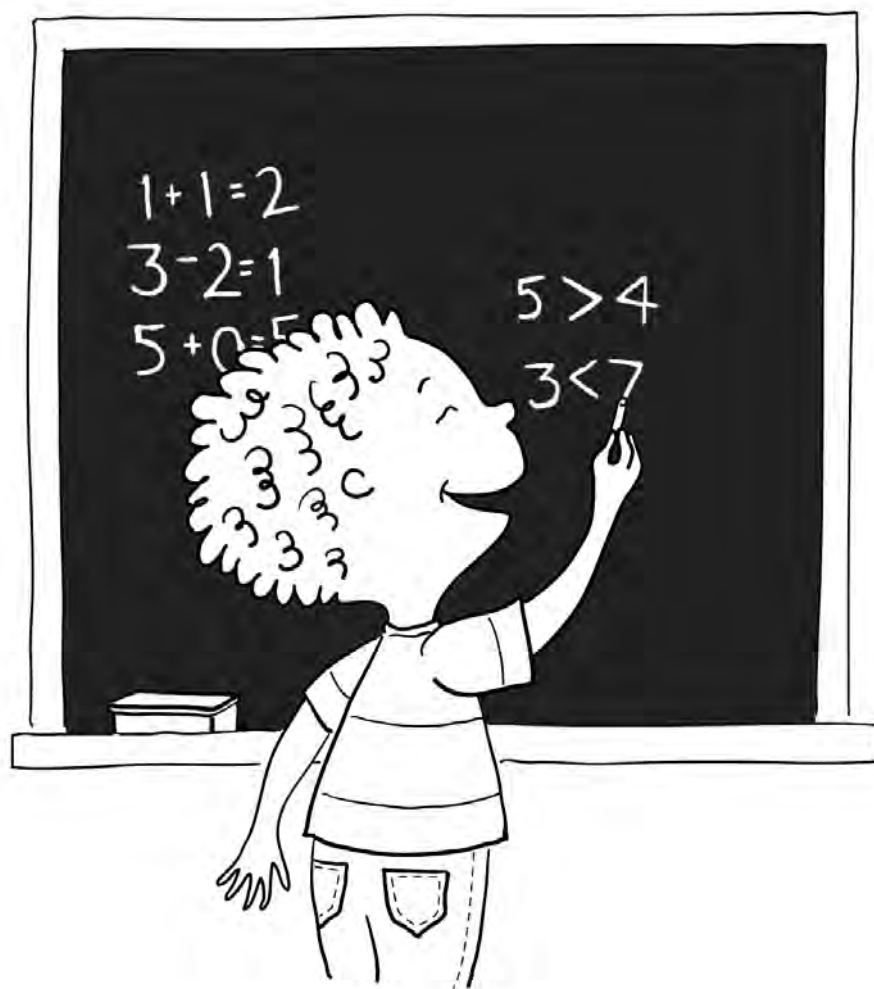## Learning the Language of Math with Rhythm and Rhyme
Teacher's Online Resource

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curriculum *plus*

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The lessons for the chants in this Teacher's Resource have been selected to support the implementation of the mathematics curriculum in the primary grades. It is intended to be used as a supplement to a classroom math program by introducing students to math language and ideas. The Teacher's Resource suggests ways to use the chants to support children's knowledge and skill development in math as well as to help them develop familiarity with the language of mathematics.

Math Chants contains the simple language structures and high frequency words encountered in the children's reading and writing and combines these elements with the mathematical concepts they are learning.

WHY USE RHYME AND CHANTING IN MATH?

For generations, in their play, children have used traditional rhymes and have enjoyed learning new skills through rhyme and rhythm. Many of the chants in this collection are either traditional rhymes or based on traditional rhymes. Over the centuries, these traditional rhymes and chants have benefited children in significant ways: learning and understanding the names and values of numbers, practicing their counting skills forward and backward, and counting in multiples.

UNDERSTANDING MATH LANGUAGE

The language of mathematics is often daunting to young learners when they enter school. They are required to understand the math symbols and their meanings as well as the sometimes abstract and/or unfamiliar vocabulary. Homonyms can add an extra challenge. For example, 'left' may refer to one side of an object or it may be used to describe subtraction.

Homophones, with identical pronunciations but different spellings and meanings, may confuse the young learner. Some examples are: eight, ate; cent, scent, sent; sum, some; two, to, too. Unless they are able to comprehend these differences, children will be confused by much of the language they hear or read. To avoid this problem, point out to your students that several of the everyday words they already know in one context may have another meaning in mathematical language.

According to Schiro (1997) an important element in a learner's mathematical success is the competence to communicate mathematically. In order to acquire this ability, children need many opportunities to talk about, listen to, and read and write math language in the classroom. It is also critical that children discover a purpose for communicating mathematically with words, numerals and symbols. They should see mathematics as a way of solving problems. Classroom mathematics instruction should emphasise that *knowing* mathematics means that you can *do* mathematics. Using *Math Chants* is an enjoyable way to familiarize students with mathematical ideas and vocabulary.

READING CONNECTIONS

Recently there has been a move away from learning math skills in isolation and a movement toward a problem-solving approach with an emphasis on the understanding of math concepts. It is also helpful to integrate math across the curriculum.

The use of quality literature in the classroom can provide significant assistance in developing links between the children's familiar world and the sometimes challenging abstract mathematical concepts which occur in the larger world. *"Many children's books present interesting problems and illustrate how other children solve them. Through these books students see mathematics in a different context while they use reading as a way of communication."* (National Council of Teachers of Mathematics, 1989). Much of this literature is too difficult for young learners to read on their own. We see these books as ones that are read to children, first for the sheer enjoyment of a good story and then for the exploration of concepts and language through meaningful discussions. An enthusiastic, knowledgeable teacher can lead students to search for connections between what they already know and new mathematics knowledge contained in the story. With encouragement, learners will make predictions about what will happen next, see patterns, and use reasoning to look for possible ways to solve problems encountered by the character(s). Children should also be given the opportunity to use illustrations to make visual interpretations of events in a story.

The same learning links can be made with the simpler guided reading books which children are able to read by themselves in the classroom. Many of these books use math language which parallels what students are learning in their mathematics lessons. We have included the titles of such books in the *Porcupine Collection*, published by Curriculum Plus Publishing. Sometimes these connections can be made in the text and sometimes in the theme of a book. You will find these listed at the end of this resource. For example, **positional language** (up, down) occurs in *Mothers and Babies* by Jennifer Low (2001). **Problem solving** and **counting to 20** are found in *Porcupine Gets Stuck* by Shari Schwartz, Helen Tomassini and Linda Widenmaier (2003).
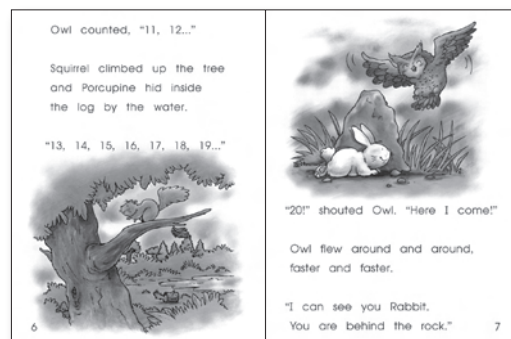
Porcupine Gets Stuck

PROBLEM SOLVING: USING KNOWLEDGE AND STRATEGIES

If children are to become skilled problem solvers, it is essential that they have a balance between *knowledge* and *strategies*. However, in the very early stages of math development specific learning outcomes serve as a foundation.

Learning Outcomes:
- Counting forward to 10 and then 20
- Understanding part/whole relationships in a number
- Using part/whole relationships to count on from a given number
- Counting backward from 10
- Recognizing and writing numerals to 20
- Understanding place value concepts

When children have this counting knowledge and realize that counting determines the number of objects in a set, they are ready to solve simple problems. They use counting on and counting back to solve simple addition or subtraction. Counting in twos, threes, fives, etc. gives them the strategies for multiplication tasks. Through interesting and meaningful problems, children learn to use this knowledge and develop math skills. At this early stage, problems need to provide a challenge while allowing students to recognize that they have the knowledge and the strategies to find solutions.

The strategies that children find useful at this level are:
- drawing or using pictures
- acting out math (drama)
- using materials
- predicting and checking

The activities and reproducible masters offer reinforcement of early knowledge as well as problem-solving strategies through situations children can link to their existing knowledge.

SCAFFOLDING THROUGH QUESTIONING

Questioning is a critical part of scaffolding throughout the *Math Chants* lessons.

Introducing the problem and setting the scene.
- Tell me/us the problem in your own words.
- What are you trying to find out?
- What are you going to do?

Working on the problem.
- Tell me/us what you are doing.
- Why are you doing this?
- Is this helping you to find the answer?

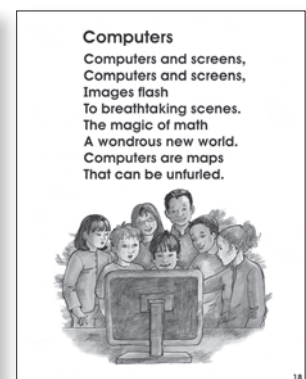Review and Reflection of learning.
- Tell me/us what you did.
- Tell me/us what helped you.
- Tell me/us what was difficult.
- Tell me/us what you learned.

Questions should be open, not closed. They should encourage children to think, share their ideas and talk about their learning.

TECHNOLOGY

The use of computers in your classroom can assist you to incorporate meaningful and appropriate mathematical learning for your students as they explore and enjoy activities together. One of the important benefits of using technology is that computers provide opportunities for individual practice and reinforcement of skills.

In order to maximize the use of computers, teachers need to make careful selection of appropriate, commercially produced software programs which will support and/or extend young learners' mathematical progress. After being trained in the use of computer software, children will be able to access and use these programs at a technology learning centre. While you work with other children, your students can be learning independently, in pairs, or in small groups. Research indicates that cooperative learning advances academic progress, social interaction and positive attitudes in children. (Baker, 2000). Two *Math Chants* selections, *Computers* and *Computer Fun*, are especially suitable for placement in the technology learning centre after they have been read and enjoyed by the whole class.

Computer Fun

Would you like to fly a spaceship?
Or do your best in math?
Or maybe track a dinosaur
Along some jungle path?

You might want to play a math game
That takes a lot of skill.
Well, turn on your computer,
You're sure to get a thrill.

If you follow the instructions
And handle it with care,
Your computer will amaze you
And take you everywhere.

Computers

Computers and screens,
Computers and screens,
Images flash
To breathtaking scenes.
The magic of math
A wondrous new world.
Computers are maps
That can be unfurled.

THE IMPORTANCE OF LEARNING GOALS AND REFLECTION IN MATH

Each lesson in *Math Chants* includes a Learning Goal to discuss with your students. There is significant research evidence to show that children are more motivated and learn better when they understand what the Learning Goal is. "*With a mastery goal individuals are oriented towards developing new skills, trying to understand their work, improving their level of competence, or achieving a new sense of mastery based on self referenced standards.*" Ames (1993). For example, a child who understands the Learning Goal might say, "*I am learning to add num-*

bers up to 20."

Discussing, writing about, and exploring math concepts in a variety of situations are especially helpful in encouraging children to learn from each other, to clarify ideas and to express themselves. Many students find that writing about their learning each day allows them to clarify their thinking in a non-threatening situation. Their mathematics learning is consolidated through writing because they think about what they have learned and what helped them to learn. Younger children may record their learning in pictures rather than in words.

Regular reflection encourages students to think about the processes and strategies they have used during a math activity. It also allows you to make observations about their thought processes, the strategies they use and their mathematical understandings. The journal reflections are at the end of each lesson and are scaffolded to increase the level of independence in completing them from whole class on chart paper, to small group, to pairs, and finally individual journals.

You will need to model the recording of the children's reflections at the end of several group lessons until they acquire the confidence to attempt the task independently. An indication of what can be achieved is shown in the following examples from a child's personal math journal:

"Today I found out that when I put the counters in 2s it was easy to see the even numbers."

"Today I learned how to add objects up to twenty by counting on."

SHARING AT HOME

The *Math Chants* student book may be taken home by the children as part of your classroom "borrow-a-book" program. This will enable them to read the chants they have learned to friends and family and to reread familiar selections as often as possible.
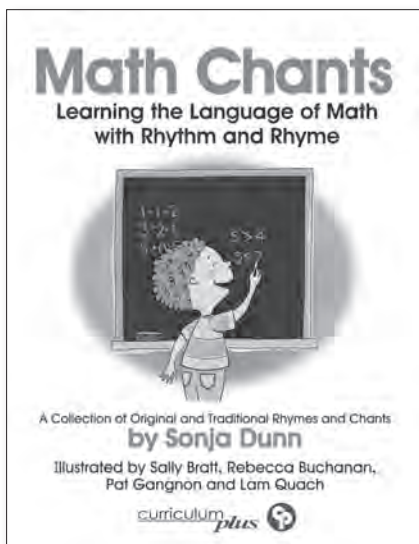
Math Chants Student Book

LESSON PLANNING AND LESSON PLANS

On page 7 of this Teacher's Resource Book you will find discussion of lesson planning. Pages 9 to 30 contain a suggested lesson plan for each math chant. Reproducible masters of appropriate activities associated with the lesson plans are also provided on pages 34 to 58.

SUMMARY

Activities in this resource are based on clear understandings about children's math learning.

Children learn best when:
- They enjoy math experiences.
- They work cooperatively with others as well as independently.
- They use games as a way of practicing and using number knowledge.
- They have many opportunities to practice the strategies they are learning.
- They become confident in applying a range of strategies and can use materials to describe and model these strategies.
- They know and reflect on the expected outcome of the learning.
- They receive specific feedback e.g., *"I like the way you used math words like symmetry and square to tell about your learning in your journal."*
- They have daily opportunities to reflect upon their learning.
- The context is relevant and meaningful to them.
- New ideas are related to their existing ideas and experiences.
- New concepts and skills are presented in a variety of ways to accommodate different learning styles.

Teachers foster children's learning when:
- **They share learning goals with children, both orally and in written form.**
- They provide an environment which promotes sharing ideas and taking risks.
- They create lessons that make links to previous number experiences and with other curriculum areas.
- They use contexts that include and reflect cultural diversity when solving math problems.
- They know the mathematics and can understand children's thinking.
- When they use children's learning to consolidate the lesson.
- They use whole-class sessions to teach number knowledge.
- They use small groups for specific strategy teaching.
- They use materials appropriately to model strategies.
- They teach games and activities before asking children to work independently.
- They model and involve children in investigations.
- They scaffold the use of strategies by modelling the process as 'Think Alouds' when solving math problems in group lessons.
- They encourage the use of strategies through appropriate questions.
- They provide positive, constructive feedback.
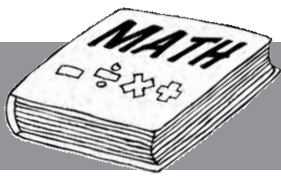
LESSON PLANNING USING MATH CHANTS

The introductory teaching sessions are structured to provide awareness, practice and enjoyment of early mathematical concepts through problem solving experiences.

The lesson plans below provide a framework for using *Math Chants* with the whole class or a small group. (There are times when it is important to work with children in small instructional groups according to their needs.) Suggestions for using each poem in *Math Chants* appear in the lesson plan section of this Teacher's Resource.

Each lesson is divided as follows:
- Getting Started
- Working On It
- Doing It
- Bringing the Learning Together

GETTING STARTED

Choose a chant that matches the math concept you plan to teach.

Place the chant poster on an easel where it can easily be seen by all the children. Draw their attention to the illustration(s) and ask questions to help them predict what the chant is about.

Talk to the children and find out their current math knowledge relative to the concept you have chosen. You can achieve this in the following ways:
- Children sharing their current math knowledge with one or more of the others in their group.
- Children sharing their current math knowledge with a larger group followed by the teacher recording this information on chart paper.

These strategies help students link the new knowledge to their previous knowledge.

WORKING ON IT

Reading to students: Ask the children to listen as you read the chant aloud to them. Use a pointer as you read each word. This models the way you want the students to read when they, themselves, are reading.

Shared reading: Invite the children to read along with you as you read the chant again. Then, ask them to discuss their math understandings of the chant.

Encourage discussion, checking for mathematical knowledge and strategies by asking questions such as:
- "*How did you know that?*"
- "*What helped you work that out?*"
- "*How else could you do that?*"

During this questioning, give the children plenty of positive feedback

about the math concept you are teaching. These questions also clarify for you what is already known and what needs to be taught.

DOING IT

This is the problem solving experience designed for children to develop mathematical skills and concepts.

Group the children as appropriate for the activities suggested in each lesson plan. Give the children plenty of positive feedback related to the math concept they are learning. For example, in a lesson about addition, appropriate feedback might be. "*I liked the way you used the strategy of counting on from the largest number.*"

BRINGING THE LEARNING TOGETHER

Invite the children to return to the class circle to consolidate their learning.

The teacher's observations of children's learning during the "doing" section of the lesson, are used to structure this part of the lesson. Strategically choose the problem solving strategies, examples of mathematical thinking and samples of children's solutions to share to ensure that the key mathematics in the lesson has been made explicit. This is an important part of the lesson and teachers need to allow enough time in the lesson for the consolidation of the learning.

Record the learning from the lesson in class, group, paired and individual journals.

I Love Math
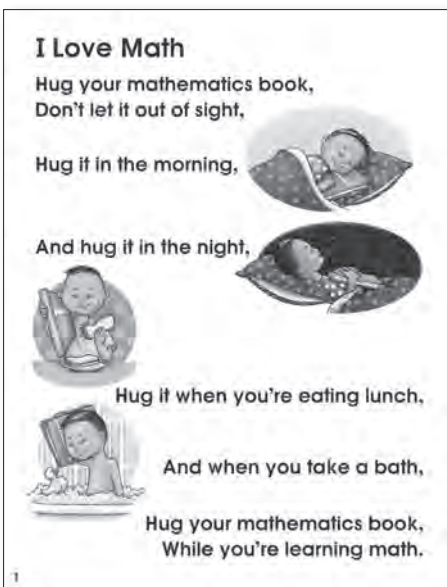
The *I Love Math* chant can be used as a warm-up poem at the beginning of a math lesson. This chant can also be used as a context to develop children's understanding of data management:
- collecting data about high frequency words in the chant.
- collecting data through a survey of children's likes.

This chant can also be used as a context to develop children's understanding of measurement of time:
- identifying sequences of events in a child's day.

... and as a context to develop children's understanding of number:
- estimation, comparison or number.
- understanding part/whole relationships in number.

Background for Teachers:
Evidence of negative attitudes toward mathematics has been gathered from children who are in the early years of their school experience. Older family members, the media and society in general often express negative opinions about math e.g., *"I can't do math! Math is hard!"* This chant models a positive attitude toward mathematics.

LESSON 1
Lesson Summary: Collecting data about the vocabulary in the chant.
Materials:
- *I Love Math* chant poster
- sticky notes
- Reproducible Master #1

Getting Started:
T and C: Invite the children to suggest nursery rhymes which contain mathematics OR ask children to listen for the mathematics in some familiar nursery rhymes that you will recite e.g., *Hickory Dickory Dock*, *Baa, Baa Black Sheep*, or in a finger play such as *5 Little Monkeys Jumping on The Bed*.

Working On It:
T: Tell the children that math can be an important part of stories, poems, rhymes and almost everything. That's why you love math! Show the children the *I Love Math* chant. Read the chant to the children. Ask the children to share questions and comments about the chant.
- *It's not a good idea to take a math book in the bath.*
- *He really likes his math book.*

Read the chant again and ask the children to notice the words that they hear many times. Record the words that the children suggest. Ask the children how you could find out how often a word is used in the chant.

Doing It:
Give each pair of students a copy of the chant and ask them to find out how often a word or words of their choice is/are used.

Bringing the Learning Together:
Compare strategies used to collect data about the frequency of words used in the chant e.g., colour coding them, numbering them, using sticky notes.

Compare the frequency of the words using language such as there are 5 "hugs" and 4 "its". There is one more "hug" than "it".

LESSON 2
Lesson Summary: Sequencing in two ways; according to number and time.
Materials:
- copies of the student book for *Math Chants*
- number line
- pictures of the child from the chant (**Reproducible Master #2**)

Getting Started:
T: Show the children the *I Love Math* chant poster. Ask the children what they remember about the chant e.g., the word "hug" is in the chant 5 times. Read the chant with the children again.

Working On It:
T and C: Show the children a copy of the student book for *Math Chants*. Show the children the contents page at the beginning of the book. Ask a child to read the page number for the *I Love Math* chant. Ask the children for ideas about how you would look for page 1.
- *Start at the front of the book and turn the pages until you get to page 1.*
- *Look near the beginning of the book because 1 is the first number that you say when you count.*

Show the children the number of the last chant in the book (22). Ask children where you would look to find a chant on page 19. Ask children to explain their reasoning.
- *19 is closer to 22 than it is to 1 so it is near the end of the book not near the beginning.*

Model the pages in the book with a number line numbered 1 − 22. Ask

children to predict where you would find page 10. Look for reasoning that includes making comparisons of the page number to the total number of pages in the book e.g., 10 is about half of 20 so it will be about half way through the book.

Tell children to work in pairs. One child gives a partner a number to find in the book. The other child thinks about where in the book that number would be and estimates by opening the book to try and match the given number. Share the page numbers found and the strategies used to find them.

Doing It:

T: Tell the children that they were using numbers to find pages in the beginning, middle and end of the book. The *I Love Math* chant talks about time in the beginning, middle and end of a day. Give the children the pictures from **Reproducible Master #2** and ask them to put the pictures on in order as they hear them in the chant. Read the chant as children put the pictures in the order that they occur in the chant. Ask the children to think of other ways to order the pictures to tell a story of what happens in the day. Compare possible solutions to this problem;

- Bath time could be in the morning or at night but lunch time is always in the middle of the day.
- The picture for learning math could be before or after lunch. Ask children to identify other events in their day.

Ask them to create a storyboard for their day by gluing the pictures in order on another sheet of paper.

Bringing the Learning Together:

Choose a few examples of children's storyboards to share with the whole class. Identify which storyboards could have other possible orders i.e., because there is more than one time for the event to occur (watching TV before or after dinner).

LESSON 3

Lesson Summary: Collecting data through surveys.
Materials:
- *I Love Math* chant poster
- sticky notes
- chart for collecting survey data (**Reproducible Master #3**)

Getting Started:

T: Show the children the *I Love Math* chant poster. Ask the children what they remember about the chant. Listen for use of sequencing language or vocabulary from the chant. Ask children to find the *I Love Math* chant in their copies of the book. Look for children applying what they know about number to locate the page e.g., do they go to the beginning of the book? Read the chant together.

Working On It:

T: Ask the children to point to the word "love". Ask them to think of something that they can say that they love and to share their ideas with a partner. Ask them to think of something that they "like" and to share their ideas with a partner.

Ask the children which they like better, morning or night (from the chant). Collect data by having each child draw a sun or moon on a sticky note and sorting the sticky notes into a graph. Ask the children how they would find which the class liked better – lunch or taking a bath (from the chant). Collect data to answer this question.

Doing It:

Ask children to think of other surveys that they could use to collect data about what the class likes. Record pairs of suggestions on the blackboard or on chart paper e.g., cats/dogs, basketball/soccer, corn/peas. Ask children to survey their classmates and record the data on the chart (**Reproducible Master #3**).
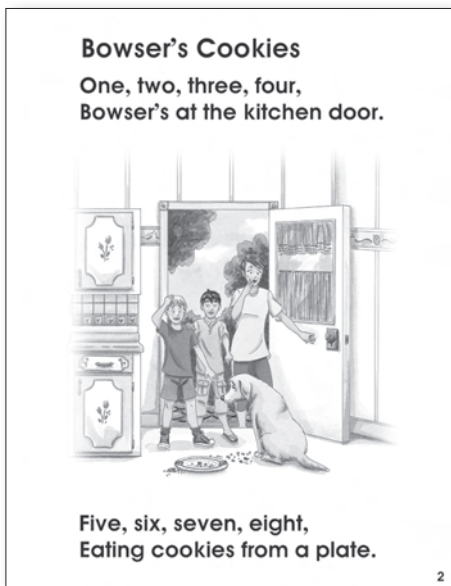
Bringing the Learning Together:

Compare the number of responses in each survey question to the numbers in the original whole class surveys about morning/night and lunch/taking a bath. The total number should be the same but the two parts of the number could vary e.g. in a class of 20 children there could be 12 yes and 8 no responses or 10 yes and 10 no responses etc. Ask children to think of reasons why the numbers might be different for some surveys e.g., they asked someone more than once, they didn't ask everyone the question. Record the pairs of responses for each question and the total as a number sentence e.g., $15 + 5 = 20$.

Math Journal:

Summarize the learning from the lesson with a whole class journal. Model the use of pictures, diagrams and math language to record learning. Model strategies for organizing the journal.

Bowser's Cookies

> **Bowser's Cookies**
> One, two, three, four,
> Bowser's at the kitchen door.
>
> Five, six, seven, eight,
> Eating cookies from a plate.
>
> 2

The *Bowser's Cookies* chant can be used as a context for developing children's understanding of number:
- doubling as an addition strategy.
- the concept of "0".

Background for Teachers:

Addition facts that are doubles seem to be natural for children e.g., $1 + 1$, $2 + 2$, $3 + 3$. Comparing the numbers in addition facts to doubles is an effective strategy for understanding the relationships between numbers. Experiencing "0" as representing a quantity is important for children's understanding of place value in numbers such as 105 (in this number there are 1 hundred, 0 tens, and 5 ones).

LESSON 1

Lesson Summary: Identifying number relationships by comparing them to doubles.

Materials:
- *Bowser's Cookies* chant poster
- paper plates
- paper plates with 2 circles, 4 circles, 6 circles and 8 circles in two rows
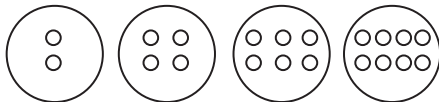
- sticky notes
- circle counters or paper circles
- "Plates" (**Reproducible Master #4 and 5**)

Getting Started:

T and C: Invite the children to join you in reading a chant selected from *Math Chants* or another poem from your math collection of poems.

T: Show the children the new math chant *Bowser's Cookies.*

T and C: Discuss what Bowser might have done with the cookies. Ask what the children remember about Bowser from stories they may have read or a dog they may know.

Working On It:

T: Read the chant to the children.

T and C: Read the chant together.

T: Tell the children that you have 4 plates with pretend cookies on them. Ask them to choose which plate they think is a picture of the cookies that Bowser ate. Ask children to draw the picture of the plate that they choose on a sticky note. Sort the drawings. Read the chant again and point to the cookies as the numbers in the math chant are read.

Doing It:

T: Ask the children to "read" the numbers on each of your plates in as many ways as they can.
- $1 + 1, 2, 3 - 1$
- $2 + 2, 4,$

Repeat for each plate.

Give each child a plate and some counters. Ask them to model the counting in the story. After the children have put 8 "cookies" on their plates, "tell" a story of Bowser eating the cookies that children can model by removing "cookies" from their plates e.g., there were $4 + 4$ or 8 cookies on the plate. Bowser ate 1 cookie, then there were $3 + 3 + 1$ or $4 + 4 - 1$ cookies on the plate.

Invite children to put cookies on their plates. Ask a partner to record the cookies and if possible, use numbers to record how many cookies are on the plate e.g., $7, 3 + 3 + 1, 4 + 4 - 1$.

Bringing the Learning Together:

Sort the pictorial representations recorded by the children into two categories – Doubles and Doubles + 1. Identify similarities and differences.
- The cookies in the "doubles" group all have partners. In the doubles + 1 group there is always a cookie without a partner.

LESSON 2

Lesson Summary: Modeling "0" as a quantity.

Materials:
- *Bowser's Cookies* chant poster
- sticky notes

Getting Started:

Show the children the *Bowser's Cookies* chant poster. Ask the children what they remember about the chant e.g., *Bowser ate 8 cookies.* Read the chant with the children again.

Working On It:

Ask the children how many cookies are on the plate beside Bowser. Ask the children to identify the number of children in the picture (3), ...the number of elephants in the picture (0), ...the number of adults in the picture (1), ...the number of watermelons in the picture (0). Ask children to suggest other examples of things that could be counted in the picture. Ask the children to suggest other examples of (0) in the picture.

Doing It:

Ask children to find other examples of 0 in the classroom and identify them with either a sticky note or by recording them on a paper.

Bringing the Learning Together:

Compare the examples that the children found e.g., 0 on a clock, we have 0 pencils on the table.

Math Journal:

Summarize the learning from the lessons with a whole class journal. Model the use of pictures, diagrams and math language to record learning. Model strategies for organizing the journal.

Sonja Dunn, the author of *Math Chants*, reads *Bowser's Cookies* with a group of students.

Bees and Bears
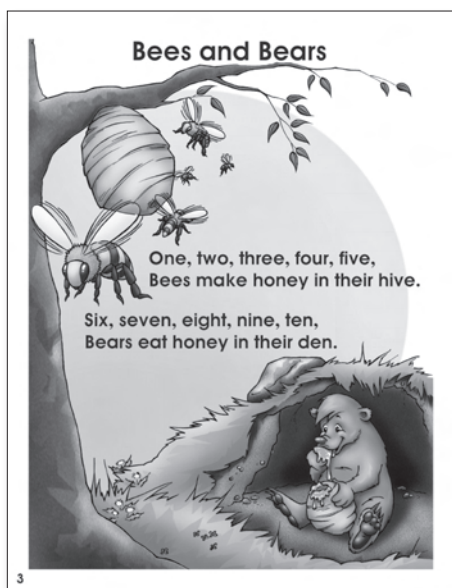
The *Bees and Bears* chant can be used as a context for developing children's understanding of number sense and numeration:
- understanding of the concept of 5 as quantity.
- using one-to-one correspondence to compare the objects in two sets.

Background for Teachers:
When young children are developing understanding of number, they may think that the quantity changes when the size of the objects counted changes. They may think that 5 large objects is a greater quantity than 5 small objects. Children can match objects through one-to-one correspondence to determine that two sets of objects of different sizes have the same quantity.

LESSON 1
Lesson Summary: Making and comparing sets of 5 using different sized objects.
Materials:
- *Bees and Bears* chant poster
- copies of the student book for *Math Chants*
- plastic bags with 5 counters in two different materials e.g., 5 bread tags and 5 bottle caps, 5 linking cubes and 5 plastic counters, 5 counting bears and 5 Popsicle® sticks etc.
- empty plastic bags and a collection of counting materials
- optional extension activity - children draw a flower for each bee (**Reproducible Master #6**)

Getting Started:
T and C: Invite the children to join you in reading a chant selected from *Math Chants* or another poem from your math collection of poems.
T: Show the children the new chant *Bees and Bears.*
T and C: Ask children to share what they know about the relationship between bees and bears. *Are they friends? Do you know any other stories about a bear who likes honey?* e.g., *Winnie the Pooh*.

Working On It:
T: Read the chant to the children.
T and C: Read the chant together.
T: Ask the children to use what they know about numbers to find page 3.
- *3 is a number that I say near the beginning when I am counting so page 3 will be near the beginning of the book.*

Ask the children to point to the bees as you read the first two lines of the chant. Ask the children to count the number of yellow flowers in the picture. Tell the children that the 5 bees look bigger than the 5 yellow flowers. Ask the children if there is a yellow flower for each bee. Ask the children how you could check.
- Put a counter on each bee and then move each counter to a flower.
- Paperclip a piece of clear acetate to the poster and draw lines to match each bee to a flower.

Ask children if there is a purple flower for each bee.

Doing It:
Show the children the plastic bags. Tell them that each bag has two kinds of counters in them. Tell them that someone (another teacher or a class helper) told you that they put 5 of each kind of counter in each bag but you are not sure because some are big and some are small. Ask children to check that each plastic bag has 5 of each kind of counter. Watch for the strategies the children use to compare the number of counters e.g., Do they match one of each kind of counter? Do they count each set and compare the number for each?

Tell the children that you need some more sets of bags. Ask them to find 5 of two kinds of counters to put into an empty bag. Exchange bags and check the number of counters in each others bags.

Bringing the Learning Together:
Share the strategies used to compare the number of each kind of counter. Create a chart for 5 using counters of a variety of sizes. Draw lines to match each object in one type of material to an object in anther type of material e.g.,
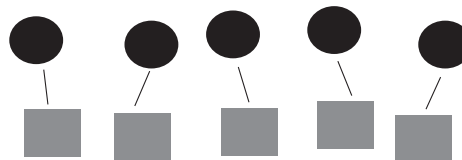
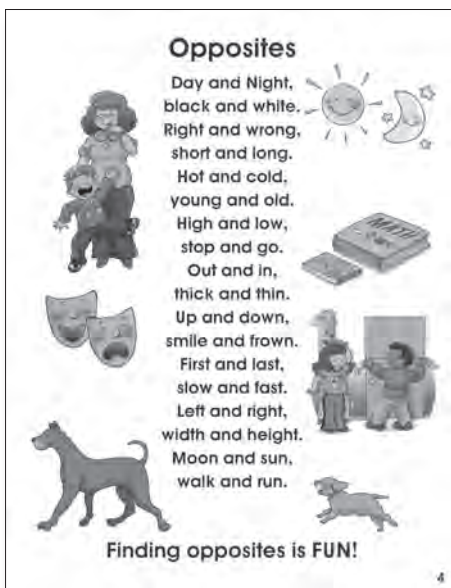## Extending the Learning:
Reproducible Master #6
Draw a flower for each bee. Interview the children and ask them to show you how they know that there is a flower for each bee.

Math Journal:
Summarize the learning from the lesson with a whole class journal. Model the use of pictures, diagrams and math language to record learning. Model strategies for organizing the journal.

Opposites

Day and Night,
black and white.
Right and wrong,
short and long.
Hot and cold,
young and old.
High and low,
stop and go.
Out and in,
thick and thin.
Up and down,
smile and frown.
First and last,
slow and fast.
Left and right,
width and height.
Moon and sun,
walk and run.

Finding opposites is FUN!

The *Opposites* chant can be used as a context for developing children's understanding of geometry:
- positional language: high/low, out/in, up/down, left/right.

This chant can also be used as a context for developing children's understanding of number:
- ordinal language: first/last.

... as a context for developing children's understanding of measurement:
- measurement language: short/long, width/height, thick/thin, hot/cold, day/night, fast/slow.

... and as a context for developing children's understanding of data management:
- sorting by attributes such as thick/thin, short/long, black/white.

Background for Teachers:

Opposites provides a context for children to learn that the application of a description such as slow, thick, hot often requires a comparison of two objects. A pencil may be short in comparison to a ruler but long in comparison to a paper clip. The children may have experienced the use of measurement terms in contexts which interfere with the development of understanding e.g., *"How long is your name"* when what is meant is *"How many letters are in your name"*. *Opposites* can also provide examples of attributes for sorting objects into two categories.

LESSON 1

Lesson Summary: Making comparisons using measurement.

Materials:
- *Opposites* chant poster
- a math book or thick book and a thinner picture book
- a collection of different sized classroom objects e.g., chalkboard eraser, books, paintbrushes, etc.
- Opposites exercise - the children will draw the opposite of what is shown (**Reproducible Master #7**)

Getting Started

T and C: Invite the children to read a chant selected from *Math Chants* or another poem from your math collection of poems.

T: Show the children the new chant, *Opposites*. Invite the children to make predictions using the information in the pictures on the chart.

T and C: "Read" the pictures together in several ways e.g., thick/thin, thick/not thick, thin/not thin. Ask the children to read other pictures in a variety of ways to develop understanding of the concept of opposites e.g., happy/sad, sad/not sad, happy/not happy.

Working On It:

T: Read the chant to the children.

T and C: Read the chant together. Point to the illustrations that match some of the examples of opposites in the chant. Show the children two books (one thick, one thin). Ask the children which words in the chant describe the two books. Tell the children that you spy something in the room that is thicker than the math book. Ask the children to guess your object and if possible compare the thickness to the book. Repeat the game of "I Spy" using the thin book as a comparison.

Doing It:

Ask the children to play "I Spy" in pairs using the collection of classroom objects and the opposites long/short.
- *I spy something that is longer than the blackboard eraser.*

Extending the Learning:

Opposites exercise - draw the opposites (Reproducible Master #7)

Bringing the Learning Together:

Consolidate the learning by choosing one object and identifying when it could be described as short and when it could be described as long. Record the ideas on chart paper. *When is a pencil long?* (When compared to a paperclip.) *When is a pencil short?* (When compared to ruler.)

Extending the Learning:

Opposites Game (**Reproducible Master #8**)

LESSON 2

Lesson Summary: Sorting objects into two categories according to attributes or position.

Materials
- *Opposites* chant poster
- attributes blocks (one for every child)
- 2 large circles drawn on paper to be used as sorting circles
- squares of paper (e.g., 10 cm x 10 cm) for making a picture

Getting Started:

T: Show the children the *Opposites* chant poster. Ask the children to think of words from the chant that mean not long, not up, not first, not young etc. Read the chant together with the children.

Working On It:

Distribute one attribute block to each child. Ask the children to work in pairs and compare their blocks. Model the use of language in the comparison by comparing a block with a child. Share their comparisons.

• *My block is thick and your block is thin.*

• *My block is big and your block is small.*

Ask the children to work in a group of 4 and think of as many ways as they can to sort their blocks into two groups.
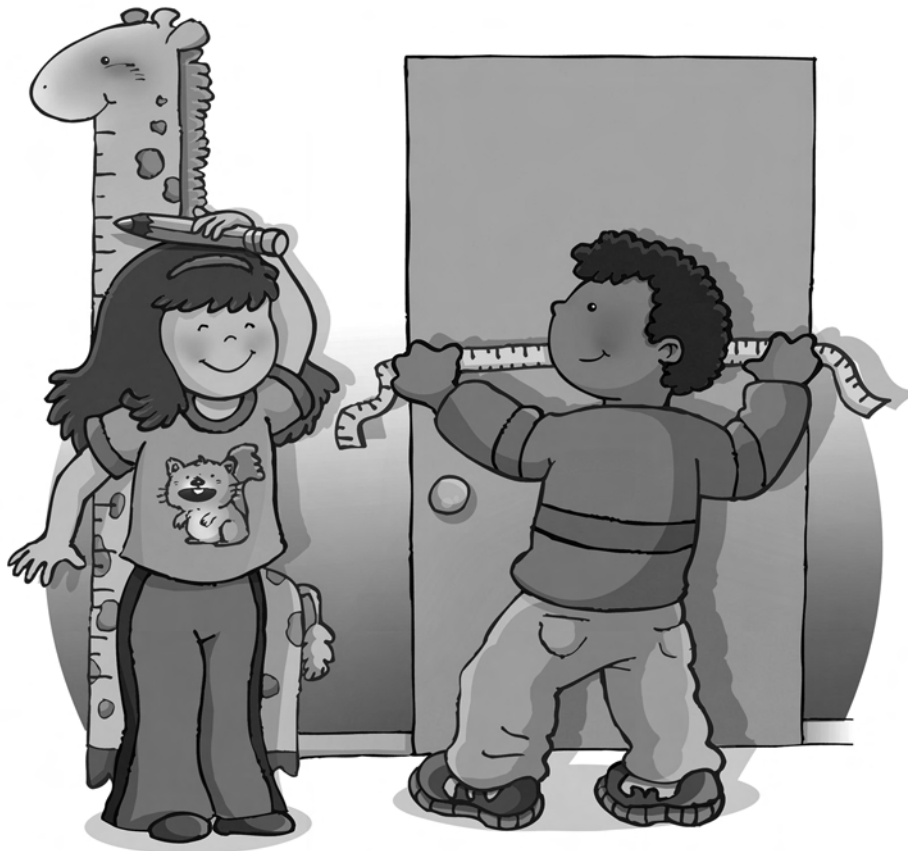
Compare the ways that the blocks were sorted.

Doing It:

Tell the children that they are going to make a sorting game for their friends. Ask them to work in pairs or a group of 4 to draw a set of 4 pictures for one of the opposites in the chant e.g., first/last, walk/run, black/white, width/height. Brainstorm possible combinations of the 4 pictures e.g., a group of children could make a game with 4 pictures of first and 0 pictures of last, or 3 pictures of first and 1 picture of last, or 2 pictures of first and 2 pictures of last etc.. Exchange pictures and sort them in the sorting circles.

Bringing the Learning Together:

Consolidate the learning by making a chart of the opposites in the chant and illustrated by the children. The sorting games created by the children can be put into plastic bags and used as a centre.
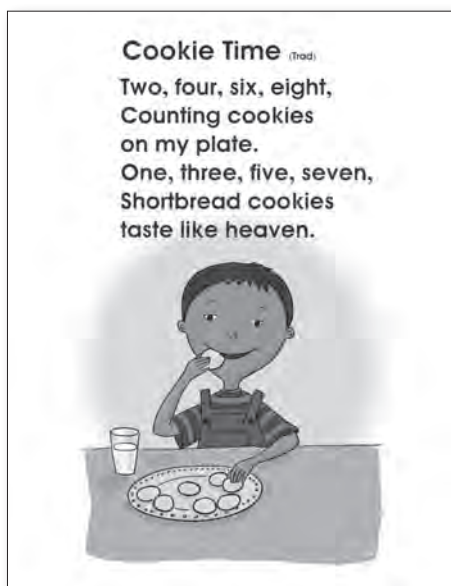
Optional Activity: Opposites Game **(Reproducible Master #8)**

Math Journal:

Summarize the learning from the lesson with a whole class journal. Model the use of pictures, diagrams and math language to record learning. Model strategies for organizing the journal.

Cookie Time (Trad)

Two, four, six, eight,
Counting cookies
on my plate.
One, three, five, seven,
Shortbread cookies
taste like heaven.

The *Cookie Time* chant can be used as a context for developing children's understanding of number:
- counting forward and backward by 2's using a variety of tools.
- identifying odd and even numbers as numbers that cannot and can be shared equally.

Background for Teachers:
Counting by twos helps children develop more efficient counting strategies. Children may appear to know how to count by twos but may not know what to do with the one that is left over when counting an odd number of objects. Using a variety of tools for counting helps children develop deeper understanding of the number relationships when counting by 2s through multiple representations.

LESSON 1
Lesson Summary: Counting by units of one or two.
Materials:
- *Cookie Time* chant poster
- a variety of tools e.g., number line, hundreds chart, ten frame
- circle counters or paper circles (about 10 - 15 for each child)

Getting Started:
T and C: Invite the children to join you in reading a chant selected from *Math Chants* or another poem from your math collection of poems.
T: Show the children the new math chant *Cookie Time*. Ask the children to count the pictures of the cookies on the plate.

Working On It:
Read the chant to the children. Count the cookies on the plate in two ways – starting with two and counting by 2s, and then again starting with 1 and counting by 1's. Ask the children to compare the two ways to count e.g., *What is the last number that I said when I counted the cookies each way?*
Tell the children to model counting the cookies in the math chant using

circle counters for pretend cookies and a hundreds chart or a number line. Ask the children to compare the number of "cookies" that they used with the last number that the "cookie" is placed on in the hundreds chart or number line.

Doing It:
Tell children that you are wondering what else in the classroom can be counted both by 1's and by 2s. Ask the children to choose something in the classroom to count, or provide pairs of children with bags of counters. Ask children to count by 2s using the number line or hundreds chart.

Bringing the Learning Together:
Observe children as they count by 2s. Ask children to share their strategies e.g., moving the counters with two fingers while counting. Ask children to compare the total number when counting both ways.

LESSON 2
Lesson Summary: Identify odd and even numbers through sharing
Materials:
- *Cookie Time* chant poster
- Ten frames (**Reproducible Master #9**)
- an assortment of objects to be counted

Getting Started:
T: Show the children the *Cookie Time* chant poster. Ask the children what they remember about the chant e.g., There were cookies on a plate. Read the chant with the children again.

Working On It:
T: Ask the children to predict if the child pictured in the chant could share the cookies on the plate with a friend. Ask the children to show their prediction with thumbs up (yes), thumbs down (no), and thumbs sideways (not sure). Sort the cookies on a ten frame by identifying the first row of the ten frame as the child in the chant and the second row as the friend.

Doing It:
Tell the children that you are wondering which numbers of cookies can be shared fairly with a friend. Tell children to choose a number and share them using the rows of the ten frames.
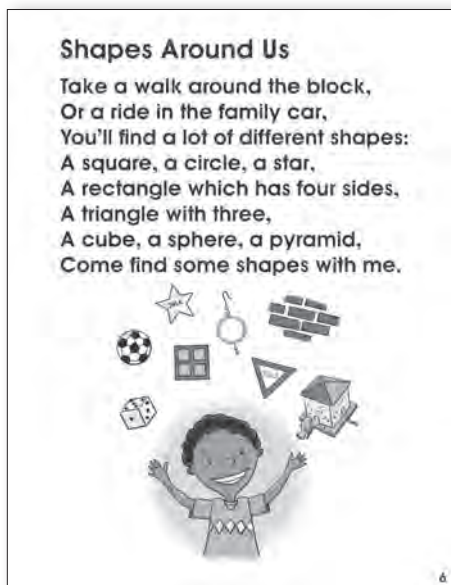
Bringing the Learning Together:
Sort the numbers recorded on the ten frame as yes or no for sharing equally or not (odd or even).
Circle the numbers that are shared equally on a number line and on a hundreds chart. Ask the children what they notice about the numbers that are circled (every other number, numbers that are said when counting 2, 4, 6, 8)

Math Journal:
Summarize the learning from the lesson with a whole class journal recorded on chart paper. Model the use of pictures, diagrams and math language to record learning. Model strategies for organizing the journal.

15

Shapes Around Us

Shapes Around Us

Take a walk around the block,
Or a ride in the family car,
You'll find a lot of different shapes:
A square, a circle, a star,
A rectangle which has four sides,
A triangle with three,
A cube, a sphere, a pyramid,
Come find some shapes with me.

The *Shapes Around Us* chant can be used as a context for developing children's understanding of geometry:
- naming shapes by the number of sides.
- sorting and classifying triangles, squares and rectangles by their properties.
- sorting 2-D shapes.

Background for Teachers:
Many commercially available posters for geometric shapes provide only one representation of shapes such as equilateral triangles for the picture of a triangle (some children may call the "yield sign" in the chant as an "upside down" triangle because they are not used to seeing triangles in this orientation. Some posters etc. even incorrectly identify a square in a rotated position as a diamond. These experiences can interfere with children's development of understanding of geometric transformations such as slides, turns and flips in which the shape is the same although it has been moved in space so it doesn't need a new name.

LESSON
Lesson Summary: Making and identifying geometric shapes by connecting dots.

Materials
- *Shapes Around Us* chant poster
- join some dots to make a fence for the zoo animals
  (Reproducible Master #10)

Getting Started:
T and C: Invite the children to join you in reading a chant selected from *Math Chants* or another poem from your math collection of poems.
T: Show the children the new chant *Shapes Around Us*. Ask the children to name the objects in the illustration e.g., soccer ball, number cube, etc. Ask the children to listen to the chant and identify the geometric names for these objects.

Working On It:
T: Read the chant to the children. Ask the children to match the objects in the picture with the geometric terminology in the poem. Re-read the part of the chant that describes the number of sides in a triangle and a rectangle. Count the sides of the star. Tell the children that mathematicians name geometric shapes by the number of sides. Mathematicians have a name for a shape with ten sides. Its a decagon. Challenge the children to be mathematicians and say the geometric names as you point to the pictures in the chant.

Doing It:
T: Remind the children that the name of the chant is *Shapes Around Us*. Tell the children that they are going to make shapes around animals in the zoo by connecting some dots to make a pretend fence. Distribute **Reproducible Master #10**. Ask the children how many dots they will have to connect to make a shape with 4 sides around the animals. Count the dots with the children (there are 5) Ask the children to connect 4 of the dots. Compare the shapes created by connecting 4 of the dots. Sort them as rectangles and not rectangles. Repeat for 2 more times using **Reproducible Master #10**.
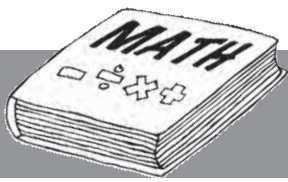Ask the children how many dots they will have to connect to make a shape with 3 sides around the animals. Count the dots with the children (there are 4). Ask the children to make shapes by connecting 3 of the dots around each animal.

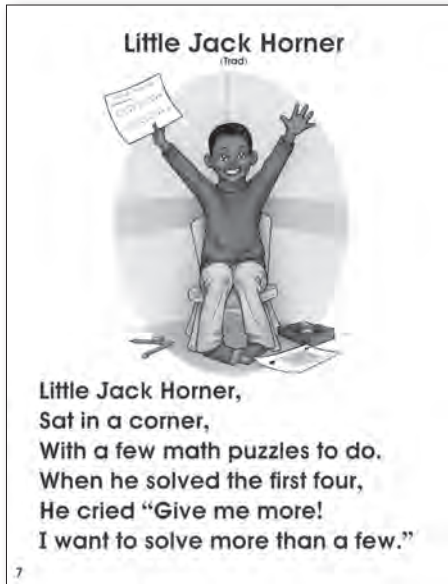### Bringing the Learning Together:
Consolidate the learning by comparing the shapes created each time that dots were connected. The children should understand that connecting any three dots resulted in a triangle around the animals but only connecting 2 dots that were equal distance apart and another two dots that were equal distance apart resulted in rectangles.

Math Journal:
Summarize the learning from the lesson with a whole class journal recorded on chart paper. Model the use of pictures, diagrams and math language to record learning. Model strategies for organizing the journal.

Little Jack Horner,
Sat in a corner,
With a few math puzzles to do.
When he solved the first four,
He cried "Give me more!
I want to solve more than a few."

The *Little Jack Horner* chant can be used as a context for developing children's understanding of geometry:
• shapes can be made by combining other shapes.
The chant can also be used as a context for developing children's understanding of data management:
• collecting and organizing data about the type and number of shapes used to solve puzzles.

Background for Teachers:
Understanding that shapes such as squares and rectangles can be composed by combining two triangles is foundational to understanding the geometric relationships that are used to develop formulae for measurement. Understanding geometric relationships by composing and decomposing shapes is also applied when children use 2-D shapes to build or compose 3-D figures.

LESSON
Lesson Summary: Composing shapes to make larger shapes.
Materials:
• *Little Jack Horner* chant poster
• pattern blocks
• manipulatives that are geometric shapes
  e.g., pentominoes tangrams, attribute blocks (optional)
• outline of a shape made by connecting 4 hexagons the size of a pattern block hexagon (**Reproducible Master #11** enlarged 50%)

Getting Started:
T and C: Invite the children to join you in reading a chant selected from *Math Chants* or another poem from your math collection of poems.
T: Show the children the new math chant *Little Jack Horner*. Ask the children to describe where the child is and what it looks like the child is doing.

Working On It:
T: Read the chant to the children. Show the children **Reproducible Master #11**. Tell the children that this is one of the puzzles that Jack says that he solved. Tell them that you think that there is more than 1 way to cover the shape with pattern blocks. Distribute copies of the puzzle and pattern blocks. Challenge the children to find ways to solve the puzzle. Compare the solutions by recording the number of each kind of block used in each solution in a chart:

Identify any relationships that the children notice:
• *When we only used hexagons we used 4 altogether.*
  When we used other shapes we used more than 4 blocks.

Doing It:
Tell the children that Jack wants some more puzzles to solve. Ask them to use either the pattern blocks or other geometric shapes to make a puzzle for Jack to solve. Combine the shapes to make a larger shape and then trace around the outside of the larger shape.

Bringing the Learning Together:
Consolidate the learning by sharing observations that you made about new shapes that were created by combining two or more shapes.
• *I noticed that two squares can make a rectangle.*
Invite the children to share the their observations about shapes that are made when shapes are combined.

Extending the Learning:
The puzzles created by the children can be used to create a centre.

Math Journal:
Summarize the learning from the lesson with a group journal recorded on chart paper. Brainstorm a list of math words that could be used in the journal. Compare the use of pictures, diagrams, math words, symbols to clearly communicate learning in the journal entries.

One, Two, Buckle My Shoe *(trad)*

One, Two, Buckle My Shoe (Trad)

One, two, buckle my shoe,

Three, four, shut the door,

Five, six, pick up sticks,

Seven, eight, lay them straight,

Nine, ten, a big fat hen.

The *One, Two Buckle My Shoe* chant can be used as a context for developing children's understanding of number:
- reading number words and symbols.
- counting by 2s, skipping counting.
- groups of 2.

Background for Teachers:
Unitizing is a foundational concept that children apply in understanding the place value system. Experiences with a variety of units i.e., 1 dozen but 12 eggs, 1 metre but 100 centimetres, enables children to develop a deeper understanding of the concept. This math chant's context provides an opportunity for students to experience doubling, an important strategy.

LESSON
Lesson Summary: Counting units of 2.
Materials:
- *One, Two, Buckle My Shoe* chant poster
- the chant cut into individual panels and put into plastic bags (one for each child or pair of children) **(Reproducible Master #12)**
- paper bags or paper cups
- assortment of counting materials e.g., bread tags, counters, linking cubes etc.
- Singles and pairs - the children fill in the blanks **(Reproducible Master #13)**

Getting Started:
T and C: Invite the children to read a chant selected from *Math Chants* or another poem from your own collection of poems.
T: Show the children the chant *One, Two, Buckle My Shoe* (Some children may already know this traditional chant.)

Working On It:
T: Read the chant to the children. Use sticky notes to put the symbols for each number word on the chant.
T and C: Read the chant again. Distribute the pictures from **Reproducible Master #12** in the plastic bags to the children. Read the chant again while the children sequence the pictures to match the chant. Ask the children what strategy they used to choose the picture that would come next.
- *I looked for the numbers that followed after.*

Ask the children why there are only 5 pictures when the chant is about counting to 10. Ask 5 children to stand up and turn their backs to the rest of the class. Ask the class how many children are standing up. Ask the children to show you with their fingers how many eyes we will count on the children standing up. Ask the children to turn around and count their eyes by 2s. Say 5 children have 10 eyes. The number of eyes is double the number of children. Ask the children how many feet they would count on 5 children. Ask the children how many ears they would count on 4 children. Encourage the children to use the word "double" to describe the relationship between the number of ears and the number of children.

Doing It:
Ask the children to work in pairs and make a guessing game for their classmates to solve. Ask them to choose a set of paper cups e.g., 6 and put 2 counters in each one. Then they can ask their friends to tell how many counters there will be altogether when you count them. Listen for and watch for the strategies that children use when figuring out the number of counters.

Bringing the Learning Together:
Consolidate the learning by making a chart of the numbers in the guessing games e.g., 5 paper cups and 10 counters. Ask the children to make statements to compare the numbers e.g., 12 is double 6.

Brainstorm a list of everyday objects that come in twos or pairs e.g., mittens, shoes, eyes, the feet of some animals, wings, hot/cold taps, etc. Pose problems orally using the list as a context e.g., There are 10 birds' wings. How many birds? Encourage the use of comparative language in explaining their solutions.
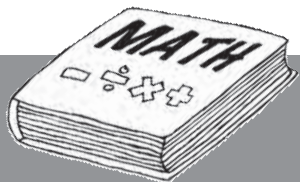- *Each bird has two wings so the number of birds is half of the number of wings.*

Extending the Learning:
Reproducible Master #13 for individual practice. Children can also create their own problems for others to solve.

Math Journal:
Summarize the learning from the lesson with a group journal recorded on chart paper. Brainstorm a list of math words that could be used in the journal. Compare the use of pictures, diagrams, math words, symbols to clearly communicate learning in the journal entries.

Ten Green Frogs
(Trad)

Ten green frogs sitting on a well,
One looked down and in he fell.
Frogs jump high,
Frogs jump low,
Nine green frogs dancing to and fro.

Nine green frogs sitting on a well,
One looked down and in he fell.
Frogs jump high,
Frogs jump low,
Eight green frogs dancing to and fro.

Eight green frogs sitting on a well,
One looked down and in he fell.
Frogs jump high,
Frogs jump low,
Seven green frogs dancing to and fro.

The *Ten Green Frogs* chant can be used as a context for developing children's understanding of number:
- counting backwards from 10.
- the relationship between addition and subtraction.

This chant can also be used as a context for developing children's understanding of pattern:
- decreasing patterns.

Background for Teachers:
This chant provides an opportunity for children to count backwards from 10. Counting backwards is an important skill for subtraction, an operation that can be challenging for children who have more experience in counting forward than backward. Modeling the chant can allow children to see the relationship between addition and subtraction when they see that the number of frogs in the water in the well is increasing as the number of frogs sitting on the well decreases.

LESSON
Lesson Summary: Model decreasing and increasing counting patterns.
Materials:
- *Ten Green Frogs* chant poster
- sets of cubes or counters (10 for each child)
- a variety of tools e.g., number line, hundreds chart, ten frames
- cross section drawing of a well for each child
  (Reproducible Master #14)

Getting Started:
T and C: Invite the children to join you in reading a familiar chant from either *Math Chants* or from your own math collection of poems.
T: Show the children the new chant *Ten Green Frogs*. Ask the children how many frogs are on the side of the well. Ask the children how many frogs are not on the wall of the well. Ask how many frogs there are alto-

gether. Record on chart paper or a blackboard 9 + 1 = 10. Ask the children to use the frogs in the chant to picture the numbers in the number sentence.
- *9 frogs on the wall and 1 frog jumping in the water is the same as 10 frogs.*

Record 10 − 1 = 9 on chart paper or a blackboard. Ask the children to use the frogs in the chant to picture the numbers in the number sentence.
- *10 frogs in the picture minus 1 frog who is jumping into the water is the same as 9 frogs sitting on the wall.*

Working On It:
T: Read the chant to the children. Ask the children how they knew what words were coming next.
- *The words were in a pattern.*
- *I heard words like Frogs jump high, Frogs jump low over and over again.*

T and C: Read the chant together. Discuss what is happening to the numbers. Use math language: getting less, counting backward.
T and C: Distribute the counters and the **Reproducible Master #14**. Tell the children to use the counters as pretend frogs as you tell what happened in the chant.
T: Tell the sequence in the chant. Ask the children to identify the pattern in the numbers.
- *There will be 1 less frog on the wall and 1 more in the water each time.*

Doing It:
Ask the children to choose a material to show the number patterns in the story e.g., linking cubes, ten frames, hundreds charts, number lines etc.
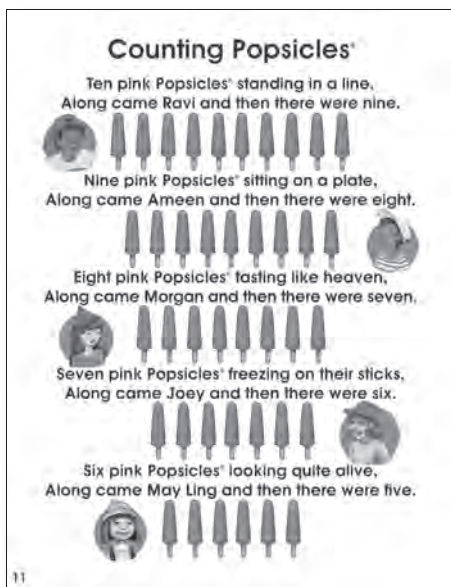
Bringing the Learning Together:
Compare the representations of the counting patterns. Identify the decreasing and increasing numbers in each pattern. Show the children a tower of 6 cubes. Ask the children to show you what the next tower in the story pattern of decreasing number would look like by making the tower. Ask the children to explain their thinking.

Math Journal:
Summarize the learning from the lesson with a group journal recorded on chart paper. Brainstorm a list of math words that could be used in the journal. Compare the use of pictures, diagrams, math words, symbols to clearly communicate learning in the journal entries.

Counting Popsicles®

Counting Popsicles®

Ten pink Popsicles® standing in a line,
Along came Ravi and then there were nine.

Nine pink Popsicles® sitting on a plate,
Along came Ameen and then there were eight.

Eight pink Popsicles® tasting like heaven,
Along came Morgan and then there were seven.

Seven pink Popsicles® freezing on their sticks,
Along came Joey and then there were six.

Six pink Popsicles® looking quite alive,
Along came May Ling and then there were five.

The *Counting Popsicles®* chant can be used as a context for developing children's understanding of number:
  • counting backwards from 10.
  • the concept of subtraction as comparison.
  • adding or counting to 55.
  • making tens.

Background for Teachers:
"Take away" is a commonly used meaning for subtraction. Understanding of subtraction as the comparison of two numbers supports children in understanding part/whole relationships in numbers e.g., When comparing 11 with 7 students would think of 11 as the whole number and 7 as one part of it so they need to determine the other part of 11. This chant provides a context for developing the concept of subtraction as comparison as the Popsicles® are pictured in a row.

LESSON 1
Lesson Summary: Comparing the differences of numbers.
Materials:
  • *Counting Popsicles®* chant poster
  • Popsicle® sticks or other counters
  • rows Popsicles® from the chant laid out in a random order
    (**Reproducible Master #15**)
  • scissors, glue, paper

Getting Started:
T and C: Invite the children to join you in reading a familiar chant from either *Math Chants* or from your own math collection of poems.
T: Show the children the new number chant *Counting Popsicles®*. Ask them to estimate if the number of Popsicles® in the pictures is more or less than 20 (thumb up more than 20, thumb down less than 20, thumb sideways if not sure). Ask children to explain their thinking.

Working on it
T: Read the chant to the children.

T and C: Read the chant together. Distribute the Popsicle® sticks to the children. Ask them to use them to model the chant. Invite them to talk about what is happening to the numbers. Watch to see if they remove just one stick each time or gather the sticks and count the new number out.

Doing It:
Show the children a copy of **Reproducible Master #15**. Tell them that these pictures are for the chant but they are mixed up. Ask them to cut them out and put them in the right order.

Bringing the Learning Together:
Consolidate the learning by sharing the strategies used for putting them in the right order.
  • *I looked for the picture of 1 Popsicle® and cut it out first.*
  • *I cut out all the pictures and then I put them in order.*
  • *I cut out the first picture and put it at the bottom because 10 is the last number.*

LESSON 2
Lesson Summary: making tens to add or count to 55.
Materials:
  • *Counting Popsicles®* chant poster
  • **Reproducible Master #15**
  • scissors, glue, paper

Getting Started:
T: Show the children the *Counting Popsicles®* chant poster. Ask them what they remember about the chant e.g., One Popsicle® kept getting eaten each time. Read the chant with the children again.

Working On It:
Ask the children to suggest different ways to count e.g., by 1's, 2s, 5's, 10's. Tell them that you are wondering how many Popsicles® are in the picture for the chant altogether.

Doing It:
Distribute copies of **Reproducible Master #15**. Model cutting the Popsicles® individually to count them by 1's. Ask them to work in pairs and to find ways to use counting to solve the problem.

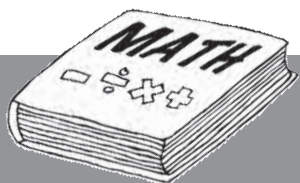**Bringing the Learning Together:**
Consolidate the learning by strategically sharing the strategies used e.g., Did children cut the Popsicles® to make groups for counting in various ways. Record on a chart the pairs of numbers in the chant that could be used to make 10. Count the number of Popsicles® by 10.
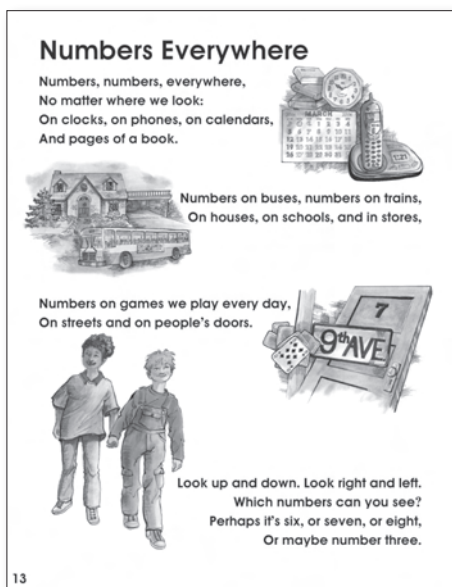
Extending the Learning:
Ask children to find the number of objects in a book or chant with a similar counting sequence.

Math Journal:
Summarize the learning from the lesson with a group journal recorded on chart paper. Brainstorm a list of math words that could be used in the journal. Compare the use of pictures, diagrams, math words, symbols to clearly communicate learning in the journal entries.

Numbers Everywhere

Numbers, numbers, everywhere,
No matter where we look:
On clocks, on phones, on calendars,
And pages of a book.

Numbers on buses, numbers on trains,
On houses, on schools, and in stores,

Numbers on games we play every day,
On streets and on people's doors.

Look up and down. Look right and left.
Which numbers can you see?
Perhaps it's six, or seven, or eight,
Or maybe number three.

13

The *Numbers Everywhere* chant can be used as a context for developing understanding of number:
* differentiating between phone numbers and addresses.
* sorting phone numbers to identify patterns.

This chant can also be used as a context for developing understanding of data management:
* collecting data about numbers in the environment.

Background for Teachers:

In this chant children are encouraged to notice examples of numbers in their environment. Children's experiences with number outside of the classroom might include phone numbers and numbers on their team shirts. In these contexts the numbers do not relate to a quantity. This may be confusing to children when we try to focus our lessons on understanding number as representing quantity. Young children are often expected to learn their address and phone number but often do not receive instruction in learning them. To understand place value, children learn that only the digits, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, are needed to make any numbers.

LESSON 1

Lesson Summary: Compare phone numbers and addresses.

Materials:
* *Numbers Everywhere* poster
* phone numbers printed on slips of paper (2 per child)
* "pretend" addresses cut into strips (e.g., 1 Maple St., 2 Maple St., 10 Maple St., 1 Elm St., 2 Elm St., 10 Elm St.))

Getting Started

T and C: Invite the children to join together in reading a familiar chant from *Math Chants* or one from the class collection.
T: Show the new chant *Numbers Everywhere*.
T: Ask children to look around the classroom and share places where they can find numbers that are everywhere in their classroom.
* *There are numbers on the clock.*
* *There are numbers on the calendar.*

Working On It:

T: Read the chant to the children. Ask the children to compare the places that they found numbers in the classroom with those in the chant.
T: Say to the children, *"There is a part in the chant about numbers on houses."* Tell the children that you were writing addresses and phone numbers on papers and now you can't remember which papers are addresses and which ones are phone numbers. Distribute them to the children and ask them to sort them. (use the examples from the materials list) Ask them to share characteristics of each kind of number.
* *Addresses have letters or words and numbers, phone numbers only have numbers.*

Doing It:

T: Ask the children to compare the number of digits that are in a phone number with the number of digits in an address. Tell them you are wondering how people can remember so many digits. Ask them to work in groups to sort their phone numbers.

Bringing the Learning Together:

Compare the sorting groups. Share their observations from their sorts.
* *All of our phone numbers begin with the same three numbers.*
* *All of our phone numbers have 3 digits, then another 3 digits, and then 4 digits together.*
* *Phone numbers use 10 digits altogether.*

Ask the children to predict how the addresses could be organized. Show the children that addresses are not sequenced 1, 2, 3, 4, but that 1, 3, are on one side of the street and 2, 4, are on the other side of the street. Have the children order the rest of the addresses as they would appear on a street.

Extending the Learning:

Make an address book for favourite characters from picture books and stories e.g., ask children to suggest a pretend address and phone number for *Clifford* or *Red Riding Hood*. Watch to see if children apply their learning about phone numbers and addresses in developing pretend one e.g., Do they use 10 digits for the phone number?

LESSON 2

Lesson Summary: Collecting data about examples of numbers in the environment.

Materials:
* *Numbers Everywhere* poster
* calculator
* clipboards or "clipboards" made with pieces of box cardboard and a rubber band for holding the paper
* pencils and paper

Getting Started:

T: Show the children the *Numbers Everywhere* chant poster. Ask the children what they remember about the chant.
* *There were places in the chant with numbers just like our classroom.*
* *We have phone numbers.*

T and C: Read the chant again.

21

Working On It:
T: Show the children a calculator. Tell the children that they can make any number by pressing the digits, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 on the calculator. Invite the children to suggest numbers and you will make them on the calculator by pressing the digits e.g., like the date or year. Record the numbers suggested on chart paper. Tally the frequency of each digit used.

Doing It:
Tell the children that you are wondering which digit they would find most often on a number walk. Provide pairs of children with a clipboard, pencil and paper for them to collect data about the digits that they see in the numbers that they find everywhere while walking around the school, or the neighbourhood.

Bringing the Learning Together:
Share the results of their data collection about the digit that was seen most frequently. Compare strategies used to collect and organize the data.

Extending the Learning:
Use a digital camera to record examples of numbers from the chant e.g., numbers in stores, numbers on buses and create a bulletin board display.

Math Journal:
Summarize the learning from the lesson with a group journal recorded on chart paper. Brainstorm a list of math words that could be used in the journal. Compare the use of pictures, diagrams, math words, symbols to clearly communicate learning in the journal entries.

Rebecca's Bubblegum

One, Rebecca,
Two, Rebecca,
Three, Rebecca,
Four,
Used to stick her bubblegum
On the kitchen door.

Five, Rebecca,
Six, Rebecca,
Seven, Rebecca,
Eight,
Then she put her bubblegum
Underneath her plate.

Nine, Rebecca,
Ten, Rebecca,
Older every year.
Now she sticks her bubblegum
Right behind her ear!

14
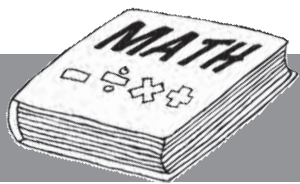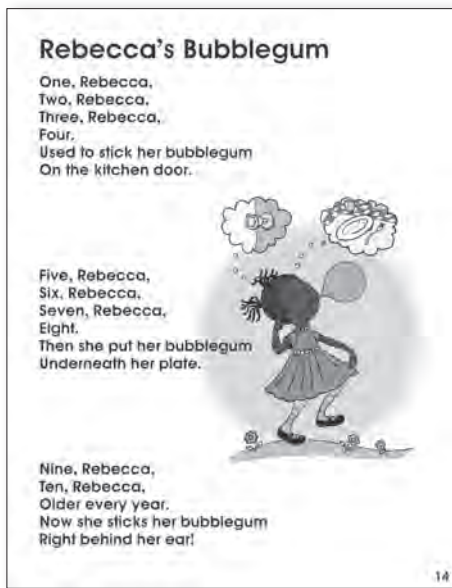
The *Rebecca's Bubblegum* chant can be used as a context for developing understanding of measurement:
- passage of time.

Background for Teachers:
Since time is not a concrete object, it can be challenging for children to understand how time is measured. Children will use benchmarks to try to describe the passage of time e.g., there are three more sleeps until we go on our trip. They also will describe passage of time in relation to their own physical changes or to changes in what they can do.

LESSON
Lesson Summary: Sequencing to show passage of time
Materials:
- *Rebecca's Bubblegum* poster
- series of pictures of Rebecca from ages 1 - 10 (one per child or one for every pair of children) cut apart and put in plastic bags (**Reproducible Master #16**)

Getting Started:
T and C: Invite the children to join together in reading a familiar chant from *Math Chants* or one from the class collection.
T: Show the new chant *Rebecca's Bubblegum*. Tell the children this chant is about a girl named Rebecca and how she changes as she gets older. Ask the children to share ideas about how they know that they are growing up.
- *I used to have to stand on a stool to brush my teeth and now I can reach by myself.*
- *I can put my coat and shoes on by myself.*

Ask the children to listen to how Rebecca has changed in the chant. Read the chant to the children.
- *She used to put her bubblegum on the floor, then under her plate and now she puts it behind her ear!!!*

Working On It:
T: Distribute the pictures of Rebecca growing up (**Reproducible Master #16**). Ask the children to show you in which picture Rebecca is the youngest. Ask them to explain their thinking.
- *Rebecca is the smallest in this picture so I think she is not very old.*

T: Tell the children to put the pictures in order from youngest to oldest while you read the chant again. Read the chant slowly while the children match the pictures to the ages in the chant one Rebecca (pause), two Rebecca (pause) etc.

Doing It:
T: Ask the children to make their own story about how they are growing up by making a picture of themselves at 1 year old, 2 years old, etc. on individual pieces of paper. Exchange their pictures with a friend and see if they can be put in order.

Bringing the Learning Together:
Consolidate the learning by comparing the characteristics of the pictures of 1 year old e.g., short hair, clothing, etc.

Extending the Learning:
The learning can be extended by adding the years for each picture e.g., *If this is a picture of you now, what year can we write on it? What year can we write for this picture of you last year?* Etc.

Math Journal:
Summarize the learning from the lesson with a group journal recorded on chart paper. Brainstorm a list of math words that could be used in the journal. Compare the use of pictures, diagrams, math words, symbols to clearly communicate learning in the journal entries.

Symmetry
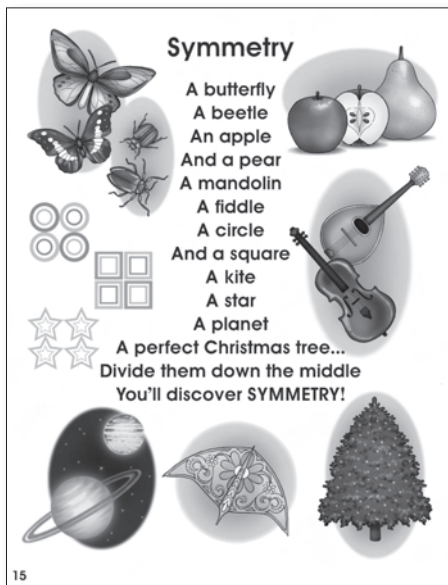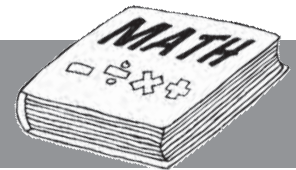
The *Symmetry* chant can be used as a context for developing understanding of geometry:
- properties of shapes.
- lines of symmetry.

Background for Teachers:
Lessons about geometric properties of shapes are often limited to the number of sides or angles of a shape. Investigations of symmetry of geometric shapes can result in deeper understanding of the shapes. Children may also need experiences in understanding that the symmetry in some real life objects may not be identifiable in some perspectives. An overhead view of bird in flight may be symmetrical but a side view of the same bird may not be symmetrical.

LESSON
Lesson Summary: Comparing lines of symmetry of shapes.
Materials:
- *Symmetry* chant poster
- scissors, paper
- images of objects from the chant (Reproducible Master #17)

Getting Started:
T and C: Invite the children to join together in reading a familiar chant from *Math Chants* or one from the class collection.
T: Show the new chant *Symmetry*.
T and C: Identify the pictures for the math chant. Ask the children to identify any ways in which the pictures are the same or different.
- *The planet looks like the same shape as the design with 4 circles and the apple.*

Working On It:
T: Read the chant to the children. Ask the children to retell the main idea

about symmetry in the chant.
- *Dividing the pictures in the middle shows symmetry.*

Tell the children that you are not sure if you can picture in your mind dividing each object in the chant down the middle. Show the children **Reproducible Master #17** with the pictures from the math chant. Ask them to help you understand the symmetry in each object.

Doing It:
Children investigate the symmetry in the pictures e.g., by cutting them out and then folding them or drawing lines down the middle. Challenge the children to explore designs with symmetry by folding a plain piece of paper and cutting out shapes. Ask them to predict the shapes that they will see when they unfold the paper.

Bringing the Learning Together:
Consolidate the learning by sorting the pictures and their lines of symmetry. Pose questions such as, is there another way that I can fold the square so that it is divided down the middle? Is there another way that I can fold the circle so that it is divided down the middle? Which pictures have only one way? Which ones have more than one way? Do all insects have a line of symmetry? Do all trees have a line of symmetry? Do you have a line of symmetry?

Extending the Learning:
Draw a picture of yourself and show yourself divided down the middle. Is there a way to draw a picture of yourself that cannot be divided down the middle (e.g., a profile of a face)?

Math Journal:
Summarize the learning from the lesson with a group journal recorded on chart paper. Brainstorm a list of math words that could be used in the journal. Compare the use of pictures, diagrams, math words, symbols to clearly communicate learning in the journal entries.

Months of the Year
(Trad)

Thirty days has September,
April, June and November.
All the rest have thirty-one,
Lots of days for lots of fun.
But February's in a state,
As she has only twenty-eight.
So each fourth year she leaps the line,
And adds one day for twenty-nine.

16
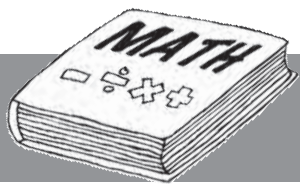
The *Months of the Year* chant can be used as a context for developing children's understanding of data management:
- sorting the months in different ways.
- reading data i.e., days in a chart.

This chant can also be used as a context for developing children's understanding of number:
- comparing numbers.

Background for Teachers:
Calendar is a popular activity in many primary classrooms. Most activities become routine for children rather than opportunities for learning through problem solving. Children need opportunities to read data e.g., the days of the week, organized in charts by knowing how to read both across rows and down columns. They also need to know what to do with the blank spaces that appear at the beginning and the end of a month that is represented in a calendar. This becomes important when determining elapsed time that extends beyond a month e.g., the number of days from the first day of school until Thanksgiving.

Comparing the number of days in a month is also an opportunity to learn about comparing quantity (the number of days) with measurement (length of each month).

Making comparisons is an important meaning of subtraction and shows the connection between subtraction and addition e.g., in comparing 28 and 31, 28 is 3 less than 31 and 31 is 3 more than 28.

LESSON 1
Lesson Summary: Sorting the months of the year .
Materials:
- *Months of the Year* chant poster
- months for the current year pulled from a calendar
- cut out the months of the year from **Reproducible Masters #18a & b**
- chart paper or larger paper for each child
- scissors and glue for each child

Getting started:
T and C: Invite the children to join you in reading a chant chosen from *Math Chants* or one from your math collection of poems.

T: Show the children the new math chant *Months of the Year.*

T: Invite children to name the months of the year they know. As the children name the months they know, post the calendar page with the named month on a board (e.g., with tape or magnetic strips). Tell the children that calendars are tools for measuring time. Ask the children to name other tools that are used to measure time e.g., clocks.

Ask students to look at the calendars for each month and identify what is the same and what is different about them e.g., They all have numbers. They all have squares.

Working On It:
T: Tell the children that this chant is based on an old rhyme about the months of the year. Then, read the chant to the children.

T and C: Read the chant together. Invite the children to ask questions or make comments about the names of the months in this poem:
- *When we say the months of the year we always start with January. This chant starts with September.*
- *Our school year starts with September but then we have October. October was not next in this chant.*
- *Some months were left out of the chant.*

Read the chant again and model the sorting in the chant by posting the calendar page as it is referenced in the poem. Sort and organize the months in the poem by the number of days e.g., one group for September, April, June and November, all the rest in another group and February in another group.

September	January	February
April	March	
June	May	
November	July	
	August	
	October	
	December	

T: Ask the children to suggest a title for each group e.g., months with 30 days, months with 31 days, month with 28 or 29 days.

T: Ask the children to compare the number of months in each group e.g., the third group only has one month in it.
- *The middle group has the most months in it.*

Doing It:
Ask the children to find another way to sort the months of the year. Tell the children to record their sorting strategy by gluing the months from **Reproducible Masters #18a & b** on chart paper in sorted groups.

Bringing the Learning Together:
Compare the ways in which the months of the year were sorted.

LESSON 2

Lesson Summary: Collecting and recording data about the months of the year and sort the months again

Materials:
- *Months of the Year* chant poster
- months for the current year pulled from a calendar
- cut out the months of the year from **Reproducible Masters #18a & b**
- chart paper or larger paper for each child
- scissors and glue for each child

Getting Started:

T: Show the children the *Months of the Year* chant poster. Ask the children what they remember about the chant e.g., The months are sorted by the number of days. Read the chant with the children again.

Working On It:

T: Give each child a copy of the months of year. (**Reproducible Masters #18a & b**). Ask the children what days in the year are important to them (e.g., My birthday is July 14. I like Ramadan.). Model for the children how you locate the important days through think-aloud (e.g., I know that July is about the middle of the year. January, February, March, April, May, June, July – here it is. I know that 14 is about the middle of the month 1, 2, ... here is 14. When I trace with my finger to the top of this column I see that this birthday will be on Wednesday. I wonder how many children have a birthday on Wednesday this year.).

Ask the children to read the calendar to locate their birthdays (or other special days if birthdays are not celebrated for religious reasons) on their copy of the months of the year.

Record special days on the large copy of the calendar.

Doing It:

Ask the children to find a way to use the information about special days to sort the months of the year e.g., months with holidays in them and months without holidays in them, months in which seasons begin and months in which no seasons begin. Tell children to record their sorting strategy by gluing the months on chart paper in the sorted groups.

Bringing the Learning Together:

Compare the ways in which the months of the year were sorted.

LESSON 3

Lesson summary: Applying information about the number of days in the month to order the months of the year.

Materials:
- *Months of the Year* chant poster
- cut out the months of the year on **Reproducible Masters #18a & b** but cut the names off of each month. Cut each month along the outside lines for each child or pair of children.
- chart paper or larger paper for each child or pair of children
- scissors and glue for each child or pair of children

Getting Started:

T: Show the children the *Months of the Year* chant poster. Ask volunteers to point to the names of the months of the year in the chant. Read the chant with the children again.

Working On It:

T: Tell the children that you were making a calendar for the year on your computer. You cut them out and then realized that you forgot to put the names of the month on each one. Tell the children that you think that you can use what you know about the number of days in each month to put them in the right order. Give each child or pair of children a set of **Reproducible Masters #18a & b** with the names of the months cut off. Ask the children to help you.

Doing It:

Ask the children to find the month with only 28 days in it. Ask children the name of this month. Ask children what month would go before this one. Ask them to share their strategies for figuring this out e.g., I know that January comes before February so I looked for a month with 31 days in it so I sorted the months to find the ones with 31 days. Then I looked for a month that ended on the day before February started. Observe the strategies used by the children as they glue the months in order.

Bringing the Learning Together:

Compare the strategies used to solve the problem of order the month.

LESSON 4

Lesson Summary: Comparing the numbers 28, 29, 30, 31

Materials:

- *Months of the Year* chant poster
- Reproducible Masters #18a & b
- chart paper or larger paper for each child
- scissors and glue for each child

Getting Started:

T: Show the children the *Months of the Year* chant poster. Ask children to identify the number words in the chant. Record the numbers for each number word on a sticky note and put them beside the words in the poster. Read the chant with the children again.

Working On It:

T: Tell the children that some months feel like they are longer than others. Tell the children that you were wondering how much longer some months are than others. Ask the children for suggestions for comparing the lengths of two months like January and February e.g., children may suggest comparing the last number in each month.

T: Tell the children that you want to be able to see how the number of days in each month compare so you are going to cut them up to make a time line for the month. Cut each row for each month and rearrange them to form a line. Compare the "length" of the two lines by counting the number of days that do not have a match e.g., 28 days have a match but these 3 days in January have no matching days in February. Ask the children to agree or disagree with the following statements by showing thumbs up or thumbs down:

1. January has 3 more days than February.

2. February has 3 less days than January.

3. If I add 3 more days to February then they will both have the same number of days.

4. If I take 3 days away from January then they will both have the same number of days.

Doing It:

T: Tell the children that you are wondering how the other months compare. Ask them to compare two other months by turning the calendar for each month into a time line.

C: Choose two months. Cut them into rows and glue them onto chart paper. Ask children to write or dictate statements to compare the number of days in the two months.

Bringing the Learning Together:

Compare the findings of the children about their comparisons of two months.

Math Journal:

Summarize the learning from the lesson with a pairs journal recorded on chart paper. Brainstorm a list of math words that could be used in the journal. Choose responses to compare the effective use of pictures, diagrams, math words, symbols to clearly communicate learning in the journal entries.

The Chickens (Anon)

The Chickens (Anon)

Said the first little chicken
With a funny little squirm,
"I wish I could find
A fat little worm."

Said the second little chicken
With an odd little shrug,
"I wish I could find
A fat little slug."

Said the third little chicken
With a sharp little squeal,
"I wish I could find
Some nice yellow meal."

Said the fourth little chicken
With a small sigh of grief,
"I wish I could find
A little green leaf."

Said the fifth little chicken
With a faint little moan,
"I wish I could find
A wee gravel stone."

"Now, see here," said the mother,
From the green garden patch,
"If you want any breakfast,
Just come here and scratch."

17

The Chickens chant can be used as a context for developing understanding of number:
  • understand and use ordinal numbers.

Background for Teachers:
Understanding ordinal numbers requires thinking about the position of individual objects in relation to others rather than the quantity of a set of objects. Ordinal numbers are usually assigned by "reading" left to right and top to bottom. Reading this way requires assumptions about the starting point. In this lesson, children learn that the ordinal position can change when the direction or starting point changes. This experience deepens understanding of the use of ordinal numbers.

LESSON
Lesson Summary: Naming objects using ordinal numbers
Materials:
  • *The Chickens* chant poster
  • copies of the student books for *Math Chants*
  • Which One is First? exercise (**Reproducible master #19**)

Getting Started:
T and C: Invite the children to join you in reading a chant selected from *Math Chants* or another poem from your math collection of poems.
T: Ask the children to think of something they like to eat. Ask 5 children to share their ideas. Model the use of ordinal numbers by reviewing the ideas shared and identifying the order using ordinal numbers.
  • *First I heard Ravi tell me that he likes samosas, second I heard Gabriella tell me that she likes ice cream, third etc. to fifth.*
Show the children the new chant *The Chickens*. Ask the children to point to the first chicken. Ask them to explain their thinking.
  • *He's the first one because he's nearest to the top of the page.*
Read the chant to the children.

Working On It:
T: Distribute the student copies of *Math Chants*. Ask the children to use the table of contents to find the page number of the first math chant in the book. Repeat for the second, third, fourth and fifth. Record the ordinal words and the page number on chart paper. Compare the ordinal names and the number names.
  * *I can hear four in the word fourth but I don't hear one in the word first.*
Ask the children to use what they know about numbers to find page 17. Read the chant again and ask the children to point to the chicken who is talking in each part of the chant.
Ask the children to form lines of 5 people and to remember their places in these lines. Then have the children move around the room (could be to music). When the teacher claps (or the music stops), the children get back into their original lines of 5. Repeat a few times.
Ask everyone in the line to turn around on the spot while staying in their lines.
Give commands for children to follow:
"Put up your hand if you are third in your line."
"Jump up and down two times if you are fifth in your line."

Doing It:
Return to *The Chickens* poster and ask the children which chicken would be first if we counted from the mother. Count the chickens using ordinal numbers in two ways from top to bottom and from mother to top. Distribute copies of **Reproducible Master #19** to the children. Ask them to draw 5 pictures e.g., of people or animals etc. for each space. In the first space the animals/people are going from the tree to the pond. In the space below it the same animals/people are going from the pond to the tree. In the pictures of the well, the animals are jumping into the water in the well. In the space below it, the same animals are jumping from the water out of the well. Interview children asking them to use ordinal numbers to identify the pictures e.g., *"Which one is first in this picture?"*

Bringing the Learning Together:
Consolidate the learning by connecting 5 linking cubes of 5 different colours. Tell the children that you have made a "train" with the cubes. Move the train along an imaginary track from left to right. Ask the children to identify colours of the first, second, third etc. cubes. Move the train from right to left. Ask the children to identify colours of the first, second, third etc. cubes. Turn the train around. Ask the children to identify colours of the first, second, third etc. cubes.
Ask the children what they need to know when they are choosing first, second etc.
  * *We need to know where the start is.*

Math Journal:
Summarize the learning from the lesson with a pairs journal recorded on chart paper. Brainstorm a list of math words that could be used in the journal. Choose responses to compare the effective use of pictures, diagrams, math words, symbols to clearly communicate learning in the journal entries.

Computers

Computers and screens,
Computers and screens,
Images flash
To breathtaking scenes.
The magic of math
A wondrous new world.
Computers are maps
That can be unfurled.

18
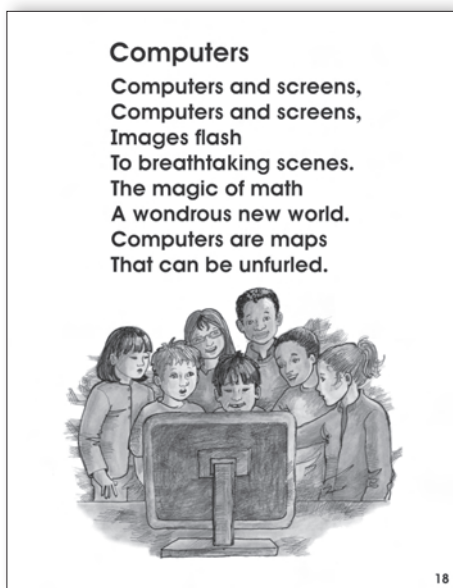
The *Computers* chant can be used as a context for developing understanding of geometry:
- composing shapes.
- tessellating shapes.

Background for Teachers:
There has been some interesting research into the impact of video games on children. In this lesson, the video game "*Tetris*" will be adapted so that children can investigate tessellations. Tetrominoes are made by combining 4 squares so that a side of one square is touching a side of another square. Dominoes, pentominoes, and hexominoes are made by combining 2 squares, 5 squares and 6 squares respectively.

Lesson Summary: Composing shapes with tetrominoes.
Materials:
- *Computer*s chant poster
- tetrominoes (**Reproducible Master #20**)
- 5x8 grid (**Reproducible Master #21**)

Getting Started:
T and C: Invite the children to join you in reading a chant selected from *Math Chants* or another poem from your math collection of poems.
T: Show the children the new chant *Computers*.
T and C: Ask the children to share ways in which they have seen computers used.
- *I saw someone on TV use a computer to find where someone lived.*
- *My sister uses the computer to play games.*

Working On It:
T: Read the chant to the children. Ask the children to share ideas that they heard in the chant.
T and C: Read the chant together.

T: Tell the children that you are wondering about the connection between math and the computer. Tell the children that some computer games have math in them.

Doing It:
T: Show the children the shapes and tell them that they are used to play a computer game called "*Tetris*". Each shape is called a tetromino and is made by joining 4 squares together. Tell the children that you are wondering if tetrominoes can be combined to make squares. Distribute sets of tetrominoes (**Reproducible Master #20**) to the children so that they can investigate combinations that result in squares. Challenge the children to see if they can also make the 5 x 8 rectangle (**Reproducible Master #21**) with tetrominoes.

Bringing the Learning Together:
Consolidate the learning by sharing solutions to both challenges. Which pairs of tetrominoes can be combined to make squares? Which pairs of tetrominoes fit together without leaving spaces?

Math Journal:
Summarize the learning from the lesson with a pairs journal recorded on chart paper. Brainstorm a list of math words that could be used in the journal. Choose responses to compare the effective use of pictures, diagrams, math words, symbols to clearly communicate learning in the journal entries.

Computer Fun

Would you like to fly a spaceship?
Or do your best in math?
Or maybe track a dinosaur
Along some jungle path?

You might want to play a math game
That takes a lot of skill,
Well, turn on your computer,
You're sure to get a thrill.

If you follow the instructions
And handle it with care,
Your computer will amaze you
And take you everywhere.
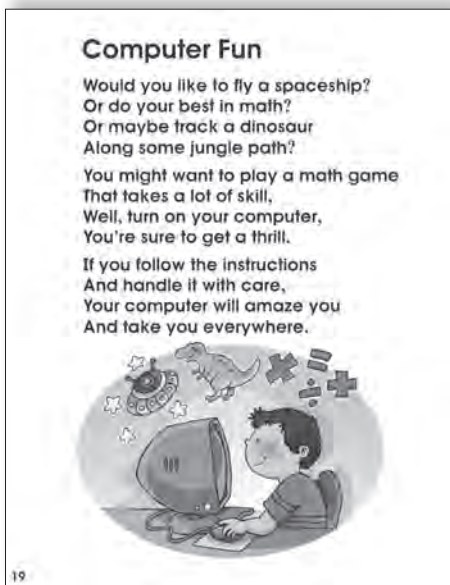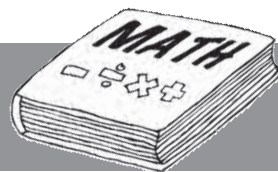
The *Computer Fun* chant can be used as a context for developing understanding of measurement:
  • estimating and measuring with non-standard units.

Background for Teachers:
When computer programs are used effectively for learning math, children can receive instantaneous feedback as they develop and test their hypotheses e.g., *"I think if I turn this shape it will fit in this space."* This lesson is based on interactive programs and applets that allow children to estimate the number of spaces needed to move an object such as a turtle or ladybug, test their estimate by inputting instructions, and then revising their estimates based on how the object responded to their instructions.

LESSON
Lesson Summary: Estimating and measuring the number of "steps"
Materials:
  • *Computer Fun* chant poster
  • Dinosaur in the Jungle maze to predict how many steps it takes the dinosaur to get through a maze (**Reproducible Master #22**)
  • How many steps? maze to predict how many steps it takes animals of different sizes to get through a maze (**Reproducible Master #23**)

Getting Started:
T and C: Invite the children to join you in reading a chant selected from *Math Chants* or another poem from your math collection of poems.
T: Show the children the new chant *Computer Fun*. Ask them to share what they know about computers (children may remember ideas from the previous chant if the chants have been used in order). Ask the children to listen for their ideas in the chant.

Working On It:
T: Read the chant to the children. Ask the children to share the ideas that they heard in the chant. Show or tell the children a game like chess or tic-

tac-toe. Tell the children that sometimes people make computer versions of games. Today you are going to do the opposite and take a computer game and make it a board game. Tell them to think of the math in the game. Distribute **Reproducible Master #22**. Ask the children to estimate how many steps it would take to get the dinosaur through the maze. Record the estimates on chart paper. Ask each child to use the footprint to measure how many steps it takes to "walk" through the maze. Record the measurements and compare them.

Doing It:
Ask the children to line up at one end of the classroom. Tell them to take 5 giant steps. Use a book or other item to mark how far the children moved. Ask the children to return to the end of the classroom. This time tell the children to take 5 baby steps. Compare the distance traveled each time. Ask them why this happened since they took 5 steps each time.
Distribute **Reproducible Master #23**. Tell the children on this game board the animals are different sizes so their "footprints" are different sizes. Ask them to predict what will happen to the number of "footsteps" needed to walk the animals through the jungle maze. Ask the children to test their predictions by walking the animals through the maze. Count the number of "footsteps" needed to walk through the maze each time.

Bringing the Learning Together:
Compare the number of footsteps each animal takes to walk through the maze. Record the measurement data. Discuss how the number of steps compares to the size of the steps
  • *The smallest footprints needed the most steps.*
  • *The biggest footprints needed the least number of steps.*
Share the strategies that the children used to use the "footprints" to measure the number of "steps" without gaps or overlaps.

Math Journal:
Summarize the learning from the lesson with a pairs journal recorded on chart paper. Brainstorm a list of math words that could be used in the journal. Choose responses to compare the effective use of pictures, diagrams, math words, symbols to clearly communicate learning in the journal entries.

Good Morning Mrs. Hen (Anon)

Cluck, cluck, cluck, cluck, cluck,
Good morning Mrs. Hen.
How many chickens have you got?
Madam, I've got ten.
Four of them are yellow,
And four of them are brown.
And two of them are speckled red,
The nicest in the town.

20
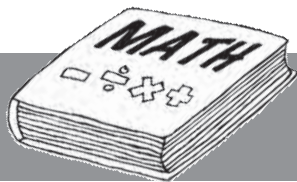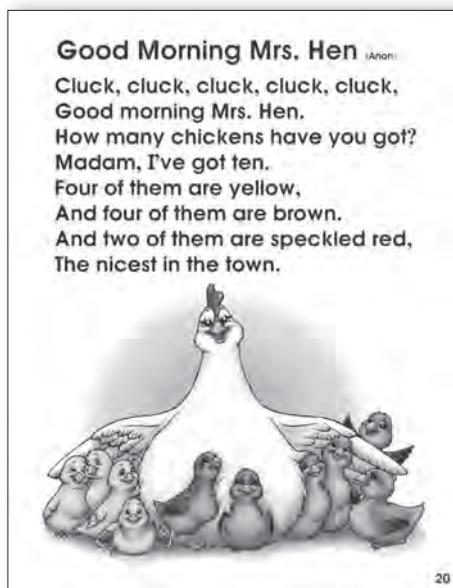
The *Good Morning Mrs. Hen* chant can be used as a context for developing understanding of number:
  • part/whole relationships in the number 10.

Background for Teachers:
When children can partition numbers such as 10, they have the ability to think about numbers as ideas and understand that numbers can be split or partitioned in multiple ways. Seeing part/whole relationships of numbers enables children to move from counting all to more sophisticated and efficient ways to determine quantity.

LESSON
Lesson Summary: Combinations that are the same as 10.
Materials:
  • *Good Morning Mrs. Hen* chant poster
  • ten frames (**Reproducible Master #9**)
  • counters for each child (3 different colours if possible)

Getting Started:
T and C: Invite the children to join you in reading a chant selected from *Math Chants* or another poem from your math collection of poems.
T: Show the children the new chant *Good Morning Mrs. Hen*. Ask the children to share observations about the picture for the chant.
  • *I see a mother chicken hugging her chicks.*
  • *I see two chicks in front of the mother hen.*
Ask the children to compare their ideas to the ones in the chant while they listen to you read the chant.

Working On It:
Read the chant to the children. Ask the children how their ideas compare to those in the chant.
  • *The chant says that there are ten chickens.*
  • *The chant says that the chickens are different colours.*

Read the chant again and ask the children to use the ten frame (**Reproducible Master #9**) to make a "math picture" of the chickens e.g., use 4 counters for the yellow chickens, 4 counters of another colour for the brown chickens, and 2 counters of another colour for the speckled chickens. Make comparisons as the chant is modeled e.g., when there are 4 of one colour and 4 of another colour ask the children what they notice about the number on their ten frames.
  • *There are 2 fours.*
  • *There are 8.*
  • *We need two more to fill the ten frame.*

Doing It:
Use sticky notes to change the number of yellow chickens to 5, the number of brown chickens to 2 and the number of speckled chickens to 3 in the chant poster. Ask the children to use their ten frames to see if Mrs. Hen still has 10 chickens.
Ask the children to find other ways to change the numbers of each colour chicken but keep the number of chickens as 10.

Bringing the Learning Together:
Consolidate the learning by recording on chart paper the different combinations for 10 that the children found. Make comparisons and record their observations.
  • *There are always three parts.*
  • *It's still 10 every time.*
  • *5 + 4 + 1 is almost like 5 + 5 but then there would only be 2 kinds of chickens.*
Read the chant again using some of the combinations that the children investigated.

Math Journal:
Summarize the learning from the lesson with an individual journal entry. Brainstorm a list of math words that could be used in the journal. Choose responses to compare the effective use of pictures, diagrams, math words, symbols to clearly communicate learning in the journal entries.

Numbers and Sums

Numbers and Sums

Numbers and sums,
Numbers and sums,
We learn how to count
By tens and by ones.
We learn how to add,
To subtract, multiply,
Math can be fun
Why not give it a try?
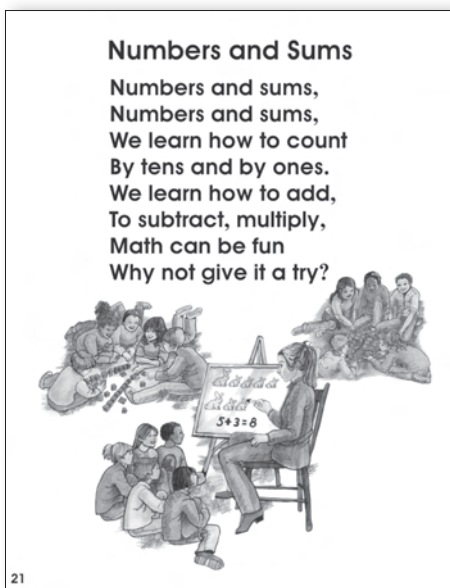
The *Numbers and Sums* chant can be used as a context for developing understanding of number:

- place value of patterns of numbers on a hundreds chart.
- applying place value patterns to solve addition and subtraction questions with a hundreds chart.
- multiplication patterns on a hundreds chart.

Background for Teachers:
Place value is a fundamental concept of our number system. Organizing numbers in a hundreds chart supports children in exploring patterns in the ones digits in the rows and patterns in the tens digit in the columns.

LESSON
Lesson Summary: Counting, addition, subtraction and multiplication patterns in a hundreds chart.
Materials:
- *Numbers and Sums* chant poster
- hundreds charts

Getting Started:
T and C: Invite the children to join you in reading a chant selected from *Math Chants* or another poem from your math collection of poems.
T: Show the children the new chant *Numbers and Sums*. Ask the children to share observations about the picture for the chant.
- *The children are playing a game.*
- *All the children are doing math.*
- *There are 3 groups of 5 children. There are 15 children.*

Ask the children to compare their ideas to those in the chant.

Working On It:
Read the chant to the children. Ask them to identify ideas about math in the chant.
- *We didn't talk about counting but the chant did.*

Compare the words "sum" and "some". Talk about the math word "sum" as being the result of combining numbers.

Distribute the hundreds charts. Tell the children to think of ways to use the hundreds chart to model the ideas in the chant. Read the chant together again. List the math in a chart – counting by tens and ones, add, subtract, multiply. Ask the children to model counting by ones on the hundreds chart. Describe the pattern that they are using to count.

- *We are going across each row from left to right.*

Ask the children to model counting by tens. Describe the pattern that they are using to count.

- *We are going down a column from top to bottom.*

Ask the children to use the hundreds chart to count the children in the picture. Describe the skipping counting or multiplication pattern of 5. The numbers in the fifth and tenth column are said when counting by 5's, skip counting by 5's or multiplying by 5.

Ask the children to use the counting patterns to find the sum of two numbers such as 15 + 23.

- Start at 15 count by 10's down the column two times to add 20. Count 3 squares right to add 3. The sum is 38.

Ask the children to use counting patterns to subtract 38 − 23.

- Start at 38 count backwards by 10 up the column two times to subtract 20. Count 3 squares left to subtract 3. The solution is 15.

Doing It:
Invite the children to work in pairs. Take turns posing addition and subtraction problems to solve using the counting patterns on the hundreds chart.

Bringing the Learning Together:
Consolidate the learning by sharing problems and counting patterns used to solve the problems. Share any observations e.g., the diagonals are counting by 9's and 11's.

Math Journal:
Summarize the learning from the lesson with an individual journal entry. Brainstorm a list of math words that could be used in the journal. Choose responses to compare the effective use of pictures, diagrams, math words, symbols to clearly communicate learning in the journal entries.

Going Fishing (Anon)

I went fishing,
Took some bait.
Didn't go early,
Didn't go late.

Caught eight fishes
To put in my pail.
Seven were mackerel,
The eighth was a whale.

The seven were easy
To put in the tin,
But that whale caused me trouble
Before I packed him in!

Took my catch home,
What did Mother say?
"Get those fish out of here –
We're having steak today!"

22
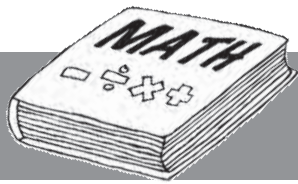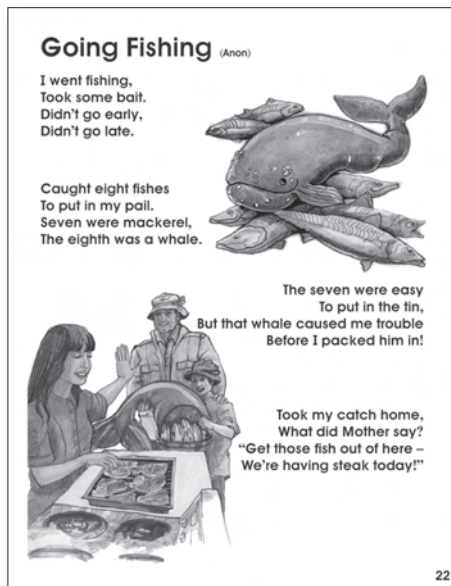
The *Going Fishing* chant can be used as a context for developing understanding of measurement.
  • measuring length using standard and non-standard units

Background for Teachers:
Children need hands-on experiences with measurement units in order to be able to visualize measurements that they read about in problems. This helps them think about the reasonableness of their solution e.g., *I know that I am about 1 metre tall so it is not reasonable to say that the wall of the classroom is 10 metres high.*

Lesson Summary: measuring length using standard and non-standard units.

Materials:
  • *Going Fishing* chant poster
  • metre sticks
  • sidewalk chalk or blackboard chalk
  • chart paper

Getting Started
T and C: Invite the children to join you in reading a chant selected from *Math Chants* or another poem from your math collection of poems.
T: Show the children the new chant *Going Fishing*. Ask the children to share what they know about fishing.
  • *I saw a program on TV about fishing.*
  • *We went fishing when we went camping.*

Working on it
Read the chant to the children. Ask the children to share their responses to the chant.
  • *A whale is big. It wouldn't fit in a pail.*
  • *What are they going to do with the fish?*
Ask the children to predict whether a whale could fit in a pail. Ask them to predict if a whale could fit in their classroom.

Tell the children that you were curious about the size of the fish in the chant. You did some research and you found out that a mackerel is 36 cm long. You are wondering how big a mackerel really is. Measure a line 36 cm long on chart paper. Use the line to draw a fish shape that is "life-sized."

Doing It:
Tell the children that in your research you found out that a whale is not really a fish. It is a mammal. There are different kinds of whales.
Show the children the following information about whales.

Pilot Whale	6 m	18 mackerels long
Gray Whale	14 m	52 mackerels long
Fin Whale	21 m	63 mackerels long
Minke Whale	9 m	27 mackerels long
Blue Whale	34 m	102 mackerels long

Assign one of the types of whales to each group of students and ask them to determine if their whale could fit in the classroom. Provide each group with a metre stick. Cut out the drawing of the mackerel and allow the children to use it to measure their whale. Watch the strategies the children use to move the metre stick while measuring.

Bringing the Learning Together:
Consolidate the learning by sharing the findings of each group. Based on the information from each group, estimate the length of the classroom. Estimate the number of mackerels long the classroom would be.

Math Journal:
Summarize the learning from the lesson with an individual journal entry. Brainstorm a list of math words that could be used in the journal. Choose responses to compare the effective use of pictures, diagrams, math words, symbols to clearly communicate learning in the journal entries.

Reproducible Masters

MATH
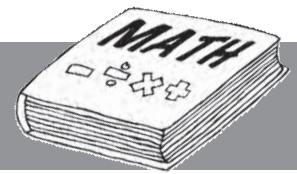
Reproducible Master 7

Draw the opposites.

short | long | short | long

slow | fast | slow | fast

down | up | down | up

Reproducible Master 10

Connect the dots to make shapes around the zoo animals.

Reproducible Master 16

Reproducible Master 23

How Many Steps?
Help the animals walk through the maze.
Use the footprints to predict how many steps it will take each of them.

Cat footprints

Zebra footprints

Kangaroo footprints

I Love Math

Hug your mathematics book,
Don't let it out of sight,

Hug it in the morning,

And hug it in the night,

Hug it when you're eating lunch,

And when you take a bath,

Hug your mathematics book,
While you're learning math.

Do a drawing of yourself learning math with your mathematics book.

Do you like_____?

YES	NO

Plates template
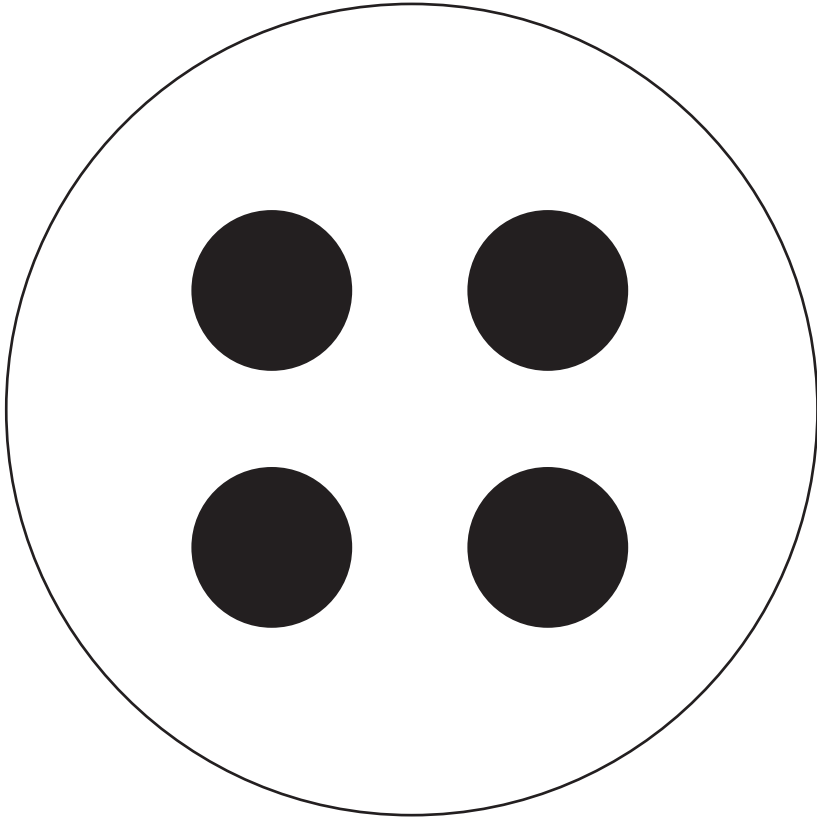
Plates template
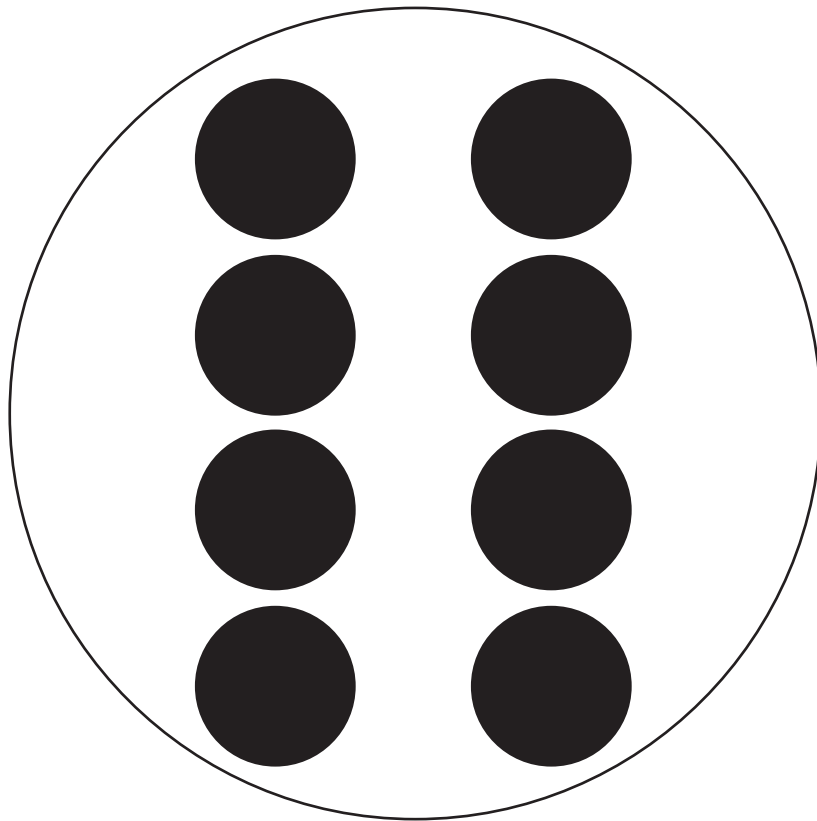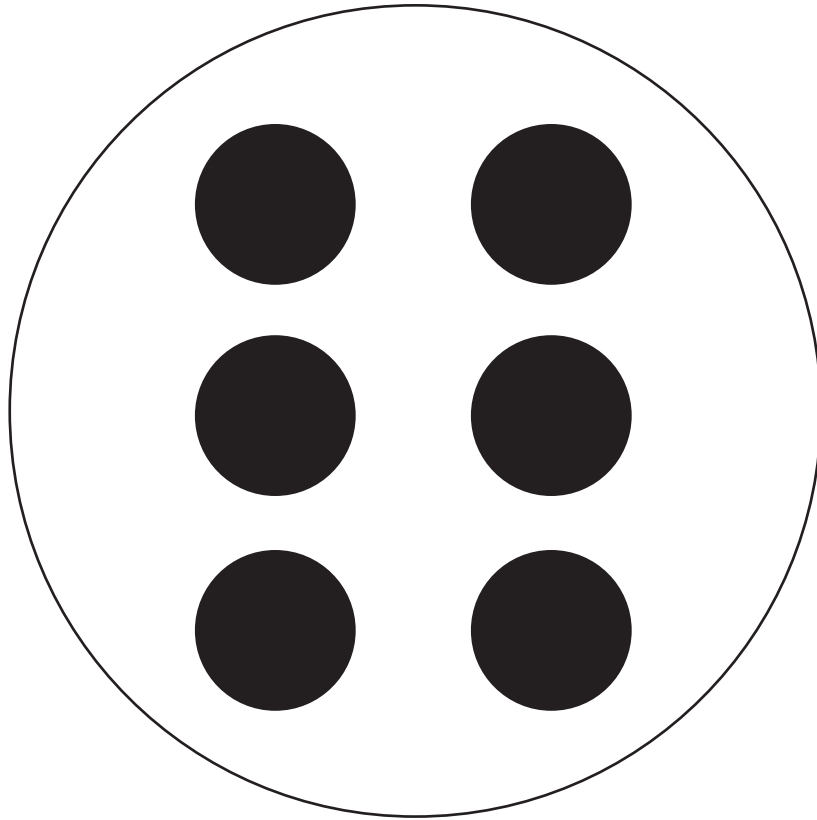
Draw a flower for each bee.
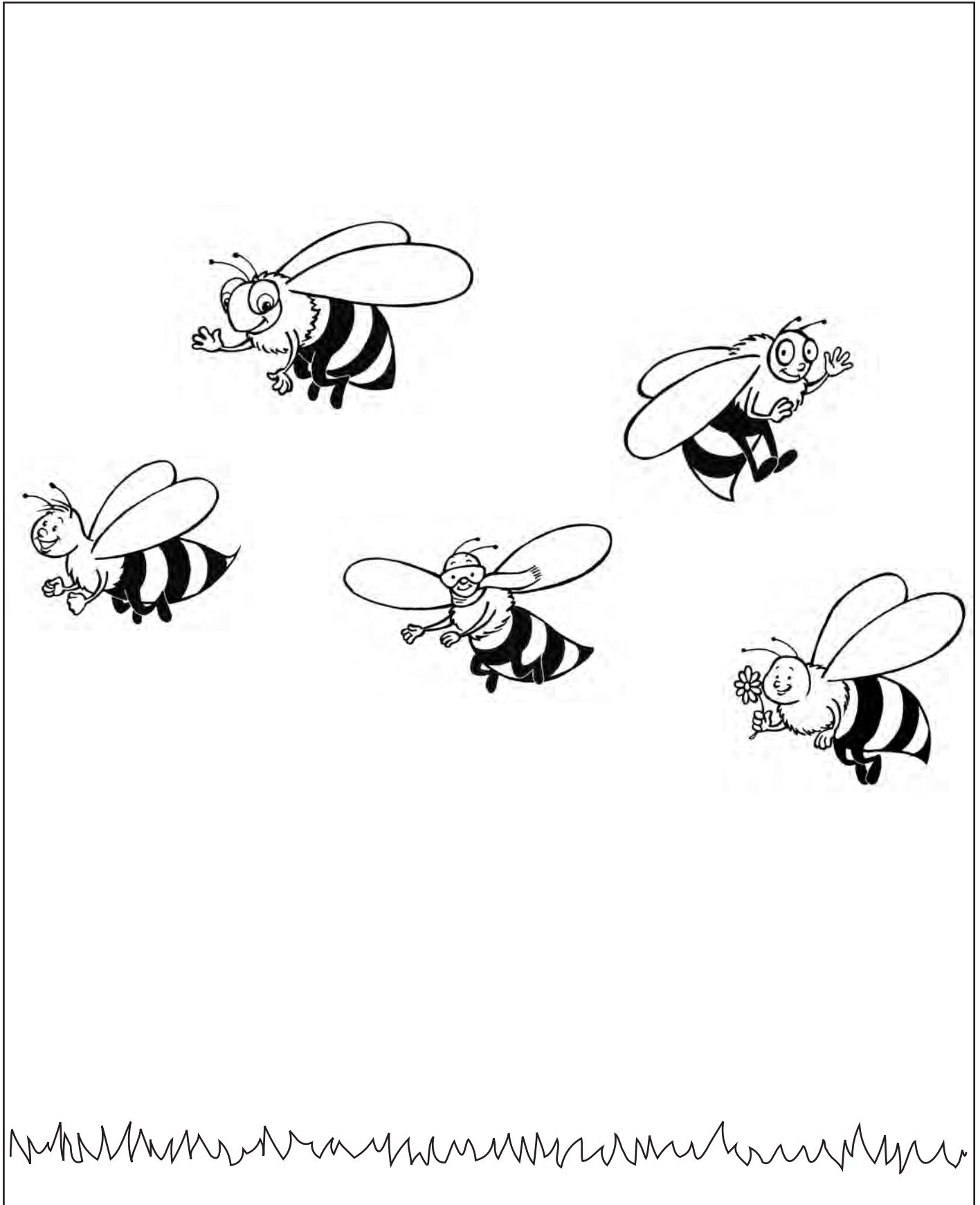
Draw the opposites.
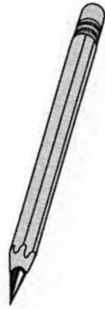
short long	short long
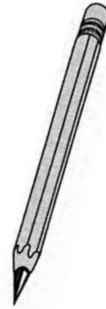
| slow   fast | slow   fast |

| down   up | down   up |

Opposites
Go Left, Go Right
A game for 2 players

You will need:
2 different counters
and a number cube.
To play:
- Each player puts a counter on the **START** square.
- Choose who starts.
- Take turns to toss the number cube.
- Move the number of squares given on the number cube. Always face in the direction of the arrows.
- If you land on a black square you must do what it says.
- The winner is the first person to reach the **END**.
- You must toss the exact number of moves to get to the **END**.

10 Frames

Connect the dots to make shapes around the zoo animals.

One, two, buckle my shoe.

Three, four, shut the door.

Five, six, pick up sticks.

Seven, eight, lay them straight.

Nine, ten, a big fat hen.

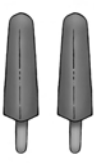# Singles and Pairs - Fill in the blanks and illustrate
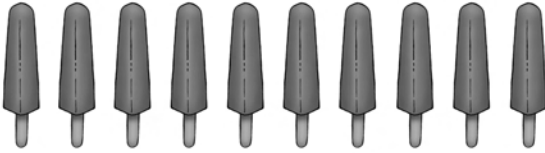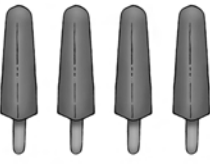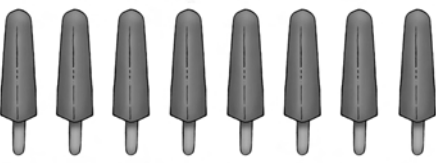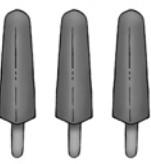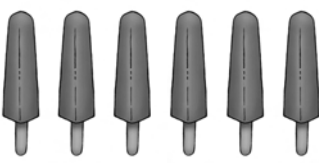
5 pairs of shoes is the same as _____ shoes.
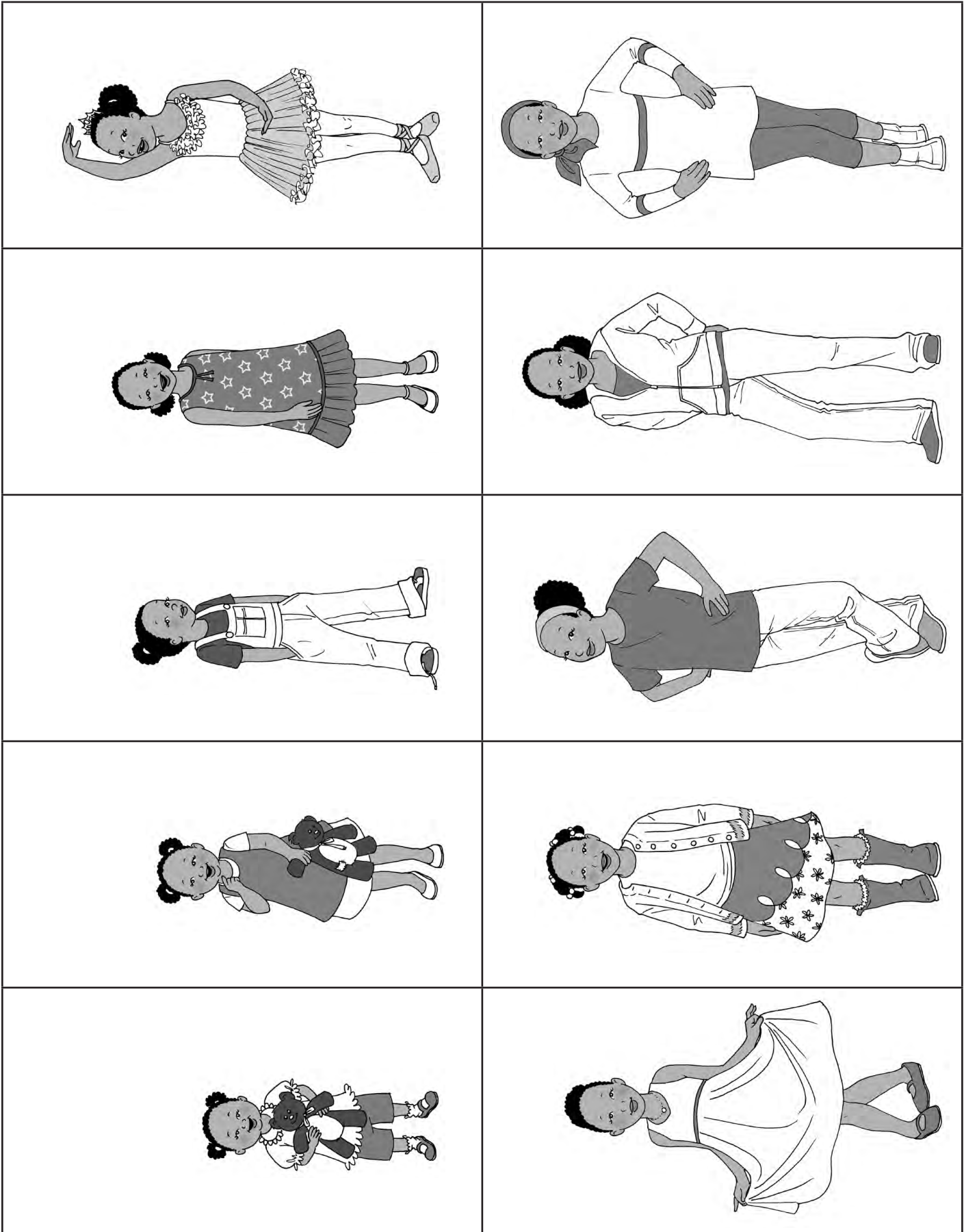
_____ pairs of mittens is the same as 14 mittens.
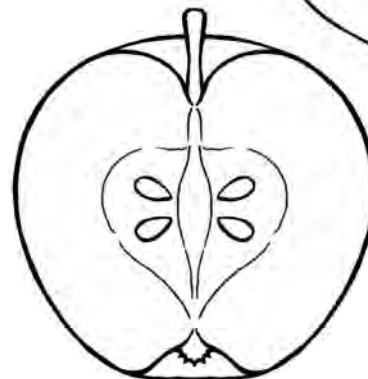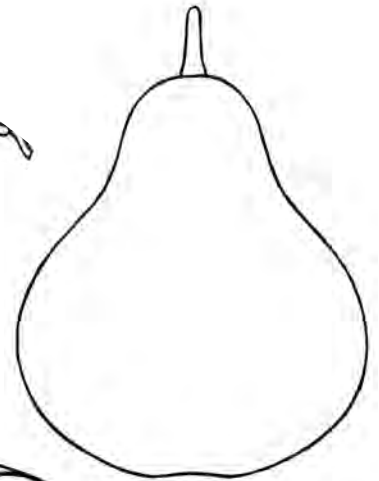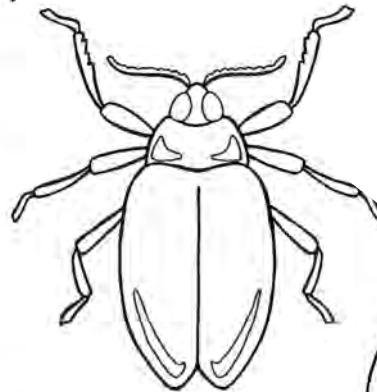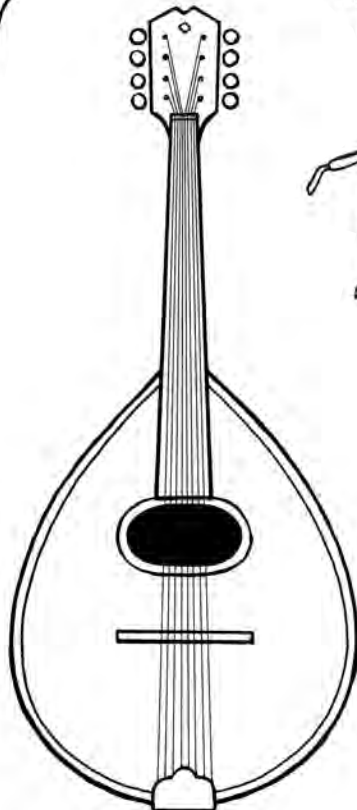
_____ bicycles will need _____ bicycle wheels.

January

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

February

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

March

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

April

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

May

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

June

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

July

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

August

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

September

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

October

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

November

S	M	T	W	T	F	S
		1	2	3	4	
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

December

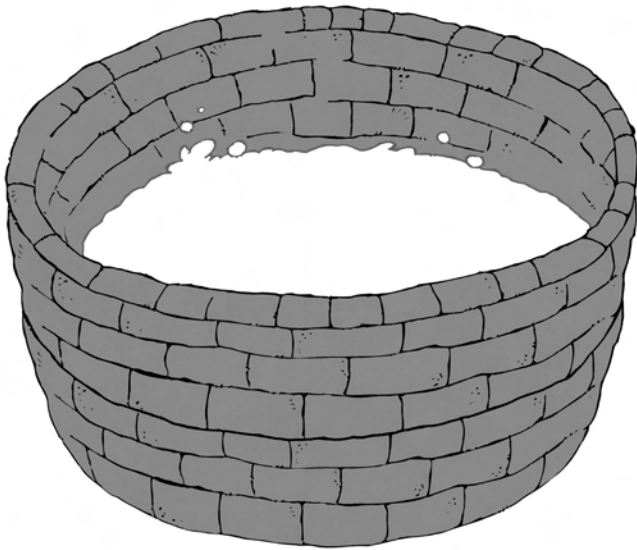| S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Which One is First?
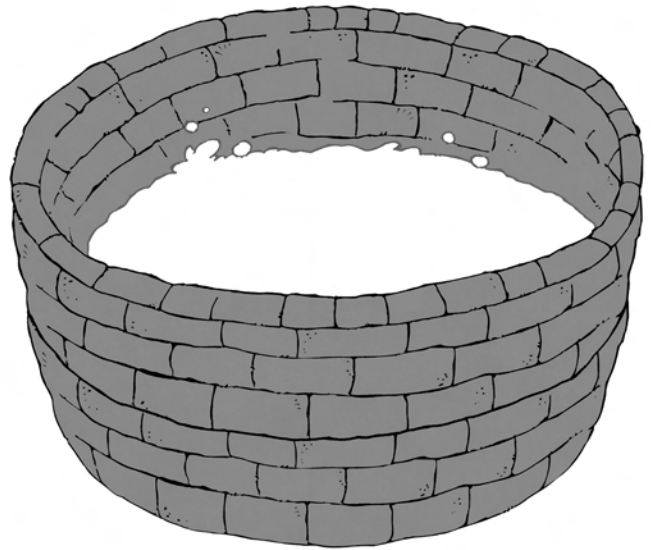
Draw 5 things going to the pond.
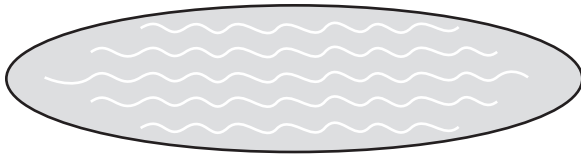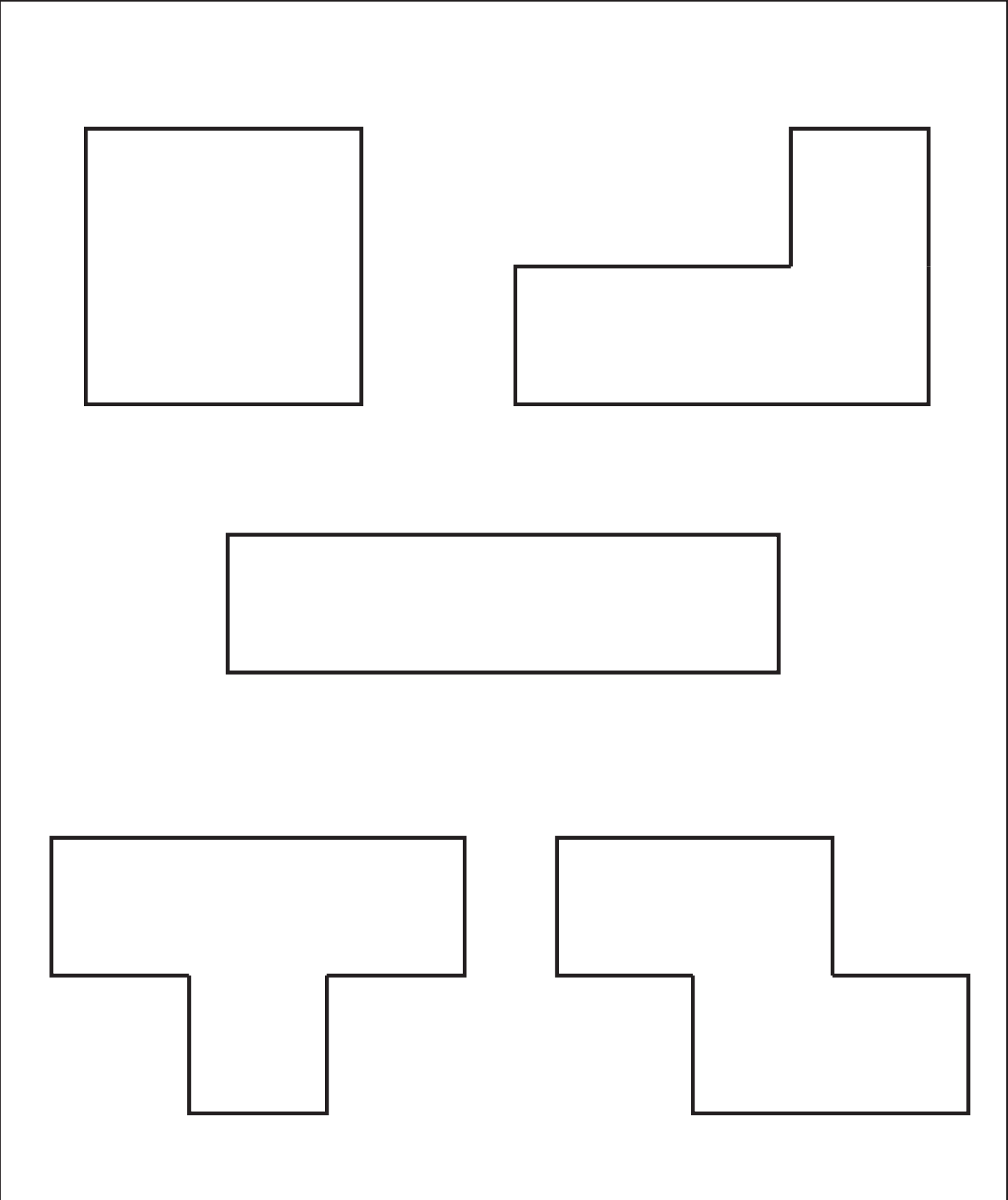
Draw 5 things going to the tree.
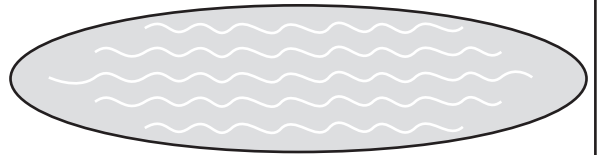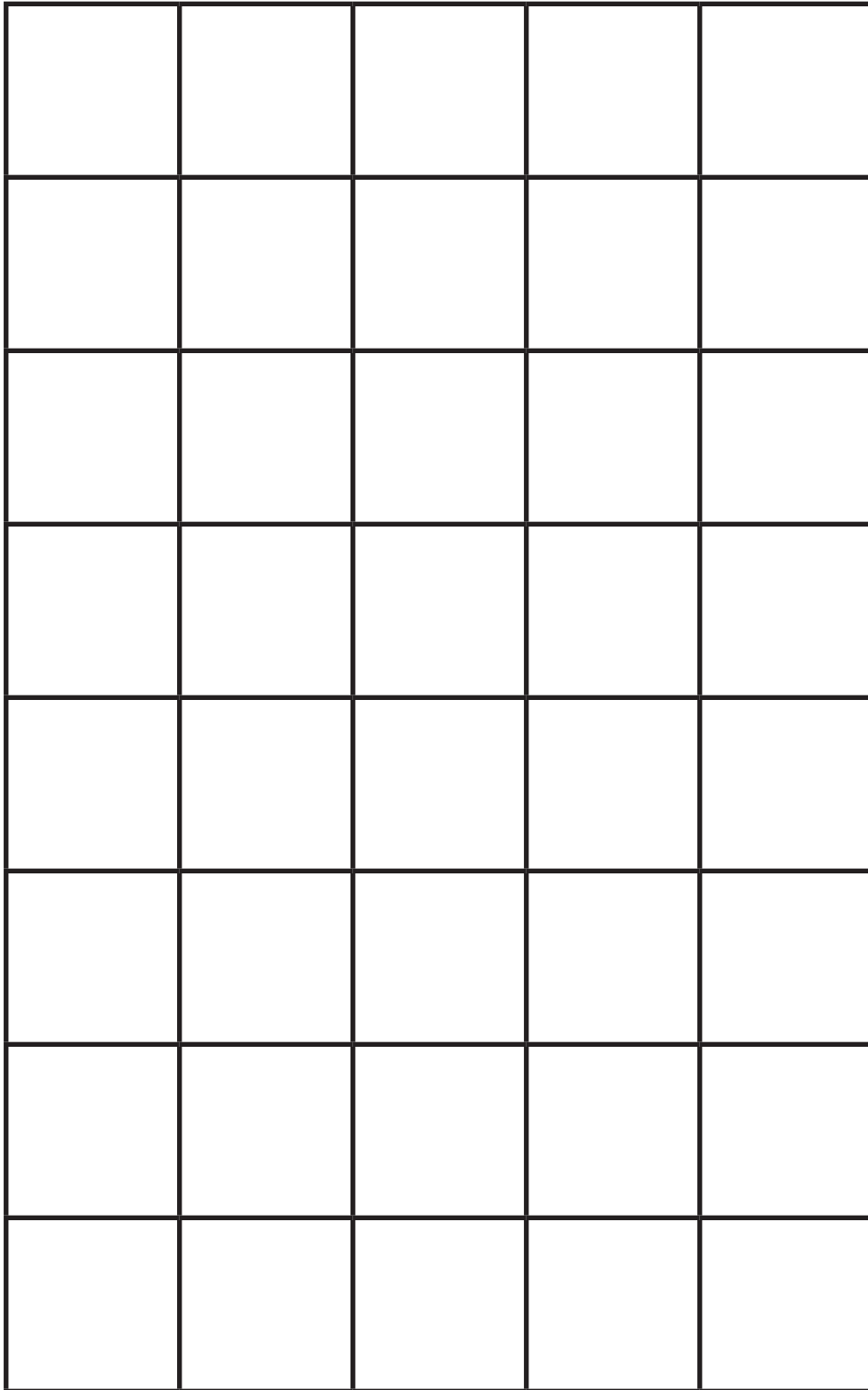
Draw 5 things jumping into the well.

Draw 5 things jumping out of the well.

Tetrominoes

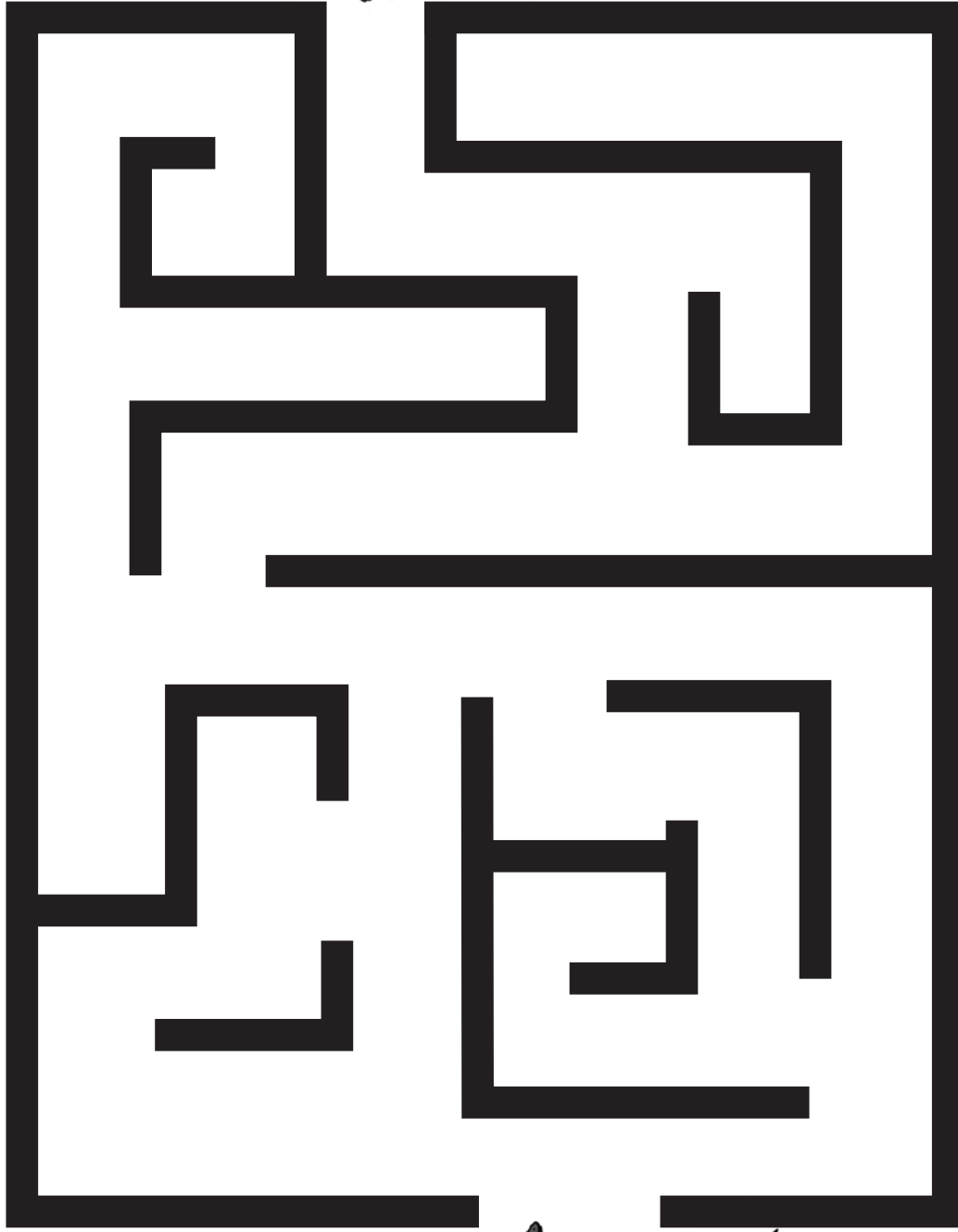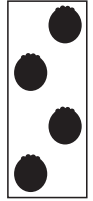# Tetrominoes Grid

Dinosaur in the Jungle

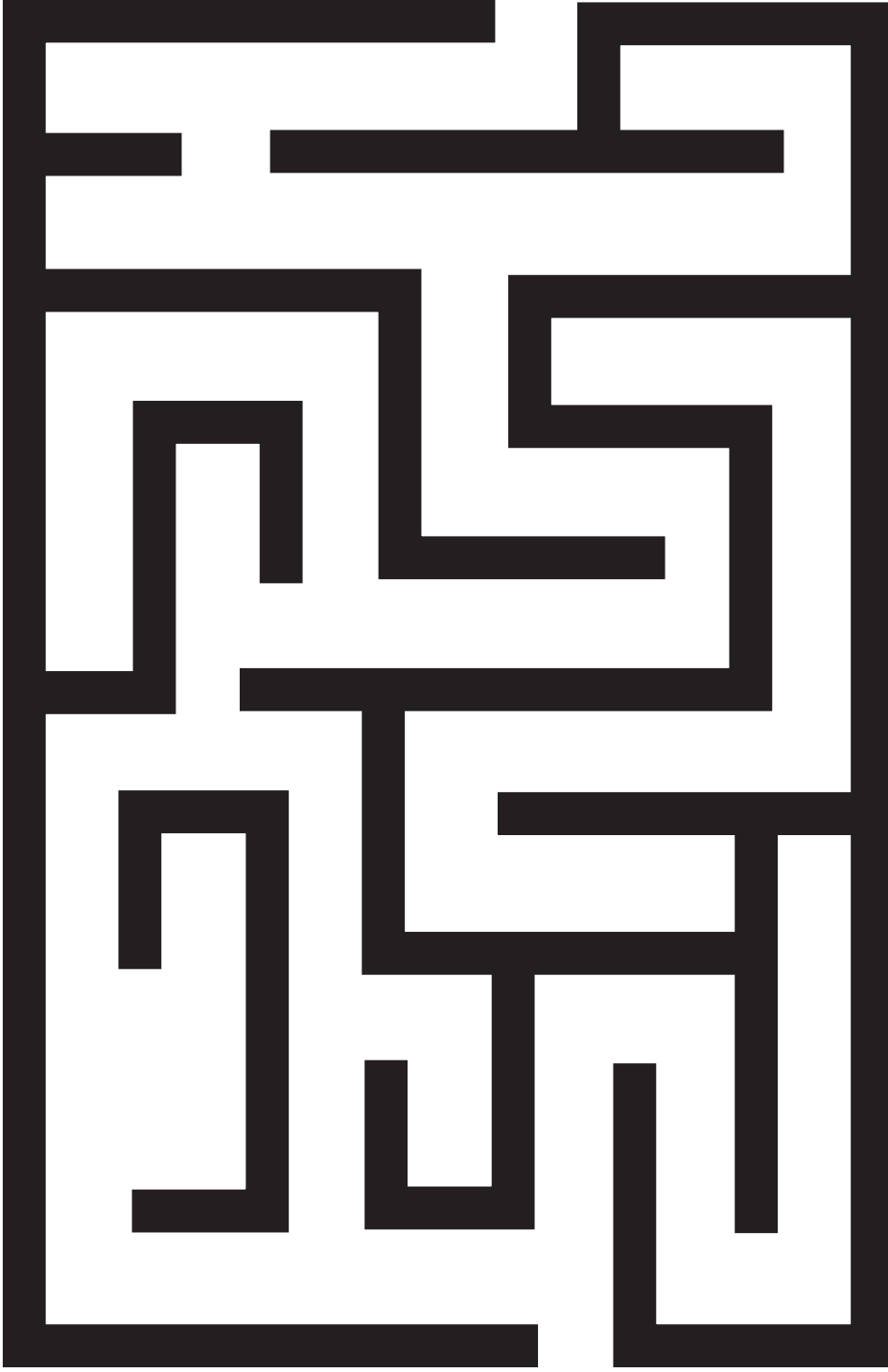## Help the dinosaur walk through the jungle to the tree.

Dinosaur footprints
Use this to predict how many steps it takes the dinosaur to get through the maze.
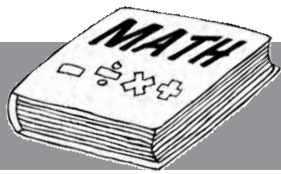
How Many Steps?

Help the animals walk through the maze.
Use the footprints to predict how many steps it will take each of them.

Zebra footprints

Kangaroo footprints

Cat footprints

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Heller, M.F.
How Do You Know What You Know? Metacognitive Modelling in the Content Areas.
Journal of Reading 29 (1986): 415-422.

McGregor, M.
Using Words to Explain Mathematical Ideas.
Australian Journal of Language and Literacy 25.1 (2000): 78-89.

Schiro, M.
Integrating Children's Literature and Mathematics in the Classroom:
Children as Meaning Makers, Problem Solvers, and Literary Critics.
New York: Teachers College Press, 1997.

Thiessen, D., M. Matthias, and J. Smith.
The Wonderful World of Mathematics: A Critically Annotated List of Children's Books in Mathematics.
Reston: National Council of Teachers of Mathematics. 1998.

Whitin, D.J., and P. Whitin.
Math is Language Too: Talking and Writing in the Mathematics Classroom.
Reston: National Council of Teachers of Mathematics, 2000.

Math Chant / Porcupine Collection
Reading Connections

I LOVE MATH
Lesson 2
Books with math/thematic links :
Gunnery, Sylvia. *Crow's Busy Day*. Toronto: Curriculum Plus, 2004.
(sequencing events in the day of the life of a crow)

Hawkins, Lise and Ivor Sinfield, *Max, the Zamboni Driver*. Toronto: Curriculum Plus, 2003
(sequencing events in a day in the life of a Zamboni driver)

Lesson 3
Books with math/thematic links:
Brezdon, Margaret. *Make No Bones About It*. Toronto: Curriculum Plus 2004
(Survey questions, Do you like to play the piano? Do you like to play hockey? Do you like gymnastics? Do you like to play basketball? Do you like bones?)

Burroughs, Susan, *Picking Apples*. Toronto: Curriculum Plus 2001
(Survey questions, Do you like picking apples? Do you love apple pie?)

Burroughs, Susan, *Mosquitoes*. Toronto: Curriculum Plus 2001
(Survey question, Do you like mosquitoes?)

Edwards, Wendy, *Breakfast Time*. Toronto: Curriculum Plus 2001
(Survey question, Do you like cereal?)

Etue, Pat, *Bananas for Lunch*. Toronto: Curriculum Plus 2001
(Survey question, Do you like bananas?)

Schwartz, Shari, Tomassini, Helen, Widenmaier, Linda, *Dad's Pancakes*. Toronto: Curriculum Plus 2001
(Survey questions, Do you like pancakes? Do you like butter and syrup on pancakes? Do you like jam and syrup on pancakes? Do you like butter and syrup and jam on pancakes?)

Wells, Jan, *Thanksgiving Dinner*. Toronto: Curriculum Plus 2001
(Survey questions, Do you like turkey? Do you like potatoes and gravy?)

Willing, Kathlene, *The Playground*. Toronto: Curriculum Plus 2001
(Survey questions, Do you like to go to the playground? Do you like to swing? Do you like to slide? Do you like to dig in the sandbox? Etc.)

BOWSER'S COOKIES
Lesson 1
Books with math links:
Burroughs, Susan. *New Shoes*. Toronto: Curriculum Plus 2001.
(counting pairs of shoes to learn double numbers)

Burroughs, Susan. *The Twins*. Toronto: Curriculum Plus, 2001.
(Discussing twins as a context for learning about double numbers).

Burroughs, Susan. *The Twins' Halloween*. Toronto: Curriculum Plus, 2001.
(Discussing twins as a context for learning about double numbers).

Etue, Pat. *The Coyote and the Turkeys*. Toronto: Curriculum Plus, 2003.
(5 turkeys in two rows as a double number)

Sawyer, Lynn. *Six More Days Until My Birthday*. Toronto: Curriculum Plus, 2003.
(counting backwards from 6 to 0)

Books with thematic links:
Etue, Pat. *Making Cookies*. Toronto: Curriculum Plus, 2001
(thematic link: Bowser, the dog character in the chant)

BEES AND BEARS
Books with math links:
Edwards, Wendy. *Breakfast Time*. Toronto: Curriculum Plus, 2001
(math link: 1 to 1 correspondence)

OPPOSITES
Books with theme links:
Burroughs, Susan. *The Fox and the Crow*. Toronto: Curriculum Plus 2001.
(examples of opposites in positional language e.g., up/down)
Saragosa, Joanne. *The Dream Catcher*. Toronto: Curriculum Plus, 2003.
(examples of opposites in positional language e.g., over/under)

Lesson 1
Books with math links:
Barrett, Joan and Joan Littleford. *The Train Ride*. Toronto: Curriculum Plus, 2001.
(comparing sizes)
Dunn, Karen. *The Biggest Christmas Tree*. Toronto: Curriculum Plus, 2003.
(comparing sizes)
Labatt, Mary. *Dinosaurs*. Toronto: Curriculum Plus, 2004.
(comparing sizes)

Lesson 2
Books with math links:
Burroughs, Susan. *Hats and Mittens*. Toronto: Curriculum Plus, 2001
(sorting by the attribute of colour)

Burroughs, Susan. A Maple Leaf. Toronto: Curriculum Plus, 2001
(sorting by the attribute of colour)

Wells, Jan. Looking in the Mirror. Toronto: Curriculum Plus, 2001.
(sorting by the attribute of colour)

Wells, Jan. Rough, Bumpy or Smooth. Toronto: Curriculum Plus, 2004.
(sorting by the attribute of texture)

COOKIE TIME (trad)
Books with math links:
Burroughs, Susan. *Hats and Mittens*. Toronto: Curriculum Plus, 2001.
(counting two mittens and one hat provides experience with odd and even numbers)

Burroughs, Susan. *New Shoes*. Toronto: Curriculum Plus 2001.
(counting pairs of shoes to learn even numbers)

Burroughs, Susan. *The Twins*. Toronto: Curriculum Plus, 2001.
(Discussing twins as a context for learning about even numbers).

Burroughs, Susan. *The Twins' Halloween*. Toronto: Curriculum Plus, 2001.
(Discussing twins as a context for learning about even numbers).

Schwartz, Shari, Helen Tomassini, and Linda Widenmaier. *A Winter Day in the Arctic*. Toronto: Curriculum Plus, 2001.
(counting the fish by twos)

SHAPES AROUND US
Books with math links:
Hawkins, Lise, Sinfield, and Ivor Sinfield, *Living in the City*. Toronto Curriculum Plus 2004.
(exploring shapes in the city.)

Hawkins, Lise, Sinfield, and Ivor Sinfield, *Living in the Country*. Toronto Curriculum Plus 2004.
(exploring shapes in the country.)

Hawkins, Lise, Sinfield, and Ivor Sinfield, *Shapes Around the City*. Toronto Curriculum Plus 2003.
(exploring shapes in the city.)

Wells, Jan, *Signs Around Us*. Toronto Curriculum Plus 2001.
(exploring the geometric shapes in traffic signs.)

LITTLE JACK HORNER (trad)
Books with math links:
Hawkins, Lise, Sinfield, and Ivor Sinfield, *Living in the City*. Toronto Curriculum Plus 2004.
(exploring shapes that combine to make other shapes in the context of the city.)

Hawkins, Lise, Sinfield, and Ivor Sinfield, *Living in the Country*. Toronto Curriculum Plus 2004.
(exploring shapes that combine to make other shapes in the context of the country.)

Hawkins, Lise, Sinfield, and Ivor Sinfield, *Shapes Around the City*. Toronto Curriculum Plus 2003.
(exploring shapes that combine to make other shapes in the context of the city.)

ONE, TWO, BUCKLE MY SHOE (trad)
Books with math links:
Burroughs, Susan. *Hats and Mittens*. Toronto: Curriculum Plus, 2001.
(using pairs of mittens to understand 1 pair/2 mittens)

Burroughs, Susan. *New Shoes*. Toronto: Curriculum Plus 2001.
(counting pairs of shoes as a context for counting by 2s)

Burroughs, Susan. *The Twins*. Toronto: Curriculum Plus, 2001.
(Discussing twins as a context for counting by 2s).

Burroughs, Susan. *The Twins' Halloween*. Toronto: Curriculum Plus, 2001.
(Discussing twins as a context for counting by 2s).

Schwartz, Shari, Helen Tomassini, and Linda Widenmaier. *A Winter Day in the Arctic*. Toronto: Curriculum Plus, 2001.
(counting the fish by twos)

TEN GREEN FROGS (trad)
Books with math links:
Sawyer, Lynn. *Six More Days Until My Birthday*. Toronto: Curriculum Plus, 2003.
(counting backwards from 6 to 0)

Wells, Jan. *William and the Kitten*. Toronto: Curriculum Plus, 2001.
(relationship between subtraction and addition. e.g., Anna's 5 kittens less one kitten is four kittens. William has 0 kittens until he gets one from Anna.)

COUNTING POPSICLES®
Books with math links:
Labatt, Mary. *Barn Owls*. Toronto: Curriculum Plus, 2003.
(comparing the number of eggs laid by owl e.g.,If one owl lays 4 eggs and another owl lays 7 eggs, how many more eggs are in the second owl's nest than the first owl's nest?)

Sawyer, Lynn. *Six More Days Until My Birthday*. Toronto: Curriculum Plus, 2003.
(counting backwards from 6 to 0)

Wells, Jan. *William and the Kitten*. Toronto: Curriculum Plus, 2001.
(relationship between subtraction and addition. e.g., Anna's 5 kittens less one kitten is four kittens. William has 0 kittens until he gets one from Anna.)

Whelehan, Susan. *A Pocketful of Trouble*. Toronto: Curriculum Plus, 2001.
(adding to find the number of things in Mark's pocket)

NUMBERS EVERYWHERE
Books with math links:
Intscher, Janet and Pat Etue. *City Transportation*. Toronto: Curriculum Plus, 2004
(ask children to look for numbers in the pictures)

Whelehan, Susan. *The Yard Sale*. Toronto: Curriculum Plus, 2004.
(tell children that there are missing numbers in this story. Ask them to suggest prices for the yard sale items. Place prices on the pages with sticky notes)

REBECCA'S BUBBLEGUM
Books with math/theme links:
Bratt, Sally. *Owning a Cat*. Toronto: Curriculum Plus, 2004.
(physical changes in a cat over time as it grows up)

Cobb, Karen. *When Will I Be Like You?* Toronto: Curriculum Plus, 2003.
(physical changes over time as a loon grows up)

Dunn, Karen. *Wolves*. Toronto: Curriculum Plus, 2004.
(physical changes as a wolf grows up)

SYMMETRY
Books with math links:
Hawkins, Lise, Sinfield, Ivor, *Shapes Around the City*. Toronto Curriculum Plus 2003.
(The shapes of objects in the city can be explored for lines of symmetry.)

Schwartz, Shari, Helen Tomassini, and Linda Widenmaier. *Snow Angels*. Toronto Curriculum Plus 2001.
(The shapes of the snow angels and the children can be explored for lines of symmetry.)

Wells, Jan, *Signs Around Us*. Toronto Curriculum Plus 2001.
(The shapes of signs and letters in signs can be explored for lines of symmetry.)

MONTHS OF THE YEAR (trad)
Books with math/theme links:
Days of the week/special days:
Feldberg, Marsha. *Getting Ready for Baseball*. Toronto: Curriculum Plus, 2003
(using the calendar to identify days of the week in the story)

Intscher, Janet. *Ling's New Year Surprise*. Toronto: Curriculum Plus, 2001.
(special days of the year, Chinese New Year)

Lewicki, Pat and Rita Trautmann. *Mr. Walker Wednesday*. Toronto: Curriculum Plus, 2003.
(using the calendar to identify days of the week in the story)

Lewicki, Pat and Rita Trautmann. *You've Got Mail*. Toronto: Curriculum Plus, 2003.
(using the calendar to identify days of the week in the story, special days of the year, birthdays)

Saragosa, Joanne. *After School Snacks*. Toronto: Curriculum Plus, 2001.
(using the calendar to identify days of the week in the story)

Saragosa, Joanne. *Mom's Birthday Surprise*. Toronto: Curriculum Plus, 2001.
(special days of the year, birthdays)

Sawyer, Lynn. *Six More Days Until My Birthday*. Toronto: Curriculum Plus, 2003.
(using the calendar to track the events in the story. Special days of the year, birthdays)

Wells, Jan. *The Fairy Tale Birthday Party*. Toronto: Curriculum Plus, 2001.
(special days of the year, birthdays)

Books with math/theme links:
Seasons of the year:
Feldberg, Marsha. *In the Ravine.* Toronto: Curriculum Plus, 2004.
(matching the names of the months to the seasons of the year)

Hawkins, Lise and Ivor Sinfield. *My Maple Tree*. Toronto: Curriculum Plus, 2004.
(matching the names of the months to the seasons of the year)

Saragosa, Joanne. *My Friend Brandon*. Toronto: Curriculum Plus, 2003.
(matching the names of the months to the seasons of the year)

THE CHICKENS (Anon)
Books with math/thematic links:
Dunn, Karen, *Getting Ready for Winter*. Toronto: Curriculum Plus, 2003.
(retell the story using ordinal numbers to identify who squirrel asked for help)

Etue, Pat. *Turtle Plays a Trick on Beaver*. Toronto: Curriculum Plus, 2003.
(the race in the story provides a context for using ordinal numbers)

Hawkins, Lise and Ivor Sinfield. *Fishcakes for Supper.* Toronto: Curriculum Plus, 2003.
(replace the connecting words, first, next etc. with ordinal numbers to describe how to make fishcakes)

Hawkins, Lise and Ivor Sinfield. *The Pizza Visit*. Toronto: Curriculum Plus, 2003.
(replace the connecting words, first, next etc. with ordinal numbers to describe how to make a pizza)

Schwartz, Shari, Helen Tomassini and Linda Widenmaier. *The Santa Claus Parade*. Toronto: Curriculum Plus, 2001.
(the parade in the story provides a context for describing what the children saw first, second etc.)

Wells, Jan. *Superdog Helps Firefighter Ed*. Toronto: Curriculum Plus, 2003.
(read the sequence for fire safety using ordinal numbers)

COMPUTERS
Allen, Liz, *Rainy Day E-mail*. Toronto, Curriculum Plus 2001
(Using a computer to communicate)

Allen, Liz. *What Flew by the School?* Toronto, Curriculum Plus, 2004.
(Using a computer to research information about owls)

Johnson, Fran, *The Computer*. Toronto, Curriculum Plus 2001.
(The parts of a computer)

COMPUTER FUN
Books with thematic links:
Dunn, Karen. *Rudy Raccoon's Surprise*. Toronto: Curriculum Plus 2004.
(theme, counting footsteps)

Dunn, Rebecca. *Wolves*. Toronto: Curriculum Plus, 2004.
(theme, comparing footsteps)

Edwards, Wendy. *It Was Missy*. Toronto: Curriculum Plus 2001.
(theme, counting footsteps)

Etue, Pat. *Nick's New Boots*. Toronto: Curriculum Plus, 2003.
(theme, counting footsteps in the snow)

Intscher, Janet. *Bowser Has a Bath*. Toronto: Curriculum Plus 2001.
(theme, comparing footsteps)

GOOD MORNING MRS. HEN **(Anon)**
Books with math links:
Burroughs, Susan. *At the Bird Feeder*. Toronto: Curriculum Plus, 2001.
(Identify the groups of birds in each picture as parts of the whole number e.g., I see 2 birds and 2 birds and 1 bird. I see 5 birds.)

Burroughs, Susan. *Squirrels*. Toronto: Curriculum Plus, 2001.
(Describe the pictures by identifying the number of the whole group as well as parts of the group e.g., I see 4 squirrels. 1 squirrel is climbing the tree and 3 are in the tree.)

NUMBERS AND SUMS
Books with math links:
Schwartz, Shari, Helen Tomassini and Linda Widenmaier. *Porcupine Gets Stuck*. Toronto: Curriculum Plus, 2003.
(Point to the numbers on the hundreds chart as the owl counts.)

Schwartz, Shari, Helen Tomassini and Linda Widenmaier. *The Elevator Adventure*. Toronto: Curriculum Plus, 2003.
(Point to the numbers on the hundreds chart as the elevator rises.)

GOING FISHING **(Anon)**
Books with math links:
Dunn, Rebecca. *Wolves*. Toronto: Curriculum Plus, 2004.
(Information about the actual size of a wolf can be used to draw a life-sized wolf)

Books with thematic links:
Edwards, Wendy. *Fishing with Grandpa*. Toronto: Curriculum Plus 2001.
(thematic link: fishing)

Schwartz, Shari, Helen Tomassini and Linda Widenmaier. *Camping*. Toronto: Curriculum Plus, 2001.
(thematic link: fishing)

Schwartz, Shari, Helen Tomassini and Linda Widenmaier. *A Winter Day in the Arctic*. Toronto: Curriculum Plus, 2001.
(thematic link: fishing)