
Putting it all together!

Math Concept:

Vocabulary words:

Art Form:





Picture Books that Nurture Mathematical Thinking: Ages 3-5

Geometry

~Position and Space~

Baicker, Karen, *I Can Do It Too!*
Carle, Eric, *From Head to Toe*
Cauley, Lorinda Bryan, *Clap Your Hands*
Cohen, Caron Lee, *Where's the Fly?*
Crews, Nina, *A High, Low, Near, Far, Loud, Quiet Story*
Dodds, Dayle Ann, *Wheel Away!*
Ellwand, David, *Clap Your Hands*
Hartman, Gail, *As the Crow Flies: A First Book of Maps*
Hill, Eric, *Where's Spot?*
Hoban, Tana, *All About Where*
Hoban, Tana, *Over, Under and Through*
Hutchins, Pat, *Rosie's Walk*
Martin, Bill and Archambault, John, *Here Are My Hands*
Marzollo, Jean, *Pretend You're a Cat*
Newcome, Zita, *Head, Shoulders, Knees, and Toes and Other Action Rhymes*
Portis, Antoinette, *Not a Box*
Reasoner, Charles, *Who's Hatching?: A Sliding Surprise Book*
Rosen, Michael, and Oxenbury, Helen, *We're Going on a Bear Hunt*
Walton, Rick, *How Can You Dance?*

~Shapes~

Blackstone, Stella, *Bear in a Square*
Carle, Eric, *The Secret Birthday Message*
Carle, Eric, *My Very First Book of Shapes*
Charles, N.N., *What am I? Looking Through Shapes at Apples and Grapes*
Crosbie, Michael J., *Architecture Shapes*
Dodds, Dayle Ann, *The Shape of Things*
Dotlich, Rebecca Kai, *What is Round?*
Dotlich, Rebecca Kai, *What is Square?*
Ehlert, Lois, *Color Farm*
Ehlert, Lois, *Color Zoo*
Emberley, Ed, *Picture Pie*
Emberley, Ed, *Picture Pie 2*

Emberley, Ed, *The Wing on a Flea: A Book About Shapes*
Falwell, Cathryn, *Shape Space*
Greene, Gowler, *When a Line Bends...A Shape Begins*
Hoban, Tana, *Circles, Triangles and Squares*
Hoban, Tana, *Cubes, Cones, Cylinders, and Spheres*
Hoban, Tana, *Round and Round and Round*
Hoban, Tana, *Shapes, Shapes, Shapes*
Hoban, Tana, *Spirals, Curves, Fanshapes and Lines*
Hoban, Tana, *So Many Circles, So Many Squares*
Hutchins, Pat, *Changes Changes*
MacDonald, Suse, *Sea Shapes*
Metropolitan Museum of Art, *Museum Shapes*
Micklethwait, Lucy, *I Spy Shapes in Art*
Portis, Antoinette, *Not a Box*
Rau, Dana Meachen, *A Star in My Orange: Looking for Nature's Shapes*
Reasoner, Charles, *Shapes for Lunch*
Rosa-Mendoza, Gladys, *Colors and Shapes/los colores y las figuras*
Shapes (Paradise Press, 2001)
Shaw, Charles G., *It Looked Like Spilt Milk*
Thong, Roseanne, *Round is a Mooncake*
Van Fleet, Matthew, *Spotted Yellow Frogs*
Wallace, Nancy Elizabeth, *Look! Look! Look!*
Wilson, Zachary, *A Circle in the Sky*

Measurement (Comparison)

Adams, Pam, *Ten Beads Tall*
Alborough, Jez, *Tall*
Aker, Suzanne, *What Comes in 2's, 3's and 4's?*
Allen, Pamela, *Who Sank the Boat?*
Barner, Bob, *Parade Day*
Bernhard, Durga, *Earth, Sky, Wet, Dry*
Clark, Emma Chichester, *Mimi's Book of Opposites*
Eastman, P.D., *Big Dog...Little Dog*
Gordon, Sharon, *Just the Opposite: Fast/Slow*
Gordon, Sharon, *Just the Opposite: Up/Down*
Harper, Dan, *Telling Time with Big Mama Cat*
Hoban, Tana, *Big Ones, Little Ones*
Hoban, Tana, *Exactly the Opposite*
Hoban, Tana, *Is It Larger? Is It Smaller?*
Hoban, Tana, *More, Fewer, Less*
Jenkins, Steve, *Actual Size*
Jenkins, Steve, *Biggest, Strongest, Fastest*
Jocelyn, Marthe, and Slaughter, Tom, *One Some Many*
Lillie, Patricia, *When This Box is Full*

McBratney, Sam, *Guess How Much I Love You*

Miller, Margaret, *Big and Little*
Minters, Frances, *Too Big, Too Small, Just Right*
Murphy, Stuart J., *The Best Bug Parade*
Murphy, Stuart J., *The Greatest Gymnast of All*
Murphy, Stuart J., *A House For Birdie*
Murphy, Stuart J., *Just Enough Carrots*
Murphy, Stuart J., *Mighty Maddie*
Nathan, Cheryl and McCourt, Lisa, *The Long and Short of It*
Rathmann, Peggy, *10 Minutes till Bedtime*
Rosa-Mendoza, Gladys, *Opposites/Opuestos*
Russo, Marisabina, *The Line Up Book*
Schreiber, Anne, *Slower Than a Snail*
Serfozo, Mary, *What's What: A Guessing Game*
Stickland, Paul and Henrietta, *Dinosaur Roar!*
Tompert, Ann, *Just a Little Bit*

Number and Operations

~Counting Up~

Barry, Frances, *Duckie's Ducklings: A One-to-Ten Counting Book*
Burton, Katherine, *One Gray Mouse*
Cabrera, Jane, *Over in the Meadow*
Carle, Eric, *1,2,3 to the Zoo*
Carle, Eric, *My Very First Book of Numbers*
Carle, Eric, *The Very Hungry Caterpillar*
Carter, David A., *How Many Bugs in a Box?*
Cave, Kathryn, *One Child, One Seed: A South African Counting Book*
Clark, Emma Chichester, *Mimi's Book of Counting*
Dahl, Michael, *Ants at the Picnic: Counting by Tens*
Dahl, Michael, *Eggs and Legs: Counting by Twos*
Dahl, Michael, *Hands Down: Counting by Fives*
Dahl, Michael, *Speed, Speed Centipede: Counting by Tens*
Davis, Rebecca Fjelland, *Flowers and Showers: A Spring Counting Book*
Dorros, Arthur, *Ten Go Tango*
Dunrea, Olivier, *Deep Down Underground*
Ehlert, Lois, *Fish Eyes*
Ernst, Lisa Campbell, *Up to Ten and Down Again*
Falwell, Cathryn, *Feast for 10*
Feelings, Muriel, *Moja Means One: Swahili Counting Book*
Fleming, Denise, *Count!*
Freymann, Saxton and Elffers, Joost, *Food For Thought*
Freymann, Saxton and Elffers, Joost, *One Lonely Seahorse*
Geddes, Anne, *Ten in the Bed*

Giganti, Paul, *How Many Snails?*

Girnis, Meg, *1 2 3 for You and Me*
 Greenfield, Eloise, *Aaron and Gayla's Counting Book*
 Grossman, Virginia, and Long, Sylvia, *Ten Little Rabbits*
 Gustafson, Scott, *Animal Orchestra*
 Guy, Ginger Foglesong, *Fiesta*
 Hill, Eric, *Spot Can Count*
 Hoban, Tana, *26 Letters and 99 Cents*
 Hoban, Tana, *Let's Count*
 Ives, Penny, *Five Little Ducks*
 Jane, Pamela, *Fall is Here: Counting 1 to 10*
 Kellogg, Steven, *Frogs Jump*
 Krebs, Laurie, *We All Went on Safari: A Counting Journey Through Tanzania*
 Lavis, Steve, *Cock-A-Doodle-Do! A Farmyard Counting Book*
 Lee, Huy Voun, *1,2,3, Go!*
 Lessac, Frane, *Island Counting 1 2 3*
 Lesser, Carolyn, *Spots: Counting Creatures from Sky to Sea*
Let's Look at Numbers (Anness Publishing Limited, 2001)
 Linden, Ann Marie, *One Smiling Grandma*
 Lueck, Laura, *My Baby Brother Has Ten Tiny Toes*
 Lyon, George Ella, *Counting on the Woods*
 MacDonald, Suse, *Look Whooo's Counting*
 Mazzola, Frank, *Counting is for the Birds*
 McMillan, Bruce, *Jelly Beans for Sale*
 Micklethwait, Lucy, *I Spy Two Eyes: Numbers in Art*
 Milich, Zoran, *City 123*
 Mockford, Caroline, *Cleo's Counting Book*
 Moore, Elaine, *Roly-Poly Puppies*
 Mora, Pat, *Uno, Dos, Tres, One, Two Three*
 Morozumi, Atsuko, *One Gorilla*
 Murphy, Chuck, *Chuck Murphy's One to Ten Pop-Up Surprises!*
 Murphy, Stuart J., *Every Buddy Counts*
One Butterfly: A Peek Inside the World of Numbers (Random House, 2006)
 Onyefulu, Ifeoma, *Emeka's Gift: An African Counting Story*
 Root, Phyllis, *One Duck Stuck*
 Rosa-Mendoza, Gladys, *Numbers 1 2 3/ Los Numeros 1 2 3*
 Roth, Carol, *Ten Dirty Pigs/Ten Clean Pigs*
 Roth, Susan L., *My Love for You*
 Sabuda, Robert, *Cookie Count: A Tasty Pop-Up*
 Saul, Carol P., *Barn Cat*
 Sayre, April Pulley, *One is a Snail, Ten is a Crab*
 Scherer, Jeffrey, *The Ants Go Marching*
 Siddals, Mary McKenna, *Millions of Snowflakes*
 Siede, George, and Preis, Donna, *Numbers 123*
 Shahan, Sherry, *Cool Cats Counting*
 Shea, Pegi Deitz, *Ten Mice for Tet*
 Slaughter, Tom, *1 2 3*
 Tafuri, Nancy, *Who's Counting?*
 Tildes, Phyllis Limbacher, *Counting on Calico*
 Walsh, Ellen Stoll, *Mouse Count*
 Williams, Sue, *Let's Go Visiting*

~Counting Down~

Bang, Molly, *Ten, Nine, Eight*
Burris, Priscilla, *Five Green and Speckled Frogs*
Christelow, Eileen, *Five Little Monkeys Jumping on the Bed*
Christelow, Eileen, *Five Little Monkeys Sitting on a Tree*
Crisp, Dan, *Five Little Men in a Flying Saucer*
Dillard, Sarah, *Ten Wishing Stars*
Ellwand, David, *Ten in the Bed*
Ernst, Lisa Campbell, *Up to Ten and Down Again*
Falwell, Cathryn, *Turtle Splash! Countdown at the Pond*
Freeman, Tina, *Ten Little Monkeys Jumping on the Bed*
Gerth, Melanie, *Good Night, Sweet Butterflies*
Gerth, Melanie, *Ten Little Ladybugs*
Haskamp, Steve, *Eight Silly Monkeys*
Haskamp, Steve, *This Little Piggy*
Hutchins, Pat, *Ten Red Apples*
Kelly, Martin and Learis, Phil, *Five Green and Speckled Frogs*
Kubler, Annie, *There Were Ten in the Bed*
Masurel, Claire, *Ten Dogs in the Window*
Milstein, Linda, *Coconut Mon*
Peek, Merle, *Roll Over! A Counting Song*
Rose, Deborah Lee, *One Nighttime Sea*
Stockham, Jess, *Ten Little Speckled Frogs*
Thaler, Mike, *Seven Little Hippos*
Wise, William, *Ten Sly Piranhas: A Counting Story in Reverse*
Yoon, Salina, *Five Silly Turkeys*
Yoon, Salina, *Five Spooky Ghosts*
Zinmeister, Elke, *Ten Fat Sausages*

~Counting Rhymes~

Arenson, Roberta, *One, Two, Skip a Few: First Number Rhymes*
Arnold, Tedd, *Five Ugly Monsters*
Baker, Keith, *Big Fat Hen*
Bartlett, Alison, and Wilson, Anna, *Over in the Grasslands*
Beil, Karen Magnuson, *A Cake All for Me!*
Brown, Marc, *Hand Rhymes*
Burris, Priscilla, *Five Green and Speckled Frogs*
Cabrera, Jane, *Over in the Meadow*
Christelow, Eileen, *Five Little Monkeys Jumping on the Bed*
Christelow, Eileen, *Five Little Monkeys Sitting on a Tree*
Dunn, Opal, *Number Rhymes to Say and Play!*
Ehrhardt, Karen, *This Jazz Man*
Ellwand, David, *Ten in the Bed*
Evans, Michael, *Over in the Meadow*
Freeman, Tina, *Ten Little Monkeys Jumping on the Bed*
Geddes, Anne, *Ten in the Bed*
Gunson, Christopher, *Over on the Farm*

Ives, Penny, *Five Little Ducks*
Kimmelman, Leslie, *How Do I Love You?*
Kelly, Martin and Learis, Phil, *Five Green and Speckled Frogs*
Kubler, Annie, *There Were Ten in the Bed*
Langstaff, John, *Over in the Meadow*
Peek, Merle, *Roll Over! A Counting Song*
Scherer, Jeffrey, *The Ants Go Marching*
Schertle, Alice, *1,2, I Love You*
Stockham, Jess, *Ten Little Speckled Frogs*
Yaccarino, Dan, *Five Little Pumpkins*

~Ordinal Numbers~

Carle, Eric, *Ten Little Rubber Ducks*
Larios, Julie Hofstrand, *On the Stairs*
Murphy, Stuart J., *Henry the Fourth*
Sis, Peter, *Going Up!*
Yaccarino, Dan, *Five Little Pumpkins*

~Operations~

Hutchins, Pat, *The Doorbell Rang*
Jonas, Ann, *Splash!*
Murphy, Stuart J., *Jack the Builder*

~Part-Part-Whole Relationships~

Anno, Mitsumasa, *Anno's Counting Book*
Baker, Keith, *Quack and Count*
Crews, Donald, *Ten Black Dots*
Jenkins, Emily, *Five Creatures*
McMillan, Bruce, *Counting Wildflowers*
Miller, Virginia, *Ten Red Apples*
Reiser, Lynn, *Ten Puppies*
Sturges, Philemon, *Ten Flashing Fireflies*
Winburn, William B., *10 Rubber Duckies*

Algebra (Patterns)

Adams, Pam, *There Was an Old Lady Who Swallowed a Fly*
Arenson, Roberta, *One, Two, Skip a Few: First Number Rhymes*
Arnold, Tedd, *Five Ugly Monsters*
Andrews-Goebel, Nancy, *The Pot that Juan Built*
Baer, Gene, *Thump, Thump, Rat-a-Tat-Tat*
Baker, Jeannie, *Window*
Bartlett, Alison, and Wilson, Anna, *Over in the Grasslands*
Beaton, Clare, *Daisy Gets Dressed*
Benton, Linda, *I See Patterns* (Creative Teaching Press)
Berkes, Marianne, *Over in the Ocean: In a Coral Reef*
Brown, Marc, *Hand Rhymes*
Boynton, Sandra, *Doggies*
Boynton, Sandra, *Hippos Go Berserk!*
Burris, Priscilla, *Five Green and Speckled Frogs*
Cabrera, Jane, *Over in the Meadow*
Cabrera, Jane, *Ten in the Bed*
Christelow, Eileen, *Five Little Monkeys Jumping on the Bed*
Christelow, Eileen, *Five Little Monkeys Sitting on a Tree*
Cole, Henry, *Jack's Garden*
Dunn, Opal, *Number Rhymes to Say and Play!*
Durango, Julia, *Cha Cha Cha Chimps*
Ellwand, David, *Ten in the Bed*
Emmett, Jonathan, *Through the Heart of the Jungle*
Evans, Michael, *Over in the Meadow*
Freeman, Tina, *Ten Little Monkeys Jumping on the Bed*
Geddes, Anne, *Ten in the Bed*
Gunson, Christopher, *Over on the Farm*
Harris, Trudy, *Pattern Bugs*
Harris, Trudy, *Pattern Fish*
Henkes, Kevin, *Shhhh*
Ives, Penny, *Five Little Ducks*
Kalan, Robert, *Jump, Frog, Jump!*
Kimmelman, Leslie, *How Do I Love You?*
Kelly, Martin and Learis, Phil, *Five Green and Speckled Frogs*
Kubler, Annie, *There Were Ten in the Bed*
Langstaff, John, *Over in the Meadow*
Lass, Bonnie, and Sturges, Philemon, *Who Took the Cookies from the Cookie Jar?*
Let's Look at Patterns (Anness Publishing Limited, 2001)
Martin, Bill, *Brown Bear, Brown Bear, What Do You See?*
Martin, Bill, *Chicka Chicka Boom Boom*
Miller, Margaret, *Now I'm Big*
Miranda, Anne, *Let's Get the Rhythm*
Morozumi, Atsuko, *One Gorilla*
Murphy, Stuart J., *Beep Beep, Vroom Vroom*
Murphy, Stuart J., *A Pair of Socks*
Peek, Merle, *Roll Over! A Counting Song*
Roberts, Sheena, *We All Go Traveling By*

Schaefer, Lola M., *This is the Sunflower*
Scherer, Jeffrey, *The Ants Go Marching*
Sharratt, Nick, *My Mom and Dad Make Me Laugh*
Singer, Marilyn, *Quiet Night*
Stockham, Jess, *Ten Little Speckled Frogs*
Sweet, Melissa, *Fiddle-I-Fee*
Swinburn, Stephen R., *Lots and Lots of Zebra Stripes*
Taback, Simms, *There Was an Old Lady Who Swallowed a Fly*
Taback, Simms, *This is the House that Jack Built*
Tuxworth, Nicola, *Let's Look at Patterns*
Ward, Jennifer, *Over in the Garden*
Webb, Steve, *Tanka Tanka Skunk*
Westcott, Nadine Bernard, *I Know and Old Lady Who Swallowed a Fly*
Williams, Rozanne Lanczak, *Mr. Noisy's Book of Patterns* (Creative Teaching Press)
Yaccarino, Dan, *Five Little Pumpkins*
Zelinsky, Paul O., *The Wheels on the Bus*

Data Analysis and Probability

Accorsi, William, *Billy's Button*
Ahlberg, Janet and Allan, *The Baby's Catalogue*
Alborough, Jez, *Clothesline*
Anholt, Catherine and Laurence, *All About You*
Bryant-Mole, *Texture*
Cheltenham Elementary School Kindergartners, *We Are All Alike... We are All Different*
Grayes, Kimberlee, *Collecting Things is Fun* (Creative Teaching Press)
Hill, Sandi, *Just Graphi It!* (Creative Teaching Press)
Hill, Sandi, *Look and See* (Creative Teaching Press)
Hoban, Tana, *Dots, Spots, Speckles and Stripes*
Hoban, Tana, *Is It Red? Is It Yellow? Is It Blue?*
Hoban, Tana, *Is it Rough? Is It Smooth? Is It Shiny?*
Hutchins, Pat, *Which Witch is Which?*
Jocelyn, Marthe, *Hannah's Collections*
Machotka, Hana, *What Neat Feet*
Miller, Margaret, *Whose Shoe?*
My First Look at Sorting (Random House, 1991)
Nagda, Ann Whitehead, *Tiger Math: Learning to Graph from a Baby Tiger*
Nechaev, Michelle Wagner, *Our Favorites* (Creative Teaching Press)
Perry, Sarah, *If...*
Van Fleet, Matthew, *Tails*
Widdowson, Kay, *Please, Mr. Crocodile*
Williams, Rozanne Lanczak, *Buttons, Buttons*
Williams, Rozanne Lanczak, *What's in my Pocket?*
Winthrop, Elizabeth, *Shoes*

MUSIC ELEMENTS

Time

- Steady Beat – an even pulse pattern (it sets the tempo/speed: fast/slow/stop)
- Rhythm – patterns of long and short

Pitch – How high or low a sound is

Melody – Patterns of pitch played on an instrument or sung

Timbre – The characteristic sound quality of an instrument or voice. (a flute sounds different than a cello)

Dynamics – The volume of sound; loud/quiet

Song structure/Form

- Verse
- Verse + chorus
- Zipper song
- Echo song
- Call and response
- Cumulative song

Early Childhood Math Content Areas

I. *Number and Number Sense*

Counting

One to One Correspondence

Recognizing Numerals – numeral 5 is same as ***** or ^^^^^ or <<<<<<

Ordinal Numbers – first, third, fifth (placement value)

Subitizing – recognizing quantity without having to count

Quantity

Conservation – not fooled by appearances (O O O O O same as OOOOO)

Estimation

Part-Part-Whole – many ways to make whole ($1+6=7$, $2+5=7$, $3+4=7$) dividing number into smaller sets and put it back together

Operations – add-on, take away

II. *Geometry*

Shapes – recognize, describe, name properties, and draw 2D & 3D shapes: (triangle, rectangle, circle, trapezoid, rhombus, cone, sphere, cylinder, pyramid, prism, cube, oval, hemisphere, etc.)

Language – vertex, corner, base, side, edge, rectangular prism, triangular prism

Attributes – big, blue, triangle = 3 attributes

Matching of Shapes

Compose & Decompose

Spatial Awareness/Relationship – *Position, Direction, Distance; able to describe location beside: behind, next to, between, etc.*

Transformation – *Shapes move (turn, flip, slide)*

III. Measurement – *All about comparing something to a standard: non-standard measurement (yarn, sticks, footprint) and standard units.*

Comparisons – *which has more/less, heavier/lighter, longer/shorter, colder/hotter (big vocabulary unit-develop understanding): Length, height, width, weight, volume, temperature, time, speed*

IV. Data Analysis and Probability

Data Collection

Classifying and Sorting

Graphing

Modes of Representation – *Tallies, concrete objects, drawings*

V. ALGEBRA

Patterns

Seriation

Math Processes – How

Representation

Problem Solving/Critical Thinking

Reasoning & Proof (Testing)

Making Connections with Everyday Routines and Prior Knowledge

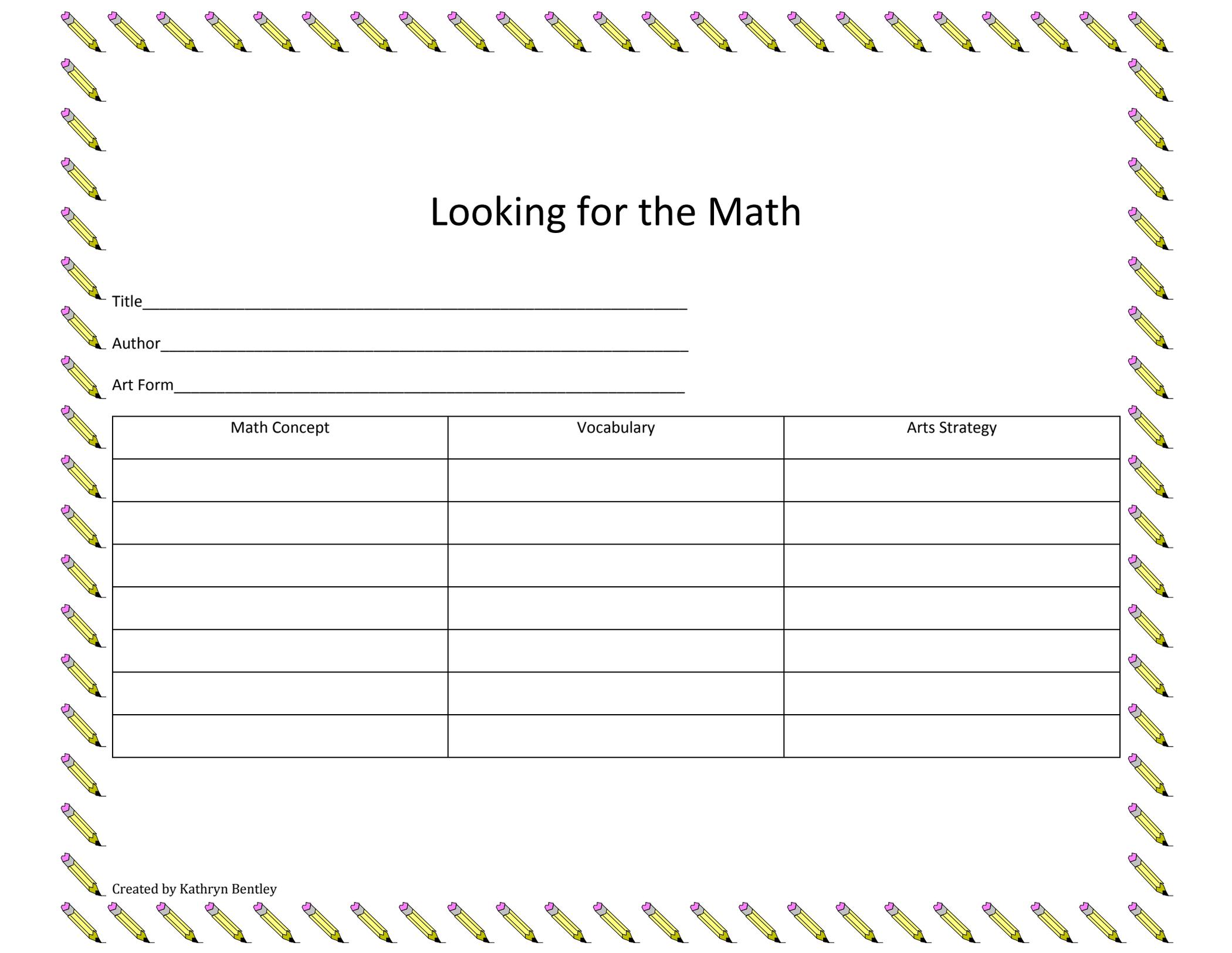
Communication

References

Copple, Carol and Bredekamp, Sue 2009. *Developmentally Appropriate Practice in Early Childhood Programs*. 3rd ed. Washington, DC: NAEYC

Copley, Juanita V. 2010. *The Young Child and Mathematics*. 2d ed. Washington, DC: NAEYC

Maria Gallagher, M.Ed. Fairfax County Office for Children



Looking for the Math

Title _____

Author _____

Art Form _____

| Math Concept | Vocabulary | Arts Strategy |
|--------------|------------|---------------|
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DRAMA ELEMENTS

Character/qualities/ personality/ action

Plot/Story

Beginning/Middle/End

Setting/Environment

Dialogue

Theme

Conflict/Resolution

Story-telling

Role play

Tools:

- Body, voice
- Props/costume/scenery
- Gesture: subtle and large
- Movement/Physicalize
- Imagination

DANCE ELEMENTS

Body – The instrument of dance, the parts alone (heads, shoulders) and whole body involvement

Action – Movement made by body

- Locomotor – moving from one place to another e.g. walk, slide, crawl, gallop
- Non-locomotor – moving without changing place e.g. bend, twist, stretch

Space – Where we move and the shape of movements

- Body shape – straight, bent, twisted, curved, symmetrical, asymmetrical,
- Direction – forward, backward, side, around, toward, away, diagonal, up, down
- Level – high, medium, low
- Pathway – curved/straight, zigzag, random
- Place – personal space, general space
- Range/amount of space – large, small, narrow, wide

Time – The speed and duration of movement

- Tempo – fast, slow, stop
- Rhythm – beat (steady, uneven), pattern/rhythm

Energy – Amount and kind of force applied to movement

- Qualities – sustained, explosive, collapse, sudden, quick
- Degrees of energy – strong/weak, heavy/light

COGNITIVE DEVELOPMENT

Mathematical Thinking and Expression

Children begin to:

- Experiment with and use numbers and counting in their play.
- Recognize and describe common shapes.
- Understand and use words that identify different positions in space (e.g., in, out, under, over).
- Recognize and duplicate simple patterns within their environment using manipulatives, art materials, body movements, etc.
- Sort, classify, and order objects on the basis of one or two attributes (color, shape, size, small to large, short to tall, etc.).

