



Esso
FAMILY
MATH

Extended Resources
Weeks 7 to 10
for JK, K & Grade 1 Children
and their Parents

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Esso Family Math



Esso Family Math Background

The Esso Family Math Project is a community-based program for families who would like their children to experience success in math. The original research and development of materials took place at the University of Western Ontario between 1999 and 2004. A team, headed by Dr. Barry Onslow, built on the earlier Family Math successes realized at Berkeley in the 1980s and 1990s. Due to the continuing demand for Family Math programming in Ontario, members of the original Esso Family Math Team have recently developed four new sessions to add to the original program. We would like to thank Dr. Onslow for his continuing support during this process.

The Esso Family Math Project was initiated to support all parents, but especially those who may find it difficult to obtain help in facilitating their children's mathematical growth and development. Some parents have little math education, and it may be impossible for them to obtain resources for home reinforcement of math concepts. Their children fall behind quickly. Low-income families, minority families, and single parent families often have difficulty overcoming these challenges.

Esso Family Math uses everyday materials and math games to help children understand math ideas. Concepts used in the real world such as measurement, estimation, and mental math are sometimes difficult for children to grasp during structured classes. Esso Family Math provides a means for parents to reinforce everyday schooling while encouraging their children to have fun as they learn. Parents gain confidence and feel they are better able to help their children enjoy and understand math in a positive environment.

The four new sessions contained in this manual continue the focus on:

- equity for families from different socio-cultural and socio-economic backgrounds
- community building
- age-appropriate activities
- clear links to school curriculum
- the development of good parenting skills
- sound mathematics content
- effective teaching and learning strategies

The Coding Used Throughout the Outline

The Esso Family Math Project was originally designed for families in Ontario, Canada. Consequently, the coding used in the *Curriculum Expectations* is based on the Ontario Ministry of Education and Training 2005 Grades 1- 8 Mathematics Curriculum, and their 2006 Kindergarten Program. **The 2011 Update makes reference to the 2005 Ontario Mathematics Curriculum for Grades 1 – 8 and the 2010 - 2011 Full Day Early Learning - Kindergarten Program.** The mathematical expectations written next to these codes match learning outcomes or expectations common to many other provinces, states, and countries. Therefore, if you are using this program outside of Ontario, simply match the expectation with those of your own jurisdiction. The following are the five mathematics strands in Ontario:

NS/N	Number Sense and Numeration
M	Measurement
G	Geometry
P/P&A	Patterning and Algebra
DM/DM&P	Data Management and Probability
(o)	overall expectations
(s)	specific expectations

Mathematical process expectations are also given in the Ontario Curriculum and are noted as follows:

PS	Problem Solving
R&P	Reasoning and Proving
REF	Reflecting
ST&CS	Selecting Tools and Computational Strategies
CONN	Connecting
REP	Representing
COMM	Communicating

In all activities, at least one expectation for both the Kindergarten and the Grade One Program are provided. Junior Kindergarten students in Ontario start school at about four years of age, and Grade One children are approximately six years old.

The New and the Old

The sessions in this book are labelled as Weeks 7 – 10. They are an extension to the original six-week program published in 2004 and updated in 2008 and 2011. Important information on the structure of the sessions can be found on pages vi to ix of the first manual. The sessions follow the same consistent format from week to week because children benefit from structure and repetition when developing mathematical skills and concepts. Exploration and practice lead to greater understanding. Therefore, the activities are repeated each week in the same order using a variety of materials.

The new weeks build on the basic concepts of the first six-week program. An attempt to extend the mathematical understanding has been built into several of the repeating activities.

Estimating jar	A 10 frame has been added to count the contents. This promotes a visual anchor or representation of 10, a key number in the place value of our number system.
Graph	Families are asked to predict before gathering and displaying the data. This provides another opportunity to apply skills of estimation.
Math Walk	A tally sheet has been added to record observations during the walk. This allows practice using a simple but effective form of record keeping.
Table Activities	These activities are longer and more complex allowing for a broader range of responses.
Homebook	There are more activities for the families to complete at home each week

Because of the expanded steps and greater complexity, many of the activities will take longer to complete. Timelines have been noted to show an activity that may be omitted

A Word of Appreciation

These four additional weeks were written in response to many requests from those using the Esso Math Resources for JK, K and Grade 1 Children and their Parents. The authors, members of the original Esso Family Math Team, called on the experience of other team members in writing this manual.

The Imperial Oil Charitable Foundation, Investing in Children, and The Faculty of Education at The University of Western Ontario have all provided support in developing this addition to the Esso Family Math Program.



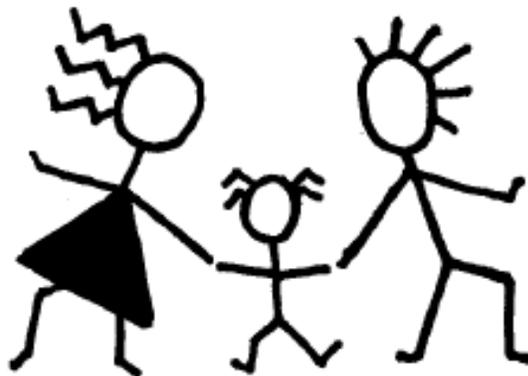
Weeks Seven to Ten

Week Seven: "Travelling Me"

Week Eight: "Active Me"

Week Nine: "Sleepy Me"

Week Ten: "Hungry Me"

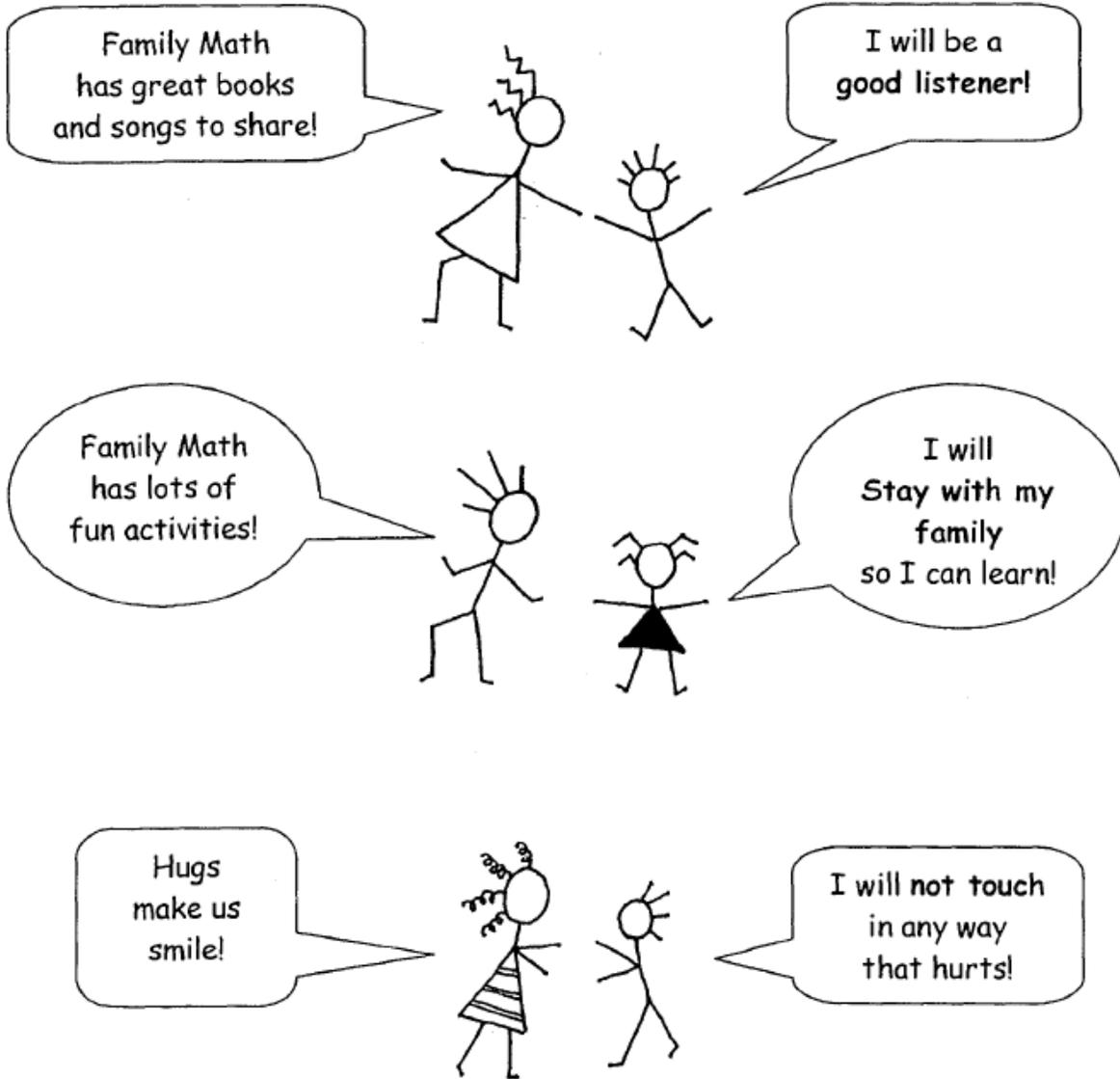


Family Math: An Overview – Weeks 7 - 10

	<u>Week 7</u> Travelling Me	<u>Week 8</u> Active Me	<u>Week 9</u> Sleepy Me	<u>Week 10</u> Hungry Me
Books Welcome				
1 Estimating Jar Number Line	Keys	Shoelaces	Feathers	Raisins
2 Story, Song or Verse	Wheels on the Bus	<u>Tacky the Penguin</u>	<u>How Do Dinosaurs Say Goodnight</u> Or <u>Time for Bed</u>	<u>If You Give A Mouse a Cookie</u>
3 Table Activity 10 9 8 7 6 5 ...	Building a 2-D Bus	Sock Beanbags	Night Scene	Cookie Patterns
4 Graph	How many keys?	How many times can you throw and catch your beanbag?	How many pillows are on your bed?	Food for Picnic Basket
5 Math Walk 10 9 8 7 6 5...	Find things that roll.	Find things as long as your shoelace. Find things as long as 2 shoelaces.	Find things that are soft.	Find things shaped like an orange, a box, a can, a sugar cube, an ice cream cone.
6 Story, Song or Verse	<u>One is a Snail</u>	The Grand Old Duke of York	<u>The Napping House</u>	<u>There Was an Old Lady</u>
7 Table Activity 10 9 8 7 6 5...	Paper Airplanes	Shoelaces and Skipping Ropes	Toothbrush Measuring	Nuts and Bolts
8 Estimating Jar Number line	See above			
Story	<u>Freight Train</u>	<u>Barnyard Dance</u>	<u>Goodnight Moon</u>	
Snack	Straight Pretzels Round Cheerios	Mozzarella strings	Bananas	Eat their Nuts and Bolts (from Activity 7)
Homebook	<ul style="list-style-type: none"> • Homebook • box of crayons 	<ul style="list-style-type: none"> • sidewalk chalk • shoelaces and skipping rope used in the session 	<ul style="list-style-type: none"> • package of sticky stars 	<ul style="list-style-type: none"> • package of microwave popcorn • Optional – fridge magnet for tally sheet

FAMILY MATH RULES!

Guidelines help us to teach.....Rules help us to learn and have fun!



Disruptive behaviour affects both individual and group learning. When necessary, please take some quiet time away from the group to remember our Family Math rules. If you and your child are ever asked to take a *Time Out* by the community or teacher leader, know that you are always welcome back as soon as everything has returned to normal.

We are here to have fun and work together!



Week Seven

“Travelling Me”

WEEK # 7

THEME: Travelling Me

ACTIVITIES		Key Words
Books	<i>Family gathering time with a variety of math / theme books...</i>	
Welcome	Family Math Rules (if needed)	
1. Estimating Jar Number line	Estimate the number of keys in the jar	guess estimate zone range reasonable over under
2. Story, song or verse	Wheels on the Bus	pattern
3. Table Activity 10 9 8 7 6 5...	<i>Modelling of activity by leader</i> Demonstrate how to cut and combine shapes	rectangle circle triangle square
	<i>tables</i> Building a 2-D bus	
4. Graph	How many keys?	more less same how many?
5. Math Walk 10 9 8 7 6 5...	<i>Sing: "Going on a Math Walk"</i> What Can You Find That Rolls?	roll cylinder sphere cone
6. Story, song or verse	<u>One is a Snail</u> (Sayre & Sayre)	numbers 1 – 10 counting by 10's to 100
7. Table Activity 10 9 8 7 6 5...	<i>Modelling of activity by leader</i> Demonstrate construction	triangle predict discover discuss chances (un)likely never always sometimes
	<i>tables</i> Paper Airplane	
8. Estimating Jar Number line	Count the keys using ten frames	zone range reasonable estimate ten frame
<p style="text-align: center;">Leaders / children (Story / snack)</p> <p>Read: <u>Freight Train</u> (Crews)</p> <p>Snack: straight pretzels round Cheerios</p>		<p style="text-align: center;">Teacher Leader / Community Leader / Parents (Where's the Math and Homebook)</p> <p>Review math concepts in activities. Extend to home. Homebag: - Homebook for Weeks 7 - 10</p>

WEEK #7

THEME: Travelling Me

	Curriculum Strands <i>Links to School</i>	Message to Parents <i>Links to Home</i>
Books Welcome	Mathematical language: Communicate effectively by listening and speaking	Help your child look for math in books. Have fun finding and talking about it.
1. Estimating Jar Number line	Number Sense and Numeration	Concentrate on reasonable guesses, not correct answers. Find the “zone” - an important lifelong skill.
2. Story, song or verse	Geometry Pattern	This adaptation of a traditional song makes connections between math and daily life.
3. Table Activity 10 9 8 7 6 5...	Geometry	Relationships are explored as children manipulate shapes. Opportunities to use geometric terms happen as children complete the task.
4. Graph	Data Management	This graph introduces the concept of “more than”. It provides for recoding numbers in 1-to-1 correspondence.
5. Math Walk 10 9 8 7 6 5...	Geometry	Geometric shapes are related to real world items.
6. Story, song or verse	Number Sense and Numeration	Math in this book is more than 1-to-1 correspondence. There is more than 1 way to find a correct answer.
7. Table Activity 10 9 8 7 6 5...	Probability Geometry	The format “Predict, Discover, Discuss” is used to help children use the language of probability (e.g. likely, sometimes, never, always)
8. Estimating Jar Number line	Number Sense and Numeration	Were you in the “zone”? The more you estimate the better you get! 10 frames reinforce place value.
Homebook	Number Sense and Numeration Patterning	Math is FUN! Look for math in your neighbourhood. Sing math. Talk math. Use concrete materials. Repetition develops understanding.

WEEK# 7

THEME: Travelling Me

Activities		Start Time	Duration	Team Member Responsible
Books	Family Math Rules			Teacher Leader/ Community Leader
Welcome				
1. Estimating Jar Number line	Keys	6:00	10 minutes	
2. Story, song or verse	Wheels on the Bus	6:10	5 minutes	<i>Eliminate for time constraints if need be</i>
3. Table Activity	Building a 2-D bus	6:15 6:20	Modelling • 5 minutes Tables •10 minutes	
10 9 8 7 6 5...				
4. Graph	How many keys?	6:30	10 minutes	
5. Math Walk	What Can You Find That Rolls?	6:40	5 minutes	
10 9 8 7 6 5...				
6. Story, song or verse	<u>One is a Snail</u> (Sayre & Sayre)	6:45	5 minutes	
7. Table Activity	Paper Airplane	6:50 6:55	Modelling •5 minutes Tables •15 minutes	
10 9 8 7 6 5...				
8. Estimating Jar Number line	Count the keys using ten frames	7:10	10 minutes	
Story / Snack (children)	<u>Freight Train</u> (Crews) straight pretzels round Cheerios	7:20	15 minutes	
Parent Talk Homebook		7:20	15 minutes	Teacher Leader/ Community leader
Planning		7:35		Discuss and delegate next week's responsibilities

WEEK# 7**Materials****THEME: Travelling Me**

Activities	Purchased	Gathered/ Made	Volunteer Responsible
Books Welcome	<ul style="list-style-type: none"> •name tags •poster of “Family Math Rules” 	<ul style="list-style-type: none"> •variety of math theme-related books 	
1. Estimating Jar	<ul style="list-style-type: none"> •estimating jar •post-it notes •stick tack 	<ul style="list-style-type: none"> •number line •between 12 – 18 old keys 	
2. Story, song or verse	<ul style="list-style-type: none"> • download copy of Family Math Music C.D. 	<ul style="list-style-type: none"> •C.D. player •chart of words (if desired) 	
3. Table Activity 1098765...	<ul style="list-style-type: none"> •yellow paper •scissors •markers •sturdy background paper •glue 	<ul style="list-style-type: none"> •copies of shape page 	
4. Graph	<ul style="list-style-type: none"> • collection of old keys • green painters tape • markers • handmade graph • sharp knife •stick tack 	<ul style="list-style-type: none"> •make “How many keys?” graph 	
5. Math Walk 1098765...	<ul style="list-style-type: none"> •pencils 	<ul style="list-style-type: none"> •copy of song •tally sheet 	
6. Story, song or verse	<u>One is a Snail</u> (Sayre & Sayre)		
7. Table Activity 1098765...	<ul style="list-style-type: none"> •paperclips 	<ul style="list-style-type: none"> •pre-creased 8 1/2 x 11 piece of paper •rope •tally sheet 	
8. Estimating Jar Number line	<ul style="list-style-type: none"> •estimating jar •transparent overlay 	<ul style="list-style-type: none"> •number line •10 frames 	
Story / Snack (children)	<u>Freight Train</u> (Crews) <ul style="list-style-type: none"> •straight pretzels •round Cheerios 		
Homebook Parent Talk	<ul style="list-style-type: none"> •estimating jars(1 per family) •homebag 	Homebags filled prior to Parent Talk <ul style="list-style-type: none"> •homebook 	

Facilitating the Activities

(a more detailed look at each activity)

Week # 7

Activity 1: The Estimating Jar

Materials:

- estimating jar (100 - 125 ml)
 - Collection of old keys (between 12 – 18)
 - number line (106 cm or 42 inches long - **3** legal sized pieces of paper joined horizontally)
- 0 1 2 3 4 5 6 7 8 9 1 0 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
- post-it notes (12.5 cm by 7.5 cm or 4 by 6 inches)
 - markers

Key Words

zone range

estimate guess

size

Instructions:

1. Leader holds up jar and asks families to think about how many keys there are in the estimating jar. Stress that we are not counting yet. We are estimating or making our best guess.
2. Families are given a post-it note. They place it above their range or zone of estimated answer. The post-it note will cover a range of approximately 3 numbers.
3. Remind families that they want to be “in the zone”, not have an exact answer.
4. Continue to stress that we are not counting. We are estimating.

Where’s the Math?

Estimating develops a sense of number. This skill is developed through practice and reflection. The more we estimate and the more we think about why we estimate, the better we become. This activity also develops risk-taking, problem solving and the idea that there is a range of possible answers when estimating. Finding a reasonable answer demonstrates an understanding of quantity.

Curriculum Expectations:

Kindergarten:

- NS1.6 • begin to use information to estimate the number in a small set
Mathematical Processes • Problem Solving and Communicating

Grade One:

- N(s) • estimate the number of objects in a set

Week # 7 Activity 2: Song – The Wheels on the Bus

Materials:

- Family Math Music C.D. (downloadable from the website:
<http://www.edu.uwo.ca/essofamilymath/resource.asp>)
- C.D. player
- chart of words (if desired)

Key Words
pattern

Instructions:

1. Families and leader together do the actions to the song from the C.D. and join in singing the song. The words are on the following page.

Where's the Math?

Through active participation, families and leaders reinforce the language of mathematics. This story/song has been re-written to include more mathematical concepts. This well known story/song can be used as a starting point for more discussion, and illustrates connections between mathematics and other aspects of their daily lives. The pattern of the song encourages prediction.

Curriculum Expectations:

Kindergarten:

“Reading books aloud and in shared reading contexts provides real links between literature and mathematical ideas, since some stories use mathematical terminology and/or contain illustrations of mathematical concepts. Reading can also give children a sense of how mathematics is connected with other aspects of life”.

The Full Day Early Learning Program - Mathematics p 93

Mathematical Processes • Communicating

Grade One:

Throughout Grade 1, students will:

“communicate mathematical thinking orally, visually, and in writing, using everyday language, a developing mathematical vocabulary, and a variety of representations.”
The Ontario Mathematics Curriculum p 32 Grade 1 Mathematical Process

The Wheels on the Bus

The wheels on the bus are round, round, round.
Round, round, round. - round, round, round.
The wheels on the bus are round, round, round.
All through the town.

The doors on the bus are big rectangles.
Big rectangles, big rectangles.
The doors on the bus are big rectangles
And they open and close all day.

From the bus you see a yellow triangle, yellow triangle, yellow triangle.
From the bus you see a yellow triangle.
The yield sign at the corner.

From the bus you see a red octagon.
A red octagon, a red octagon.
From the bus you see a red octagon.
The stop sign at the corner.

From the bus you see red-yellow-green, red-yellow-green
Red-yellow-green.
From the bus you see
Red-yellow-green.
Traffic lights are a pattern.

Kids on the bus go up and down, up and down, up and down.
Kids on the bus go up and down.
Can you repeat this pattern?

The people on the bus go in and out, in and out, in and out.
The people on the bus go in and out.
Guess how many took the bus today?

Tell Mom and Dad about your ride today.
Your ride today, your ride today.
Tell Mom and Dad about your ride today
Shapes and patterns along the way.

Week # 7 Activity 3: Building a 2-D Bus

Materials:

- one yellow 8 ½ sheet lined to make rectangles (as in diagram)
- one white sheet divided into three parts – (master copy is on the next page)
 - 4 squares
 - 6 triangles
 - 4 circles
- glue
- scissors
- markers
- one background sheet where the completed bus will be glued

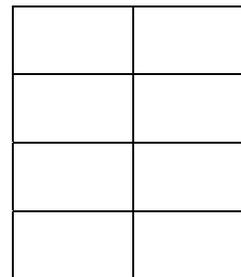


Table Talk: some sample questions

How many ... did you use? (rectangles, circles etc.)
What could you add?
Where might you put it? (over, beside, on top of)
Where is the smallest? largest? Why?

Key Words

circle square
rectangle
triangle
smaller bigger
corners sides
count combine

Instructions:

1. Leader demonstrates cutting the shapes from lined yellow and white papers. Shapes could be pre-cut for younger children.
2. Leader demonstrates how math talk is important by encouraging and modeling language such as rectangle, circle, square and triangle, more rectangles, fewer circles
3. Leader combines some rectangles and glues them on the background sheet to make a bigger rectangle – the body of the bus
4. Leader questions children about how other shapes may make this one big rectangle look more like a bus. e.g., “If you glue on some circles it will look like wheels” or “If you glue on squares it will look like windows.”
5. During building, leaders encourage “math talk”

10 9 8 7 6 5 4 3 2 1 STOP.
Hands on head.

Leader waits for full attention of group.

Where's the Math?

This activity provides children with experiences manipulating 2-D geometric shapes. It encourages children to compose larger shapes by combining two or more smaller shapes. It gives children the opportunity to use geometric language while thinking, reflecting and solving the given task. This activity encourages exploration of geometric concepts such as balance and symmetry. It also fosters mathematical communication in a social setting. It is a safe activity in that children of all developmental levels are able to participate in with confidence.

For more details about stages of understanding of geometry look at The Van Hiele Model of Geometric Thought: http://euler.slu.edu/teachmaterial/Van_Hiele_Model_of_Geometr.html.

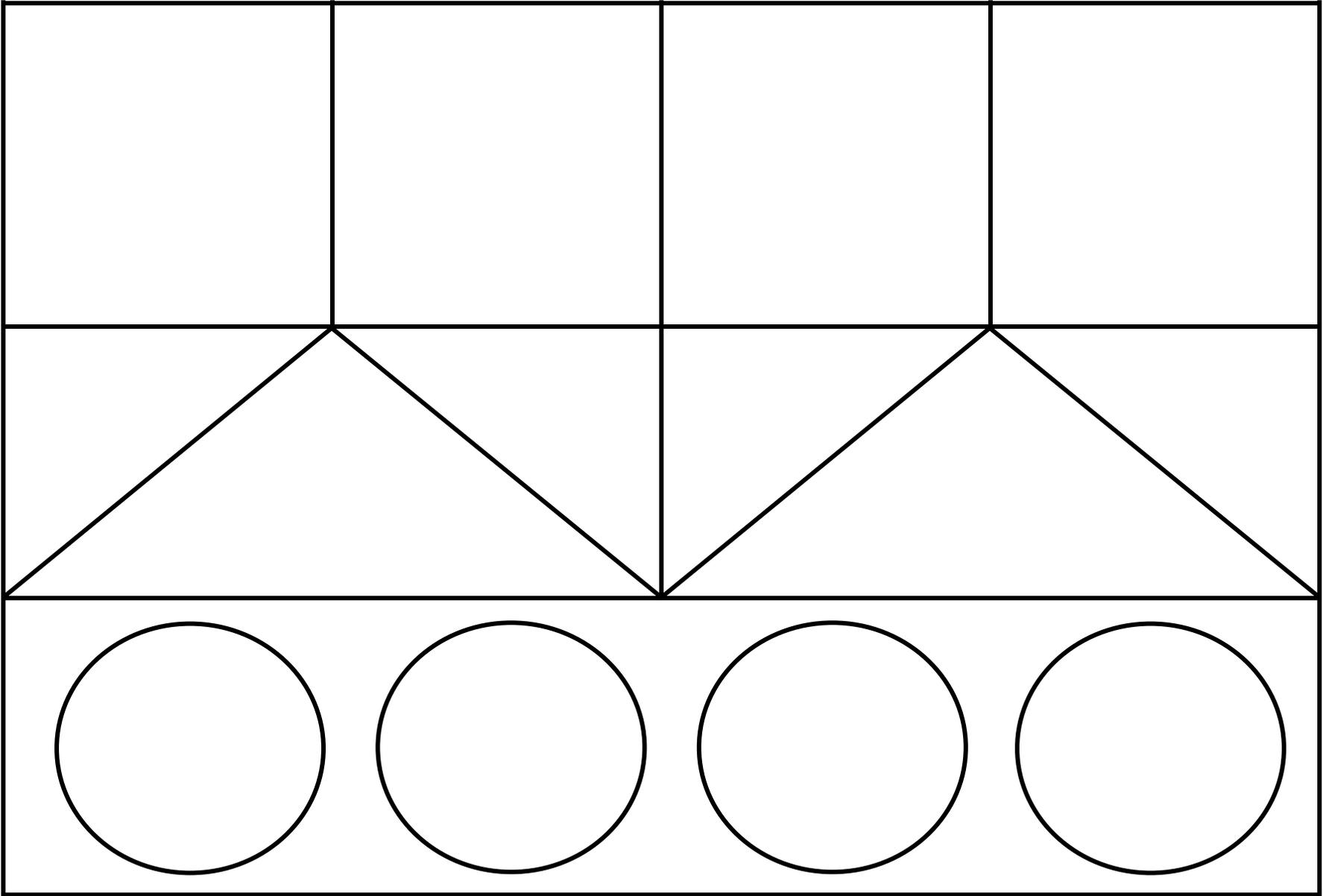
Curriculum Expectations:

Kindergarten:

- G3.3 • compose pictures, and build designs, shapes, and patterns, using two-dimensional shapes, and decompose two-dimensional shapes into smaller shapes, using various tools or strategies (*e.g., sand at the sand table, stickers, geoboards, pattern blocks, a computer program*)
- Mathematical Processes • Problem Solving, Reflecting

Grade One:

- G(s) • compose patterns, pictures, and designs, using common two-dimensional shapes



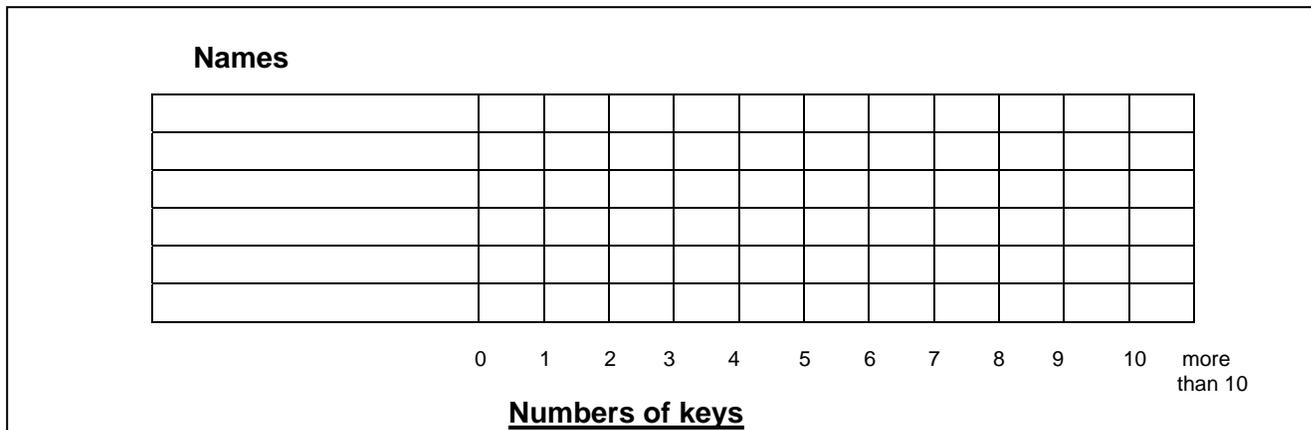
Week # 7 Activity 4: Graph – How many keys?

Materials:

- green painters tape
- markers
- stick tack
- handmade graph
- sharp knife

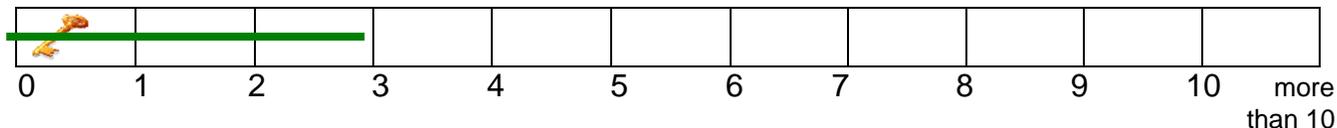
Key Words

more than same
less than equal
fewer



Instructions:

1. Leader puts '0 to more than 10' graph on wall and asks families to count how many keys are in Mom or Dad or Grandma's or other adults' pocket or purse? Leaders should participate as well if more data is needed.
2. In the interests of saving time, leaders may wish to consider a few strategies for getting the families' names on the graph. Families can print their name as they wish to be known on the graph as they arrive. Leaders could also print children's names on the left side of the graph in advance.
3. Leader notes that if any family has more than ten keys they can stop counting at 10. Point out the "More than 10" point on the graph.
4. Leader demonstrates for the group how to use the tape to show the number of keys by sticking it at the zero point on the graph and stretching it to the right until the number of keys is reached.
5. Leader must model using a key to show how the first key fills the space between zero and one so that counting begins at the number one, not the zero. Tape is stretched across to show that concept.



6. Be sure to count as the tape is unrolled. Leader uses an exacto-type knife to cut the tape precisely at the number. A sharp knife is more accurate than scissors when working with the tape.

7. Have one family member count the keys in their pocket or purse.
8. Beside their name, families will stretch the tape across the graph to the number that shows how many keys they have. A leader will use a sharp knife to cut the tape at the indicated place. *In the interest of saving time children could use wide coloured markers to draw the line indicating their catches instead of using tape.*
9. Families take turns showing how many keys are in their pocket by stretching the tape to the right.
 - Leader briefly discusses the data with questions and comments such as:
 - What do you notice about the graph? (more, less, the same)
 - How many people don't have keys in their pockets? How can we tell?
 - How many people have five keys on their key rings?
 - How many people have more than 10 keys on their key rings?

Where's the Math?

This activity demonstrates how a graph sorts and organizes information. It helps children gain conceptual understanding of number by investigating objects they find in their everyday environment. It also gives children the opportunity to use comparative language. By having all of the adults participate, the amount of information/data has increased. This graph reflects a movement towards a semi-abstract bar graph.

Curriculum Expectations:

Kindergarten:

- | | |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| DM5.3 | • respond to and pose questions about data collection and graphs |
| NS1.11 | • investigate and develop strategies for composing and decomposing quantities to 10 (<i>e.g., use manipulatives or "shake and spill" activities</i>) |
| Mathematical Processes | • Selecting Tools and Strategies, Connecting |

Grade One:

- | | |
|---------|--------------------------------------------------------------------------------------------------------------------|
| DM&P(s) | • read primary data presented in concrete graphs and pictographs, and describe the data using comparative language |
|---------|--------------------------------------------------------------------------------------------------------------------|

Week # 7 Activity 5:

Going on a Math Walk

Materials:

- copy of song (see page 14)
- tally sheet and pencil

Key Words

roll
cylinder sphere
cone

Instructions:

1. Leader sings “Going on a Math Walk” one line at a time. Families repeat.
2. Leader explains that families are going to hunt all around the room to find some things that move easily and quietly.
3. Tell the children they will not be looking for things that can be pushed or pulled. They will not be looking for things that are hard to move or make a lot of noise when they are moved.
4. Ask what they will look for.
5. Point to something in the room that rolls and explain that families will have only 1 minute to walk and find things that roll.
6. Give tally sheets and pencils to families and ask them to keep track of the number of things they find that roll using a lumberman’s tally.

10 9 8 7 6 5 4 3 2 1 STOP. Hands on head.

(Leader waits for full attention of the group)

Come back and tell us what you found.

7. Have a brief discussion of what the families found encouraging correct mathematical terminology and its real world alternative such as:

cylinders – cans, markers, ...

spheres – balls, apples ...

cones – ice cream cones

You may want to mention that cups (like paper coffee cups are properly called “truncated cones”. If their edges were extended far enough they would meet in a point forming a cone.

Truncated means cut off.

Where’s the Math?

“Most young children come to school already knowing a great deal about mathematics. Children bring with them an intuitive knowledge of mathematics, which they have developed through curiosity about their physical world”

The Kindergarten Program 2006 p 17

Math Talk about the attributes (or characteristics) of geometric figures will help children connect their prior knowledge of everyday objects with that object’s geometric properties. Spheres, cylinders and cones are the 3D figures that will roll.

Curriculum Expectations:

Kindergarten:

- G3.2 • identify and describe, using common geometric terms, two-dimensional shapes (*e.g., triangle*) and three-dimensional figures (*e.g., cone*) through investigation with concrete materials
- DM5.2 • collect objects and data and make representations of their observations, using concrete graphs
- Mathematical Strategies • Connecting

Grade One:

- G(s) • describe similarities and differences between an everyday object and a three-dimensional figure

Going on a Math Walk (Chant)

(Chanted as a group each week before the Math Walk to the tune "Going on a Bear Hunt")

Leader: **Going on a math walk.** (clap, clap with hands; pat, pat on knees)

Families: repeat

Leader: **Are you ready?** (clap, clap pat, pat)

Families: repeat

Leader: **What will we look for?** (clap, clap pat, pat)

Families: repeat

Leader: We're....."gonna" look for **numbers**. (hand over eyes like a visor)

Families: repeat

Leader: We're "gonna" do some **measuring**. (stretch hands out wide)

Families: repeat

Leader: We're "gonna" look for **shapes**. (hands make a circle, triangle etc.)

Families: repeat

Leader: And we're "gonna" look for **patterns**. (hand over eyes like a visor)

Families: repeat

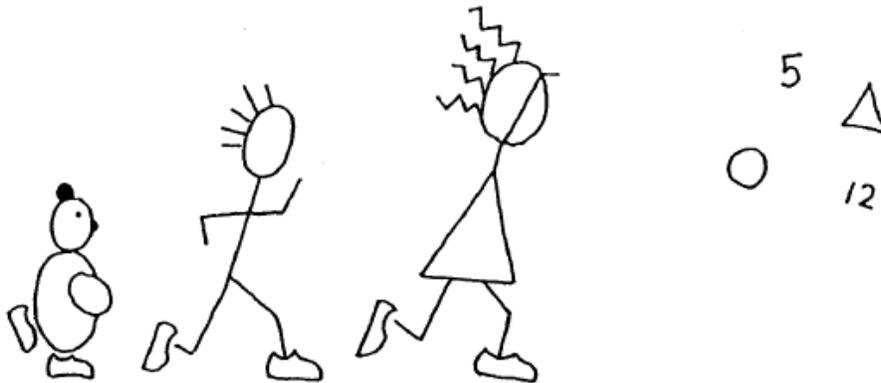
pat pat pat pat pat pat(alternating knees)

Leader: **Where do we go?** (hands out to the side in questioning gesture)

Families: repeat

Leader says:

"We know math is everywhere but tonight we will go _____ (location of the walk) and look for _____ (math strand)."



How many things roll?

Keep track like this

~~||||~~ ||

How many things roll?

Keep track like this

~~||||~~ ||

Week # 7 Activity 6: Story – One is a Snail, Ten is a Crab

Materials:

- One Is a Snail, Ten Is a Crab (Sayre & Sayre)

Key Words

numbers 1 – 10

counting by 10's
to 100

Instructions:

1. Leader talks about traveling to a favourite place.
2. Leader asks where some of the favourite places are that families like to travel. Some suggestions might be: Grandma's a park a beach
3. Leader reads the story about travelling to the beach.
4. Encourage prediction, e.g. "How many? How do you know? What might have 5 legs, 7 legs,"
5. As children count the legs be sure to stress the idea of "counting on" (a spider has 8 legs and one more makes 9 . Rather than counting 1, 2, 3, 4, 5, 6, 7, 8, .. and one more is 9)

Where's the Math?

This book, at first glance, is demonstrating one to one correspondence (counting the number of feet on each page). The book also shows the adding pattern of "one more" as each page has one more foot than the preceding one. It also demonstrates that there is more than one way to get to the correct answer. For example three feet can be represented by one person and one snail or by three snail's feet.

Curriculum Expectations:

Kindergarten:

- NS1.11 • investigate and develop strategies for composing and decomposing quantities to 10 (*e.g., use manipulatives or "shake and spill" activities*)

Mathematical Strategies • Problem solving. Communicating

Grade One:

- N(s) • compose and decompose numbers up to 20 in a variety of ways, using concrete materials

Week # 7

Activity 7: Paper Airplanes Predict, Discover, Discuss

Materials:

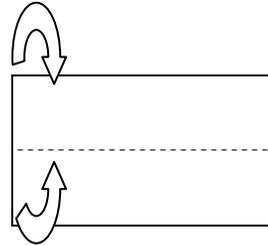
- Paperclips
- one piece of 8 1/2 x 11 inch piece of paper per family **pre-creased**
- rope
- copies of tally sheet

Key Words

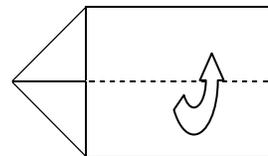
triangle	predict
discover	discuss
chances	(un)likely
never	always
sometimes	

Instructions for pre-creasing paper

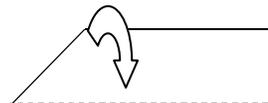
1. Fold the paper in half lengthwise to make 2 rectangles .



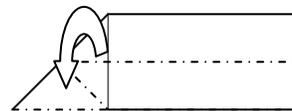
2. Unfold the paper. At one end, fold in each corner so that they meet at the centre line crease. Two (right-angled) triangles are formed.



3. Refold in half again along the middle crease. The triangles are hidden on the inside.



4. With the folded edge towards you, fold the top (open) edge toward you so that it meets the fold at the bottom.



5. Flip over and repeat on the other side



6. Open wings. Add a paper clip to the nose of the plane. It is ready to fly.

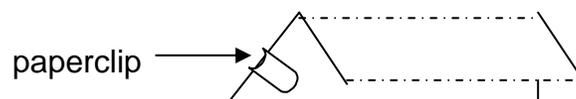


Table Talk: some sample questions

What is the chance of the plane landing 10 steps away? (good, poor, unlikely)

How many steps away do you predict the plane will land?

How often will the plane land? (never, sometimes, always)

What are the chances the plane will land ...? (likely, unlikely)

What did you discover?

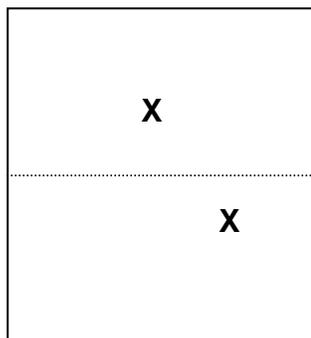
How close were you?

Why did the plane land closer? Further away?

Instructions for activity:

1. Leader demonstrates how to make paper airplanes.
2. Leader hands out pre-creased paper airplane sheets.
3. Families follow the leader's instructions and make their own paper airplanes. Giving each child a different colour of paper may make tracking airplanes easier.
4. After having previously marked a landing area for the planes with a rope that is away from people and potential hazards, the leader models **Predict, Discover, Discuss** by:
 - talking with the group to get them to predict whether the plane will land in front of or behind the rope while using terms such as "more than, less than/closer than, further than" etc.
 - pacing 5 steps and throwing the plane to land near that spot.
 - recording on the tally sheet where the plane landed

Tally Sheet
Blank page folded to indicate rope



X indicates plane landed beyond rope

X Indicates plane landed in front of rope

- discussing why the plane landed where it did (e.g., it was too heavy; I threw it too high/low; etc.)
5. Leader lines families up so that all are facing the rope. With instructions such as "Stop", "Ready for take off" and "Go" leader establishes a safe routine for throwing planes.
 6. Leader asks families to "predict, discover, discuss" for themselves.
 7. Families repeat the "predict, discover, discuss" process after changing landing distance, adjusting the folds of the airplane, or making another type of alteration that could change the prediction and result.

10 9 8 7 6 5 4 3 2 1

STOP. Hands on head.

Leader waits for full attention of group.

Where's the Math?

This is a rich mathematical activity because there are many strands involved (e.g., geometry, number sense and numeration, measurement). The focus is on probability as evidenced in the modelling. All three strands should be addressed through math talk at tables.

Prediction involves the same risk taking skill as already introduced in the estimating jar activities. "Predict, discover, discuss" is an important parenting skill as well as an excellent teaching strategy.

Please note this process is also covered thoroughly in Water Play (Week 3 - page 42) and Bug Count (Week 5 – page 64,65)

Curriculum Expectations:

Kindergarten:

- DM5.4 • use mathematical language in informal discussions to describe probability
- Mathematical Processes • Problem Solving, Selecting Tools and Strategies

Grade One:

- DM&P(s) • describe the likelihood that everyday events will occur, using mathematical language (i.e., impossible, unlikely)

Week # 7 Activity 8: The Estimating Jar (The count)

Materials:

- keys from the jar (between 10 - 20)
- number line
- transparent overlay
- 10 frames (see master on the next page)

Instructions:

1. Leader briefly reminds families of the guesses/estimations of the number of keys they made at the beginning of the evening.
2. Leader puts transparent overlay on the number line where most post-it notes are placed.
3. Leader places three 10 frames beneath the number line with the first one under the 0 – 9 range, the second under the 10 – 19 range and the third one under the 20 – 30 range.
4. One leader takes about half the keys out of the jar and places them in the 10 frames starting on the top left, filling the top row, returning to the bottom left and filling the bottom row (using a left to right progression).
5. The other leader pits to the corresponding numbers on the number line while the families count.



With this number of keys the leader will say, “How many keys are there?” How many more would we need to make 10? (Add keys to the 10 frame to fill it).

6. Leader then asks families if they wish to move the transparent overlay and responds to the general consensus of the group by moving the overlay as directed. This strategy will reinforce the idea of refining estimations.
7. Leader takes the rest of the keys out of the jar and places them to fill the first 10 frame and then moves on to the next 10 frame. The other leader continues to count the corresponding numbers on the number line.



With this number of keys the leader says, “We have one 10 frame filled. How many is that? How many are in the next frame? How many keys are there altogether?”

8. Leader discusses the guesses with questions such as:
 - The keys are all about the same size. Does that make it easier or harder to estimate?
 - Why did we keep the zone the same? **or** Why did we make a change?
9. Remind families that when you get larger numbers it is harder to "find the zone".
10. Encourage families to keep challenging themselves in estimating.

Where's the Math?

Children will see the grouping of ten as an anchor or "friendly" number which is a basic understanding of place value and our base ten system. Children will see the grouping of ten in the 10 frame as well as on the number line. Reminding children of their 10 fingers and 10 toes will make further links to this key number in place value.

Counting will occur. Celebrate everyone's participation. Reinforce that the more you try to estimate and talk about the strategies you use the better estimator you will become. The key strategy emphasized in this activity is "chunking" - taking a known part to estimate the whole.

Curriculum Expectations:

Kindergarten:

- NS1.3 • begin to make use of one-to-one correspondence in counting objects and matching groups of objects (*e.g., one napkin for each of the people at the table*)
- DM5.2 • collect objects and data and make representations of their observations, using concrete graphs
- Mathematical Processes • Problem Solving and Communicating

Grade One:

- N(s) • demonstrate, using concrete materials, the concept of one-to-one correspondence between number and objects when counting
- estimate the number of objects in a set, and check by counting
- relate numbers to the anchors of 5 and 10

Week # 7

Conclusion: Parent Talk

Materials:

- Where's the Math chart
- math bag
- homebook
- box of crayons

Instructions:

Teacher leader and community leader direct this part of the session.

1. Using the Where's the Math Chart, discuss where the math was tonight. (See Week 7 page 2.)
2. Discuss with parents how to repeat and extend the session's activities at home. (Continue to use the Paper airplanes. Listen to music from the C.D. Notice and discuss buses while going on a walk.) The homebook activities give ample opportunities to extend the activities about estimation and 10 frames plus several other activities. Estimating develops a sense of number. This skill is developed through practice and reflection.
3. Discussion and question time.

Where's the Math:

Tonight's theme focused on travelling with the math activities incorporating various aspects of that theme. These activities reinforced the idea that 'Math is everywhere'.

Encourage parents to:

- Look for math in their neighbourhood.
- Sing math.
- Talk math.
- Use concrete materials.

Note that repetition develops understanding.

Refer back to "Message to Parents" and "Curriculum Strands" on Week 7 – page 2.

See the "Where's the Math" section of each activity.

**Children will enjoy a quiet book and a snack with leaders to complete their evening while parents participate in this session*.*

Week Eight

“Active Me”

WEEK # 8

THEME: Active Me

ACTIVITIES		Key Words
Books	<i>Family gathering time with a variety of math / theme books...</i>	
Welcome		
1. Estimating Jar Number line	Estimate the number of shoelaces in the jar	guess estimate zone range reasonable over under long, straight
2. Story, song or verse	<u>Tacky the Penguin</u> (Lester)	counting order
3. Table Activity	<i>Modelling of activity by leader</i> Demonstrate how to draw a pattern and follow steps at stations	pattern shape measure
10 9 8 7 6 5...	<i>tables</i> Sock Beanbags	
4. Graph	Catching a Beanbag	predict probably more less same
5. Math Walk	<i>Sing: "Going on a Math Walk"</i> How many things can you find that are the same length as your shoelace? Same as 2 shoelaces?	long longer <i>short shorter</i> twice estimate guess length
10 9 8 7 6 5...		
6. Story, song or verse	The Grand Old Duke of York	up down left right
7. Table Activity	<i>Modelling of activity by leader</i> Demonstrate making "closed" shape with specified number of sides	shape corners three-sided four-sided circle
10 9 8 7 6 5...	<i>tables</i> Shoelaces and Skipping Ropes	
8. Estimating Jar Number line	Count the shoelaces using ten frames	zone range reasonable estimate ten frame

Leaders / children (Story / snack) Read: <u>Barnyard Dance</u> (Boynton) Snack: Mozzarella strings	Teacher Leader / Community Leader / Parents (Where's the Math and Homebook) Review math concepts in activities. Extend to home. Homebag: - outdoor chalk
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WEEK #8**THEME: Active Me**

	Curriculum Strands <i>Links to School</i>	Message to Parents Links to Home
Books Welcome	Mathematical language: Communicate effectively by listening and speaking	Help your child look for math in books. Have fun finding and talking about it.
1. Estimating Jar Number line	Number Sense and Numeration	Concentrate on reasonable guesses, not correct answers. Remember to use prior knowledge .
2. Story, song or verse	Patterning and Algebra Number Sense and Numeration	Patterns of counting and repetition can be found in this amusing tale with a lesson about the value of thinking differently.
3. Table Activity 10 9 8 7 6 5...	Patterning and Algebra	A pattern is created; contents are measured and counted; instructions are followed; ordinal numbers are used in creating a beanbag. Rich math!
4. Graph	Data Management Number Sense and Numeration	The procedure followed with this graph includes prediction before gathering the actual data.
5. Math Walk 10 9 8 7 6 5...	Measurement	Estimating and comparing are stressed in this walk.
6. Story, song or verse	Geometry Communication	This rewritten song links daily activities and other aspects of their daily lives with spatial relationships and math language.
7. Table Activity 10 9 8 7 6 5...	Geometry	Children explore the attributes (number of sides, corners) of shapes and use language to describe and compare them.
8. Estimating Jar Number line	Number Sense and Numeration	Were you in the “zone”? The more you estimate the better you get! 10 frames reinforce place value.
Homebook	Number Sense and Numeration Measurement Geometry Probability	Math is FUN! Look for math in your games. Measure with a variety of items. Remember to “Predict, Discover, Discuss.” Use concrete materials. Repetition develops mastery.

WEEK# 8

THEME: Active Me

Activities		Start Time	Duration	Team Member Responsible
Books				Teacher Leader/ Community Leader
Welcome				
1. Estimating Jar Number line	Shoelaces	6:00	5 minutes	
2. Story, song or verse	<u>Tacky the Penguin</u> (Lester)	6:05	10 minutes	
3. Table Activity 10 9 8 7 6 5...	Sock Beanbags	6:15 6:20	Modelling • 5 minutes Tables •15 minutes	
4. Graph	Catching a Beanbag	6:35	10 minutes	
5. Math Walk 10 9 8 7 6 5...	How many things can you find that are the same length as your shoelace? Same as 2 shoelaces?	6:45	5 minutes	
6. Story, song or verse	The Grand Old Duke of York	6:50	5 minutes	Eliminate for time constraints if need be
7. Table Activity 10 9 8 7 6 5...	Shoelaces and Skipping Ropes	6:55 7:00	Modelling •5 minutes Tables •10 minutes	
8. Estimating Jar Number line	Shoelaces	7:10	10 minutes	
Story / Snack (children)	<u>Barnyard Dance</u> (Boynton) Snack – Mozzarella strings	7:20	15 minutes	
Parent Talk Homebook		7:20	15 minutes	Teacher Leader/ Community leader Tell Families to come dressed for bed
Planning		7:35		Discuss and delegate next week's responsibilities Next week all come dressed for bed

WEEK# 8

Materials

THEME: Active Me

Activities	Purchased	Gathered/ Made	Volunteer Responsible
Books Welcome	•name tags	•variety of math theme-related books	
1. Estimating Jar	•estimating jar •post-it notes •stick tack •shoelaces (more than 10)	•number line	
2. Story, song or verse	<u>Tacky the Penguin</u> (Lester) <i>Version with CD recommended</i>	• CD player	
3. Table Activity 10 9 8 7 6 5...	• child size tube socks • dried peas or beans • fabric markers •snack size Ziploc bags	• small non-standard measure •sign with numeral “3” and diagram of 3 measures •chart paper with tube shapes outlined	
4. Graph	• beanbag from Activity 3 • green & blue painters tape • markers • sharp knife •stick tack	• make 2handmade graph: <u>How Many Times Can You Throw and Catch Your Beanbag</u>	
5. Math Walk 10 9 8 7 6 5...	•shoelaces •pencils	•copy of song •tally sheet	
6. Story, song or verse		•chart of verse (optional)	
7. Table Activity 10 9 8 7 6 5...	•shoelaces (same as for Math walk) •skipping ropes •stick tack	•chart of “Closed Shapes”	
8. Estimating Jar Number line	•estimating jar •transparent overlay	•number line •10 frames	
Story / Snack (children)	<u>Barnyard Dance</u> (Boynton) mozzarella strings		
Homebook Parent Talk	•sidewalk chalk •shoelace (same as for Math walk) •skipping rope	Homebags filled prior to Parent Talk	

Facilitating the Activities

(a more detailed look at each activity)

Week # 8 Activity 1: The Estimating Jar

Materials:

- estimating jar (100 - 125 ml)
- shoelaces (more than 10 but less than 20)
- number line
- post-it notes
- markers

Key Words

zone range
estimate guess
size small
thinner, thicker,
longer, shorter

Note: Loosely tying the shoelaces will make it easier to count them out in Activity 8 – The Count.

Instructions:

1. Leader holds up jar and asks families to estimate how many shoelaces are in the jar.
2. Show families the 'gummy worm' estimating jar from Week 5. Take out gummy worms and remind families how they fit into a jar. Remind them of the range of gummy worms there were in the jar. (Not the exact number)
3. Discuss the similarities between the gummy worms and shoelaces (e.g., both can be squished into the jar; gummy worms are thicker but shoelaces are longer).
4. Families are given a post-it note. They place it above their range or zone of estimated answer. The post-it note will cover a range of approximately 3 numbers.
5. Remind families that they want to be “in the zone”, not have an exact answer.
6. Continue to stress that we are not counting. We are estimating.

Where's the Math?

Estimating develops a sense of number. This skill is developed through practice and reflection. The more we estimate and the more we think about why we estimate, the better we become. This activity also develops risk-taking, problem solving and the idea that there is a range of possible answers when estimating. One of the strategies used in this activity is reflecting upon and using 'prior knowledge' Finding a reasonable answer demonstrates an understanding of quantity.

Curriculum Expectations:

Kindergarten:

- NS1.6 • begin to use information to estimate the number in a small set
Mathematical Processes • Problem Solving and Communicating

Grade One:

- N(s) • estimate the number of objects in a set

Week # 8 Activity 2: Story – Tacky the Penguin

Materials:

- Tacky the Penguin (Lester)
- number line
- *C.D. that comes with the book should be used if possible*
- *C.D. player*

Key Words

counting
order

Instructions:

1. One leader reads the story.
2. Another leader marches to the chant 1, 2, 3, 4 etc.
3. This same leader marches in a confused way when Tacky counts and marches
1, 2, 3,
4, 2
3, 6, 0
2 ½
0
4. Leader may ask –
 - “If Tacky were marching in a normal counting pattern, – how should his march and count continue after 4?” (Note some may say “5” for counting on and others may say “1” for repeating pattern.)
5. Have the number line available so children can refer to it while listening and while trying to follow Tacky’s count.

Where’s the Math?

This book has examples of pattern (counting) and repetition (the activities that are repeated for the hunters). Both of these concepts are essential to mathematical thinking. The counting practice and recognition of Tacky’s mistakes can also suggest that sometimes **its good to think in different ways**. This is an important message for parents and children alike to recognize.

Note: A pattern is a sequence that is repeated so that future items in the sequence can be predicted

Curriculum Expectations:

Kindergarten:

- NS1.4 • demonstrate understanding of the counting concepts of stable order (*i.e., the concept that the counting sequence is always the same – 1 is followed by 2, 2 by 3, and so on*) and of order irrelevance (*i.e., the concept that the number of object in a set will be the same regardless of which object is used to begin the counting*)

Mathematical Processes • Reflecting and Communicating

Grade One:

- N(s) • count forward by 1’s, 2’s, 5’s, and 10’s to 100, using a variety of tools and strategies demonstrate an understanding of the use of non-standard units of the same size
- count backwards by 1’s from 20 and any number less than 20 (e.g., count backwards from 18 to 11), with and without the use of concrete materials and number lines

Week # 8 Activity 3: Sock Beanbags

Materials:

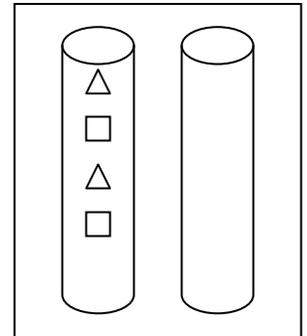
- child size tube socks • fabric markers
- bean station
 - dried peas or beans in a large container
 - small non-standard measure
 - sign with numeral and diagram of number of measures *
 - snack size Ziploc bags
- chart paper with tube shapes outlined

Key Words

pattern shape
measure

Table Talk: some sample questions

Tell me about your pattern.
What will come next?
What will come after that?



Instructions:

1. Leader begins a pattern. Use a sock as a sample. If families are having trouble, use the chart paper. i.e., triangle –square – triangle- square – triangle and asks the group what would come next. If needed, demonstrate a different pattern. Have the group devise a pattern. Continue until everyone seems clear about how to create a pattern using geometric shapes. Don't forget to model the use of circles and rectangles as well.)
 2. Leader shows them a sock beanbag with a geometric pattern on it.
 3. Leader demonstrates the steps to create their own beanbag.
 - **First** - Use the markers to create patterns on each side of the sock.
 - **Second** - Go to the “bean station” to measure scoops into a Ziploc bag.
- * **Note that the number of scoops required will depend on the size of the scoop. Leaders will need to check in advance so instructions can be exact.**
- **Third** - Seal the bag and put it in the sock.
 - **Fourth** - Knot the top of the sock.
- Stress the use of ordinals – first , second, third, etc.
4. Families go to the tables to make the beanbags.
 5. Beanbags will be used to gather data for Activity 4 – The Graph.

10 9 8 7 6 5 4 3 2 1 STOP.

Hands on head. Leader waits for full attention.

Where's the Math?

The concept of a repeating pattern is introduced. A repeating pattern starts with a *core* or *stem* (in the example - triangle - square) that is repeated so that further repetitions can be predicted (triangle - square -triangle - square - triangle - square). The names of some geometric shapes are reinforced from previous weeks. Children are measuring and counting with non-standard units when filling the beanbag. Ordinal numbers are used when giving the instructions.

Curriculum Expectations:

Kindergarten:

- P4.1 • identify, create, reproduce, and extend repeating patterns through investigation, using a variety of materials (*e.g., attribute blocks, pattern blocks, a hundreds chart, toys, bottle tops, buttons, toothpicks*) and actions (*e.g., physical actions such as clapping, jumping*)
- Mathematical Processes • Problem solving and Communicating

Grade One:

- P&A(s) • identify, describe, and extend, through investigation, geometric repeating patterns involving one attribute

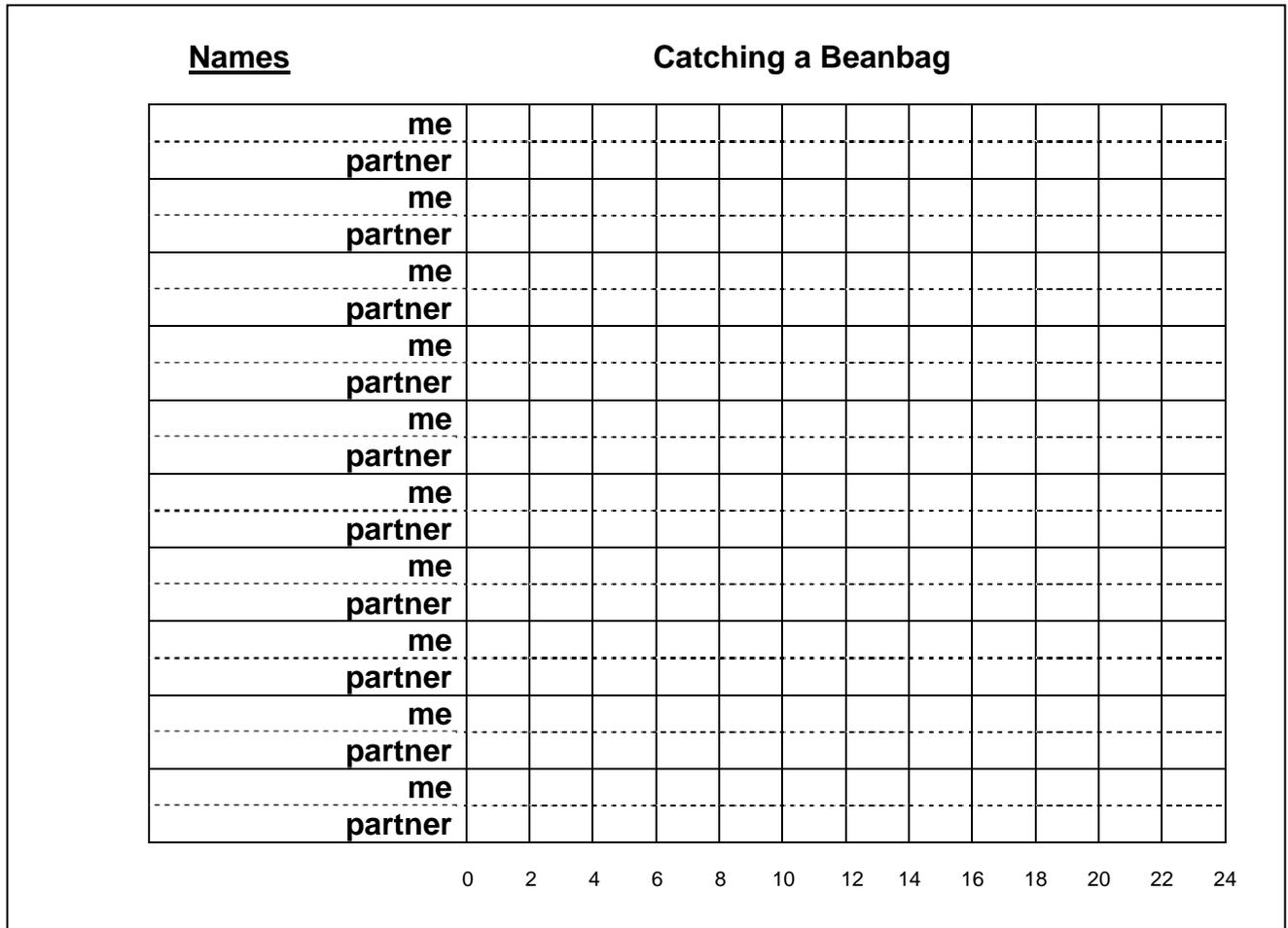
Week # 8 Activity 4: Graph – Catching a Beanbag

Materials:

- green painters tape
- blue painters tape
- markers
- stick tack
- sharp knife
- hand made graph

Key Words

predict
probably more
less same



Instructions:

1. Leader introduces activity by asking which is easier – throwing and catching by yourself or with a partner?
2. Leader shows the graph and tells the children that they will be asked to toss the bean bag in the air and catch it for a specified length of time (30 seconds). Parents will count how many times the child catches the beanbag without dropping it.
3. Leaders may wish to print children’s names on the left side of the graph or ask families to do so in advance to save time.

4. Leader demonstrates for the group how to use the tape to show the number of catches by sticking it at the zero point on the graph and stretching it to the right unit the number of catches is reached. Leader uses an exacto-type knife to cut the tape precisely at the number. The knife is more precise than scissors when working with the tape. Leader should stop at an even number so that families can discover their own solution for odd numbers. (See #6)
5. Demonstrate how to use the numbers on the bottom of the graph saying the even numbers loudly and odd numbers quietly. Repeat reading the numbers on the bottom of the graph eventually substituting the odd numbers with a 'sh'.
6. Beside their name (using the line “me”), children will stretch the green tape across the graph to the number that shows how many times they threw and caught the beanbag. A leader will use a sharp knife to cut the tape at the indicated place. *In the interest of saving time children could use wide coloured markers to draw the line indicating their catches instead of using tape.*
7. Allow for some discussion and individual choice in how children will show they have caught the beanbag an odd number of times (e.g., end the tape part way between numbers; round the number up or down, etc.)
8. Leader then asks the children to predict what will happen when they throw and catch with a partner for the same amount of time. Discussion of why they think that way should be encouraged.
9. The activity is repeated throwing between two people for 30 seconds. Both partners' catches are counted and the new data is put on the graph beside the word “partner” using the blue tape.
10. Leader asks questions for comparison such as:
 - What differences do you notice between the two parts of the graph?
 - Why do you think there are such differences?
 - Which kind of throwing and catching is easier? Why? How do you know?

Where’s the Math?

This week’s graph is set up to highlight *even numbers* and to provide a problem solving situation about how to record catches that result in an *odd number*. Having two different throwing opportunities, allows for new data to be recorded and compared. Families are encouraged to predict and interpret as the new data is added to the graph.

Curriculum Expectations:

Kindergarten:

- | | |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| DM5.3 | • respond to and pose questions about data collection and graphs |
| NS1.11 | • investigate and develop strategies for composing and decomposing quantities to 10 (e.g., use manipulatives or “shake and spill” activities) |
| Mathematical Processes | • Selecting Tools and Strategies, Connecting |

Grade One:

- | | |
|---------|--------------------------------------------------------------------------------------------------------------------|
| DM&P(s) | • read primary data presented in concrete graphs and pictographs, and describe the data using comparative language |
|---------|--------------------------------------------------------------------------------------------------------------------|

Week # 8 Activity 5: Going on a Math Walk

Materials:

- copy of song (see Week 7 page 14)
- one shoelace per person
- tally sheet and pencil (Don't cut the 2 sections of the tally sheet apart for this Math Walk.)

Key Words

long	longer
short	shorter
twice	estimate
length	tally

Instructions:

1. Leader sings "Going on a Math Walk" one line at a time. Families repeat.
2. Leader explains that even though we usually have two shoelaces, we are only going to measure with one shoelace right now.
3. Leader explains that families are going to hunt all around the room to find things that are about the same length as their shoelace.
4. Give tally sheets to families and ask them to keep track of the number of things they find that are the same length as their shoelace using a lumberman's tally.
5. Leader asks that families first guess or predict, then use the shoelace to measure. Remind families to remember the names of the object they tally so they can report back to the group.

10 9 8 7 6 5 4 3 2 1 STOP. Hands on head.

(Leader waits for full attention of the group)

Come back and tell us what you found.

6. Leader then asks the families to tie two shoelaces (the parent's and the child's) together so that they can find things that are about two shoelaces long. Note that the amount of lace used to fasten the shoelaces together could make each family's combined shoelaces different lengths. Be prepared to discuss this. Leader asks that families first guess, then use the shoelaces to measure. Tally sheets are used.

10 9 8 7 6 5 4 3 2 1 STOP. Hands on head.

(Leader waits for full attention of the group)

Come back and tell us what you found.

7. Have a brief discussion of what the families found. If time permits leaders may want to ask families to compare the tallies of one shoelace and two shoelaces.

Where's the Math?

Measurement begins by comparing 2 objects (e.g. the shoelace and the length of my leg) and developing the math language of longer, shorter and size. Estimation promotes a personal anchor or understanding of size. These skills are developed through practice and reflection.

“It is important that children be provided with a wide range of materials so that they can develop a beginning understanding of measurement. 'Concrete experience in solving measurement problems gives students the foundation necessary for using measurement tools and applying their understanding of measurement relationships. Estimation activities help students to gain an awareness of the size of different units and to become familiar with the process of measuring,”

The Ontario Curriculum Gr. 1-8 Mathematics, Strands in the Mathematics Curriculum, p.9

Curriculum Expectations:

Kindergarten:

- M2.2 • demonstrate, through investigation, an awareness of non-standard measuring devices (*e.g., feet, hand spans, string, or cubes to measure length; hand claps to measure time; scoops of water or sand to measure capacity*) and standard measuring devices (*e.g., measuring cups at the water and sand centre, balance scales at the block centre*) and strategies for using them (*e.g., place common objects end to end to measure the length of the classroom; use cubes to plan the length of a road at the sand table or the block centre; use footsteps to measure the distance between the door and the sink*)

Mathematical Processes • Problem Solving, Selecting Tools and Strategies, Communicating

Grade One:

- M(s) • demonstrate an understanding of the use of non-standard units of the same size
• compare and order objects by their linear measurements, using the same non-standard unit

How many things are same length as your shoelace?

Keep track like this

~~||||~~ ||

How many things are 2 shoelaces long?

Keep track like this

~~||||~~ ||

Week # 8 Activity 6: Verse – The Grand Old Duke of York

Materials:

- Copy of verse for leader
- Chart of verse (optional)

Key Words

up	down
left	right

The Grand Old Duke of York

The Grand Old Duke of York,
He had ten thousand men.
He marched them up to the top of the hill
And he marched them down again.

March to the chant
Hands palm out , fingers up
Move hands up
Move hands down

And when they were up, they were up.
And when they were down, they were down.
And when they were only half way up,
They were neither up nor down.

Hold hands high
Hold hands low
Hold hands waist high

So he marched them to the left
And he marched them to the right.
And he marched them round
and round the town,
And he marched them out of sight.

Move hands to the left
Move hands to the right
March in small circle

Put hands behind back

Instructions:

1. Instructor asks children if they know how to march. Demonstrate, and then introduce rhyme and actions.
2. Repeat to reinforce the words and rhythm.

Where's the Math?

Through active participation, families and leaders reinforce the language of mathematics. This story/song has been re-written to include more mathematical concepts. This well known story/song can be used as a starting point for more discussion, and illustrates connections between mathematics and other aspects of their daily lives.

“A strong sense of spatial relationships and competence in using the concepts and language of geometry also support students’ understanding of number and measurement”

The Ontario Curriculum Gr. 1-8 Mathematics, Strands in the Mathematics Curriculum, p.9

Curriculum Expectations:

Kindergarten:

- G3.6 • demonstrate an understanding of basic spatial relationships and movements (*e.g., use above/below, near/far, in/out; use these words while retelling a story*)

Mathematical Processes • Communicating

Grade One:

- COMM • communicate mathematical thinking orally, visually, and in writing, using everyday language, a developing mathematical vocabulary, and a variety of representations

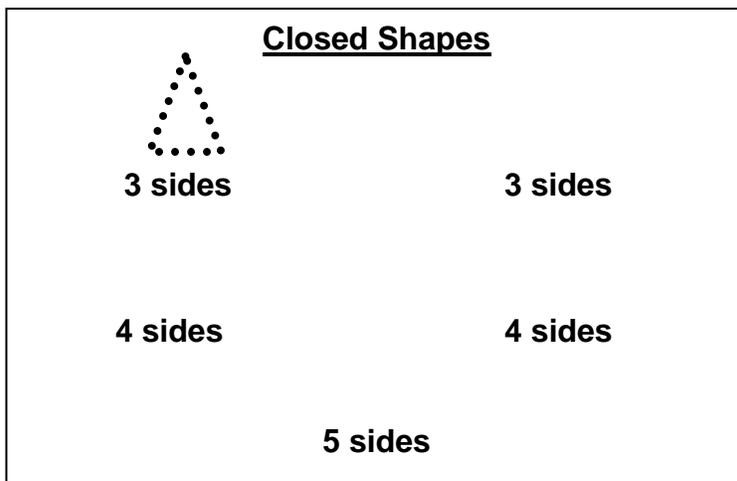
- G(s) • describe the relative locations of objects or people using positional language

Materials:

- one shoelace for every participant (adult and child use the laces they received for Activity 5 – Math Walk)
- one skipping rope for each family
- chart of “Closed Shapes”
- stick tack

Key Words

shape corners
 three-sided
 four-sided
 circle



Leader demonstrates and attaches shoelace shape on chart

Table Talk: some sample questions

- How many corners are on your 3-sided shape?
 How many corners are on your 4-sided shape?
 How many corners are on your 5-sided shape?
 Could you make a shape with 0 corners?

Instructions:

1. Families will already have a shoelace from Activity 5 – Math Walk. Leader asks them to hold onto their shoelaces and watch as the activity is modelled.
2. Leader demonstrates how to make a “closed shape” by pretending that the ends of the shoelace are sealed together.
3. Leader makes a shape with three sides and has families describe it. Leader attaches it to chart with stick tack.
4. Leader then makes a different three-sided shape and places it on chart. Families are asked to tell how it is the same and different from the first one
5. Leader makes sure participants understand the ideas of “closed” shape and number of sides.

6. Leader asks families to untie their shoelaces (if still joined from Math Walk) and explains that the adult and the child are going to make shapes that are similar to each other.
7. The adult and child will try to make a three sided shape, – talking their way through the construction. Then the adult and child will make a four-sided shape. They will continue making shapes 3 and 4 sided until the leader says 10 9 8stop.
8. Then the leader will ask the two to join their shoelaces (pretending the ends are sealed) and make a five-sided shape.
9. The last part of this activity will be to give each adult and child a skipping rope. Leader asks them to tie the skipping rope ends together. Depending on the size of the skipping rope two or more families may work together.
10. Then, in mid air, the leader challenges the families to make a three-sided shape, a four sided shape and a five-sided shape.
11. The last task will be to try to make a shape with zero corners (circle) in mid air.

10 9 8 7 6 5 4 3 2 1

STOP. Hands on head.

Leader waits for full attention of group.

Where's the Math?

In this activity children are exploring the attributes (number of sides, corners) of two-dimensional shapes and using language to describe and compare them.

Curriculum Expectations:

Kindergarten:

- G3.2 • identify and describe, using common geometric terms, two-dimensional shapes (*e.g., triangle*) and three-dimensional figures (*e.g., cone*) through investigation with concrete materials

Mathematical Processes

- Representing and Communicating

Grade One:

- G(s) • identify and describe common two-dimensional shapes (*e.g., circles, triangles, rectangles, squares*) and sort and classify them by their attributes (*e.g., colour; size; texture; number of sides*), using concrete materials and pictorial representations

Week # 8 Activity 8: The Estimating Jar (The count)

Materials:

- shoelaces from the jar (more than 10 but less than 20)
- number line
- transparent overlay
- 10 frames (see master Week 7 pages 21 and 22)

Note: Loosely tying the shoelaces will make it easier to count them out in Activity 8 – The Count.

Instructions:

1. Leader briefly reminds families of the guesses/estimations of the number of shoelaces they made at the beginning of the evening.
2. Leader puts transparent overlay on the number line where most post-it notes are placed.
3. Leader places three 10 frames beneath the number line with the first one under the 0 – 9 range, the second under the 10 – 19 range and the third one under the 20 – 30 range.
4. Leader takes about half the shoelaces out of the jar and places them in the 10 frames starting on the top left, filling the top row, returning to the bottom left and filling the bottom row (using a left to right progression).
5. The other leader points to the corresponding numbers on the number line while the families count.

👢	👢	👢	👢	👢
👢				

*With this number of shoelaces the leader says, “How many shoelaces are there?”
How many more would we need to make 10? (Add shoelaces to the 10 frame to fill it).*

6. Leader says “Show me this number on the number line.”
7. Leader then asks families if they wish to move the transparent overlay and responds to the general consensus of the group by moving the overlay as directed. This strategy will reinforce the idea of refining estimations.
8. Leader takes the rest of the shoelaces out of the jar and places them to fill the first 10 frame and then moves on to the next 10 frame. The other leader continues to count the corresponding numbers on the number line.

👢	👢	👢	👢	👢
👢	👢	👢	👢	👢

👢	👢			

*With this number of shoelaces the leader will say, “We have one 10 frame filled.
How many is that? How many are in the next frame? How many shoelaces are there altogether?”*

9. Leader discusses the guesses with questions such as:
 - Were shoelaces more difficult to estimate than keys? Why?
 - Why did we keep the zone the same? **or** Why did we make a change?
10. Remind families that when you get larger numbers it is harder to "find the zone".
11. Leave families with a challenge to think about –
 - How far would the shoelaces reach if they were placed end to end?

Where's the Math?

Children will see the grouping of ten as an anchor or "friendly" number which is a basic understanding of place value and our base ten system. Children will see the grouping of ten in the 10 frame as well as on the number line.

Counting will occur. Celebrate discussion. Remind families that through discussion, understanding of concepts can improve and grow. Reinforce that the more you try to estimate and talk about the strategies you use the better estimator you will become.

Remind families that using prior knowledge and talking about that prior knowledge is a worthwhile strategy in all mathematics activities.

Curriculum Expectations:

Kindergarten:

NS1.6 •begin to use information to estimate the number in a small set

Mathematical Processes • Problem Solving and Communicating

Grade One:

- N(s)
- demonstrate, using concrete materials, the concept of one-to-one correspondence between number and objects when counting
 - estimate the number of objects in a set, and check by counting
 - relate numbers to the anchors of 5 and 10



Week # 8

Conclusion: Parent Talk

Materials:

- Where's the Math Chart
- math bag
- homebook
- their personally designed beanbags
- sidewalk chalk
- shoelace
- skipping rope

Instructions:

Teacher leader and community leader direct this part of the session.

1. Using the Where's the Math Chart, discuss where the math was tonight. (See Week 8 - page 27.)
2. Discuss with parents how to repeat and extend the session's activities at home by playing more with their beanbag and skipping ropes.
3. Discuss homebook pages. Notice the new games mentioned: Hopscotch and Skipping rope game. This week's homebook page gives more suggestions for extending practice with estimation and 10 frames.

'To become confident and successful estimators, children need numerous opportunities to practice estimation and to learn from their experiences.'

'Are You in the Zone?' Teaching Children Mathematics. Volume 11, Number 9 May 2005 National Council of Teachers of Mathematics.

4. Discussion and question time.

Where's the Math:

Tonight's theme focused on active play with the math activities incorporating various aspects of that theme. It is important for parents to understand that "Math is everywhere" in not only what they see but what they do..

Refer back to "Message to Parents" and "Curriculum Strands" on Week 8 - page 26.

See the "Where's the Math" section of each activity.

**Children will enjoy a quiet book and a snack with leaders to complete their evening while parents participate in this session*

Week Nine

“Sleepy Me”

WEEK # 9

THEME: Sleepy Me

ACTIVITIES		Key Words
Books	<i>Family gathering time with a variety of math / theme books...</i>	
Welcome		
1. Estimating Jar Number line	Estimate the number of feathers in the jar	guess estimate zone range over under size soft hard less than more than reasonable
2. Story, song or verse	<u>How Do Dinosaurs Say Goodnight</u> (Yolen) <u>Or Time for Bed</u> (Fox)	count add on
3. Table Activity	<i>Modelling of activity by leader</i> Demonstrate materials and explain instructions <i>Tables</i> The Night Sky	build size bigger smaller count beside above below more than less than
10 9 8 7 6 5...		
4. Graph	How many pillows are on your bed?	predict difference
5. Math Walk	<i>Sing: "Going on a Math Walk"</i> What Can You Find That Is Soft?	predict difference bigger than smaller than about equal to
10 9 8 7 6 5...		
6. Story, song or verse	<u>The Napping House</u> (Wood)	pattern more smaller
7. Table Activity	<i>Modelling of activity by leader</i> Demonstrate language of comparison and non-standard measuring <i>tables</i> Toothbrush Measuring	predict discover discuss how many more than less than estimate guess
10 9 8 7 6 5...		
8. Estimating Jar Number line	Count the feathers using ten frames	zone range reasonable estimate ten frame
<p>Leaders / children (Story / snack)</p> <p>Read: <u>Goodnight Moon</u> (Brown)</p> <p>Snack: bananas (moon-shaped)</p>		<p>Teacher Leader / Community Leader / Parents (Where's the Math and Homebook)</p> <p>Review math concepts in activities. Extend to home. Homebag: -</p>

WEEK #9**THEME: Sleepy Me**

	Curriculum Strands <i>Links to School</i>	Message to Parents Links to Home
Books	Mathematical language: Communicate effectively by listening and speaking	Help your child look for math in books. Have fun finding and talking about it.
Welcome		
1. Estimating Jar Number line	Number Sense and Numeration	Concentrate on reasonable guesses, not correct answers. Use prior knowledge to figure out new situations.
2. Story, song or verse	Number Sense and Numeration	This humorous story makes connections between math and daily life. The strategy of “counting on” is a focus.
3. Table Activity	Geometry	Relationships are explored as children manipulate shapes. Opportunities to use geometric terms happen as children complete the task.
10 9 8 7 6 5...		
4. Graph	Data Management	A number line (for prediction) and a graph (for actual data) allow for comparative discussion.
5. Math Walk	Number Sense and Numeration Data Management Measurement	Counting, organizing and comparing by size all occur during this walk. Lots of math to look for.
10 9 8 7 6 5...		
6. Story, song or verse	Number Sense and Numeration Patterning	Two patterns (one growing, one shrinking) encourage counting and prediction.
7. Table Activity	Measurement	Understanding of measurement and development of personal “anchors” happen when children use familiar objects to measure.
10 9 8 7 6 5...		
8. Estimating Jar Number line	Number Sense and Numeration	Were you in the “zone”? The more you estimate the better you get! 10 frames reinforce place value.
Homebook	Number Sense and Numeration Patterning	Math is FUN! Look for math in your neighbourhood. Sing math. Talk math. Use concrete materials. Repetition develops understanding.

WEEK# 9

THEME: Sleepy Me

Activities		Start Time	Duration	Team Member Responsible
Books Welcome	Family Math Rules			Teacher Leader/ Community Leader
1. Estimating Jar Number line	feathers	6:00	5 minutes	
2. Story, song or verse	<u>How Do Dinosaurs Say Goodnight</u> (Yolen) Or <u>Time for Bed</u> (Fox)	6:10	5 minutes	
3. Table Activity 10 9 8 7 6 5...	The Night Sky	6:15 6:20	Modelling • 5 minutes Tables •10 minutes	
4. Graph	How many pillows are on your bed?	6:30	10 minutes	
5. Math Walk 10 9 8 7 6 5...	What Can You Find That Is Soft?	6:40	5 minutes	
6. Story, song or verse	<u>The Napping House</u> (Wood)	6:45	5 minutes	
7. Table Activity 10 9 8 7 6 5...	Toothbrush Measuring	6:50 6:55	Modelling •5 minutes Tables •10 minutes	
8. Estimating Jar Number line	Count the feathers using ten frames	7:05	10 minutes	
Story / Snack (children)	<u>Goodnight Moon</u> (Brown) bananas (moon-shaped)	7:15	15 minutes	
Parent Talk Homebook		7:15	15 minutes	Teacher Leader/ Community leader
Planning		7:30		Discuss and delegate next week's responsibilities

WEEK# 9

Materials

THEME: Sleepy Me

Activities	Purchased	Gathered/ Made	Volunteer Responsible
Books Welcome	•name tags	•variety of math theme-related books	
1. Estimating Jar	•estimating jar •feathers •post-it notes •stick tack	•number line	
2. Story, song or verse	<u>How Do Dinosaurs Say Goodnight</u> (Yolen) <i>If not available</i> <u>Time for Bed</u> (Fox)	•number line •small counters	
3. Table Activity 10 9 8 7 6 5...	• cotton puffs • construction paper - dark blue, yellow • silver paper (aluminium foil) • scissors • glue • masking tape	• a variety silver triangles • yellow circle cut from construction paper	
4. Graph	• green painters tape • markers • sharp knife •stick tack	•make “How many pillows are on your bed?” graph	
5. Math Walk 10 9 8 7 6 5...	• pencils	• copy of song • tally sheet • examples of things that are soft (mittens, scarf, tissues)	
6. Story, song or verse	<u>The Napping House</u> (Wood)		
7. Table Activity 10 9 8 7 6 5...	•toothbrushes		
8. Estimating Jar Number line	•estimating jar •transparent overlay	•number line •10 frames	
Story / Snack (children)	<u>Goodnight Moon</u> (Brown) • bananas (moon-shaped)		
Homebook Parent Talk	•	Homebags filled prior to Parent Talk •	

Facilitating the Activities

(a more detailed look at each activity)

Week # 9

Activity 1: The Estimating Jar

Materials:

- estimating jar (100 - 125 ml) filled with feathers

(For health reasons feathers should be purchased. For mathematical reasons feathers should be purchased so that they are the same size which should be larger than keys)

- estimating jar filled with keys (from week 7)
- number line
- post-it notes
- markers

Key Words

zone range
estimate guess
size
reasonable
hard soft
more than
less than

Instructions:

1. Leader holds up one key and one feather and asks families to compare (talk about what is the same and what is different about) the objects.
 - feathers are a bit longer than the keys
 - feathers are soft and can be squeezed and bent
2. Leader shows the jar with keys in it and asks families to remember what they can about their estimations from two weeks ago. Leader reminds the group about the zone or range that was guessed for the keys.
3. Leader asks families to think about the similarities and differences between feathers and keys when they are making their estimation.
4. Families show their response by placing a post-it note on the range of numbers that matches their estimate.

Where's the Math?

The estimating strategy of using prior knowledge (knowing the zone for the keys) will help to refine estimates for the feathers. A further strategy of comparing similarities and differences is also developed in this activity. Knowing that bigger items take up more space than smaller items and therefore fewer will fit in the jar will help children come to understand that smaller items will take up less space and therefore more will fit in the jar. It should be explained to parents that this is a fairly sophisticated concept – the relationship between size and space - and children will need repeated exposure to this concept before it is fully understood.

“Opportunities can be found daily to encourage children to reflect on and extend their understanding of mathematics as it occurs in their everyday activities, play and conversation” The Kindergarten Program p 41

Curriculum Expectations:

Kindergarten:

- NS1.6 • begin to use information to estimate the number in a small set
Mathematical Processes • Problem Solving and Communicating

Grade One:

- N(s) • estimate the number of objects in a set

Week # 9 Activity 2: Story – How Do Dinosaurs Say Goodnight

Key Words

count
add on

Materials:

- How Do Dinosaurs Say Goodnight (Yolen)
If not available use Time for Bed (Fox) described on the next page
- number line
- small counters to cover the numbers on the number line

Instructions:

1. Leader explains that this is a story of excuses. This is what dinosaurs do when they don't want to go to bed.
2. Every time a dinosaur does something to avoid going to bed a counter will be put on the number line. Example dinosaurs pout – number one is covered. Dinosaurs throw – number two is covered.
3. Continue to count the number of excuses in the story.
4. When the story and the counting is finished, leader asks for more suggestions from the children. Example – ask for a glass of milk. – add one more counter.
5. Leader asks:
 - “If we had started counting excuses at the back of the books, would the number be the same or different? Why?”

Where's the Math?

In this story there is one to one correspondence – counting. There is also the counting strategy of counting on instead of starting over again each time at zero.

This is a humorous story about going to bed. It is a story that every child and parent can relate to. It is important to relate mathematical concepts to real life experiences. This is an active story where participation and discussion is encouraged.

Curriculum Expectations:

Kindergarten:

- NS1.4 • demonstrate understanding of the counting concepts of stable order (*i.e., the concept that the counting sequence is always the same – 1 is followed by 2, 2 by 3, and so on*) and of order irrelevance (*i.e., the concept that the number of objects in a set will be the same regardless of which object is used to begin the counting*)

Mathematical Processes • Selecting Tools and Strategies and Connecting

Grade One:

- N(s) • demonstrate, using concrete materials, the concept of one-to-one correspondence between number and objects when counting
- count forward by 1's, 2's, 5's, and 10's

Alternate Story

Materials:

- Time for Bed (Fox)
- number line
- small counters to cover the numbers on the number line

Instructions:

1. Leader explains that this is a bed time story about re-counting. This is what the animals do when they go to bed.
2. Leader re reads the page 'Little Calf, Little calf. What happened today to make you laugh? Then the leader asks children what happened in their day to make them laugh.
3. Leader begins the discussion by talking about laugh moments. She places a marker on the number line for each 'laugh moment'. Example 'I saw two squirrels chasing each other today. That made me laugh.' Then children add to the number line with their 'laugh moments'. One at a time the children relate things in their day that made them laugh.
4. Continue to count the number of 'laugh moments' that the children talk about.
5. Count on from where they last left off, rather than starting to count from the beginning.
6. You could count laughs – wishes – secrets – ask what else you could count as you re-count your day?

Where's the Math?

There is one to one correspondence in the counting. The book also allows for practice of the strategy of counting on instead of starting over again.

Children and parents can relate to this bedtime routine of recounting their day. It is important to relate mathematical concepts to real life experiences. Participation and discussion is always encouraged.

Kindergarten:

- NS1.4
- demonstrate understanding of the counting concepts of stable order (*i.e., the concept that the counting sequence is always the same – 1 is followed by 2, 2 by 3, and so on*) and of order irrelevance (*i.e., the concept that the number of objects in a set will be the same regardless of which object is used to begin the counting*)

Mathematical Processes • Selecting Tools and Strategies and Connecting

Grade One:

- N(s)
- demonstrate, using concrete materials, the concept of one-to-one correspondence between number and objects when counting

Week # 9 Activity 3: The Night Sky

Materials:

- a variety of silver triangles
- yellow circle cut from construction paper (one per child)
- dark blue construction paper (background) 22 cm x 30 cm (9 in x 12 in) (one per child)
- cotton puffs
- glue
- scissors
- masking tape

Table Talk: some sample questions

How many ... did you use? (stars, clouds)
What could you add?
Where might you put it? (over, beside, on top of)
Where is the smallest? largest? (stars, clouds)

Key Words

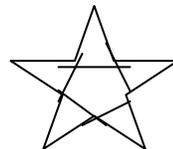
size	circle
triangle	
bigger	smaller
count	beside
above	below
more than	
less than	

Instructions:

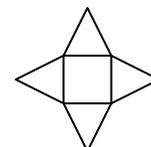
1. Leader explains that they are going to make the night sky that they see when they go to bed.
2. Leader asks what they might include as they make this sky. – stars, clouds, moon,
3. Leader shows the materials available to work with. Leader picks up the yellow circle and asks what this might become in the night sky. Leader encourages discussion about kind of moon they could put in the sky, accepting a variety of answers – full, part, half, etc. Leader then places a sample moon on a piece of blue construction paper.
4. Leader asks what materials they could use to make stars. Leader then demonstrates how several triangles put together would make a star.



2 triangles



5 triangles



4 triangles

5. Leader then asks how many clouds would fit in this picture and places three or four to complete this night scene.
6. Leader then asks families to make their own night sky with the following requirements:
 - 1 moon
 - less than 5 stars
 - more than 5 clouds.
7. During building, leaders encourage “math talk”.

10 9 8 7 6 5 4 3 2 1
STOP. Hands on head.
Leader waits for full attention of group.

Where's the Math?

This activity encourages exploration of geometric shapes to compose a picture. It gives children direct experiences manipulating two-dimensional geometric shapes.

It also fosters mathematical communication involving number sense— less than, more than, full (moon) or parts of (half moon, etc.) – and spatial sense.

Curriculum Expectations:

Kindergarten:

- G3.3 • compose pictures, and build designs, shapes, and patterns, using two-dimensional shapes, and decompose two-dimensional shapes into smaller shapes, using various tools or strategies (*e.g., sand at the sand table, stickers, geoboards, pattern blocks, a computer program*)
- G3.2 • identify and describe, using common geometric terms, two-dimensional shapes (*e.g., triangle*) and three-dimensional figures (*e.g., cone*) through investigation with concrete materials
- Mathematical Processes • Problem solving and Representing

Grade One:

- G(s) • describe the relative locations of objects or people using positional language (*e.g., over, under, above, below, in front of, behind, inside, outside, beside, between, along*)
- compose patterns, pictures and designs, using common two-dimensional shapes

Make a night sky.

- **1 moon**
- **less than 5 stars**
- **more than 5 clouds**

Week # 9 Activity 5: Going on a Math Walk

Materials:

- copy of song (see Week 7 page 14)
- tally sheet with 3 columns (big, bigger, biggest) and pencil
- examples of things that are soft (mittens, scarf, tissues)

Key Words

predict
difference
bigger than
smaller than
about equal to

Instructions:

1. The leader talks to families about going to bed with questions such as:
 - What do you do when you can't fall asleep?
 - Has anyone ever thought of 'counting sheep' as a way to fall asleep?
 - What are sheep like? (Bring out the qualities soft, fuzzy etc.)
2. Leader sings "Going on a Math Walk" one line at a time. Families repeat.
3. Leader explains that families are going to hunt all around the room to find some things that are soft like sheep.
4. Leader then shows the families a tally sheet with three columns:
 - big - picture of a hand
 - bigger – picture of an arm
 - biggest - picture of a child.
5. Leader then asks the families to walk around the room, find and tally according to their size all of the soft things they can. For example, my soft, fuzzy scarf is bigger than my arm, but not as big as me so I would put it with "bigger".
6. Leader hands out tally sheets and pencils and asks that before they start they put a check mark on the column that will get the most tallies.
7. Families have 2 minutes to tally soft things.

10 9 8 7 6 5 4 3 2 1 STOP. Hands on head.

(Leader waits for full attention of the group)

Come back and tell us what you found.

8. Have a brief discussion of what the families found.

Where's the Math?

Children make comparisons at an early age. Giving them the opportunity to organize their comparisons encourages them to develop and clarify their findings. The tally sheet gives them a framework in which to organize their findings. By tallying their results and using the "five tally" mark as an anchor they will continue to increase their understanding of number.

Curriculum Expectations:

Kindergarten:

- NS1.2 • investigate some concepts of quantity through identifying and comparing sets with more, fewer, or the same number of objects (*e.g., find out which of two cups contains more or fewer beans, using counters; investigate the ideas of more, less, or the same, using five and ten frames; recognize that the last number counted represents the number of objects in the set [concept of cardinality]*)
- M2.1 • compare and order two or more objects according to an appropriate measure (*e.g., length, mass, area, temperature, capacity*) and use measurement terms (*e.g., hot/cold for temperature, small/medium/large for capacity, longer/shorter or thicker/thinner for length*)
- DM5.2 • collect objects and data and make representations of their observations, using concrete graphs

Mathematical Processes

- Communicating and Selecting Tools and Strategies

Grade One:

- N(s) • relate numbers to the anchors of 5 and 10
- M(o) • compare, describe, and order objects, using attributes measured in non-standard units
- DM&P(s) • collect and organize primary data that is categorical and display the data using one-to-one correspondence

How many soft things?

Keep track like this

||||| ||

Big

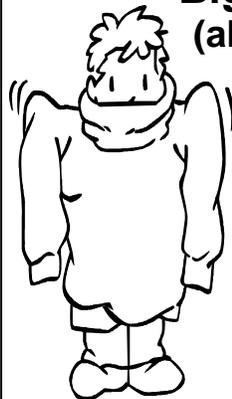
(my hand)



Bigger
(my arm)



Biggest
(all of me)



How many soft things?

Keep track like this

||||| ||

Big

(my hand)



Bigger
(my arm)



Biggest
(all of me)



Week # 9 Activity 6: Story – The Napping House

Materials:

- The Napping House (Audrey and Don Wood)

<i>Key Words</i> pattern more smaller

Instructions:

1. Leader reads the story and asks questions as the story unfolds such as:
 - I wonder who else could be sleepy in this house?
 - Now there are two characters piled up on the bed. If one more character came to this pile how many would there be?
 - I wonder how many more could fit in this pile?
 - Now there are four characters on this bed. What do you think will happen next?
 - Can you tell us what the pattern is?
 - Can you make some predictions?

Where's the Math?

It is important that good questioning and good children's literature go together. The children can see numbers increasing (a growing pattern) and size of objects decreasing (a shrinking pattern) in this story. Two patterns are happening simultaneously and both will make sense to the children. As they verbalize these mathematical ideas about size and number, they will clarify this pattern both for themselves and for others. Note that the colour is changing as well.

Curriculum Expectations:

Kindergarten:

- NS1.4 • demonstrate understanding of the counting concepts of stable order (*i.e., the concept that the counting sequence is always the same – 1 is followed by 2, 2 by 3, and so on*) and of order irrelevance (*i.e., the concept that the number of objects in a set will be the same regardless of which object is used to begin the counting*)

Mathematical Processes • Reflecting and Communicating

Grade One:

- N(s) • count forward by 1's, 2's, 5's, and 10's to 100, using a variety of tools and strategies
- count backwards by 1's from 20 and any number less than 20 (e.g., count backwards from 18 to 11), with and without the use of concrete materials and number lines

Where's the Math?

Familiar, non-standard units of measure are used so that children gain an understanding of measurement. Placing the unit of measure repeatedly and accurately along an object and counting the number of units is a concrete beginning for comprehending linear measure. Giving the child a reference increases the child's ability to succeed in estimation and helps the child personally develop anchors or reference points for units of measure.

Curriculum Expectations:

Kindergarten:

M2.3 • demonstrate, through investigation, a beginning understanding of non-standard units that are the same type (*e.g., straws, paper clips*) but not always the same size.

Mathematical Processes • Problem solving

Grade One:

M(s) • estimate, measure (i.e., by placing non-standard units repeatedly, without overlaps or gaps), and record lengths, heights, and distances

Week # 9

Activity 8:

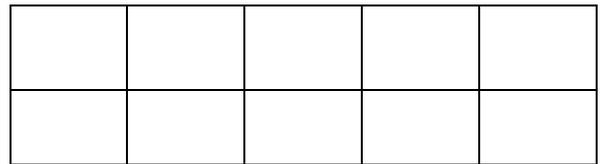
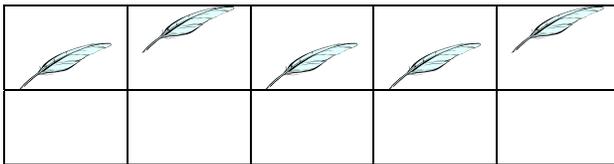
The Estimating Jar (The count)

Materials:

- feathers from the jar (between 10 - 20)
- number line
- transparent overlay
- 10 frames (see master Week 7 pages 21 and 22)

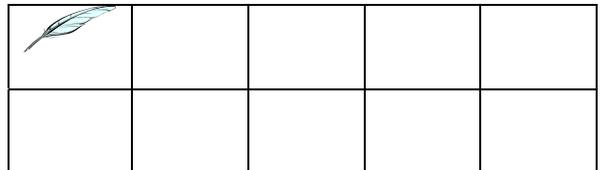
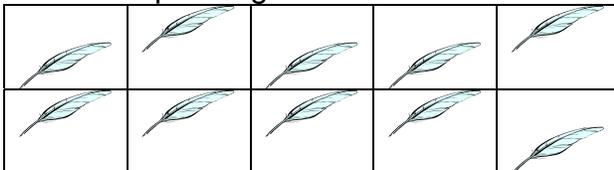
Instructions:

1. Leader briefly reminds families of the guesses/estimations of the number of feathers they made at the beginning of the evening.
2. Leader puts transparent overlay on the number line where most post-it notes are placed.
3. Leader places three 10 frames beneath the number line with the first one under the 0 – 9 range, the second under the 10 – 19 range and the third one under the 20 – 30 range.
4. Leader takes about half the feathers out of the jar and places them in the 10 frames starting on the top left, filling the top row, returning to the bottom left and filling the bottom row (using a left to right progression).
5. The other leader points to the corresponding numbers on the number line while the families count.



*With this number of feathers the leader will say, “How many feathers are there?”
How many more would we need to make 10? (Add feathers to the 10 frame to fill it)*

6. Leader then asks families if they wish to move the transparent overlay and responds to the general consensus of the group by moving the overlay as directed. This strategy will reinforce the idea of refining estimations.
7. Leader takes the rest of the feathers out of the jar and places them to fill the first 10 frame and then moves on to the next 10 frame. The other leader continues to count the corresponding numbers on the number line.



With this number of feathers the leader will say, “We had one 10 frame filled. How many is that? How many are in the next frame? How many feathers are there altogether?”

8. Leader discusses the estimates with questions such as:
 - The feathers are all about the same size. Does that make it easier or harder to estimate?
 - Why did we keep the zone the same? **or** Why did we make a change?
9. Remind families that when you get larger numbers it is harder to "find the zone".
10. Encourage families to keep challenging themselves in estimating.

Where's the Math?

In past weeks strategies of chunking (relating a known part to the greater whole) and using prior knowledge (using what you have learned from similar situations in the past to shape your estimation) have been discussed. Remind parents of the value of these strategies. Note that tonight the strategy of using new knowledge – e.g., the fact that feathers are approximately the same size as keys but feathers can be squished - was demonstrated as a useful strategy for estimation. Also children had the opportunity to learn that the smaller the item the more will fit in the jar. Success in estimation and all areas of mathematics comes from discussion and refinement of thinking, not memorization.

Curriculum Expectations:

Kindergarten:

- NS1.6 • begin to use information to estimate the number in a small set
Mathematical Processes • Problem Solving and Communicating

Grade One:

- N(s) • demonstrate, using concrete materials, the concept of one-to-one correspondence between number and objects when counting;
• estimate the number of objects in a set, and check by counting

Materials:

- Where's the Math Chart
- math bag
- homebook
- toothbrushes

Instructions:

Teacher leader and community leader direct this part of the session.

1. Discuss, using the 'Where's the Math Chart', where the math was tonight. (See Week 9 - page 46)
2. Discuss with parents how to repeat and extend the session's activities at home by doing more measuring with non-standard items (spoons, shoes) and containers. Watch the night sky and discuss the number of stars, clouds etc. that are visible from night to night. Then compare.
3. Discuss homebook pages. Encourage more exploration of geometry using towels, with number and numeration in story books at home and of making patterns with pillows and stars.
4. Discussion and question time.

Where's the Math:

Tonight's theme focused on bedtime with the math activities incorporating various aspects of that theme.

Again repeat the message "Math is everywhere."

Refer back to "Message to Parents" and "Curriculum Strands" on Week 9 - page 46.

See the "Where's the Math" section of each activity.

'Through active participation in mathematics investigations, including problem solving and discussions, children develop their ability to use mathematics as a way of making sense out of their daily experiences.'

Mathematics Overview page 92. 2010 - 2011 Full Day Early Learning - Kindergarten Program.

**Children will enjoy a quiet book and a snack with leaders to complete their evening while parents participate in this session.*



notes

Week Ten

“Hungry Me”

ACTIVITIES		Key Words
Books	<i>Family gathering time with a variety of math / theme books...</i>	
Welcome		
1. Estimating Jar Number line	Estimate the number of raisins in the jar	estimating chunking part whole range reasonable most likely
2. Story, song or verse	<u>If You Give A Mouse a Cookie</u> (Numeroff)	chance never sometimes always Impossible unlikely less likely more likely certain
3. Table Activity 10 9 8 7 6 5...	<i>Modelling of activity by leader</i> Demonstrate use of raisins and tearing in patterns <i>tables</i> Cookie Patterns	<i>up down</i> <i>sideways</i> pattern predict more than less than part whole
4. Graph	Food for Picnic Basket	represent group category
5. Math Walk 10 9 8 7 6 5...	<i>Sing: "Going on a Math Walk"</i> What Can You Find That Is Shaped Like – an orange, a box of crackers, a can, a sugar cube, an ice cream cone ?	cylinder sphere cone cube rectangular prism
6. Story, song or verse	<u>There Was An Old Lady</u> (Adams)	<i>perhaps</i> <i>chances are</i> <i>six legs eight</i> <i>legs four legs</i> <i>two legs</i>
7. Table Activity 10 9 8 7 6 5...	<i>Modelling of activity by leader</i> Demonstrate how to follow the recipe <i>tables</i> Nuts and Bolts	more than less than $\frac{1}{2}$ or half part probably equal about the same
8. Estimating Jar Number line	Count the raisins using ten frames	zone range reasonable estimate ten frame
<p>All Leaders / Children/Parents (Celebration of the completion of the program)</p> <p>Give out Certificates of Participation Snack: Nuts and Bolts made this session</p>		<p>No formal discussion with parents tonight. Some parents will want to chat informally.</p> <p>Homebag: - certificate - package of microwave popcorn - fridge magnet</p>

WEEK #10**THEME: Hungry Me**

	Curriculum Strands <i>Links to School</i>	Message to Parents Links to Home
Books Welcome	Mathematical language: Communicate effectively by listening and speaking	Help your child look for math in books. Have fun finding and talking about it.
1. Estimating Jar Number line	Number Sense and Numeration	Concentrate on reasonable guesses, not correct answers. Use new knowledge and previous experience to find the “zone”.
2. Story , song or verse	Probability Number Sense and Numeration	The story links probability and daily life. It provides a good opportunity for discussion to clarify thinking.
3. Table Activity 10 9 8 7 6 5...	Patterning	Using paper cookies to make various patterns can be transferred to many real-life situations. Talking about the patterns is as important as making them.
4. Graph	Data Management	Canada’s Food Guide is the basis of the graph which uses representative thinking.
5. Math Walk 10 9 8 7 6 5...	Geometry	Geometric shapes are related to real world items.
6. Story , song or verse	Number Sense and Numeration	The ten frame can be used with numbers found in daily life.
7. Table Activity 10 9 8 7 6 5...	Measurement Number Sense and Numeration	Recipes are a good mathematical learning activity as measurement becomes real and important.
8. Estimating Jar Number line	Number Sense and Numeration	Were you in the “zone”? The more you estimate the better you get! 10 frames reinforce place value.
Homebook	Number Sense and Numeration Patterning Data Management and Probability	Math is FUN! Look for math in your home. Eat math. Talk math. Use concrete materials. Repetition develops understanding.

WEEK# 10

THEME: Hungry Me

Activities		Start Time	Duration	Team Member Responsible
Books				Teacher Leader/ Community Leader
Welcome				
1. Estimating Jar Number line	Raisins	6:00	10 minutes	
2. Story, song or verse	<u>If You Give A Mouse a Cookie</u> (Numeroff)	6:10	5 minutes	
3. Table Activity 10 9 8 7 6 5...	Cookie Patterns	6:15 6:20	Modelling • 5 minutes Tables •10 minutes	
4. Graph	Food for Picnic Basket	6:30	10 minutes	
5. Math Walk 10 9 8 7 6 5...	Find that the same geometric figure as things you eat.	6:40	5 minutes	
6. Story, song or verse	<u>There Was An Old Lady</u> Adams)	6:45	5 minutes	<i>Eliminate for time constraints if need be</i>
7. Table Activity 10 9 8 7 6 5...	Nuts and Bolts	6:50 6:55	Modelling •5 minutes Tables •15 minutes	
8. Estimating Jar Number line	Count the raisins using ten frames	7:10	10 minutes	
Story / Snack (children)	(Celebration of the completion of the program) Certificates Snack: Nuts and made this session	7:20	15 minutes	
Parent Talk Homebook				
Planning				Thanks to all!

WEEK# 10

Materials

THEME: Hungry Me

Activities	Purchased	Gathered/ Made	Volunteer Responsible
Books Welcome		•variety of math theme-related books	
1. Estimating Jar	•raisins •estimating jar •post-it notes •stick tack	•number line	
2. Story, song or verse	<u>If You Give A Mouse a Cookie</u> (Numeroff)		
3. Table Activity 10 9 8 7 6 5...	•one small box of raisins per child	•20 brown, construction paper circles per child (approx. 6 cm in diameter) •10 brown, construction paper circles (approx. 6 cm in diameter) cut in half, per child	
4. Graph	• stick tack •download copies of Canada's Food guide for each family from website • download copy of Family Math Music CD	•make "Food for Picnic Basket" Graph •cut out 10 – 15 shapes of apples, 10 – 15 shapes of bread, 10 – 15 shapes of eggs and 10 – 15 shapes of yogurt container	
5. Math Walk 10 9 8 7 6 5...	•pencils	•copy of song •tally sheet • food items like geometric figures (orange, box, sugar cube, can, ice ream cone)	
6. Story, song or verse	<u>There was an Old Lady Who Swallowed A Fly</u> (Adams)	• picture of a spider with 8 legs • picture of an insect with 6 legs • picture of an animal with 4 legs (horse or cow) • a ten frame to hold up while the story is being read	
7. Table Activity 10 9 8 7 6 5...	•paperclips	•pre-creased 8 1/2 x 11 piece of paper	
8. Estimating Jar Number line	•estimating jar •transparent overlay	•number line •ten frames	
Story / Snack (children)	(Celebration of the completion of the program)		
Homebook Parent Talk	•package of microwave popcorn per child	Homebags filled prior to Parent Talk •certificates •fridge magnet	

Facilitating the Activities

(a more detailed look at each activity)

Week # 10

Activity 1: The Estimating Jar

Materials:

- estimating jar (100 - 125 ml)
- raisins (more than 20, less than 30)
- number line
- post-it notes
- markers
- a small clump of raisins stuck together (about 5)

Key Words

estimating
clump part
whole range
reasonable
most likely

Instructions:

1. Leader holds up jar and asks families to estimate how many raisins are in the jar .
2. Remind the participants that they now have ways (strategies) to help make a better guess.
3. Explain that raisins often get clumped or stuck together. Show a clump of raisins and tell them that this clump has 5 raisins in it.
4. Now ask them to make their best estimation.
5. Families are given a post-it note. They place it above their range or zone of estimated answer. The post-it note will cover a range of approximately 3 numbers.
6. Remind families that they want to be “in the zone”, not have an exact answer.
7. Continue to stress that we are not counting. We are estimating.

Where’s the Math?

Estimating develops a sense of number. This skill is developed through practice and reflection. The more we estimate and the more we think about why we estimate, the better we become. This activity also develops risk-taking, problem solving and the idea that there is a range of possible answers when estimating. One of the strategies used in this activity is using the clump of raisins as an anchor or reference to predict how many clumps are in the jar. Estimating involves using number sense and measurement to solve problems in the real world. Understanding that an answer is reasonable or not is also vital to success in mathematics in school.

Curriculum Expectations:

Kindergarten:

- NS1.6 • begin to use information to estimate the number in a small set
Mathematical Processes • Problem Solving and Communicating

Grade One:

- N(s) • estimate the number of objects in a set

Week # 10 Activity 2: Story – If You Give A Mouse A Cookie

Materials:

- If you Give A Mouse a Cookie (Numeroff)

Key Words

chance	never
sometimes	always
Impossible	unlikely
less likely	
more likely	
certain	

Instructions:

1. The leader asks questions before reading the story such as:
 - If you give a mouse a cookie chances are he will want a
 - If the mouse spills the milk he will likely want.....
 - Once the mouse has a cleaning cloth out, he will certainly.....
 - He will never stop at just cleaning a kitchen he will
 - Sometimes when we clean an entire house we.....
2. When the children are finished predicting the story's possibilities the leader reads the story, stopping at times, to reflect on the predictions made from the group.

Where's the Math?

Through active participation and discussion children develop their ability to use the language of mathematics, in this case probability, as a way of making sense of their daily experiences. By using the language of probability students are able to reflect and clarify their ideas and understanding. Literature is a perfect way to illustrate how probability is an essential component of our everyday mathematical life.

Curriculum Expectations:

Kindergarten:

- DM5.4 • use mathematical language in informal discussions to describe probability
- Mathematical Processes • Communicating and Reflecting

Grade One:

- N(s) • describe the likelihood that everyday events will occur, using mathematical language (i.e., impossible, unlikely, less likely, more likely, certain) (e.g., "It's unlikely that I will win the contest shown on the cereal box.").

Week # 10

Activity 3:

Cookie Patterns

Materials:

- one small box of raisins per child
- 20 brown, construction paper circles per child (approx. 6 cm in diameter)
- 10 brown, construction paper circles (approx. 6 cm in diameter) cut in half, per child

Key Words

up	sideways
down	
pattern	predict
more than	
less than	
part	whole

Table Talk: some sample questions

How many raisins are on your first cookie? your second cookie?
How many raisins will be on your fifth cookie?
How many bites have been taken out of your first cookie? your second cookie? How many bites will be taken out of your fifth?
Tell me about your pattern with $\frac{1}{2}$ cookies?
What will come next in your pattern?
Is there another way to make a pattern?
Mom or Dad, can you tell your child's patterning rule?

Instructions:

1. Leader demonstrates how to make a pattern using pretend raisin cookies.
2. Leader takes two raisins out of the box and places them on the construction paper cookie. Then leader makes a pattern two raisins, one raisin, two raisins, one raisin. Leader asks what the pattern is.
3. Leader then shows some previously prepared construction paper cookies with pieces torn from the paper to look like bites. Leader demonstrates how to tear a piece out of the brown construction paper cookie to make it look like a bite. Leader makes a pattern one bite, no bites, one bite no bites.....
4. Leader then takes $\frac{1}{2}$ circles and demonstrates a pattern with $\frac{1}{2}$ a cookie which may include flips, turns or alternating with whole cookies.
5. Families then go to their tables to begin making patterns using raisins and whole circles – raisin cookies.

10 9 8 7 6 5 4 3 2 1

STOP. Hands on head.

Leader waits for full attention of group.

6. Next families make patterns with bites taken out of their cookies.

10 9 8 7 6 5 4 3 2 1

STOP. Hands on head.

Leader waits for full attention of group.

7. Lastly families make cookie patterns with half cookies.

Where's the Math?

This is an educationally sound way to practice and extend patterning because children at all levels of mathematical development and understanding will find success. In this activity families re-visit the important skill of recognizing, describing and extending patterns. This activity is a good example of the problem solving which arises from real-life experiences and provides opportunities to apply and practice rich mathematical concepts.

Curriculum Expectations:

Kindergarten:

Overall Expectation P4

- explore, recognize, describe, and create patterns, using a variety of materials in different contexts

Mathematical Processes • Reasoning and Proving and Communicating

Grade One:

- P&A(s)
- create a repeating pattern involving one attribute
 - identify a rule for a repeating pattern

Week # 10

Activity 4:

Graph – Food For Picnic Basket

Materials:

- picnic basket filled with 10 – 15 shapes of apples, 10 – 15 shapes of bread, 10 – 15 shapes of eggs and 10 – 15 shapes of yogurt containers
- stick tack
- copy of Canada’s Food guide for each family to look at to be found on the website:
<http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/order-commander/index-eng.php>
- hand made graph
- copy of Family Math Music C.D.

Key Words

represent
group category

Food For Picnic Basket												
Vegetables and Fruits												
Grain Products												
Milk and Alternatives												
Meat and Alternatives												
	0	1	2	3	4	5	6	7	8	9	10	11

Instructions:

1. *If time permits, play ‘The Ants go Marching’ from the Family Math Music C.D. Ask families where they would find ants. Lead the discussion to the idea that ants are seen at picnics. Then move on to the picnic basket problem.*
2. Leader invites families to think about going on a picnic. Then asks the question ‘What will fill our picnic basket?’
3. Explain that each person can chose only one food to add to the picnic basket. Leader then explains the four different food groups or categories from which the families could choose. Hand out families’ own copy of Canada’s Food guide so they can follow along.
 - Show the apple shape. The apple would represent all **Vegetables and Fruits**. Point to that row on the graph and discuss possible fruits and vegetables that the apple could represent.
 - Show the piece of bread shape. The piece of bread represents **Grain Products** . Point to that row on the graph and discuss possible grain products that the piece of bread represents (i.e. cereal, rice, pasta, bagel, pita).
 - Show the yogurt container shape. The container of yogurt represents all **Milk and Alternatives** . Point to that row on the graph and discuss possible milk and alternatives that the yogurt container represents. (i.e., milk, soy beverage, cheese)
 - Show the egg shape. The egg shape represents Meats and Alternatives. Pint to that row on the graph and discuss possible **Meat and Alternates**. (i.e., kidney beans, chick peas, fish, chicken, beef, tofu, nuts)

4. Every member of the group now takes turns choosing one shape to represent the food that they would like in the picnic basket. Start with the leaders so the families get this idea reaffirmed.
 - Sara would like hot dogs at the picnic – that is a meat. So Sara would take the egg shape and place it in the horizontal graph on the meat row.
 - Barry would like watermelon in the picnic basket. Barry would take the apple and place it on the fruit and vegetable row.
 - Linda would like pretzels. She would take the bread shape and place it on the grains row.The families now will take turn placing their choices on the appropriate row.
5. Leader briefly discusses the data with questions and comments such as:
 - What do you notice about the graph?
 - Canada's Food Guide says that we should have something from every category every day. What can we tell just by looking at our graph?
 - Let's count the number in each category.

Where's the Math?

Math is everywhere. The picnic basket problem is a rich mathematical activity that arises out of an every day situation. It involves discussion and active participation. The idea that one shape can represent a variety of foods encourages representational thinking.

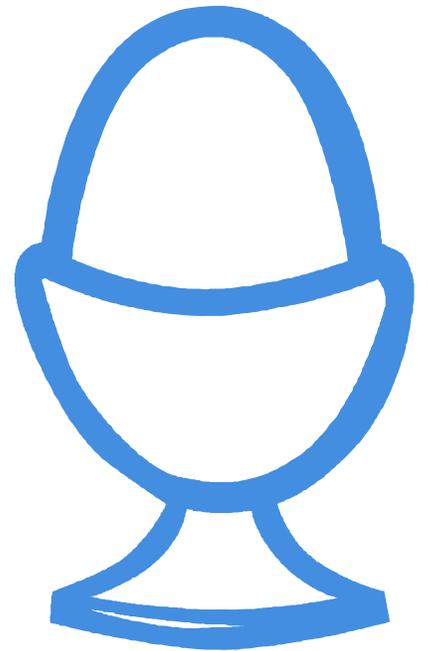
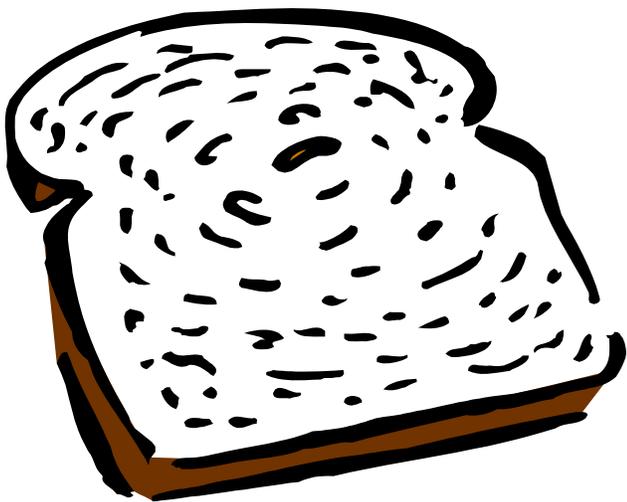
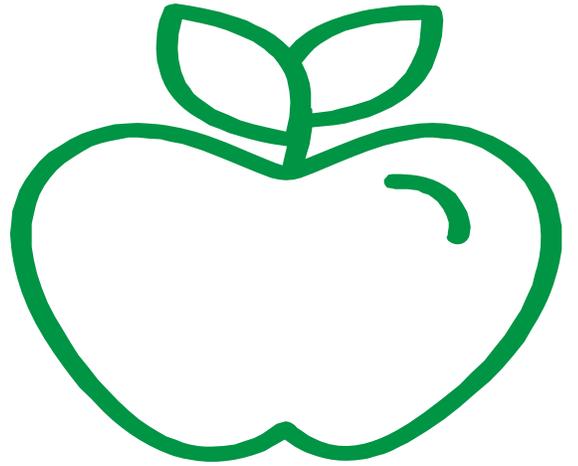
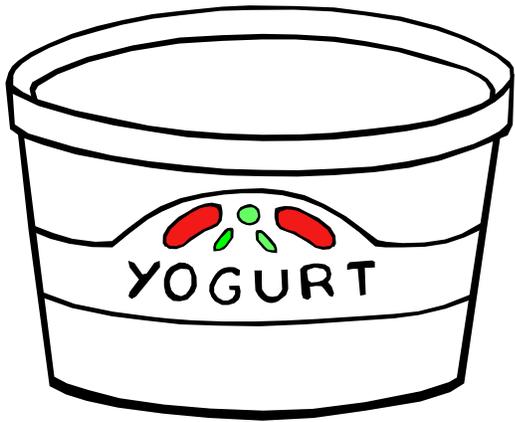
Curriculum Expectations:

Kindergarten:

- DM5.3** • respond to and pose questions about data collection and graphs
Mathematical Processes • Problem Solving and Selecting Tools and Strategies

Grade One:

- DM&P(s)** • read primary data presented in concrete graphs and pictographs, and describe the data using comparative language



Week # 10

Activity 5:

Going on a Math Walk

Materials:

- copy of song (see Week 7 page 14)
- tally sheet
- For demonstration purposes:
 - sphere-shaped food item, e.g. orange
 - rectangular prism-shaped food item e.g. empty box of crackers
 - cube-shaped food item e.g. a sugar cube or a cake box
 - cylinder-shaped food item e.g. can
 - cone-shaped food item e.g. cone for ice cream

- pencils

Key Words

cylinder sphere
cone cube
rectangular prism

Instructions:

1. Leader sings "Going on a Math Walk" one line at a time. Families repeat.
2. Leader explains that they are going to look for geometric figures. They are going to look for objects that look like an apple or an orange. They are going to look for spheres.
3. They are going to look for objects that look like a cracker box. They are going to look for rectangular prisms.
4. Then they are going to look for objects that look like a can. They are going to look for cylinders
5. They are going to look for objects that look like a sugar cube. They are going to look for cubes.
6. They are going to look for objects that look like an ice cream cone. They are going to look for cones.
7. Families tally how many spheres, rectangular prisms, cubes, cylinders and cones they can find. Note that the items found do **not** have to be foods.

10 9 8 7 6 5 4 3 2 1 STOP. Hands on head.

(Leader waits for full attention of the group)

Come back and tell us what you found.

8. Have a brief discussion of what the families found using correct mathematical terminology and its real world alternative such as:

spheres	-	oranges	rectangular prisms	-	boxes
cubes	-	sugar cube	cylinders	-	cans
cones	-	ice cream cones			

Where's the Math?

This activity promotes seeing geometry in the real world, which is most important if it is to make sense and be more than abstract words. The concrete examples used help children learn the language of geometry linked to their real world.

Curriculum Expectations:

Kindergarten:

- G3.2 • identify and describe, using common geometric terms, two-dimensional shapes (*e.g.*, triangle) and three-dimensional figures (*e.g.*, cone) through investigation with concrete materials

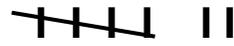
Mathematical Processes • Connecting

Grade One:

- G(s) • describe similarities and differences between an everyday object and a three-dimensional figure
- identify and describe common three-dimensional figures (*e.g.* cubes, cones, cylinders, spheres, rectangular prisms) and sort and classify them by their attributes ...using concrete materials and pictorial representations

How many of each shape can you find?

Keep track like this



Week # 10 Activity 6: Story – There Was An Old Who Swallowed a Fly

Materials:

- There was an Old Lady Who Swallowed A Fly -
(Adams)
- a drawing or picture of a spider with 8 legs
- a drawing or picture of an insect with 6 legs
- a drawing or picture of an animal with 4 legs (horse or cow)
- a ten frame to hold up while the story is being read (see master Week 7 pages 21 and 22)

Key Words

perhaps chances are
six legs eight legs
four legs two legs
How many more?

Instructions:

- 1 One leader reads the story and asks questions as the story unfolds.
2. Leader may ask -
 - How many legs does the spider have?
 - How many more legs would the spider need to fill our ten frame?
 - How many legs does the beetle have?
 - How many more legs would the beetle need to fill our ten frame?
 - How many legs does the horse have?
 - How many more legs would the horse need to get to ten legs.
 - Perhaps after the woman swallowed the fly she would....
 - Perhaps after the woman swallowed the spider she would.....
 - Perhaps after the woman swallowed the horse she would
 - Chances are you could eat a small insect like a
 - Chances are you could never eat something big like a

Note – Leaders may wish to use alternate word for the traditional lines of the story.

Instead of “Perhaps she’ll die” use “Perhaps she’ll cry”.

Instead of “She’s dead of course” use “She’s full of course.”

Where’s the Math?

The story naturally uses the language of probability – “Perhaps she’ll die”. Further opportunities to use the language of probability are suggested by the story and in the discussion questions. The use of a ten frame to relate numbers naturally found in a child’s life (the number of legs of animals) to the key anchor of 10 can be a model for parents to use in a variety of situations.

Curriculum Expectations:

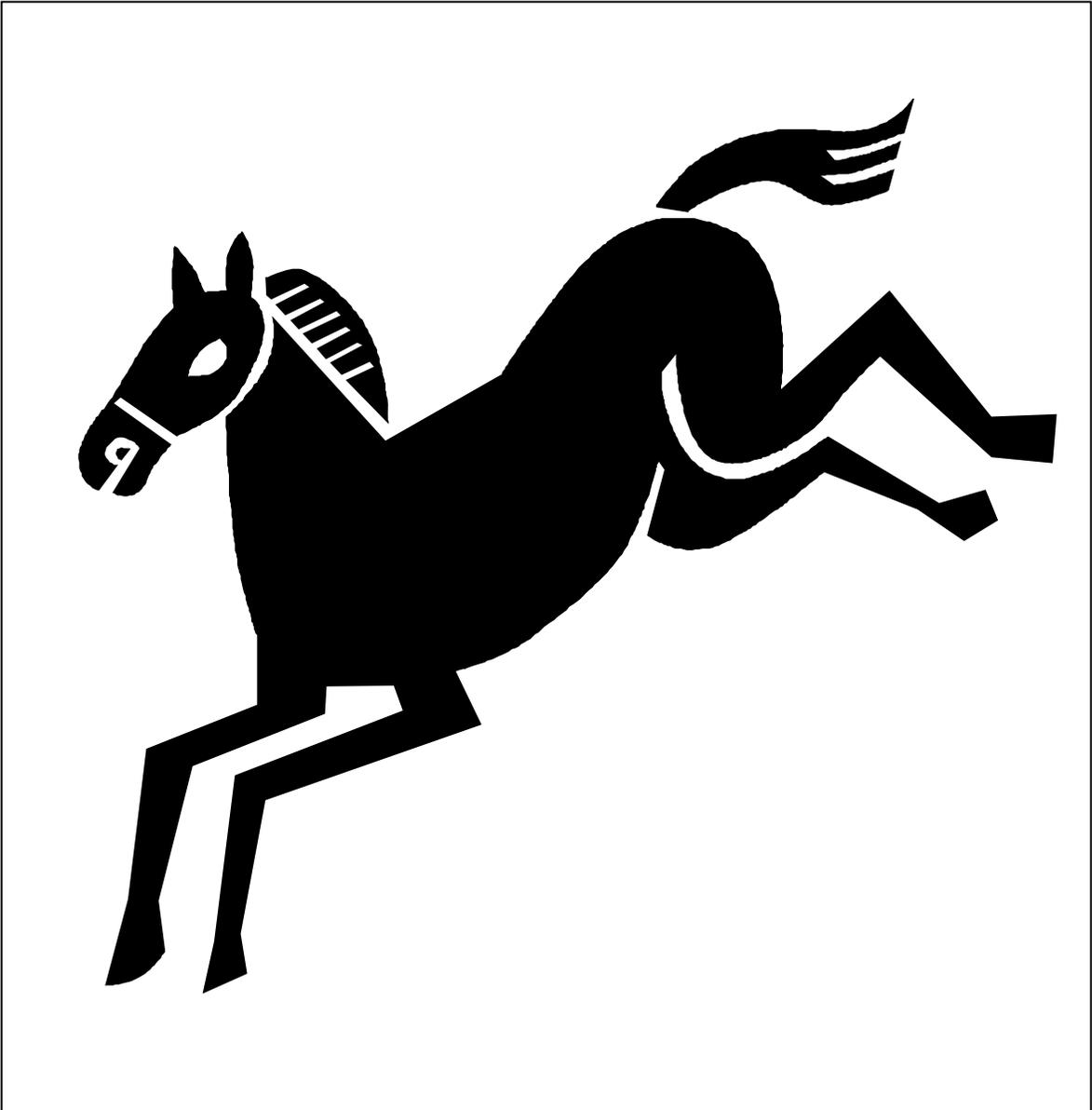
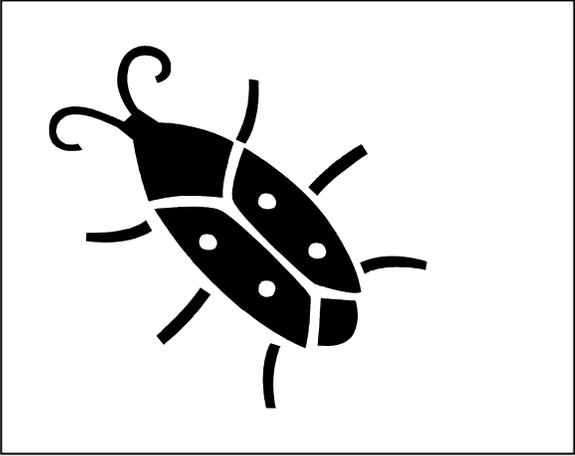
Kindergarten:

- NS1.5 • recognize some quantities without having to count, using a variety of tools (e.g., dominoes, dot plates, dice, number of fingers) or strategies (e.g., composing or decomposing numbers, subitizing)

Mathematical Processes • Communicating and Problem Solving

Grade One:

- N(s) • relate numbers to the anchors of 5 and 10



Materials:

- a piece of bristol board with recipe written on it.
- individual copies of recipe page for record keeping
- signs for stations - 1,2,3,4,5,
- hand sanitizer
- baggies in which to place participant’s Nuts and Bolts
- scoops – like those used in Week 3 Activity 7: Water Play
- 5 bins or bags – large enough to hold ingredients listed:
 - box of Shreddies
 - box of Cheerios
 - bag of straight pretzels
 - bag of sunflower seeds (shelled)
 - large box of raisins
- amounts of the last five items will vary depending on size of group

Key Words
 more than
 less than
 ½ or half part
 probably
 about the same
 equal

Recipe for Nuts and Bolts

- 2 scoops or less of **Cheerios**
- No more than 1 scoop of **pretzels**
- 2 scoops or less of **Shreddies**
- No more than 1 scoops of **sunflower seeds**
- Approximately ½ scoop of **raisins**

Table Talk: some sample questions
Note: These conversations will be held at the appropriate station as the families work.
 How many scoops of Shreddies would it take to fill your bag? How do you know?
 How many pretzels are in one big scoop? How do you know?
 Would a scoop of raisins have more than ten raisins in it? How do you know?

Instructions:

1. Leader talks about making a *math treat* and shows the recipe chart for **Nuts and Bolts**.
2. Leader reads and discusses the recipe with the families. Recipe pages can be handed out.
3. Leader shows families that each of the ingredients in the recipe has been placed at numbered stations.
 - Station 1: Cheerios
 - Station 2: pretzels
 - Station 3: Shreddies
 - Station 4: sunflower Seeds
 - Station 5: raisins

4. Leader asks participants to wash their hands or to use hand sanitizer (whichever is most convenient.)
5. Leader assigns families to stations so they do not all start at Station 1.
6. Families move through all the stations. They may check off each item on their recipe sheet as they add it.
7. When they are done they seal their baggies and come back to their own table or the carpet.
8. Leader asks, "Why did I call this a *math treat*?"
Possible answers might include:
 - because it is made with different shapes
 - because we measured
9. Nuts and Bolts can be taken home or eaten for snack.

Where's the Math?

Measurement is part of everyday life. Reading instructions such as recipes is a real world mathematics skill. This activity uses approximate measures. Knowing how to estimate, and knowing when it is useful to estimate and when it is necessary to have an exact answer, is an important mathematical skill.

Curriculum Expectations:

Kindergarten:

- M2.2 • demonstrate, through investigation, an awareness of non-standard measuring devices (*e.g., feet, hand spans, string, or cubes to measure length; hand claps to measure time; scoops of water sand to measure capacity*) and standard measuring devices (*e.g., measuring cups at the water and sand centre balance scales at the block centre*) and strategies for using them (*e.g., place common objects end to end to measure the length of the classroom; use cubes to plan the length of a road at the sand table or the block centre; use footsteps to measure the distance between the door and the sink*)

Mathematical Processes • Selecting Tools and Strategies

Grade One:

- M(s) • estimate, measure and describe the capacity and/or mass of an object, through investigation using non-standard units

Recipe for Nuts and Bolts

- 2 scoops or less of**
Cheerios
- No more than 1 scoop of**
pretzels
- 2 scoops or less of**
Shreddies
- No more than 1 scoop of**
sunflower seeds
- Approximately 1/2 scoop of**
raisins

Week # 10 Activity 8: The Estimating Jar (The count)

Materials:

- raisins from the jar (more than 20, less than 30)
- number line
- transparent overlay
- 10 frames (see master Week 7 pages 21 and 22)

Instructions:

1. Leader briefly reminds families of the guesses/estimations of the number of raisins they made at the beginning of the evening.
2. Leader puts transparent overlay on the number line where most post-it notes are placed.
3. Leader places three 10 frames beneath the number line with the first one under the 0 – 9 range, the second under the 10 – 19 range and the third one under the 20 – 30 range.
4. Leader takes about half the raisins out of the jar and places them in the 10 frames starting at the top left, filling the top row, returning to the bottom left and filling the bottom row (using a left to right progression as seen by the families)
5. The other leader points to the corresponding numbers on the number line while the families count.

○	○	○	○	○
○	○	○	○	○

○	○	○	○	

With this number of raisins the leader will say, “How many raisins are there?” How many more would we need to make 20? (Add raisins to the 10 frame to fill it).

6. Leader then asks families if they wish to move the transparent overlay and responds to the general consensus of the group by moving the overlay as directed. This strategy will reinforce the idea of refining estimations.
7. Leader takes the rest of the raisins out of the jar and places them to fill the second 10 frame and then moves on to the next 10 frame.

○	○	○	○	○
○	○	○	○	○

○	○	○	○	○
○	○	○	○	○

○	○	○	○	○
○	○			

With this number of raisins the leader will say, “We have one 10 frame filled. How many is that? How many are in the next frame? How many is that ? (Count 10, 20) Is the next 10 frame full? How many are in the third 10 frame? 20 and ___ more is ___. How many raisins are there altogether?”

8. Leader discusses the guesses with questions such as:
 - The raisins are all about the same size. Does that make it easier or harder to estimate?
 - Why did we keep the zone the same? **or** Why did we make a change?
9. Remind families that when you get larger numbers it is harder to "find the zone".
10. Encourage families to keep challenging themselves in estimating.

Where's the Math?

Children will see the grouping of ten as an anchor or "friendly" number which is a basic understanding of place value and our base ten system.

Counting will occur. Celebrate everyone's participation. Reinforce that the more you try to estimate and talk about the strategies you use the better estimator you will become. The key strategy emphasized in this activity is "chunking" - taking a known part to estimate the whole.

Curriculum Expectations:

Kindergarten:

- NS1.7 • demonstrate an understanding of number relationships for numbers from 0 to 10, through investigation (*e.g., show small quantities using fingers or manipulatives*)
- NS1.3 • begin to make use of one-to-one correspondence in counting objects and matching groups of objects (*e.g., one napkin for each of the people at the table*)
- Mathematical Processes • Problem Solving and Communicating

Grade One:

- N(s) • demonstrate, using concrete materials, the concept of one-to-one correspondence between number and objects when counting
- estimate the number of objects in a set, and check by counting
 - relate numbers to the anchors of 5 and 10

Week # 10

Conclusion: Parent Talk

Materials:

- math bag
- homebook
- microwave popcorn
- fridge magnets
- certificates

Instructions:

The Parent Talk that usually occurs at this time is replaced by a celebration time.

1. Review the homebook activities.
2. Hand out the certificates.
3. And ***most importantly***, congratulate families for successfully completing another session of Esso Family Math.

Where's the Math:

Esso Family Math is about changing attitudes toward mathematics.

'Once parents learn why mathematics is being taught the way it is, and they begin to make sense of it for themselves (often for the first time), then they generally become enthusiastic partners in the education of their children.' Training Manual for Esso Family Math Early Years Coordinators Updated 2009

Tonight is about celebrating this enthusiasm!



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