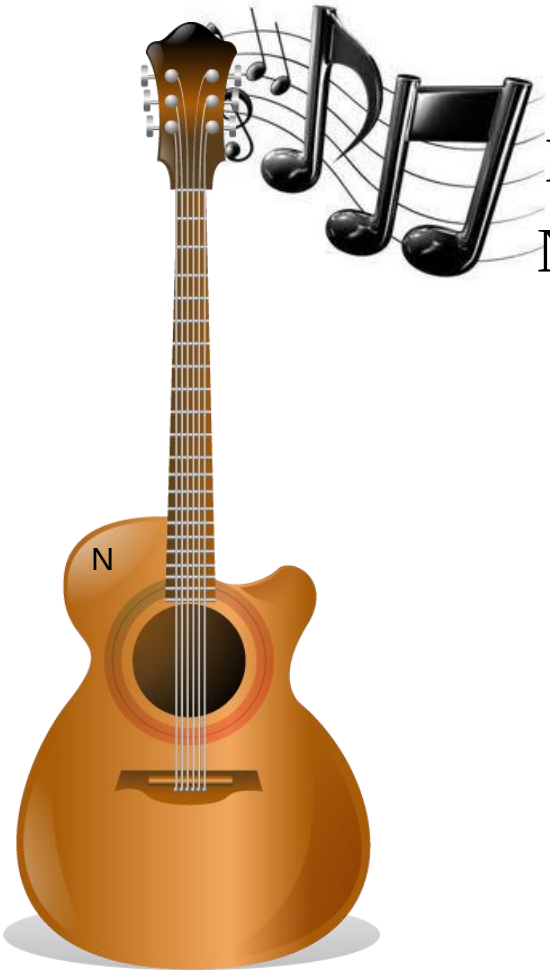


Mathematical Melodies

Numbers Are Connected

Music and Lyrics by Ruth Jean Charles

Numbers Are Connected

Numbers are always connected
Numbers are like building blocks
Every number comes from numbers
In the number melting pot

Addition is the operation that brings us to this combination
Numbers are always connected numbers are like building blocks

2 +2 is = 4, yet 2 + 3 will give you more, 4 + 3 is =7, 3+4 we know for sure

Addition is the operation that brings us to this combination
Numbers are always connected numbers are like building blocks

Even numbers are connected by this simple operation
start with 2 and add 22 and keep it going don't you quit

Addition is the operation that brings us to this combination
Numbers are always connected numbers are a building block

Numbers Are Connected

PRIMARY: Grade 1, Grade 2 and Grade 3

The Big Ideas

Operational Sense:

Addition

In learning addition, computation is seen as a key factor in helping children understand the deep structure of the number system. It is highly recommended that before attention is given to memorization and speed, children should understand the relationships and patterns in the basic addition facts.

Concentrating on learning addition in a problem solving context, through modeling using concrete and pictorial representations and encouraging reasoning is suggested.

Students use a variety of strategies to solve addition and subtraction problems. Initially, students use objects or their fingers to model the problem. As students gain experience, they begin to use more advanced counting strategies. Later, students apply their understanding of basic facts to solve addition and subtraction problems.

In the early primary grades children need to understand that addition is putting together (parts to whole), to add using concrete objects and real world situations and to compose (put together) and decompose (take apart) numbers in different ways.

As students progress, they will also write number sentences to go with the story problems they write and solve, and use objects and pictures to apply basic addition facts.

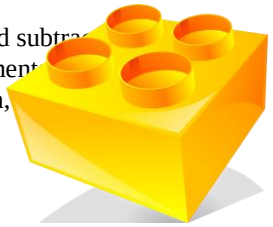
Curriculum Connections

Number Sense and Numeration

Quantity Relationships

Operational Sense

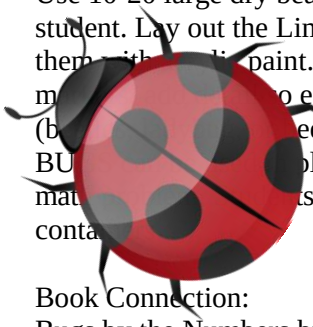
- solve a variety of problems involving the addition and subtraction of whole numbers to 20, using concrete materials and drawings (e.g., pictures, number lines) (Sample problem: Miguel has 12 cookies. Seven cookies are chocolate. Use counters to determine how many cookies are not chocolate.);
- solve problems involving the addition and subtra… digit whole numbers, using a variety of ment… one more than, one less than, counting on, … doubles);



Hands On… BEANIE BUGS

It's easier to understand numbers using counters that can be touched and arranged. Try making your own counters from objects such as buttons, blocks or pasta shapes. Counting with food is also fun using goldfish crackers, gummy bears or pieces of fruit.

Students can also make their own counters out of BEANS. Use 10-20 large dry beans (Lima Beans work well) per student. Lay out the Lima Beans on wax paper and paint them … paint. Once dry, use black fine-tip m… o each bean resembles an insect (b… ees). Once complete the BEANIE BU… place of counters with any type of mat… s can also make their own storage conta…



Book Connection:

Bugs by the Numbers by Sharon Werner and Sarah Forss (2011)

Inaugural Voyage Character Education

One way to Add by Solving Story Problems....

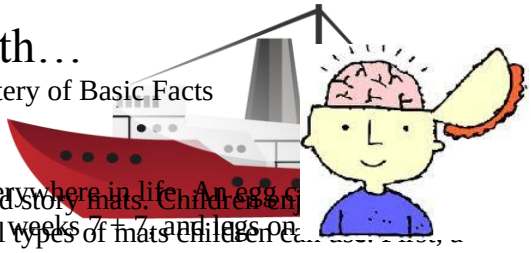
I can COUNT on You!

What are story problems? FUN! They are also stories where math takes centre stage. While constructing the stories children have the opportunity to act, tell and record addition problems using objects or pictures and story mats. Children can use story mats representing familiar colorful scenes and scenarios. There are several types of mats children can use. First, a laminated scene that children use erasable crayons/markers on, a laminated mat that they can use with picture cards and objects and finally, a paper scene that they can draw on and keep. Pick the mat depending on your activity and remember they can be used in conjunction with each other.

- By providing counters (unifix cubes, blocks, little toys, Beanie Bugs, etc) children can use them to act out stories on their mats. Some children like to use picture cards (animals, fruit, art supplies, etc) with their story mats (google images is invaluable here). To make a story, partners take turns rolling a numeral cube and acting out and telling a story. For example, a student picks the woodland story mat, a picture card of an owl and rolls the numeral two, and then says, "There are 2 owls in the forest." Another student picks a second card picturing skunks and rolls a 3 to finish the story, saying "There are 3 skunks in the forest. How many animals are in the forest?" Then they use unifix cubes or counters to represent the owls and skunks as they tell the story and solve the problem, ending with "now there are 5 animals in the forest." They then work together to draw a picture and write the story using numbers and words.
- By focussing children on one to two story problems per session they can use their time not just solving them, but use words, pictures and numbers to explain how they went about solving the problem.

Handout(s):
Double Trouble

Mental Math…



Teaching for Mastery of Basic Facts

Double Trouble

Doubles occur everywhere in life. An egg c[illegible] feet are 5 + 5, two weeks 7 + 7, and legs on [illegible]

Provide plenty of opportunities for your students to practice with double numbers. Having students determine and explain which strategies help them remember is recommended. Encourage your students to relate each double fact with a visual image that they can use to recall.

Multi-Media

Websites:

Fun math games for students to practice their addition facts:

http://funschool.kaboose.com/formula-fusion/number-fun/games/game_addition_attack.html

and

http://www.fun4thebrain.com/addition.html

Learn 360:

Math Monsters

-Making of 10s (how many combinations make 10?)

-Doubles and Their Neighbors (adding doubles to make adding easier)

www.learn360.com

SmartBoard:

http://exchange.smarttech.com/search.html?q=addition&subject=All+subjects&grade=All+grades&region=en_US

Discussion questions:

What do good friends do? What does it mean, you can 'count on a friend?' Discuss the previous questions with your class.

Group Activity:

Divide the class into pairs and have each pair finish the sentence "good friends…" with as many ideas as possible.

Gather your students back into a large group and have each pair share their thoughts. Have the class work together to choose the top three ideas to add to the master list. Post the list and refer back to it often!

To have good friends you must be a good friend. Here is a list of some of the ways good friends treat each other:

- Good friends listen to each other
- Good friends treat each other respectfully - they don't put each other down
- Good friends try to understand each other's feelings and moods.
- Good friends...

Books related to friendships:

Friendships in Nature by James Gary Hines (2002).

Children will discover how the most unlikely animals, plants, and insects pair up to help each other in fascinating ways. Rich, detailed paintings bring these 'special friendships' to life. Parents and teachers will also love the [illegible] at the end of the book for more information [illegible] and the wonder of nature.

[illegible] by Wong Herbert Yee (2008)

Introduces readers to numbers, counting, and primary and secondary colors by offering the story of ill-tempered Red who got too powerful for his own good and had to be brought down to size by One, a single entity with the courage to stand up for what was right.

Zero by Kathryn Otoshi (2010) As budding young readers learn about numbers and counting, they are also introduced to accepting different body types, developing social skills and character and learning what it means to find value in oneself and others.

Let's Play Some Games

Games are a fantastic way to help students commit arithmetic facts to memory… Practice makes perfect!

Please remember that students should not be compelled to memorize facts if they have limited strategies for [illegible]. Using 10 as an anchor number makes addition easier and more effi[illegible] conceptualize sets of 10, and adding 10 to num[illegible] ough [illegible] students do the following:

Using the worksheet entitled Die plus 10, one die and a pencil

1. Toss die
2. Add 10
3. Fill in the box

Extension: This activity can be adapted for 5's as well.

Dominoes: Play with a partner. Turn over a domino each. Who has the larger number of spots? The few[illegible] other about your spots using number sentences. Add them up now.

Spinners: Play with a partner. Take turns to spin two 0-9 spinners. Add them up.

Handout(s):
Die plus 10
Blank domino template

Acorn Estimation

Est[illegible]ry im[illegible]f mathematics. Part of being functionally numerate requires expertise in usin[illegible]ith con[illegible]ach facili[illegible] strong sense of number as well as a mastery of the basic facts, an understan[illegible]erties of t[illegible]tions as well as th[illegible]opriate uses, and the ability to compute mentally.

Pu[illegible]: any acorn loving pu[illegible]appropriate for a woodland setting (chipmunk, bird, etc).
Su[illegible]s: 12 acorn tops (eithe[illegible]l or paper acorns or simple counters), 4 large base 5 charts with counte[illegible]ase 5 cha[illegible]r 6 different tables, 6[illegible] of counters (one color), construction tree (or just draw one quickly on the[illegible]), 6 jars with 30 acorns in them.

Introduction:
Using their imagination and pretend they are in a forest. Ask them, "What do you see that is alive, is brown and green and provides shade and homes to animals?" Yes, trees. Pull your construction tree out and mount it or draw a tree quickly on the board. Animals live in the forest too (introduce them to the animal puppet). This animal has been very hungry eating acorns. Were do acorns come from? Yes, oak trees. How many acorns have they eaten? Show them the bag with acorn tops.

Estimation as a group:
Now, I would like you to use your estimation skills. Estimation - now that is a big word. Let's stop and think about it in our heads. Turn to your elbow partner and discuss what you think estimation is and where do we use it? Be prepared to share what your partner thinks it is. Once students have had time to share ideas show your students the word estimation and define it for them: it is like making an educated guess. A great deal of the math that we do on a daily basis uses estimation. When you estimate it is perfectly ok to be wrong. That is what makes estimation so much fun! Add the word to your mathematics word wall.

So, looking at the bag of acorn tops estimate how many acorns our animal friend ate. Please share your estimation with us - what strategies did you use? Today, I am going to teach you a strategy for estimating - called being in the zone. Using the hundreds chart, start at 1 - cross out numbers on the chart that are definitely not the number of objects in the jar. Stop when you reach a maybe number. Then find 100, and work backwards. Cross out the numbers that you think are not the number of acorn tops. Stop when you reach a maybe number. The numbers left are "the zone" or the range of reasonable guesses. What is our zone? My zone is more than (greater) _____ but less than (smaller) _____.

Counting using a 5 frame as a group:
Let's see how reasonable our estimate was by counting. To make our job easier I am going to use a 5 frame. As you know, 5 is an anchor number. Counting by 5's is one strategy we can use to help us add quickly. Using a 5 frame helps us do this in an organized way. Let's use the 5 frame to figure out how many acorns the animals ate. Place the acorns in the 5 frame going from left to right filling each line first before moving to another one. Now count by 5's...5...10..then add 2. Our total is 12. Were we in the zone - less than the zone - or greater than the zone?

Estimating and counting using a 5 frame in small groups:

Now you are going to go back to your desks (that have been arranged in groups) and you are going to estimate how many acorns are in your jar by filling out your learning estimate sheet using the 5 frame. Then you will count the acorns. Good luck! Please make sure you tidy up and put the acorns back in the jar when you are finished.

Picture This!

More Literature links for addition

Fiction:

Class Discussion:

Each Orange Had 8 Slices: A Counting Book by Paul Giganti (1992)

Introduces beginning math concepts and reinforces visual literacy through dynamic illustrations and appealing words that combine in a book that can be shared by youngsters and adults.

Possible extension: Using one jar of acorns and large ten frames.

100 Days of School by Trudy Harris (2006)

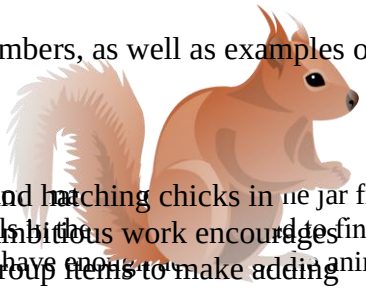
A series of rhymes illustrates different ways to count to 100 such as by adding the ten toes of ten children or ninety-nine train cars plus one caboose.

Math Fables by Greg Tang (2004)

A series of rhymes about animals introduces counting and grouping numbers, as well as examples of such behaviors as cooperation, friendship, and appreciation.

Handout(s):
3 Frames
'In the Zone'

Counting on Friends



Big Book: Yeh, S. A. (2003). Counting on Friends. Toronto: Pearson

Math for All Seasons by Greg Tang (2005)

The 16 riddles take readers through the seasons beginning with tulips and hatching chicks in the spring time and ending with snowflakes and gift boxes in winter. This ambitious work encourages creative problem solving in several ways. Youngsters learn to pair or group items to make adding easier, subtract to add (such as two 5s are 10 minus 2 equals 8), and to look for patterns and symmetries that provide further shortcuts to addition. Since most children are inclined to count items one by one, Tang's book will present them with a new tactic: recognizing visual groupings (twos, threes, and fives) to make adding faster and more accurate, and provide them with some training in it.

The Real Princess: A Mathemagical Tale (2008)

A Queen devises a way, with the help of her ring bearer, to tell whether each of the girls (or three sons hopes to marry is a true Princess.

Non-Fiction:

Springtime Addition by Jill Fuller (2004)

A small book that introduces math concepts in a big way. With simple scenarios, attractive color photographs, generous white space, and large fonts this book reinforces class content.

Group Discussion:

Students share their ideas.

All content for Picture This was provided by Novelist (http://www.ebscohost.com/novelist/).

Handout(s):
10 Frames

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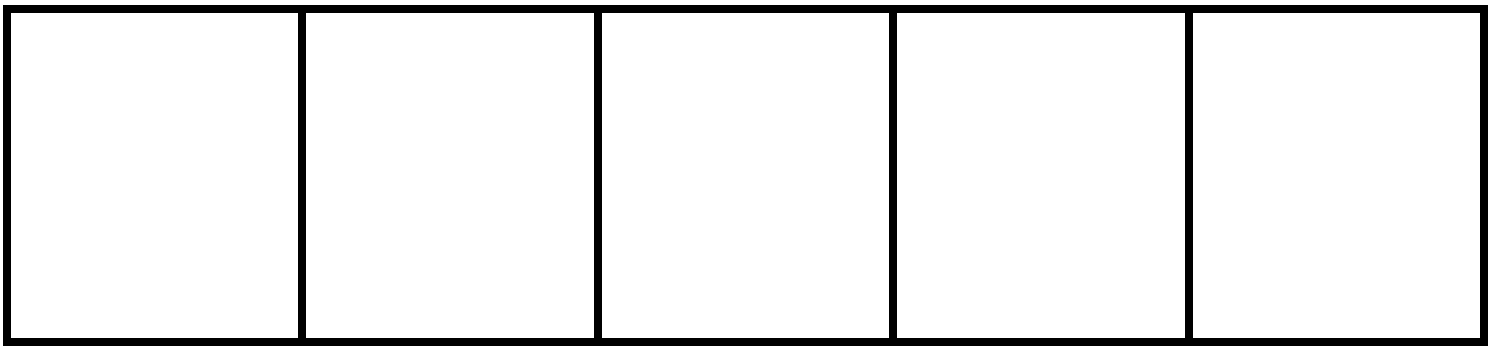
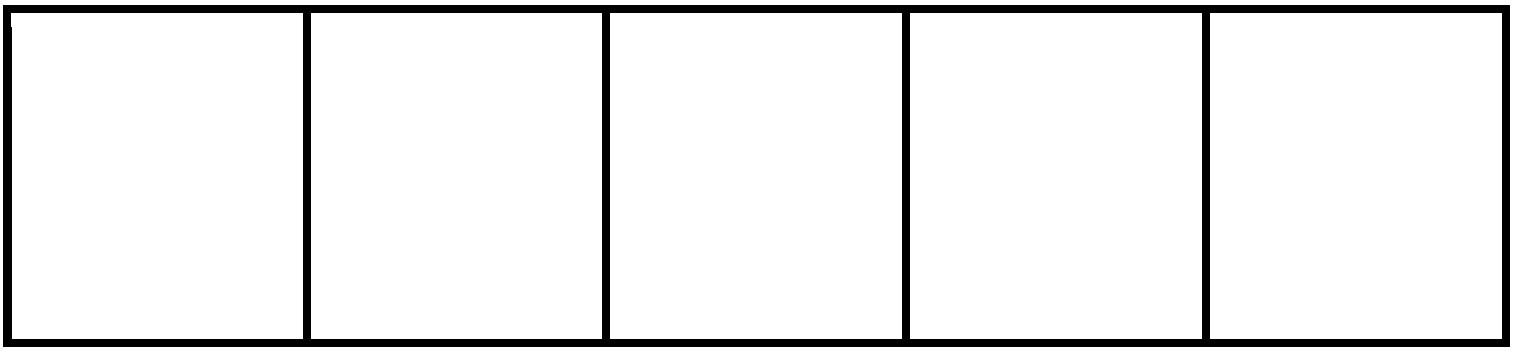
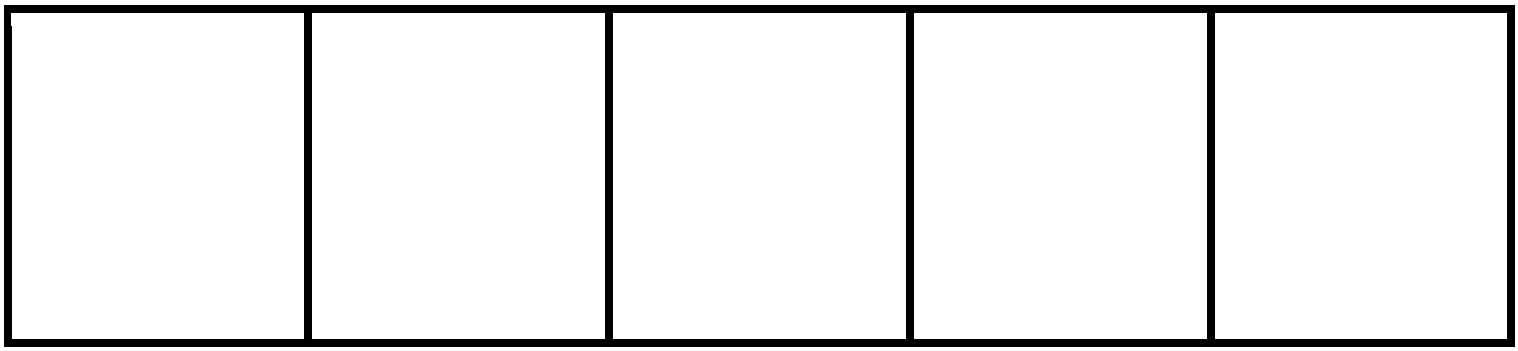
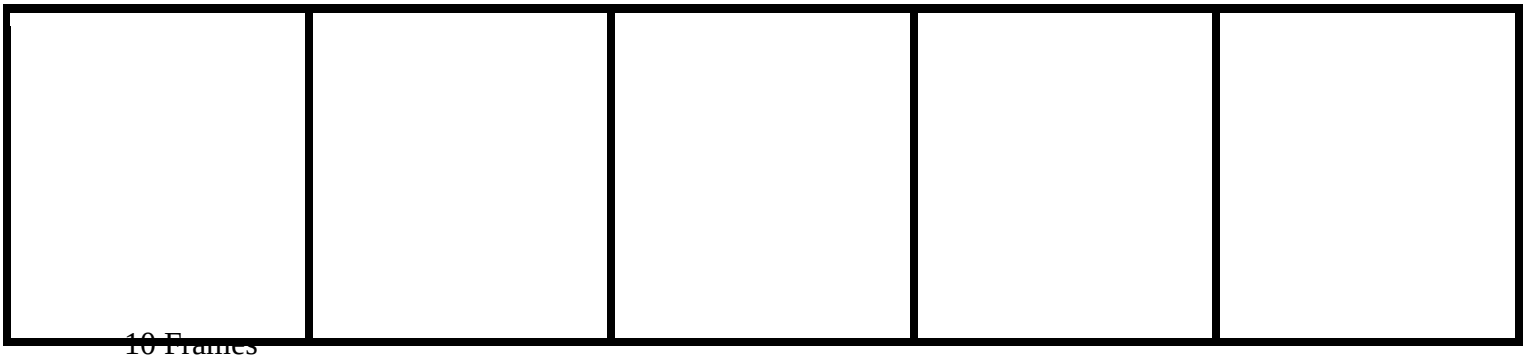
5 Frames

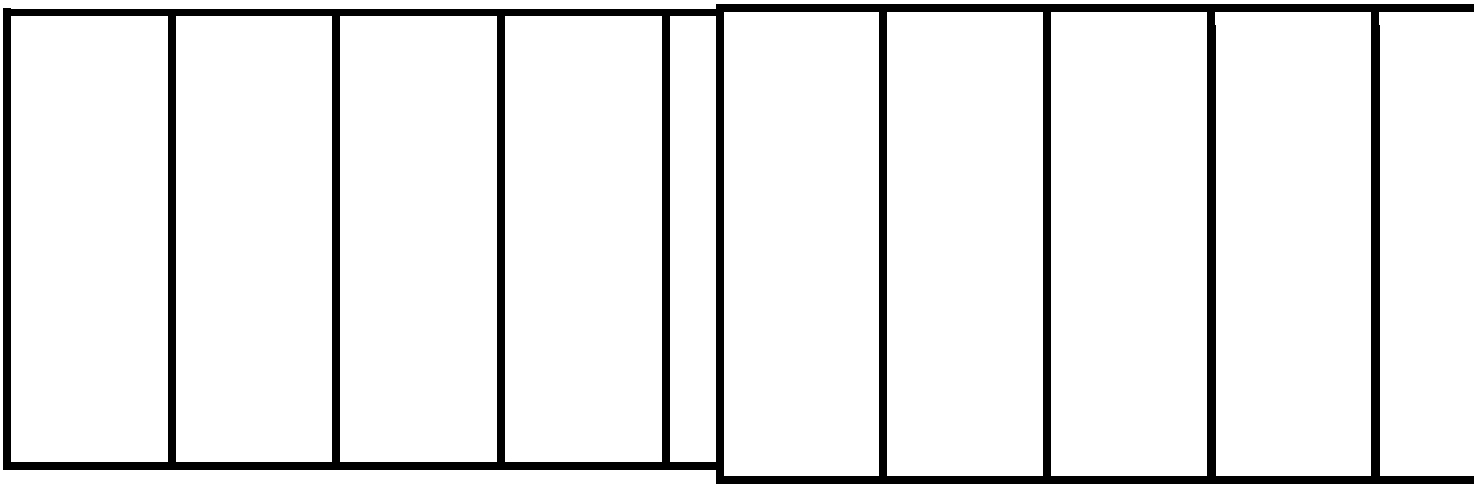




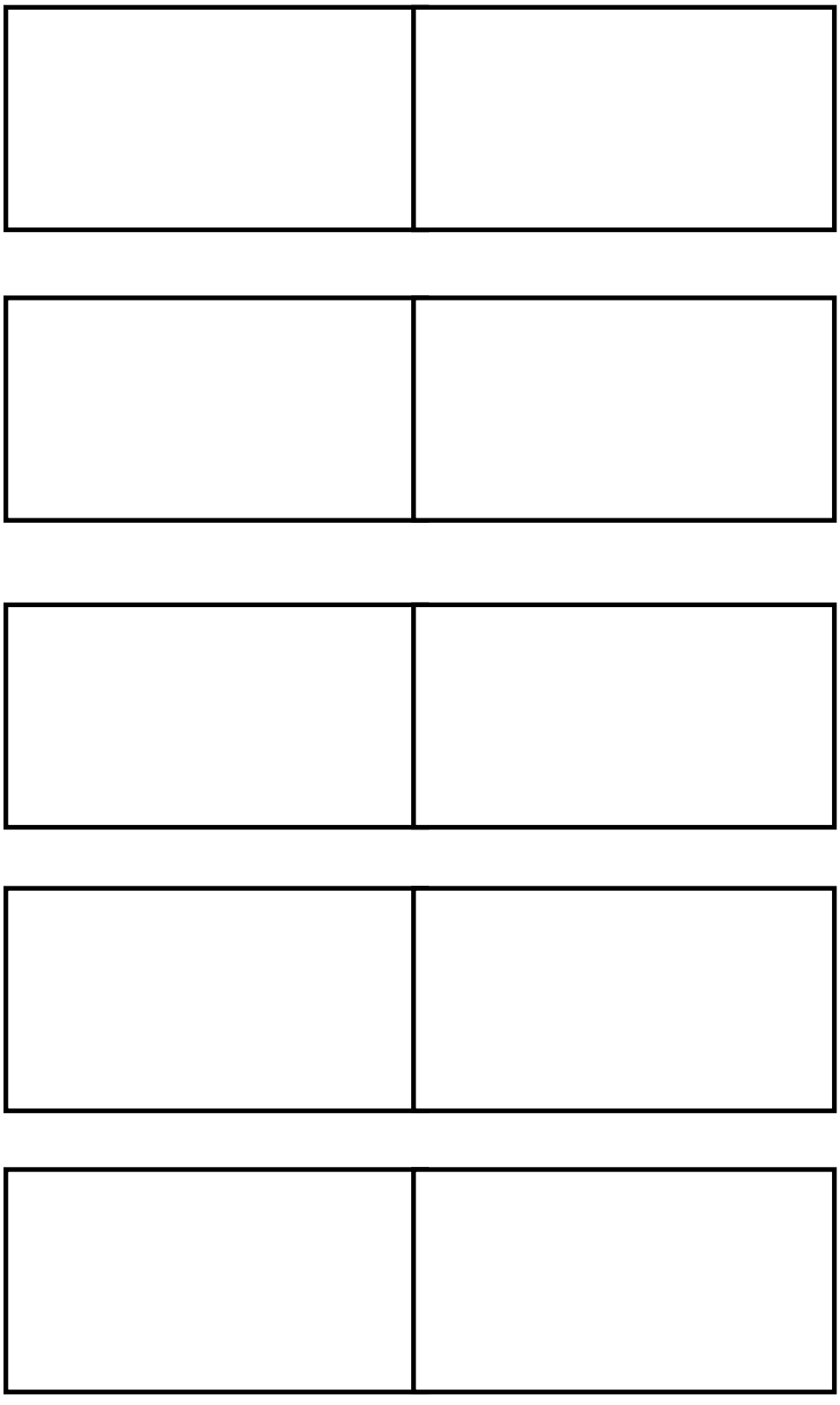




10 Frames



Dominoes



Acorn Estimation

Double Trouble

2 x 2 =	3 x 3 =	5 x 5 =
4 x 4 =	6 x 6 =	10 x 10 =
8 x 8 =	9 x 9 =	

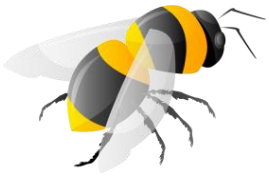
7 x 7 =	11 x 11 =	1 x 1 =

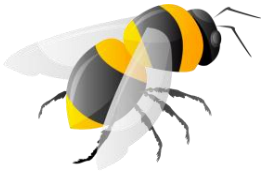
2 x 2 =	3 x 3 =	5 x 5 =
4 x 4 =	6 x 6 =	10 x 10 =
8 x 8 =	9 x 9 =	

7 x 7 =	11 x 11 =	1 x 1 =

Woodland Creatures



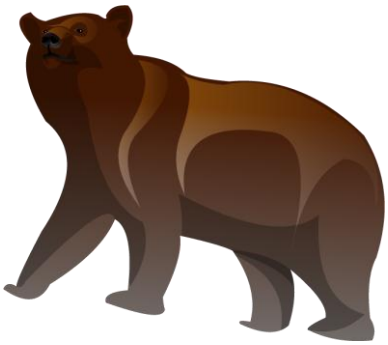





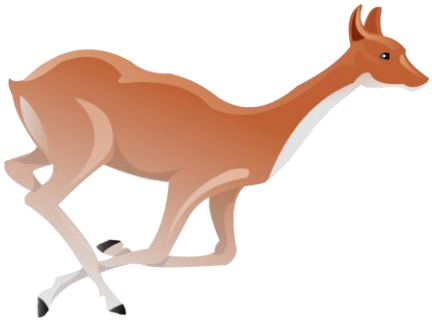
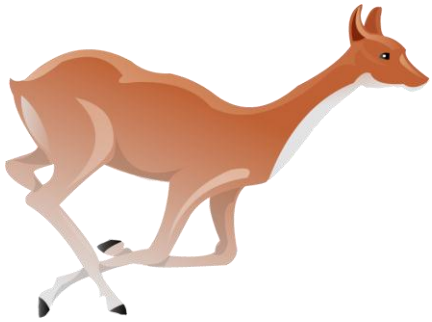








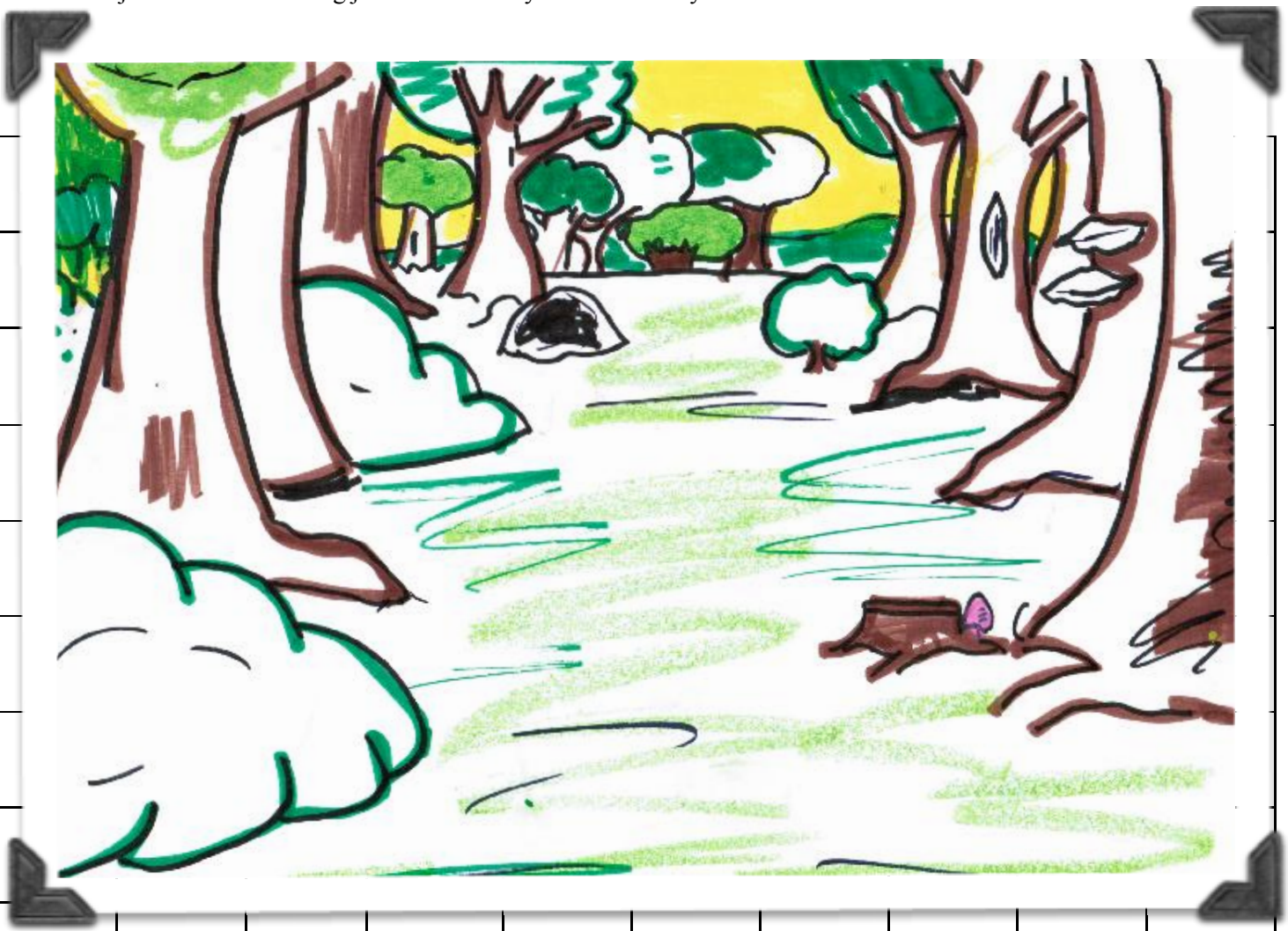
Plus Ten Graph

11	12	13	14	15	16

Learning to Estimate - Are you "In the Zone?"

☑ Start at 1. Cross out the numbers on the 100-chart that you think are definitely NOT the number of objects in the estimating jar. STOP when you reach a 'maybe' number.

☑ Work backwards from 100. Cross out the numbers that you think are definitely NOT the number of objects in the estimating jar. STOP when you reach a 'maybe' number.



81	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**
91	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**

The numbers left are "The Zone" or the range of reasonable guesses. My "zone" is more than _____ but less than _____.

(This activity comes from Teaching Children Mathematics)

Woodland Story Mat