



Math in Art Professional Learning Session

A two-year study in 2016 revealed that students who participated in art programs witnessed an overall 22.5 percent increase in math scores and 12.6 percent improvement in reading scores.

A study done in Pittsburg found that teaching math through art was a way to engage the whole child.

Notes:

Five Math Concepts

- 1 Numeracy**
 - a. Counting
 - b. One-to-one correspondence
(saying one number for each item counted)
 - c. Quantifying
(knowing "how many?" objects there are)
 - d. Subitizing
(knowing how many without having to count)
 - e. Ordinal Numbers (1st, 2nd, 3rd, 4th, etc.)
 - f. Recognizing numerals
(written numbers: 1, 2, 3, 4, etc.) and connecting numerals with quantities (amounts)
 - g. Early addition and subtraction

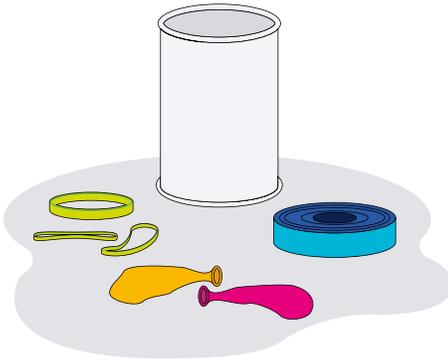
- 2 Measurement and Data**
 - a. Nonstandard (hands, string, links, blocks, etc.) and standard measurement (inches, centimeters, cups, grams, etc.)
 - b. Graphing
 - c. Estimation and predictions

- 3 Sorting and Patterns**
 - a. Classifying or sorting
 - b. Matching
 - c. Attributes (describing what something looks like)
 - d. Copying, extending and creating patterns (AB and ABB)

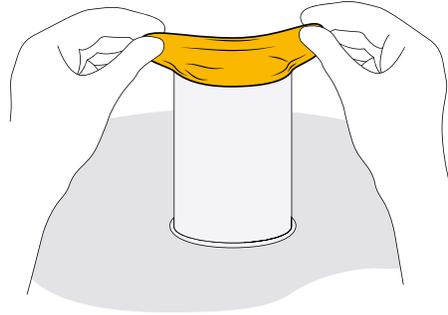
- 4 Geometry**
 - a. Spatial relationships
(in, on, under, below, next to, etc.)
 - b. Matching, recognizing, and identifying shapes
 - c. Constructing and deconstructing shapes
 - d. Shape attributes (number of sides, angles, etc.)

- 5 Comparisons**
 - a. More, less, or equal comparisons
(comparing numbers)
 - b. Size, weight, volume comparisons
(taller, shorter, heavier, lighter, etc.)
 - c. Ordinal numbers (1st, 2nd, 3rd, 4th, etc.)

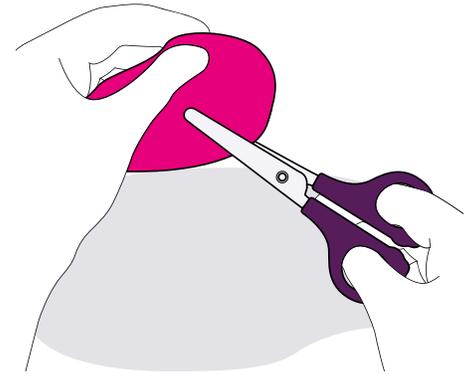
Homemade Drum



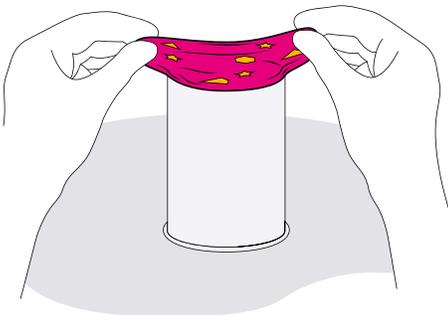
- 1** What you need:
Clean Can, Balloons,
Tape, and Rubber Bands.



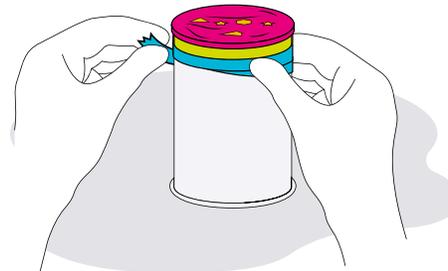
- 2** Stretch the balloon over the
opening of the can.



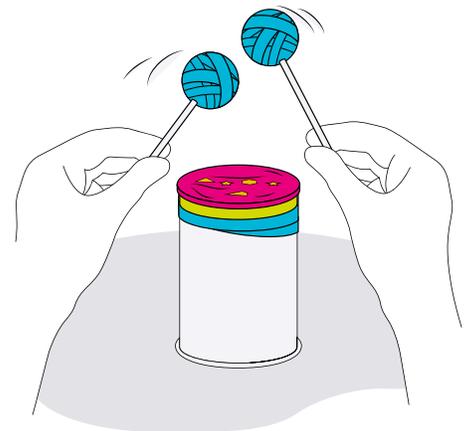
- 3** Put another balloon on a
hard surface. Using scissors
cut shapes into the balloon
for decoration.



- 4** Stretch the balloon with the
shapes over the can.



- 5** Add tape or rubber bands
around the can to secure
the balloons.



- 6** Time to play with the drum!
You can make drumsticks using
popsicle sticks with napkins
wrapped in ductape.



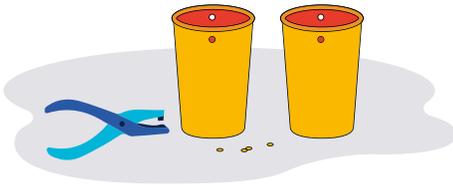
@zeno_math

Follow us on Instagram & Share how you play math with: [#zenomath](#) [#familymath](#) [#earlymath](#)

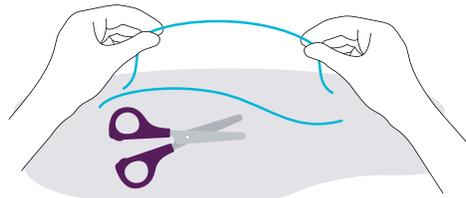
Homemade Balance Scale

★ Materials Needed:

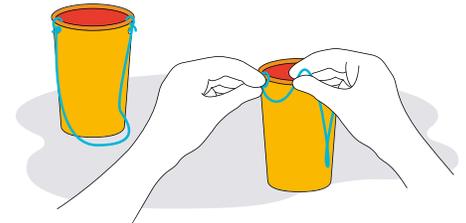
- 2 paper or plastic cups
- 1 hanger with built in hooks
- Yarn or ribbon
- Doorknob or hook
- Small items around the home (coins, rocks, small toys)



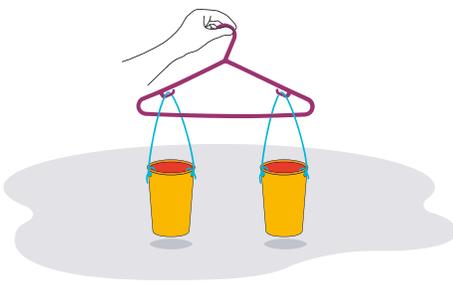
- 1** Hole Punch 2 holes into the 2 cups.



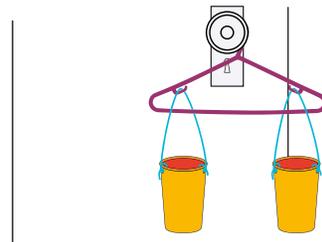
- 2** Cut 2 pieces of Yarn about 14 inches long.



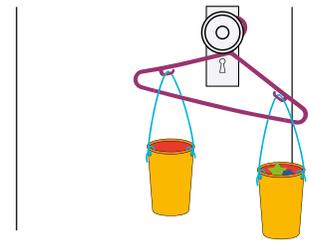
- 3** Tie an end of yarn to each hole on the cup then repeat with the second piece of yarn and cup.



- 4** Hang cup with yarn on each side of the hanger.



- 5** Find hook or doorknob to hang your hanger.



- 6** Begin to weigh your found objects (Nature items: leaves, rocks, sticks; Small toys: cars, cubes, blocks; Food items: beans, rice, lentils.)

Homemade Playdough



Ingredients:

- 2 cups of all-purpose flour
- 1/2 cup of salt
- 2 tablespoons of oil
- 2 tablespoons of cream of tartar
- 1 cup of boiling water
- Food coloring for color
- Essence, spices, or essential oils for flavor

Directions:

1. Mix the flour and salt.
2. Add the oil and mix, then add the cream of tartar and mix.
3. Going down the list of materials add 1 item at a time and mix in between.
4. Once every ingredient has been added knead until the dough looks and feels right.
5. You can add more flour or oil depending on the consistency.

Math in Art Resources

- Rockabye Baby makes rock music baby-friendly and kids music adult-friendly.
<https://www.rockabyebabymusic.com/>
- Scholastic Music and Math activities
<https://www.scholastic.com/teachers/articles/teaching-content/math-music-movement/>
- Cardboard instruments
<http://www.minieco.co.uk/cardboard-instruments/>
- Balloon Bongo Rice Shaker Guiro
<http://www.minieco.co.uk/balloon-bongo-rice-shaker-guiro/>
- American Mathematical Society
<http://www.ams.org/publicoutreach/math-and-music>
- PBS Math + Arts
<https://kcts9.pbslearningmedia.org/collection/matharts/>
- Kandinsky
<https://www.youtube.com/watch?v=l4m-k7Oyu14&t=9s>
- Symmetry
<https://www.youtube.com/watch?v=lZ5TzITdsmY>
- Water Marbling
<https://www.youtube.com/watch?v=J410yQ7PIIE>
- Crayola (free lesson plans)
<https://www.crayola.com/lesson-plans/k-12/mathematics-lesson-plans/>
<https://www.crayola.com/lesson-plans/quilt-away-lesson-plan/>
<https://www.crayola.com/lesson-plans/honor-african-american-leaders-lesson-plan/>
- Studies referenced in presentation:
https://www.parkwestgallery.com/press_releases/park-west-gallery-emphasizes-the-importance-of-art-education-in-schools/
<https://www.wesa.fm/post/independent-study-shows-benefit-incorporating-arts-math-lesson#stream/0>

Mathy Movements Professional Learning Session

Research Behind Math and Movement

Allowing children to move also improves their learning! A study in 2013 found that children with poor motor skills also have poorer reading and arithmetic skills. Other studies have found that moderate exercise enhances cognitive processing. It also increases the number of brain cells.

Teaching with the Brain in Mind, 2nd Edition
by Eric Jensen

"But by the 3rd grade, much of Black Children's natural exuberance has been replaced by frustration and resignation... Children develop this attitude when the teacher repeatedly stops them from talking and moving, limits what they can touch, examine, and requires them to be still and listen to the teacher talk."

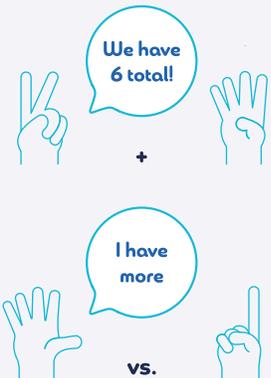
Debra Ren-Etta Sullivan,
Cultivating the Genius of Black Children

Notes:

Body Math Activities

Fingers! Instructions

- Version 1: Each player hides one hand behind their back. Say "Go!" and each player holds out 0, 1, 2, 3, 4, or 5 fingers in front of them. Try to decide who has more and who has less without counting. Count to see if you were correct.
- Version 2: Each player hides one hand behind their back. Say "Go!", and each player holds out 0, 1, 2, 3, 4, or 5 fingers in front of them. Try to say how many total fingers there are without counting. Check to see if you were correct by counting the total number of fingers showing. For more of a challenge, each player can use both hands.



Action Patterns Instructions

- Start a pattern using actions such as: stomp, clap, snap fingers, jump, pat your lap, raise your arms, etc. Stop and see if your child can continue the pattern.
- Play using an AB pattern such as: stomp, clap, stomp, clap, etc. and an ABB pattern such as clap, clap, jump, clap, clap, jump, etc.
- For more of a challenge, try having your child start the pattern and you finish it!



Body Measurement Instructions

- Version 1: Have your child trace their feet or hands. Cut out the tracings and use it to measure the length of different objects or the distance between two objects. Talk about how many "feet" or "hands" long the object was.
- Version 2: If you have multiple children, lay down and see how many "kids" long an object is or how many "kids" long the distance between two objects is.



Notes:

Song and Movement Activities

One Little Elephant Lyrics

Math Concepts: Addition and Counting

Link: <https://www.youtube.com/watch?v=wQf6yWEScB8>

One elephant went out to play (1 finger up)
Over the hills and far away (move arms over a hill)
He had such enormous fun (spread arms wide)
That he called for another elephant to come (cup hands at mouth)

"Oh elephaaannt!" (drum hands on the floor or lap)
We had one elephant and another joined, how many do we have now?

[continue up to 5..]

Five elephants went out to play (5 fingers up)
Over the hills and far away (move arms over a hill)
They had such enormous fun (spread arms wide)
That they called for all the elephants to come!
(drum hands on the floor or lap)

5 Little Monkeys Lyrics

Math Concepts: Subtraction and Counting

Link: https://www.youtube.com/watch?v=syOZr_UrFp0

Five little monkeys swinging in the tree
(swing 5 fingers in the air)

teasing Mr. Alligator can't catch me
(wave index finger)

along came Mr. Alligator quiet as can be
(index finger at mouth)

and snapped that monkey out that tree
(clap hands together)

[...continue until there are no monkeys left]

Sally the Camel Lyrics

Math Concepts: Subtraction and Counting

Link: <https://www.youtube.com/watch?v=Dm3M2WHxXyk>

Sally the camel has 5 humps
Sally the camel has 5 humps
Sally the camel has 5 humps

So ride Sally ride boom, boom, boom, boom

[continue to 0..]

Sally the camel has no humps
Sally the camel has no humps
Sally the camel has no humps
'Cause Sally is a horse of course

Appy Tappey Choo Lyrics

Math Concepts: Counting, Recognizing Numeral, and Quantifying

Appy Tappey Choo, I will show my number to you

(show number 1-10)

(do an action that many times)

[continue until you have shown all numbers 1-10]

Notes:

Going on a Bear Hunt Lyrics

Math Concepts: Spatial relationships

Link: https://www.youtube.com/watch?v=5_ShP3fEhU

We're going on a bear hunt,
We're going to catch a big one,
I'm not scared
What a beautiful day!

Oh look! It's some long, wavy grass!
Can't go over it,
Can't go under it,
Can't go around it,
Got to go through it!
(Make arm motions like you're going through long grass and make swishing sounds)

Repeat chorus

Oh look! It's a mushroom patch.
Can't go over it,
Can't go under it,
Can't go around it,
Got to go through it!
(Pretend to go through the patch making popping sounds by clapping fingers together and clapping hands)

Repeat chorus

Oh look! It's a wide river.
Can't go over it,
Can't go under it,
Can't go through it,
Got to swim across it.
(Pretend to swim and make splashing sounds)

Repeat chorus

What a beautiful day!
Oh look! A deep, dark cave.
Can't go over it,
Can't go under it,
Can't go through it,
Got to go in it.
(Pretend you're in a cave)

Uh, oh! It's dark in here.
I feel something,
It has lots of hair!
It has sharp teeth!
It's a bear!

Hurry back through the river,
(Pretend to swim and make splashing sounds)
Back through the mushroom patch,
(Make popping sounds)
Back through the long grass
(Make motions like you're going through grass and make swishing sounds)
Run in the house and lock the door.
(Make a loud clap sound)
Phew! That was close!
I'm not afraid!

Notes:
