

Math & Art Activities for Primary Grades

Learning Math through Art, Music, Dance, & Stories



Welcome

- This presentation is intended for teachers of grades K-1-2.
- We are
 - Tami Matsumoto
 - I teach mathematics at College of the Redwoods and Humboldt State University
 - Luna Wang
 - An International Student from China studying at Humboldt State University

The Math Brain Dance

The Math Brain Dance (Primary)

performed by

Debbie Gilbert

of the Whistlestop Dance
Company and Arts Impact in
Seattle, WA.

- <https://vimeo.com/90272954>
(5:36)



The “Today” Song

To the tune of "Frere Jacques"

Today is _____-day.

Today is _____-day.

All day long, all day long.

Yesterday was _____-day.

Tomorrow will be _____-day.

All day long, all day long.

Suggestion: Create alternative last lines, for example:

- “I can’t wait, I can’t wait”
- “No school tomorrow, I can’t wait”
- “Oh what fun! Oh what fun!”
- “We are going ... to the zoo.”
- “They are saying ... It will rain.”

Adapted From:

<http://www.kinderthemes.com/Songsideasandchecklists.html>

(The website advises: “Great for the Calendar Helper to Lead”)

Now found at:

<https://web.archive.org/web/20140722144715/http://www.kinderthemes.com/Songsideasandchecklists.html>

Rhymes To Help Children Write Numbers

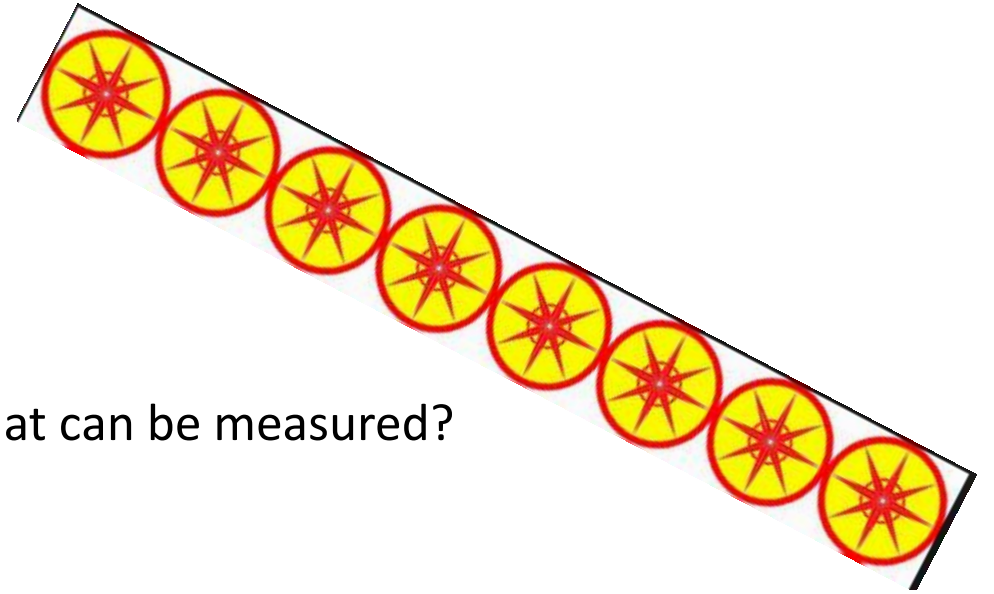
(can sing these – make it up)

Adapted from <http://www.crsd.org/Page/24099>

- Number 0 Counter Clockwise be a hero.
Now you've made the number zero.
- Number 1 Straight line down, one is fun.
That's the way you make a one.
- Number 2 Round and back on the railroad track.
Look! Here comes the Two, Two!
- Number 3 Around a tree, around a tree.
That's the way you make a three.
- Number 4 Down and over, down some more.
Wow! You've made the number Four.
- Number 5 For the five, go down and around.
With a flat rooftop (not on the ground).
- Number 6 Down to a loop, the 6 rolls a hoop.
- Number 7 Across the sky and down from heaven.
That's the way you make a seven.
- Number 8 Make an "S" and then don't wait.
Go back up and make an eight.
- Number 9 Around the loop then down the line.
That's how you make the number nine.

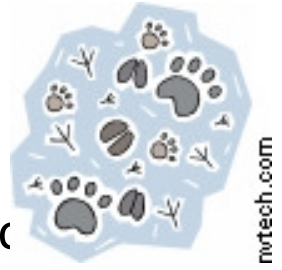
Measurement

Non-standard Measuring: DIY Colored Dot Ruler



- **DISCUSSION:** What are some items that have a “length” that can be measured?
- **ACTIVITY:**
 - Place a line of dots on a wall or chalkboard. Give students various objects (or have them choose some) to compare to the row of dots. How many dots are there in a length that matches the length of the object?
- **VARIATIONS:**
 - Give each student a piece of paper (or popsicle stick) with a row of dots, and have him/her put that next to various objects to count how many dots long each item is.
 - Use border paper (from wallpaper or from corkboard displays – you can choose seasonal borders such as pumpkins, shamrocks, hearts) and have students compare objects and count how many items in the border match up to the lengths of the objects. Ask questions such as, “How many pumpkins high is your desk?”

Non-standard Measuring: Length in “feet”



DISCUSSION: How could we get a measurement of things like the length or width of the room?
What does “one foot” of length mean?

Note: Read the book “How Big Is a Foot?” by Rolf Myller. <https://www.youtube.com/watch?v=bWhWL1MET7A>

ACTIVITY: Trace each student’s foot (with or without shoe) onto file folder or thin cardboard. Have each student cut out two copies.

Measure lengths of different things by placing the feet heel-to-toe, heel-to-toe, and repeating this to count out how many feet long something is. Alternatively, cut out several copies of the feet, and place them in a line along an object to measure its length. Note that since feet are different sizes, objects of the same length will be different numbers of feet for different people.

VARIATIONS:

- Cut adding-machine tape in lengths to match heights of students. Have each student attach paper-feet along the tape to measure height in feet (can glue, tape, or staple).
- Compare items to see if longer than or shorter than the student’s foot.
- Use animal footprints. Can use different types and compare measures.
- Use hands (The “hand,” a standard unit of measure, is equivalent to four inches. Heights of horses up to the withers are measured in hands.)

Clip-Art from: <http://dir.nvtech.com/Nature/Animals/>

DIY Measuring Tool

Option 1:

- Make your own “Dot Ruler”
 - Use a strip of paper or popsicle stick. This will become your own personal “ruler.”
 - Choose some stickers. Stick them in a row along your stick or strip of paper, spacing them as evenly as you can.
- Estimate!
 - Using your ruler, how many “dots” long do you think your pencil is?
- Measure things!
 - Using your ruler, measure how many “dots” long your pencil is. How long is your smartphone? How wide? (Estimate first.)
 - Measure more things.
 - Compare your measurements with someone else’s, for more than one thing.

Option 2

- Make your own “One-Foot Ruler”
 - Either cut a strip of paper to match the length of your foot from toe to heel. Or cut out the outline of your foot from a piece of paper (probably have to go diagonally). The exact outline is not important – the length from toe to heel should match the length of your foot.
 - Make another one so you can use them end-to-end to measure things longer than one foot.
- Estimate!
 - Using your “foot” length, estimate how many feet wide the room is. (Or how far from one table to the next, since the room is gigantic.)
- Measure!
 - Measure that distance and compare to your estimate. How did you do?
 - Measure other things too (estimate first).

How Big is a Foot?

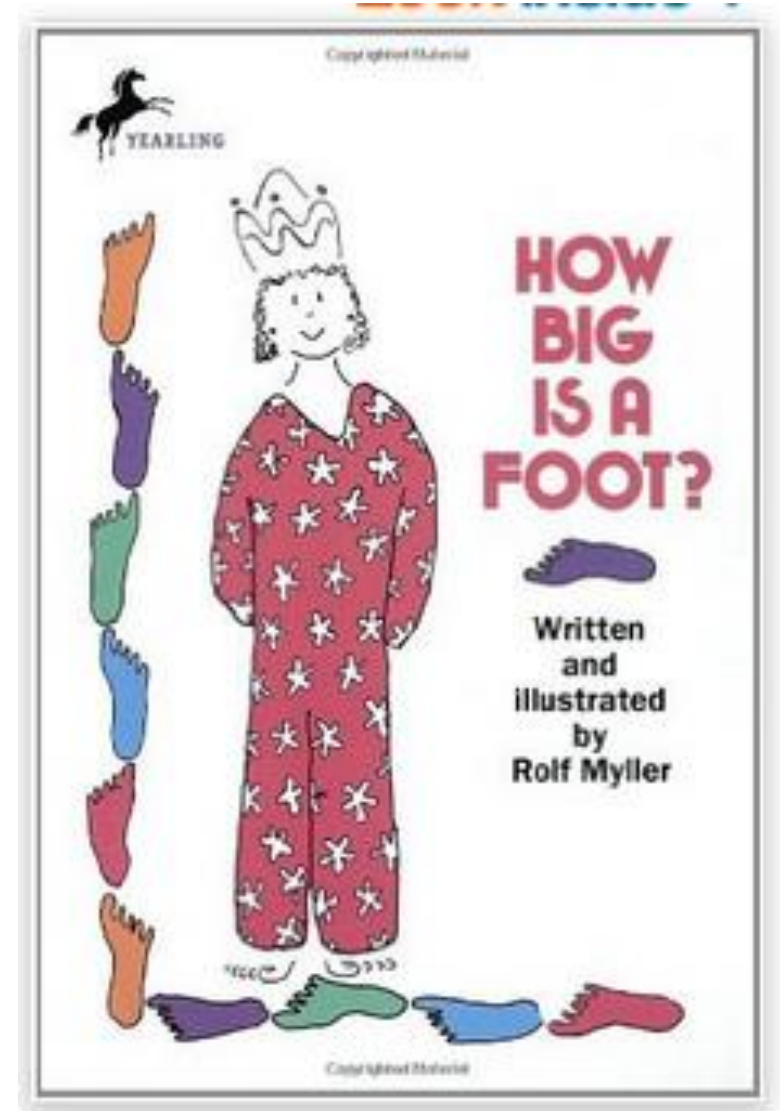
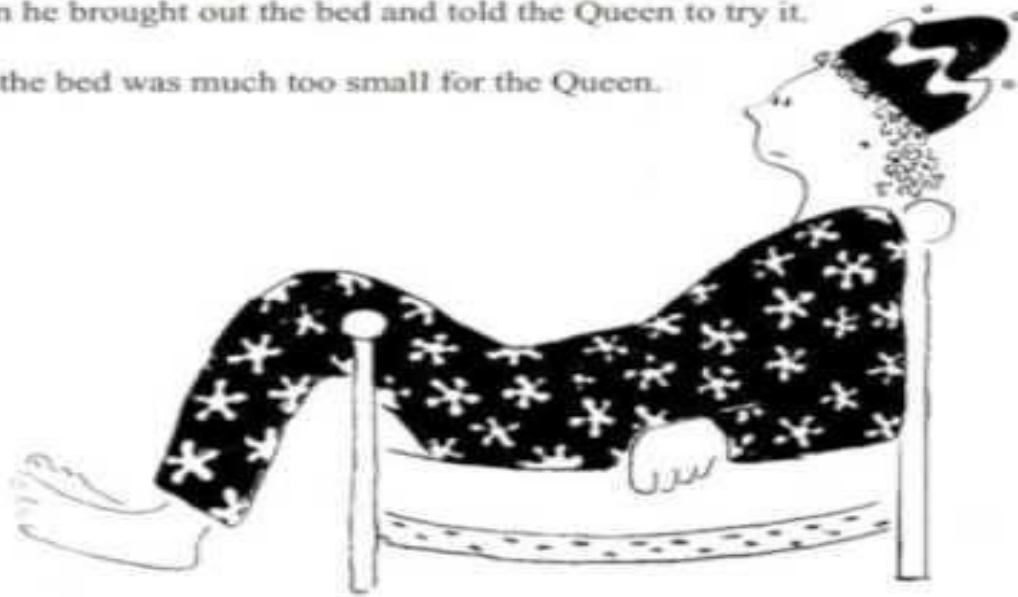
By Rolf Myller

<https://www.youtube.com/watch?v=bWhWL1MET7A>

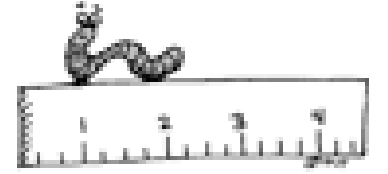
Instead, he called the Queen at once and told her to put on her new pajamas.

Then he brought out the bed and told the Queen to try it.

But the bed was much too small for the Queen.



Inch Collage Poster and Inch Worms



Use string, ribbon, and other long things to understand the length of an inch.

DISCUSSION: How long is an inch? Select different items and ask, “How many inches long do you think this i

ACTIVITY:

Show students how to measure one inch using a ruler, or give each student a piece of cardboard that is a one inch square (so that it doesn’t matter which side they use).

Then have students cut string, ribbon, etc. into pieces that are one inch long.

Each student makes a collage poster by gluing these one-inch pieces of various materials onto a piece of paper. By handling several items of one inch length, they get a better sense of how long an inch really is.

You can then hold up various items and have them guess which is longer or shorter than one inch. Then they can take a one-inch “worm” and measure items. Note: Read the book “Inch by Inch” by Leo Lionni.

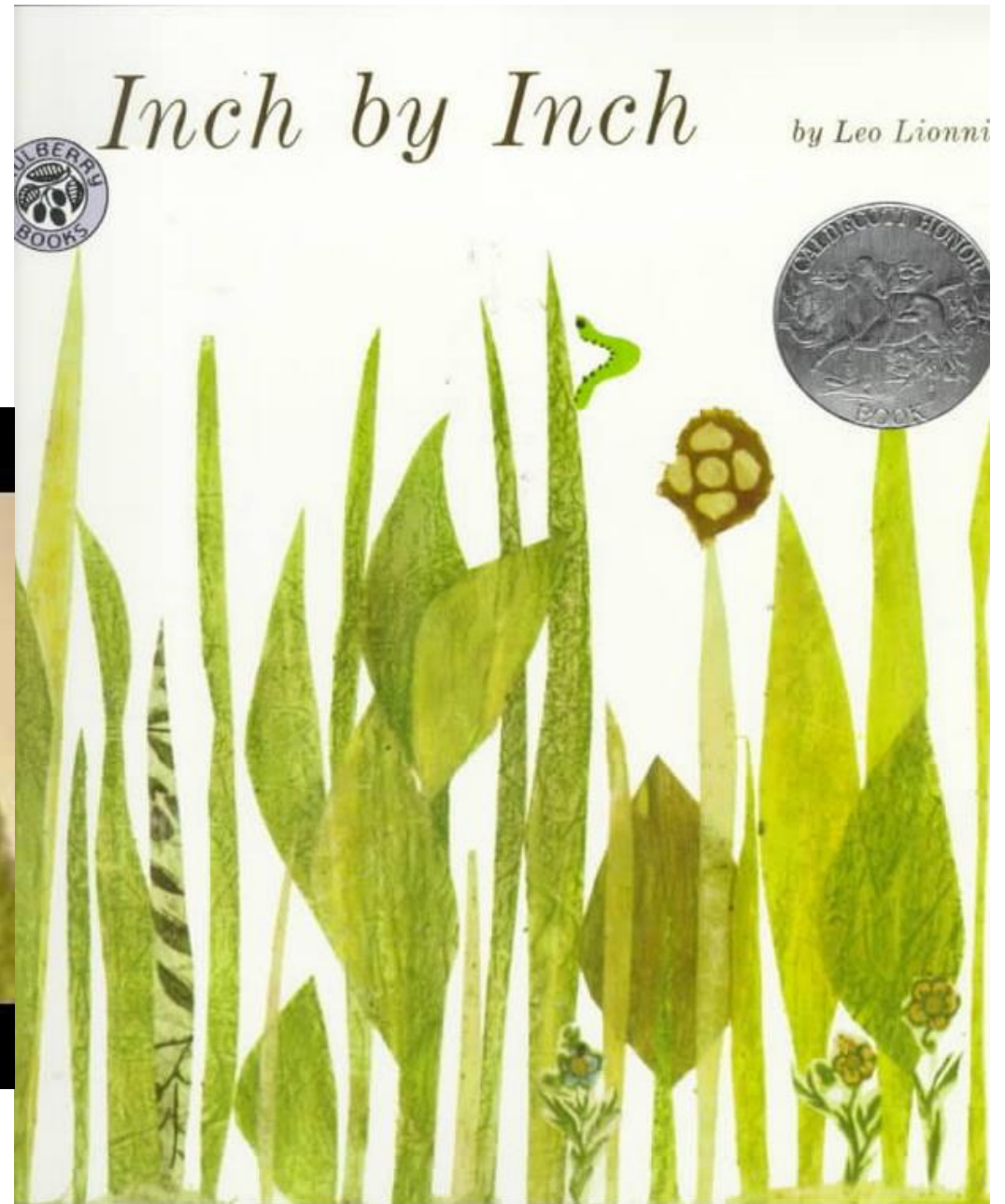
Also, they can make a longer ribbon by taping together various pieces of ribbon, string, etc., that are each one inch long, and measure lengths of items by comparing their ribbon to the objects.

Math Clip-Art from: <http://school.discoveryeducation.com/clipart/category/math3.html>

Inch by Inch

by Leo Lionni

<https://www.youtube.com/watch?v=ypCzA3pMwXo>



Measurement Dance



- Predict, then measure how many steps, tiptoes, leaps it will take to cross a room. Discuss non-standard units of measure exemplified by different people's leaps.
- Measure a distance with a variety of steps, crawls or leaps. Make a chart to compare.
- Perimeter dances with a partner: Figure out a sequence of movements that leads you in a rectangle (e.g., 8 slides to right, 4 zigzag jumps back, 8 slides left, 4 zigzag jumps forward).

Adapted from: Teaching Mathematics Through Dance and Movement

Submitted by Jan Adams, Winston-Salem/Forsyth Schools

<http://www.dpi.state.nc.us/curriculum/artsed/resources/handbook/dance/28integration#teaching>

Counting (and vocabulary)

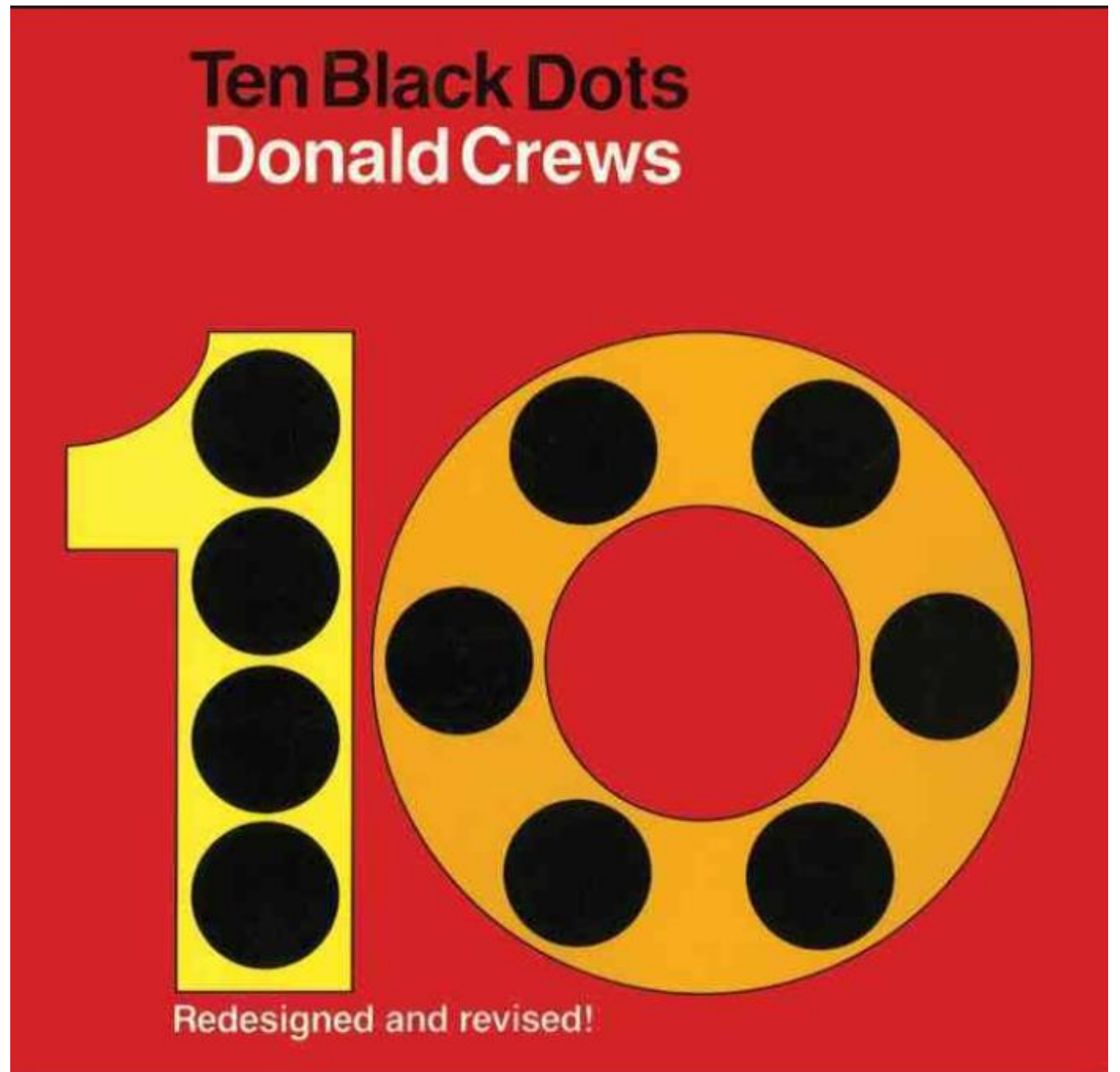
Ten Black Dots by Donald Crews

What can you do with one black dot?

Or two?

Or more?

A counting book that still seems to have wide appeal among the young.



Counting Books (examples of)

- Ten Black Dots, by Donald Crews
- How Do Dinosaurs Count to Ten?
- One Gorilla
- Ten Apples Up On Top, Dr Seuss
- Ten Little Monkeys
- Ten Naughty Little Monkeys
- Ten Little Ladybugs
- The Cheerios Counting Book – good for 1-1 correspondence, count to 20 then to 100 by tens
- Very Hungry Caterpillar, Eric Carle
- Chicka, Chicka 1 2 3 – count to 100 by tens

Fine Motor Skills Counting Activity

from Vicky at Mess For Less <http://www.messforless.net/you-can-count-on-me/>
Pipe Cleaners & Pony Beads

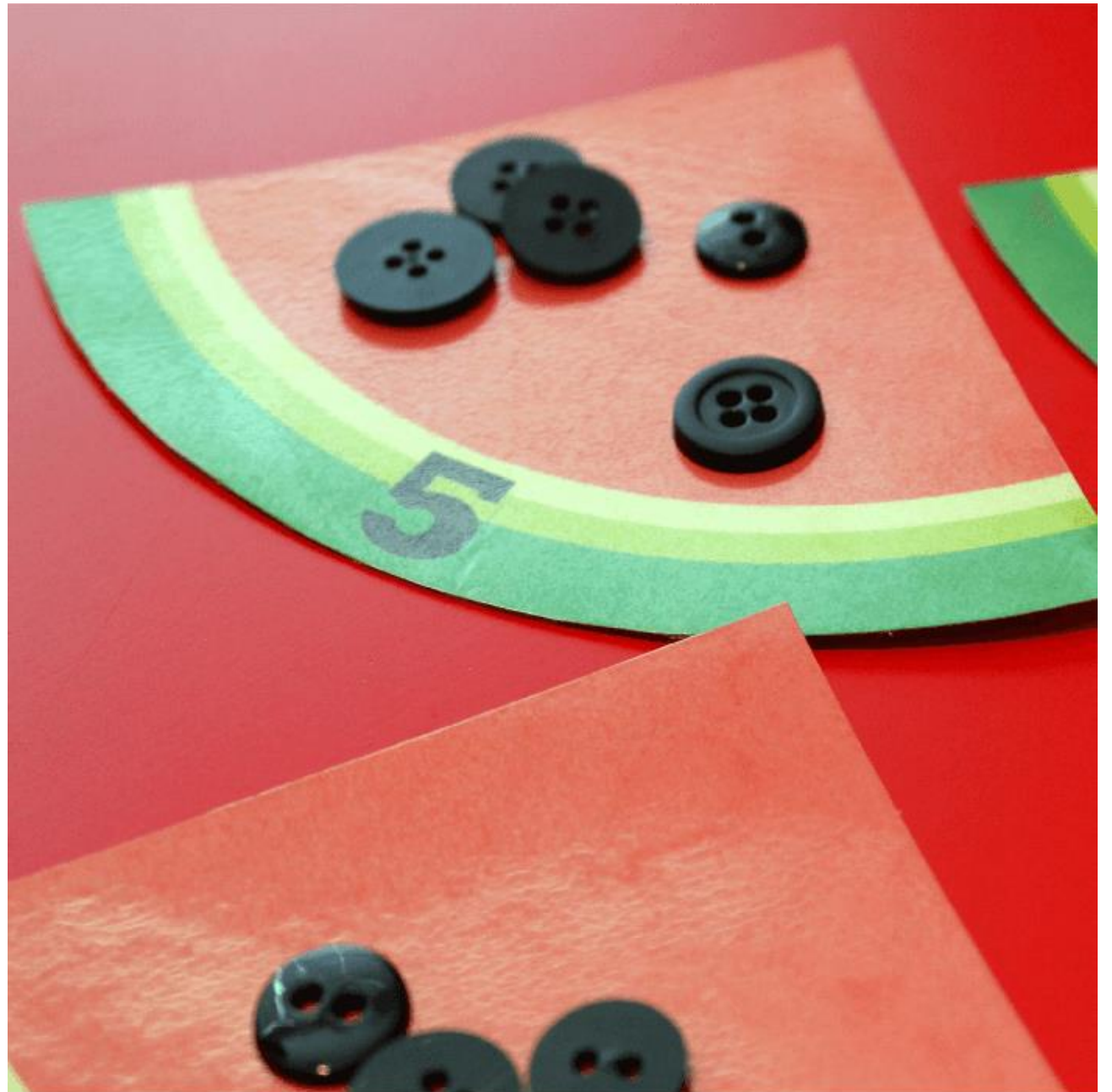


Watermelon Seed Counting Dots

Get Creative – use other things besides black dots and ten-frames

This image is from

http://fromabcstoacts.com/watermelon-seed-counting#_a5y_p=2131018



Math Coloring Activity

Math Coloring Activity Example

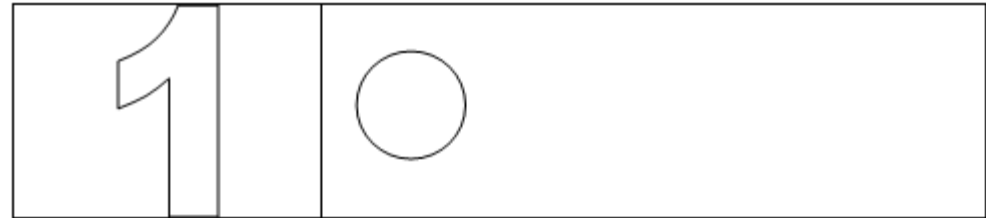
Use the same color for the numeral and the corresponding number(s) of dot(s).

This worksheet directs students to use

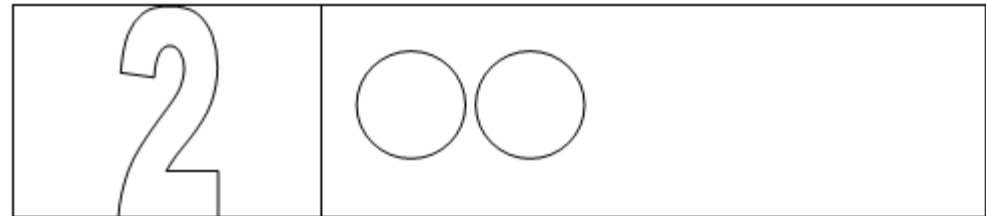
- Black for 1
- Red for 2
- Light Green for 3
- Purple for 4
- Yellow for 5

(These colors match Cuisenaire Rods 2 to 5; the 1 Rod is white.)

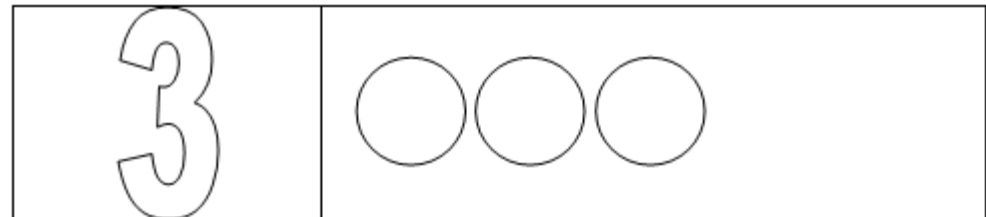
Color the number and the dot in BLACK



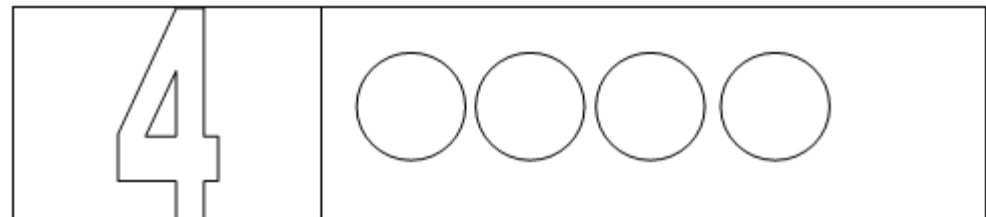
Color the number and the dots in RED



Color the number and the dots in LIGHT GREEN



Color the number and the dots in PURPLE



Color the number and the dots in YELLOW



Math Coloring Activity Example

Color each word and corresponding symbol the same color.

For example, color “ADD” and “+” using the same color.

Suggestion: Instruct students to use darker colors for + and = and use lighter colors for the numbers.

Notes:

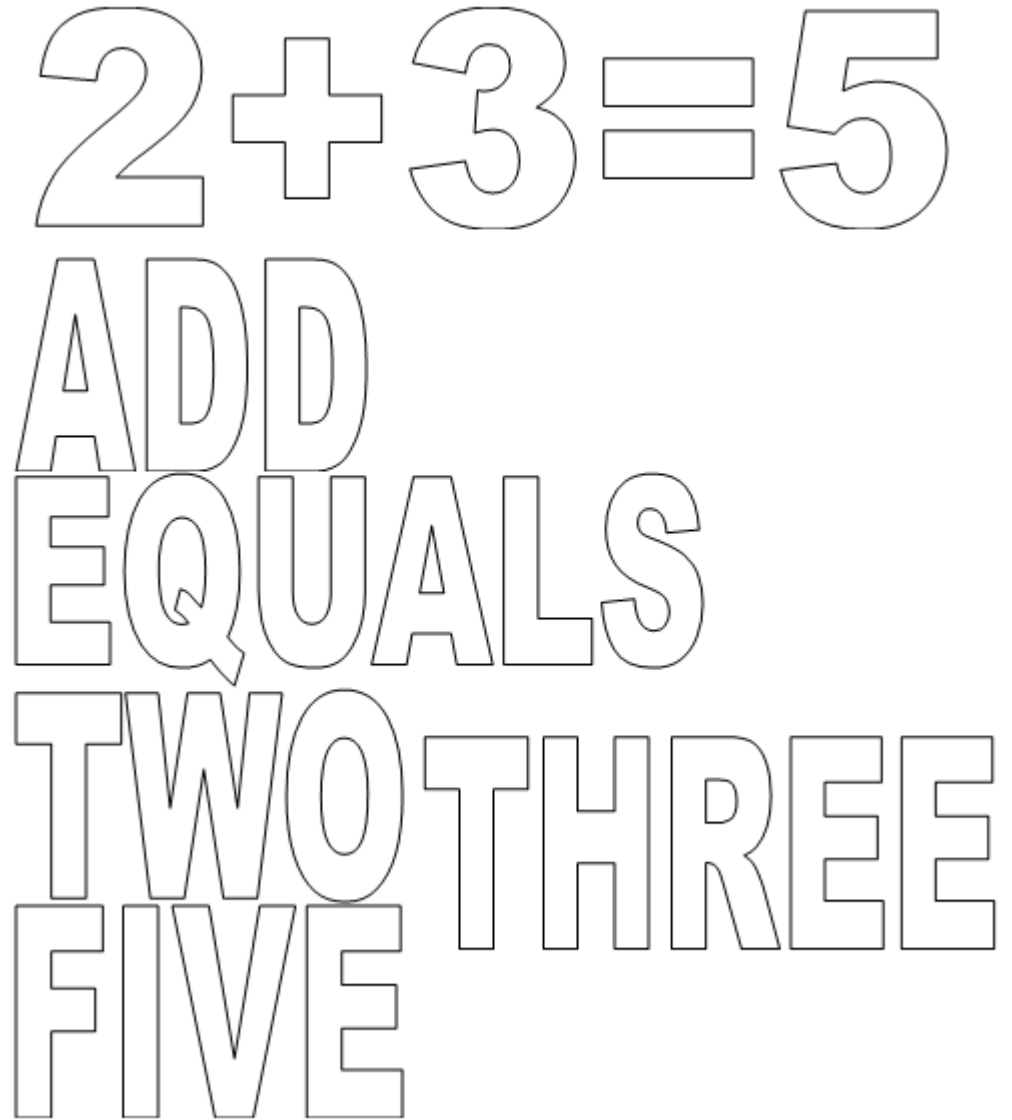
This was created in Word.

Insert – WordArt – “Arial Black” Size 96 for equation, 80 for words.

Each was done separately so the sizes would automatically adjust.

To move the “THREE”: (right click) Format WordArt – Layout – In Front of Text (Then grab it and slide it around wherever you want on the page.)

Math Coloring Activity: Color ADD and the + sign using the same color. Color TWO and 2 the same color, and so on. (Idea from the Anatomy coloring book.)



Versatile Visual Art Examples

Circle Loom Weaving on Chinnet Paper Plates (Grade 2)



<http://cassiestephens.blogspot.com/2014/04/in-art-room-circle-loom-weaving-with.html>

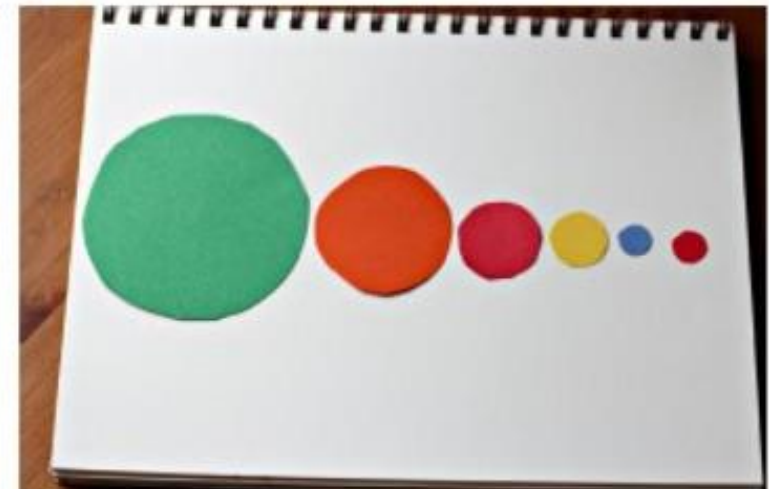
Color Wheel Clock

- Primary Colors are on 2, 6, 10
- Secondary Colors are on 12, 4, 8
- Tertiary Colors are on 1, 3, 5, 7, 9, 11
- Can use paper plates (and not real clocks)
- <http://craftwhack.com/color-wheel-for-kids/>



Math Art Circles

- The picture is taken from a Fibonacci Art Project at <http://www.whatdowedoallday.com/2015/01/fibonacci-art-project.html>
- For variations, can give students a circle with diameter=10, then they see what other circles will fit across the middle. For example a 6 and a 4, next to each other, will fit across to make 10. Or 5 and 5. Or 2 and 3 and 5. It helps them if you write the number of the diameter on the circle. Older students can discover factors and multiples.
- Adaptations: Use squares, triangles (easier to cut out)



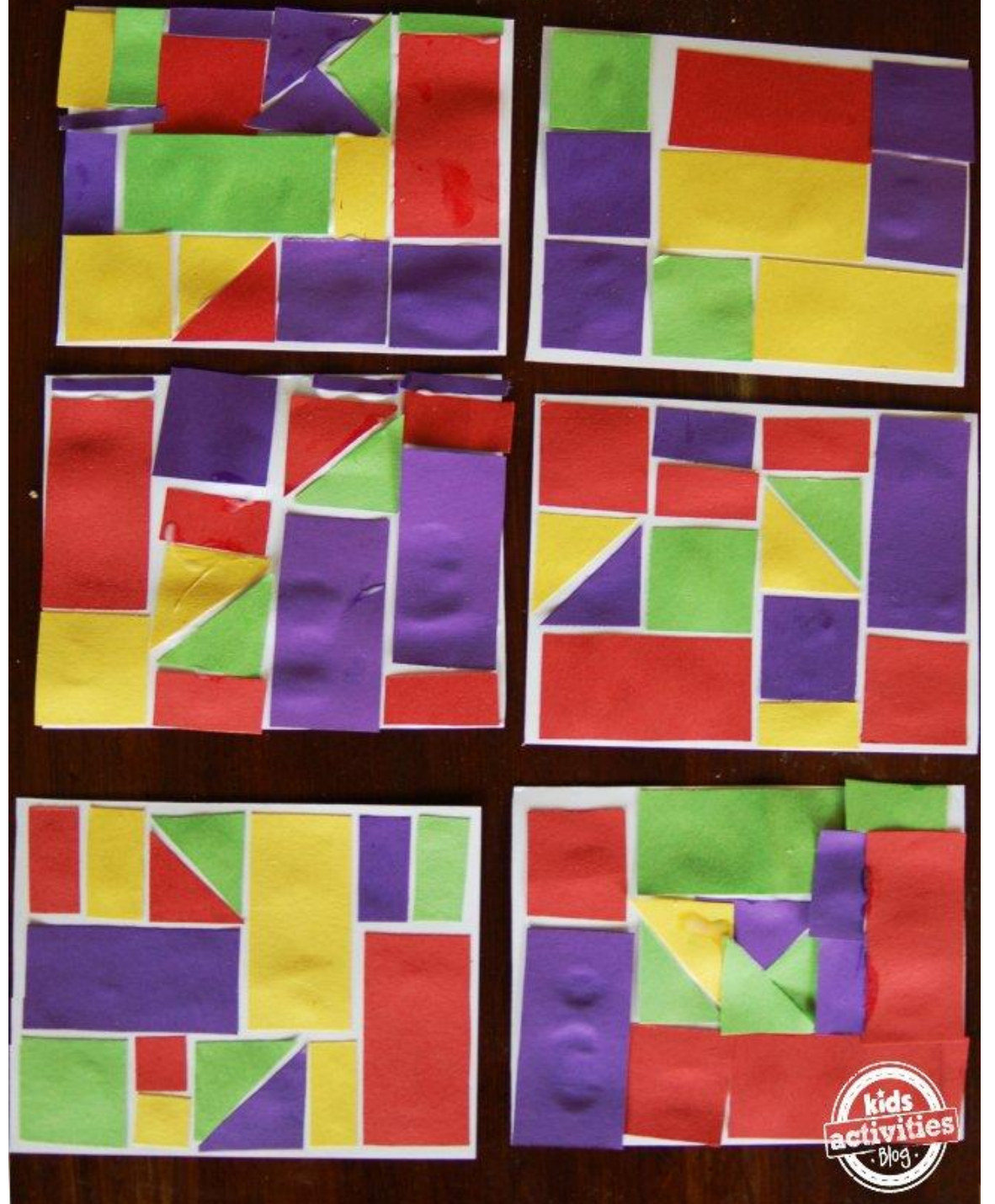
Art inspired by Paul Klee

Activity at:

<http://kidsactivitiesblog.com/50959/art-math-inspired-klee>

“Castle and Sun” by Paul Klee image below

<http://totallyhistory.com/castle-and-sun/>



Visual Arts Time!

Kindergarten

- What can you do with a dot?
 - Draw a picture that incorporates one dot sticker
 - Draw a different picture using two dot stickers (use dots of the same color, because color shouldn't be relevant here)
 - Draw with three dot stickers, or four, if you like
- Coloring Activity (1 to 5)

Grades 1-2

- Get creative with shapes of different sizes.
 - Play around for a while first
 - Glue them down if you want to
- Coloring Activity $2+3=5$

Base Ten and Place Value

“Place Value Levels” Dance

Found in: *Dance Integration: 36 Dance Lesson Plans for Science and Mathematics*

By Karen Kaufmann, Jordan Dehline

Notice the signs at left for “1” and “10” and “100”

Hundreds students (at back) dance at a high level.

Ones students (in front) dance at a low level.

Tens students dance at a middle level.

These students represent the number 565



Students form place-value lines.

Place Value Levels Dance, continued

Very brief summary of basic idea – should really read the book:

- Explain Levels:
 - High Level – stand on tiptoes, as if reaching up to a high shelf
 - Middle Level – bend over, not standing straight up
 - Low Level – sitting on floor
- Explore Levels:
 - Make a high level frozen shape with your body. Make a new high level shape.
 - Make different low-level frozen shapes.
 - Then make middle-level frozen shapes.
 - Move around the room at a high level, then slither/scoot at a low level, then move around at a middle level

“Dancers are artists who make choices using all three levels. Move through the room making choices and keep changing your dance to include high, middle, and low levels.”

- Connect to Place Value:
 - High level is for hundreds place
 - Middle level is for tens
 - Low level is for ones.
- Pass out cards, one to each student (with 5 to 8 students). Each card has either 1, 10, or 100.
- Tell them: in five counts, dance your level dance over to the “1” or “10” or “100” signs on the wall/floor. After all have finished, count how many ones, how many tens, how many hundreds and write the corresponding number on the board.
- Have students swap cards (and you swap in a few different cards to end up with a different number) and do it again.

https://books.google.com/books?id=UdjYAwAAQBAJ&pg=PA75&lpg=PA75&dq=place+value+dance+CCSS&source=bl&ots=LcJXz5LMaB&sig=0uWjzOfr3ELGz6CJ7PjZIkDhSsk&hl=en&sa=X&ved=0CEwQ6AEwCGoVChMI_5X-rqyTyQIVUtRjCh26PQfE#v=onepage&q&f=false

“Place Value Dance Party”

from *That's So Second Grade* on TeachersPayTeachers

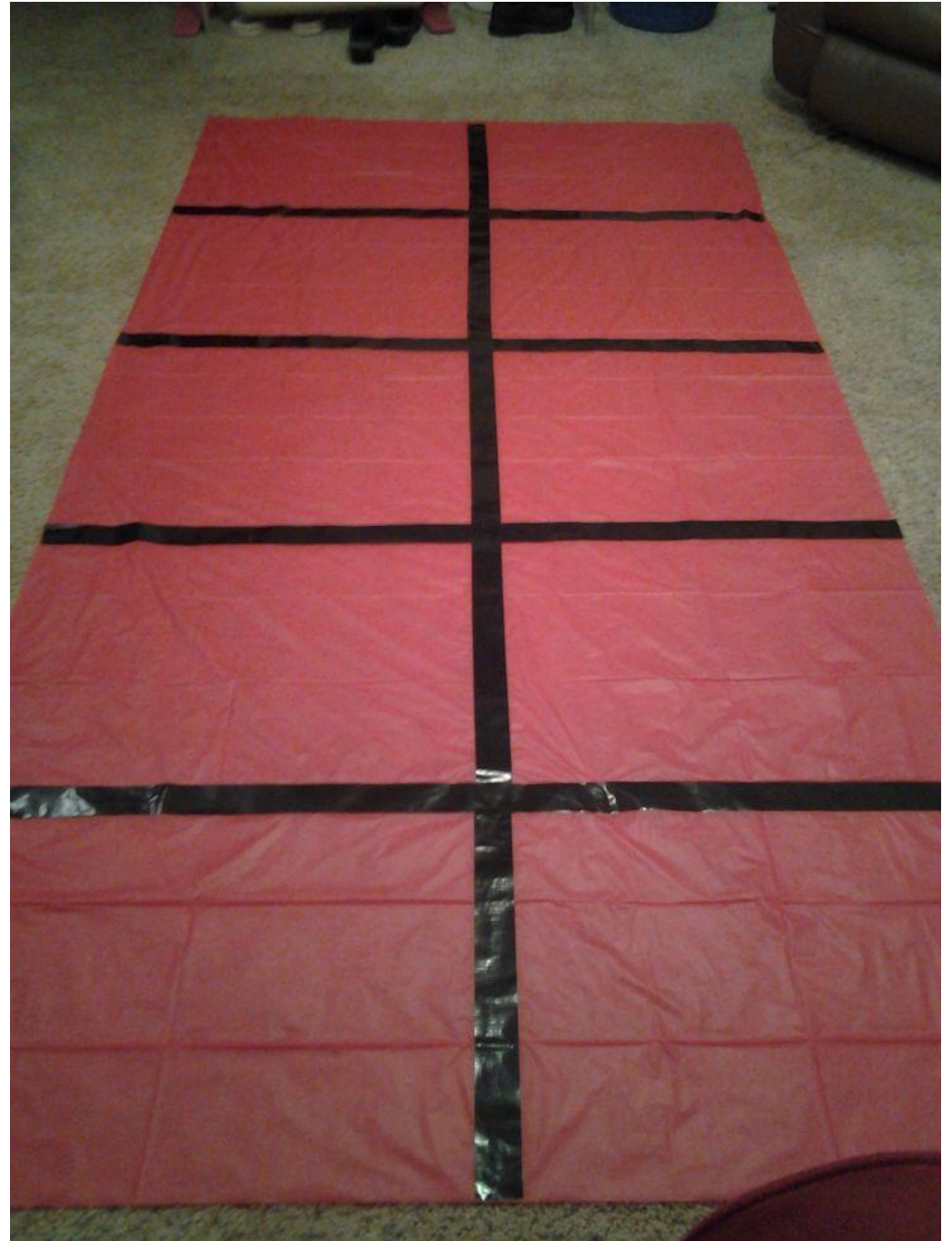
- Students will each need a dry erase marker and some sort of eraser. You could also use a sock or tissue as an eraser.
- Lay a laminated place value mat on each desk and pump up the jams! The teacher writes numbers on the mats before starting the activity.
- Turn up the music and let your kiddos dance around the room (or just around the desk area.. Your choice!) For music, she recommends the newest Kids Bop!
- When you stop the music (can be however long you choose), they must stop dancing and quietly find a desk and answer the problem on the place value mat by coloring in the correct number with their dry erase marker. For example, if the number 871 is written on their mat, the student should color in 8 hundreds, 7 tens and 1 one. She says, “I have my students squat at the desk whenever their mat is erased and a new number is written on it. This helps me quickly see whenever my whole class is ready to dance again! “
- You check quickly and then they erase. Before they leave the desk they have to create a new three digit number for the next dancer to do during the next round.
- Once everyone is ready to begin dancing again, press play and repeat!
- This activity is a great informal assessment that also happens to be really fun and motivating!
- Materials available on TpT for \$2. <https://www.teacherspayteachers.com/Product/Place-Value-Dance-Party-2NBT3-759340>

Giant Ten Frame



- **Numbers 15-20 on Ten Frames**
- From Kaydi Shaw at: <http://shawskindercrew.blogspot.com/2012/01/numbers-15-20-on-ten-frames.html>
- We've been working on identifying and creating sets using numbers 15-20 on ten frames. I taped off two ten frames on our classroom floor. We started by using flashcards to review numbers 1-15. Then I mixed the cards up and held up a card, the students had to identify it, and work together to represent that number using themselves on our ten frames. They loved being the math "manipulative" and were all so quiet and still because they each wanted a turn.

Giant Ten Frame
made from
Plastic Tablecloth and
Black Tape





- Base Ten “Blocks” using Pool Noodles
- from Kelly, a first grade teacher <http://thefirstgradefairytales.blogspot.com.br/search?q=pool+noodles>
- Note: She gives credit to TeacherTipster.com for the idea

Clock time

Clockwork Dancing

- Brief Summary from Dance Integration
 - Stand in a circle. Walk around the circle clockwise, then counterclockwise. Gallop clockwise. Freeze
 - Hands of a clock move clockwise
 - The hour hand takes one hour to move one number, 12 hours to get all the way around. Is that fast or slow? Dance with slow steps, imagining how slowly the hour hand moves.
 - The minute hand takes 5 minutes to move one number and 1 hour to get all the way around. Does it move faster or slower? Move faster (but not extremely)
 - Some clocks have second hands, which go around the clock in 1 minute. Is this faster or slower? Prance with a fast temp in a clockwise direction. Freeze.

Clockwork Dancing, continued

- (Very) Brief Summary from Dance Integration, continued
 - Low level dancing for AM times, High level dancing for PM times.
 - Explain “high level” and “low level”
 - Connect to Clocks
 - Draw outline of clock on board. Skip count by fives as you point to the numbers 1 to 12 for the minutes.
 - Time Shapes
 - Do some examples of using your body (and body parts) to show different times.
 - Give them a time (e.g. 11:45am) and have them use their whole bodies to show this time.
 - Perform with a partner. Give each pair a card with a time on it. Have them decide how to represent the time. Can each show the time, or can work together to show the time.



More Resources

Dance Integration 36 Dance Lesson Plans for Science and Mathematics

By Karen Kaufmann & Jordan Dehline

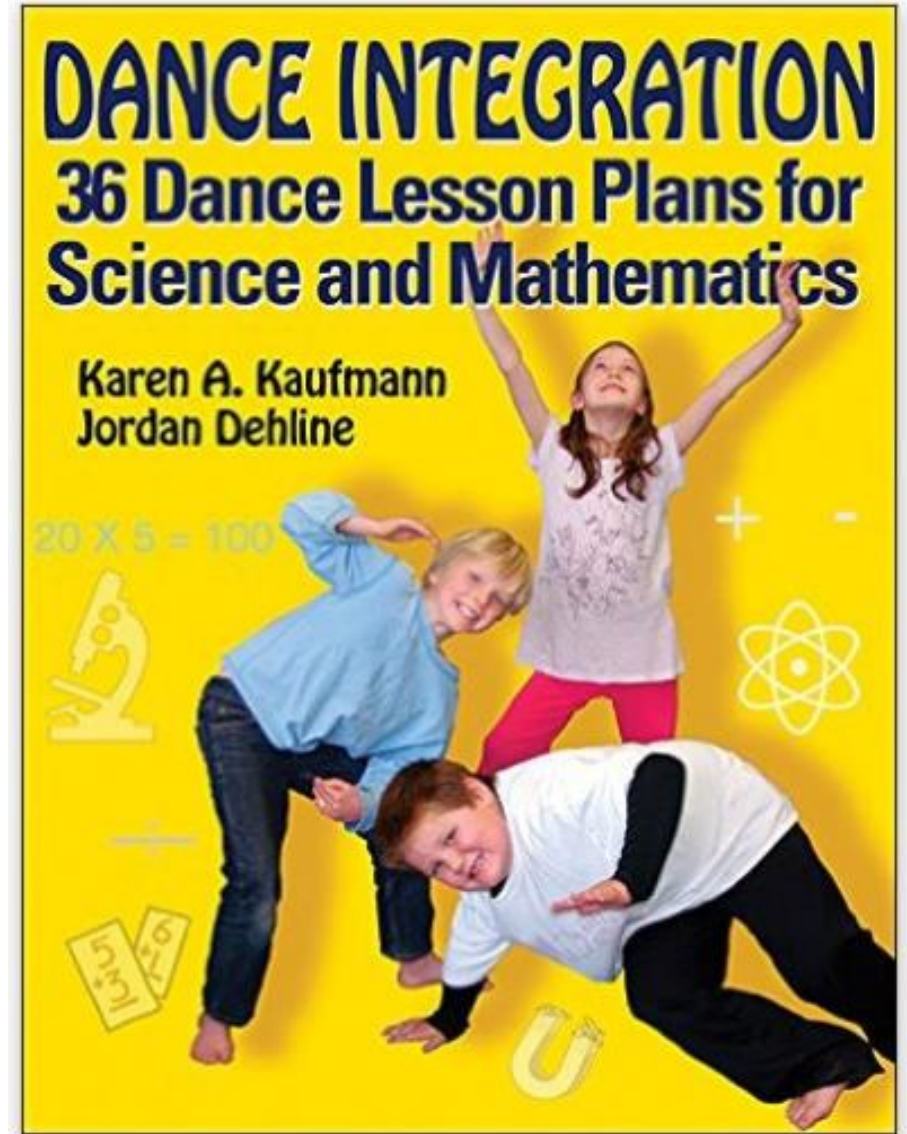
http://smile.amazon.com/dp/1450441335/ref=rdr_ext_tmb

ISBN-13: 978-1450441339

ISBN-10: 1450441335

See Preview at

https://books.google.com/books?id=UdjYAwAAQBAJ&pg=PA75&lpg=PA75&dq=place+value+dance+CCSS&source=bl&ots=LcJXz5LMaB&sig=0uWjzOf_r3ELGz6CJ7PjZIkDhSsk&hl=en&sa=X&ved=0CEwQ6AEwCGoVChMI_5X-rqyTyQIVUtRjCh26PQfE#v=onepage&q&f=false



Creative Dance Integration Lesson Plans by Erika Cravath

Lesson Plans for multiple subjects.

Also includes great tips for teaching dance and for incorporating dance into your classroom.

Can download PDF for free:

http://education.byu.edu/sites/default/files/ARTS/documents/educational_movement.pdf



MathArts

Exploring Math through Art for 3 to 6 Year Olds

By MaryAnn F. Kohl, Cindy Gainer

A huge collection of easy creative-art activities that explore math concepts.

http://www.amazon.com/gp/product/0876591772?keywords=Matharts&qid=1452344345&ref=sr_1_1&sr=8-1

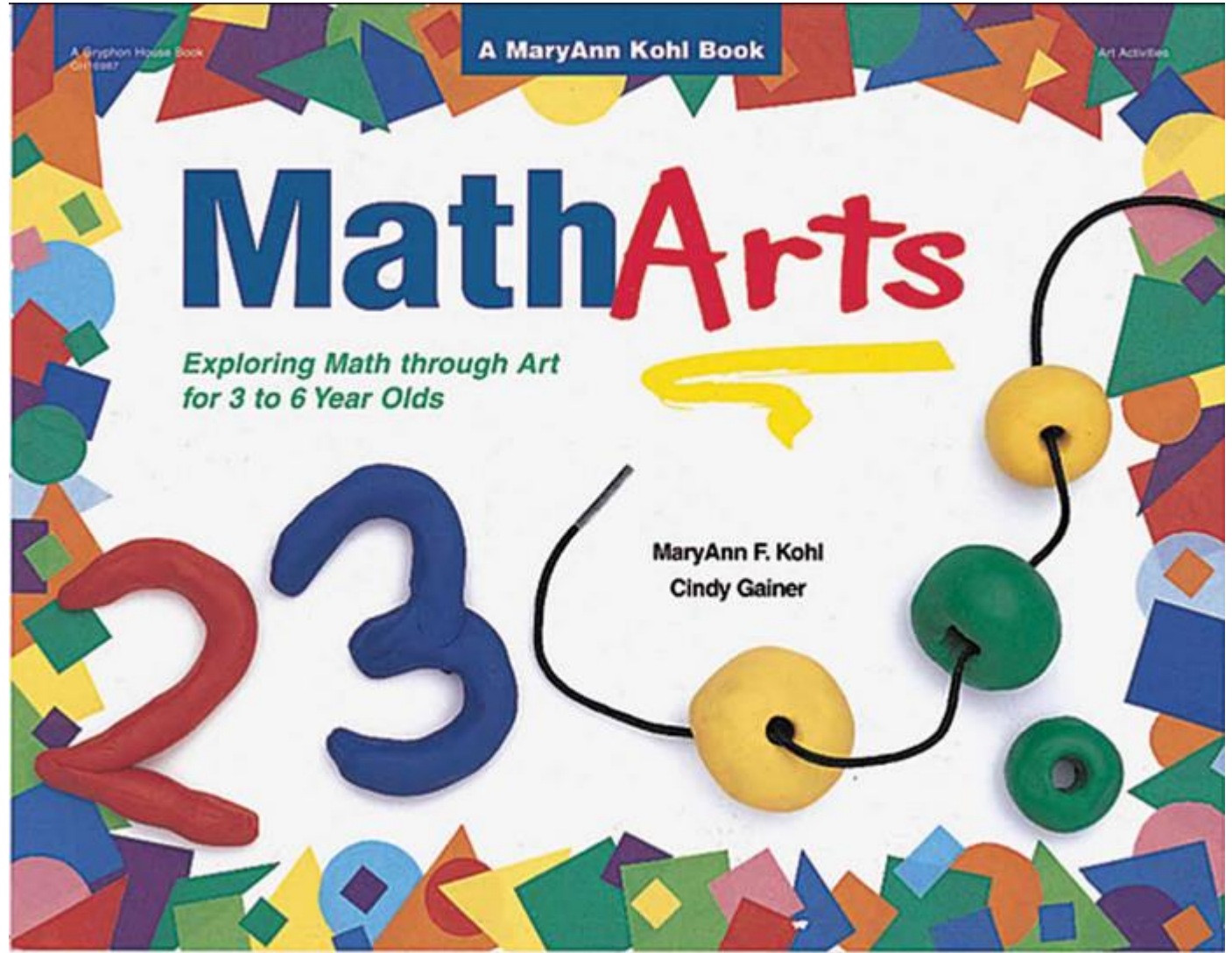
Paperback: 256 pages

Publisher: Gryphon House (January 1, 1996)

Language: English

ISBN-10: 0876591772

ISBN-13: 978-0876591772



TeacherTipster.com YouTube videos

Lots of great videos from
Mr. Smith on a variety of topics.

This is his Place Value Song (and
routine)

<https://www.youtube.com/watch?v=ATgnG0M3S3Q>

Check out his other (very
entertaining) videos too.



Share your great ideas!

If we have a couple minutes left...

Kid Snippets:
Math Class



<https://www.youtube.com/watch?v=KdxEAt91D7k>

Thanks for coming!

Feel free to contact me at tami@humboldt.edu

(And I will have links at <http://www.tamimathcr.com/steam-hcoe.html>)