

Leapfrog Program **Course Title: The Math House**

Course Description

The home is a young mathematician's playground! Toys, kitchen gadgets and rooms throughout the house are perfect for exploring math. Household items are the tools students use in counting, measuring, and basic computational activities that challenge students to problem solve and make connections between math and everyday life.

Essential Questions

- How is math part of everything we do?
- What do people need to measure and why?
- How does counting and measuring make our lives easier?
- Which is better, standard measurement or nonstandard measurement?

Outcomes

Upon successful completion of this course, students will have:

- a. Counted sets of household objects and recorded data accurately using numerals, tallies, and other symbols
- b. Practiced adding and subtracting using household objects as manipulatives
- c. Measured household objects and spaces using standard and nonstandard measurement
- d. Compared standard and nonstandard measurement regarding both accuracy and ease
- e. Researched and identified ways that people use math in their homes
- f. Created visual images, such as charts or graphs, to represent math functions
- g. Applied counting and measuring concepts by playing games

Instructional Strategies

Students will work in groups, in pairs and individually throughout the course depending on the assignment and student need. Groupings will be flexible and will change throughout the course depending on student need, ability and interest. The course will include a variety of activities, including read alouds, discussions, centers, hands-on exploration, art projects, games, small group and individualized work

Resources and Materials

- **Books**
 - a. Lionni, Leo. *Inch by Inch*. 2010, ISBN: 978-0375857645
 - b. Murphy, Stuart J. *Just Enough Carrots*. ISBN: 9780064467117
 - c. Ochiltree, Dianne. *Cats Add Up!* ISBN: 0439798531
 - d. Scieszka, J. *Math Curse*. ISBN: 978-0670861941
 - e. Stevens, Janet and Stevens-Crummel Susan. *Cook-A-Doodle-Do!* 2005, ISBN: 978-0152056582
 - f. Sweeney, Joan. *Me and the Measure of Things*. 2002, ISBN: 978-0440417569
 - g. Walsh, Ellen Stoll. *Mouse Count*. 1995, ISBN: 978-0152002237
- **Web sites**
 - a. Sid the Science Kid- Exploring Measurement
http://www.iptv.org/video/detail.cfm/3152/sisk_20081217_exploring_measurement
- http://funschool.kaboose.com/formula-fusion/games/game_lunar_lander.html Kaboose: Dr. Brain's Robot. *This site contains a review game for simple addition facts*

- **Materials**

- Provided by student:
 - General Supplies: pencils, erasers, crayons, markers, 2-pocket folder, glue stick, notebook, scissors
 - Daily snack and water bottle
 - Additional Supplies: a collection of **20 small household objects (no food items please) in a clearly labeled container**. Acceptable items could be straws, buttons, spoons, hot wheels cars, etc. (anything that can safely be used for counting activities by young children)
- Other Supplies:
 - Rulers
 - Solid and liquid measuring cups
 - Measuring spoons
 - Mixing bowls
 - Chart paper
 - 3D Wooden Shapes
 - Plastic Shapes
 - Cookie ingredients

Student Assessment

- **Pre-Assessment**

On the first day of class, students will be pre-assessed to determine their prior knowledge of the course material. Topics will include: identifying shapes, counting, basic addition and subtraction, comparing quantities, ordering numbers, recording data and measurement. There will be hands-on and written components to the pre-assessment.

- **Documentation of Learning**

Daily instructor observation will be the main assessment throughout the course. Student assignments will be examined, and student responses during class discussions and work time will be noted. Students will receive a written evaluation at the end of the session based on narrative comments, observations, student responses, student work and participation.

- **Post-Assessment**

The Post-Assessment for “The Math House” will mirror the pre-assessment so that an accurate comparison of learning can be made through direct correspondences with each component of the assessments. The Post-Assessment will include the same components of the pre-assessment, but with different values. The post-assessment will also include a combination of written and practical components. Post-assessment data will be used in each student’s individual evaluation following the course. At the end of the course students will receive a written evaluation based on general class performance, discussion, participation (whole group and small group) evaluations, and written work. Final Student evaluations are written are mailed out by September 15. Please refer to the Leapfrog Family handbook for more information

Schedule

| Date | Topic(s) | In-class Activities | How will you document learning for assessment? |
|---------------|--|---|--|
| July 11, 2011 | <ul style="list-style-type: none"> -Counting -Organizing and recording data -Identifying two and three-dimensional shapes | <ul style="list-style-type: none"> -Pre-Assessment -Discussion: When and where do we use math at home? Responses will be recorded -Read aloud: <u>The Math Curse</u> -Discuss: How was math used in the story? Add to the list generated from the previous discussion. - Introduction to various 2 and 3 dimensional shapes. - Math Hunt around the classroom: Items will be counted and grouped, and students will look for and identify 2 and 3 dimensional shapes. -Results from the hunt will be recorded using tallies and a chart | <ul style="list-style-type: none"> -Pre-Assessment -Anecdotal notes: Are students able to count items and record data? Are they able to identify two and three-dimensional shapes? Are they able to identify and count groups of items in the classroom? -Recorded data from Math Hunt |
| July 12, 2011 | <ul style="list-style-type: none"> -Standard versus non-standard measurement -Measuring length | <ul style="list-style-type: none"> -Discuss: When are some times we would need to know how big something is? How could we figure it out? -Read aloud <u>Inch by Inch</u> by Leo Lionni and <u>Me and the Measure of Things</u> -Watch "Sid the Science Kid" -Students will explore the difference between standard and non-standard measurement by measuring various items and areas using both standard and non-standard units of measurement in centers -Discussion: Compare standard and non-standard measurement as a class using a Venn diagram. When would you use each? -Students will complete a page showing the length of a classroom item in standard and non-standard units | <ul style="list-style-type: none"> -Students' responses during class discussions will be used to assess understanding -Student recordings of findings in centers -Teacher will observe students during classroom activities and make notes on student performance -Student pages in "We Measure Up" class book |

| Date | Topic(s) | In-class Activities | How will you document learning for assessment? |
|---------------|---|--|---|
| July 13, 2011 | <ul style="list-style-type: none"> -Measuring liquid volume -Measuring using cups and tablespoons -Use knowledge of liquid and solid volume measurement to mix cookie dough | <ul style="list-style-type: none"> -Review measuring length and standard versus non-standard measurement -Introduce measuring liquids and solids Discuss: When would we need to measure liquids and dry ingredients? -Read Aloud <u>Cook-A-Doodle-Do</u> -Inquiry: Exploring liquid and solid volume using measuring containers, water and dry rice -Discuss: How many cups/pints/quarts go into a gallon? How many $\frac{1}{2}$ and $\frac{1}{4}$ cups in 1 cup? -Students will continue working in their groups to mix up cookie batter. The batter will then be refrigerated and baked by the instructor after class. | <ul style="list-style-type: none"> - Teacher will observe students during classroom activities and make notes on student performance -Students' responses during class discussions will be used to assess understanding |
| July 14, 2011 | <ul style="list-style-type: none"> -Addition and subtraction | <ul style="list-style-type: none"> -Teacher read aloud <u>Cats Add Up</u> -Class discussion: When do we need to add? When do we need to take away? How are adding and subtracting different? -Students will practice addition and subtraction using household items as manipulatives -Students will make addition and subtraction stories using household manipulatives -Students will play "Dr. Brain's Robot" to practice addition and subtraction facts | <ul style="list-style-type: none"> -Student number stories -Teacher observation -Participation in discussion |
| July 15, 2011 | <ul style="list-style-type: none"> -Addition and subtraction -Comparing amounts with: Greater than, less than and equal to (<, >, =) -Fill the rooms of the Math House -Expo for friends and family | <ul style="list-style-type: none"> -Teacher Read Aloud: <u>Mouse Count</u> -We will make our class Mouse Count book. Each student will make a page showing a different way a group of mice could be split between the grass and the jar -"Addition War" Card game -Read aloud <u>Just Enough Carrots</u> -Students will compare groups of household items and write comparison sentences using the <, >, = symbols -Post-assessment -We will take our family on a tour of our Math House during our Expo. We will help them measure, add and subtract, and compare amounts. We will also show our family and friends all of the work we have created this week and share our cookies with them during our Expo. | <ul style="list-style-type: none"> -Greater than/less than number sentences -Pages from our Mouse Count book - Teacher will observe students during classroom activities and make notes on student performance |

CTD Statement on Third-Party Web Sites

Instructors are required to thoroughly review any third-party web sites they intend to use in their courses for inappropriate content. However, because web content continuously changes, CTD disclaims any responsibility for any of the content contained on third-party web sites used in course materials. If you become aware of anything that may be inappropriate, please notify CTD staff immediately.

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