STEM After School
Math Activities

Adapted from Bayview Charities Interactive Math Staff
Development Intensive Training

Bayview Charities
The purpose of this presentation is to provide a full range of possibilities for expanding and enhancing the math activities for Bayview Charities’ Operation ascend and 6to6 programs both before and after school.
Current Math Activities

• Mathematical Mondays: math activities for each grade level throughout the academic enrichment component of the PM schedule
• Math worksheets (variety of grade and skill levels)
• Math & strategy games such as dominoes, tic-tac-toe, and Around the World with math flash cards
Prospective Math Activities

• **Math Madness:**
  – Mathematical skills based upon grade level combinations
  – 4 pm-5:30 pm, Tues. & Thurs.

• **It Just Adds Up:** Newspapers In Education financial education curriculum
  – 5th-6th grade
  – “Money Mondays” (alternate Mondays w/ Mathematical Mondays)
Additional Math Components

• **Math Circles:** 45-50 minutes
  – K-1st students placed in math groups (Cubs, Tigers, Bears, etc.)
  – Groups rotate between math centers within MLK 100 or 104 at different tables (max. 10-15 min’s each)
    • Games station
    • Calculation station
    • Graphs & charts station
    • Drills & skills station

• **Math Mania:** 30-45 minutes
  – 2nd-3rd students divided by gender
    • Males (MLK 210)
    • Females (MLK 209)
  – Males: Mathematical concepts related to sports & entertainment
  – Females: Mathematical concepts related to dance, cheer and cooking
  – Math skills developed through analysis, group discussion & cooperative learning
Mathematical Skill Building:
Grade Level Excursions in Problem Solving

Bayview Charities
Operation Ascend
After School Learning Program
Mathematic Excursion Activities

- Strategy Games
  - Dominoes
  - Cards
  - UNO

- Word Problems
  - Relevant subjects
  - Realistic situations

- Real-World Connections
  - Sports
  - Shopping
  - Music/ videos
<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kinder-1st</td>
<td>Sort objects by size, shape or color</td>
<td>Probability: Roll Dice (tally/graph)</td>
<td>Memory Match (Playing Cards)/</td>
<td>Create world problems</td>
<td>Number/Addition BINGO</td>
</tr>
<tr>
<td>2nd-3rd</td>
<td>Create world problems</td>
<td>Place value/rounding</td>
<td>Dominoes/UNO</td>
<td>Probability: Roll Dice (tally/graph)</td>
<td>Hangman: Math Vocabulary</td>
</tr>
</tbody>
</table>

Key Code

Demo Lesson  Math Games  Problem Solving
Interdisciplinary Math Activities
Number Scouts- Math Activity

What makes up a community? People, of course. Then there are the other living things, such as plants and animals. There are also buildings, streets, schools, businesses, and vehicles. This activity makes students aware of one other important element in a community: numbers.

WHAT YOU NEED
Teacher helpers: adults/family members
Poster boards

WHAT TO DO
Have students form groups of Number Scouts. Tell students they are going to search for numbers in their neighborhood. Their goal is to find not only as many numbers as they can, but to find out what those numbers do and why they are important.

Make each group responsible for a section of the neighborhood or for a particular place (such as a gas station, convenience store, post office, drugstore, or library).

Have groups, accompanied by teacher helpers (adult family members, or friends) visit their sites and take notes on how numbers are used. A visit to a gas station, for example, might yield a list like this:

Numbers . . .
. . . measure how many gallons of gas are pumped
. . . tell how much the customer must pay per gallon/liter
. . . tell how much the customer must pay
. . . give prices on snacks, tires, maps, and other things
. . . are on license plates of cars
. . . are on credit cards
. . . are on money (bills and coins)
. . . are on the cars' odometers and speedometers

When all the groups have gathered their number information, have them share the information by creating a poster, in list or chart form, of the numbers they observed.

TEACHING OPTIONS
Students can create a mural of Neighborhood Numbers. Each group would be responsible for painting the site they visited and showing the numbers they observed.

Students who enjoy writing might compose a story in which a community wakes up to find out that all the numbers in town took the day off. What would it be like?
Counting to ten in Swahili
## English- Swahili Math Words:
### Counting to Ten

<table>
<thead>
<tr>
<th>One</th>
<th>Two</th>
<th>Three</th>
<th>Four</th>
<th>Five</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moja</td>
<td>Mbili</td>
<td>Tatu</td>
<td>Nne</td>
<td>Tano</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Six</th>
<th>Seven</th>
<th>Eight</th>
<th>Nine</th>
<th>Ten</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sita</td>
<td>Saba</td>
<td>Nane</td>
<td>Tita</td>
<td>Kumi</td>
</tr>
</tbody>
</table>
Math Madness

K-8 Math Program
Provided by Bayview Charities
Sponsored by AT&T
**Math Madness**

Fall (2012)

**Grades: K-6**

- **K-1:** Development of number sense as foundational element of mathematical skills
- **2-4:** Start multiplication and division computations as early as 2nd grade
- **5-6:** Increase the degree of difficulty with a corresponding degree similarity

**Primary Objective:** *Develop and strengthen mathematical skills in children participating in the before and after school program offered by Bayview Charities.*

**Everyday Math:** Incorporate enrichment activities that engage elementary children through a variety of everyday concepts such as sports, cooking and games.

<table>
<thead>
<tr>
<th>Math Madness</th>
<th>K-1st</th>
<th>2nd-4th</th>
<th>5th-6th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematical Concepts</td>
<td><strong>Number sense</strong></td>
<td>Math facts; division;</td>
<td>Word problems; fractions; decimals;</td>
</tr>
<tr>
<td></td>
<td>Shapes; Addition; Subtraction</td>
<td>multiplication</td>
<td></td>
</tr>
<tr>
<td>Money Matters</td>
<td><strong>Supermarket Shopper I</strong></td>
<td><strong>Supermarket Shopper II</strong></td>
<td><strong>Comparison Shopping/ Calculated Savings</strong></td>
</tr>
<tr>
<td>Cooking &amp; Calculations</td>
<td><strong>Cups, Feet, and Pounds (Size &amp; Weight)</strong></td>
<td><strong>Measurements &amp; Conversions; Nutritional Value</strong></td>
<td><strong>Measurements &amp; Conversions; Nutritional Value</strong></td>
</tr>
<tr>
<td>Sports &amp; Strategy Games</td>
<td><strong>Checkers &amp; Dominoes; Kickball</strong></td>
<td><strong>Chess, Checkers &amp; Dominoes; Baseball</strong></td>
<td><strong>Chess, Checkers &amp; Dominoes; Basketball</strong></td>
</tr>
</tbody>
</table>
Before and after-school participants receive intense and interactive learning experiences that support linkages between mathematics and sports, cooking, shopping, poetry and music.

Before-school participants take part in activities based upon performance level on standardized tests, and then join other participants to engage in team-based cooperative learning activities that cover mathematical concepts taught and tested for 2\textsuperscript{nd} through 6\textsuperscript{th} grade.

After-school participants receive individualized and small-group tutoring in 30-minute intervals for at least 2 days per week, participating in a Friday Fun Day with math-based games and activities such as Around the World Addition, Multiples Tag, and Math Bee. During the days when they are not participating in tutoring, after-school participants will share in cooperative learning experiences that will include cooking, sports, comparison shopping, and other forms of enrichment.
Parents and family members will be provided monthly mathematical mixers through Bayview Charities and community partners such as college admissions officers, business professionals, and educational leaders. Throughout these mixers, participants will join parents and family members in learning about math-related issues in education, business and society through presentations from guest speakers as well as testimonials from college students and business professionals.

Resources:
http://www.learner.org/interactives/dailymath/
http://www.ed.gov/print/parents/academic/help/math/part.html#p10
WHAT DOES EFFECTIVE MATHEMATICS INSTRUCTION LOOK LIKE?

As a result of recent efforts to strengthen the mathematics curricula in our nation's schools, from basic through more advanced levels, the instruction that you can see in your child's mathematics classes may look quite a bit different from what you experienced when you were in elementary school.

http://www.ed.gov/print/parents/academic/help/math/part.html#p10
Children are expected to know both basic arithmetic skills and the mathematical concepts that are the basis of these skills: They are learning and applying basic computational skills, and they will also be learning that mathematics is much more than knowing the "facts" and number operations. Young children are learning arithmetic—addition, subtraction, multiplication and division—and they also are using mathematical operations such as counting, measuring, weighing, reading charts and graphs and identifying patterns and shapes. Across the grades, children are practicing the use of their mathematics skills in many different ways, and they are using the language of math to talk about what they're doing. They are using mathematical operations that involve estimation, geometry, probability, statistics and the ability to interpret mathematical information. As they progress through school, children will increasingly show that they understand why they are using a particular math skill, recognize when they've made procedural errors and know what to do to correct those errors.
Children are involved actively in the study of mathematics: They are doing tasks that involve investigation, application and interpretation. They are talking about and writing explanations for their mathematical reasoning.

Children sometimes are working with one another: They sometimes collaborate to make discoveries, draw conclusions and discuss mathematical concepts and operations.
Children are striving to achieve high standards and are assessed regularly to determine their progress: The No Child Left Behind Act of 2001 (NCLB) calls for all children to be taught math by teachers who have the training needed to teach effectively, using curricula that are grounded in scientifically based research. The law requires annual math assessments of students in grades 3-8 according to state-defined standards and dissemination of the results to parents, teachers, principals and others. Curriculum based on state standards should be taught in the classroom; thus assessment would be aligned with instruction. In addition to assessments required by NCLB, teachers are using many different ways to determine if children know and understand mathematics concepts. Some of these ways are open-ended questions in which a student writes out the steps—or thought processes—used in solving a math problem; independent projects; and other written tests.
Children are learning to use calculators appropriately: They are using calculators not as crutches but as tools for performing operations with large numbers. Use of a calculator will not replace a thorough knowledge of basic mathematical operations.

Children are using computers appropriately: They are using computers to run software that poses interesting problem situations that would not be available to them without the use of technology.
I Got Skills Drill:

Here are questions to ask students and have them raise their hands and write results on board to compare them and see where people have the most skills:

• I can...
  - Dribble a basketball with one hand
  - Run the bases on a baseball field
  - Throw a ball at least 10 yards
  - Jump and touch the backboard of a basketball hoop
  - Climb a jungle gym
  - Catch a football with one hand
  - Kick a kickball beyond 2\textsuperscript{nd} base
  - Lift a baseball bat with one hand
  - Keep from getting tagged in freeze tag
  - Capture another team’s flag in Capture the Flag
  - Run and dribble a ball at the same time

• I wish I could...
  - Play in the NBA
  - Learn how to play golf like Tiger Woods
  - Shoot a jumper like LeBron James
  - See the Padres play a game at the stadium
  - Learn how to play tennis
  - Swim all day and all summer long
  - Go on Dancing with the Stars

You can also think up your own to add to it...
Interactive Learning
Engagement

• Students should be engaged in both a challenging and rewarding environment from the text to the application of concepts
• Student learning may occur without worksheets and books as the thrust of instruction
Connecting Concepts & Curriculum

• Students must be guided in to view concepts across the curriculum and see their relationships
• Students may be assisted with visual aids or additional “helps” to provide a platform for connecting living and learning.
Parents as Partners

• Provide parents with “Helpful Hints” in monthly newsletter

• Share “needful things” notes where parents might be able to donate calculators, mechanical pencils, or other supplies

• Demonstrate to parents how math-related activities may be as simple as measuring and mixing cake mix or charting hours spent reading together as a family
<table>
<thead>
<tr>
<th>Review Homework</th>
<th>Have students check their work</th>
<th>Supply scratch paper</th>
<th>Identify math conceptual connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide practical applications</td>
<td>Use cooking &amp; baking for measurement skills</td>
<td>Identify how math is used in sports</td>
<td>Measure household objects</td>
</tr>
<tr>
<td>Use flash cards</td>
<td>Graph family exercise times for a week</td>
<td>Find numbers used on appliances</td>
<td>Graph weather reports/temperature for a week</td>
</tr>
<tr>
<td>Place family telephone numbers in order by value</td>
<td>Graph pages read by child nightly</td>
<td>Balance checkbook with child</td>
<td>Roll coins &amp; graph the amounts by denominations</td>
</tr>
</tbody>
</table>
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