

# H.O.T. Math Writing



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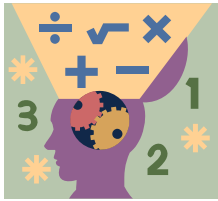
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# Goals



**Students that participate in the project 'H.O.T. Math Stories' will:**

- ✓ Learn how to analyze the elements of a math problem solving story (characters, setting, plot, questioning, etc.)
- ✓ construct various book projects
- ✓ increase their knowledge of Math Skills
- ✓ demonstrate mastery of multiple Math, Reading, and Language Arts Common Core Standards

# Common Core Standards



## Grade 3

### Math

- CCSS.Math.Content.3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- CCSS.Math.Content.3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.<sup>3</sup>
- CCSS.Math.Content.3.NBT.A.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
- CCSS.Math.Content.3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
- CCSS.Math.Content.3.MD.A.1 Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.
- CCSS.Math.Content.3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*
- CCSS.Math.Content.3.MD.D.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the

side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

- CCSS.Math.Content.3.G.A.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

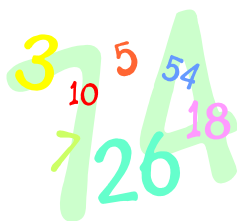
#### Reading

- CCSS.ELA-Literacy.RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

#### Writing

- CCSS.ELA-Literacy.W.3.5 With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.
- CCSS.ELA-Literacy.W.3.6 With guidance and support from adults, use technology to produce and publish writing (using keyboarding skills) as well as to interact and collaborate with others.

## Course Outline/Overview



The purpose of the project is to assist students with writing their own H.O.T questions about a selected Math standard and improve on their problem-solving skills. At the end of each Math standard, in a review of key math words and questions used in problem solving skills, students create their own story math problems based on the class monthly theme or literature book.

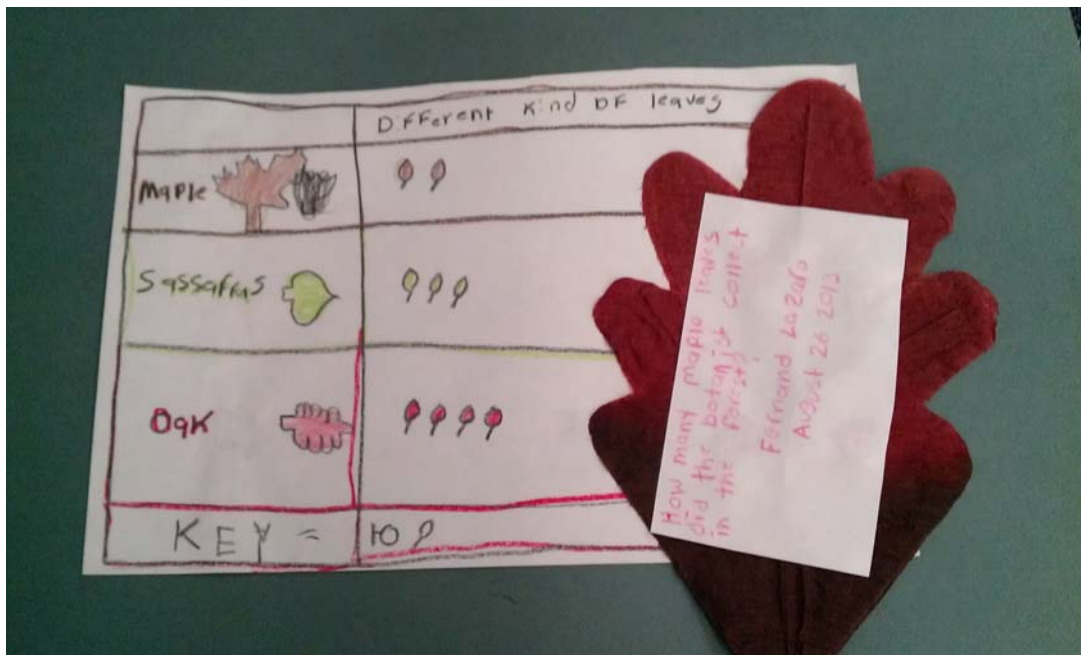
Students will write a draft problem using the Go Math problem solving questions as examples to assist with their use of important key words needed in the problem. In the first part of the project, students have editing conferences with teacher to discuss how to make sure problems are using the correct questioning and key word techniques. Students then illustrate math story problems. The Final problem solving stories are then published in book form. Students can then read the published story problems and attempt to solve them independently or working as a team, checking with the writer of the story for the correct answer. With students writing their own problems and solving the questions, it helps them with problem solving skills and will improve their academic achievement and test scores.

# Lesson Activities



The following are lesson activities for H.O.T. Math Stories to assist you in completing some of my projects with your students. If you have any questions or need additional assistance please contact me at [Tminer@dadeschools.net](mailto:Tminer@dadeschools.net).

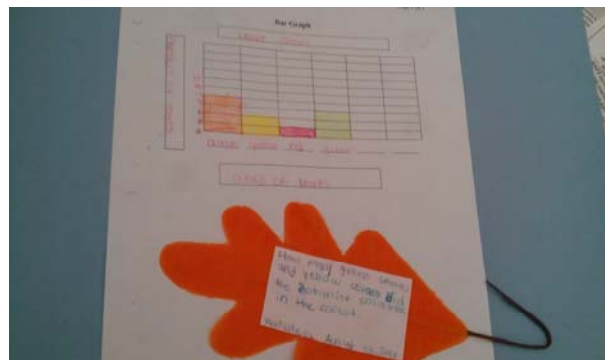
## H.O.T. Math Graphing



**Objective:** Solve one- and two-step “how many more” and “how many less” problems using information presented in tally tables, pictographs, and bar graphs

**Materials:** small foam leafs, large paper leaves, copy paper, construction paper, color pencils

**Activity:** Students have studied how to collect and analyze data in Math as well as learned about different scientists and their jobs. Explain to students that they will become a botanist and the classroom will become forest with leaves falling on ground. (Teacher throws colored foam leaf stickers around classroom floor) Students collect leaves. In small groups students decide how they want to sort leaves. (by color or shape) Groups design a tally table with their sorted leaves. Groups split into 2 sets of partners and using tally tables one set of partners creates a pictograph and the other set of partners create a bar graph. After graphs are completed review questioning strategies math lessons taught. With teacher assistance, students will write a one or two step problem solving question about the tally table, pictograph, or bar graph. Questions are written on small strips of copy paper and mounted on a paper leaf. Leaf is attached to the graph and mounted on 12x18 piece of construction paper. Graph pages are put into a booklet. Booklet is placed into the math center so students can read and solve during center time. Students should check with the writer of problem to clarify the correct answer.





## Haunting Math Tales

**Objective:** Use multiplication within 100 to create word problems in situations involving equal groups, arrays by using drawings

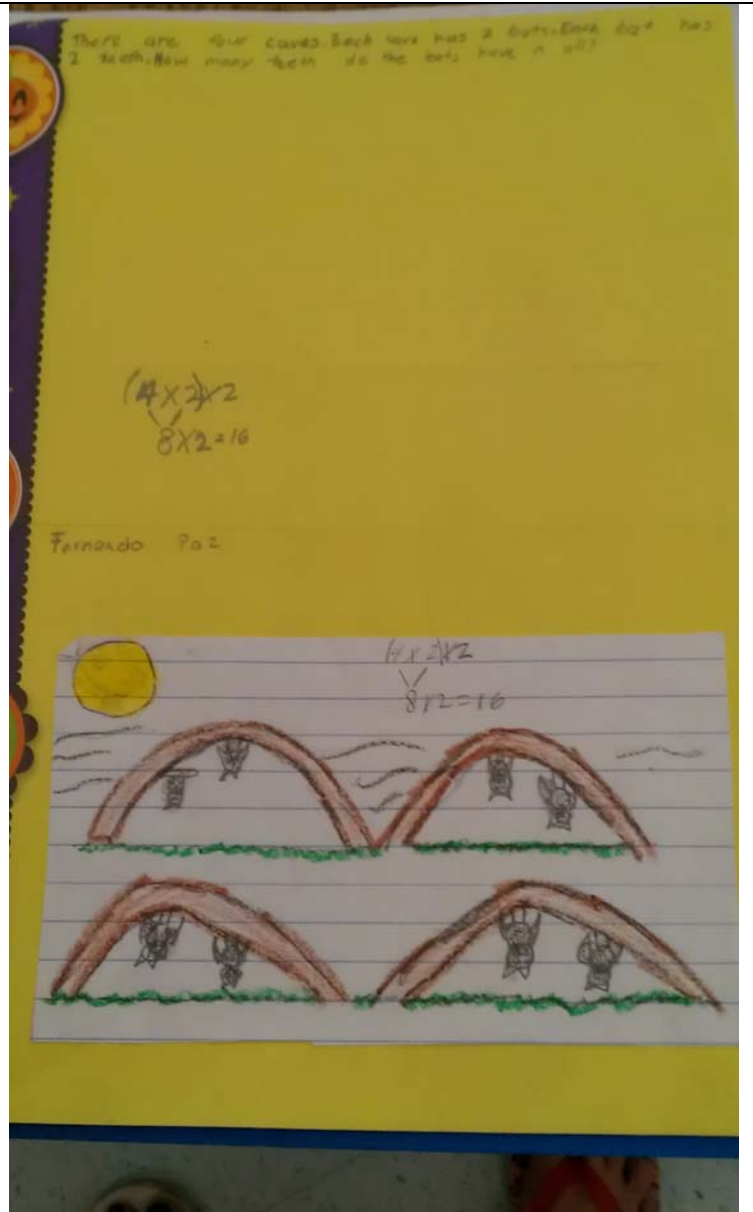
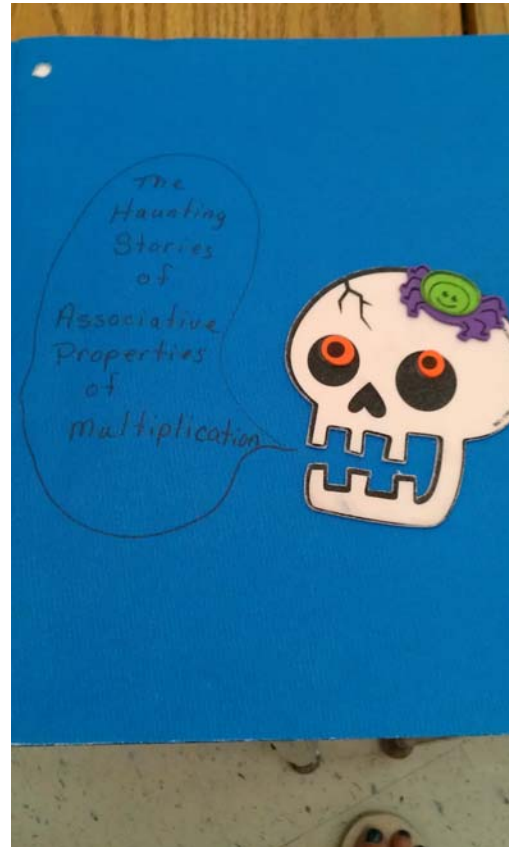
**Materials:**

- Multiplication facts cards with product no larger than 15
- three column chart labeled: Characters(who), Setting(where), Things(what),
- Haunting Math Tales worksheet(see Resources)
- Computer with Word document and clip art
- Felt pumpkin/haunted house cut out
- Construction paper



**Activity:** Open lesson by discussing words that student's associate with Halloween. List words in appropriate column of the three column chart: characters, setting, things. Also make a list of descriptive words to describe each chart category. Display the three column chart. Students will be given a multiplication math fact card. Students will complete the Haunting Math Tales worksheet by picking a word for character, setting and thing. Students will pick a descriptive word to describe the character, setting, and thing. Students brainstorm a Halloween multiplication story plot using the words from the chart and their multiplication fact. Students will also develop a problem solving question about their story plot. Teacher will proof read their plot and question for accuracy. The final draft will be composed on a Word document and illustrated with clip art. Each student will share their Haunting Math Tale with a partner to solve. Tales will be compiled in a booklet and using a felt pumpkin or haunted house as the book cover.

**Extend Activity:** expand the lesson to include associative properties



## Division and Fact Families



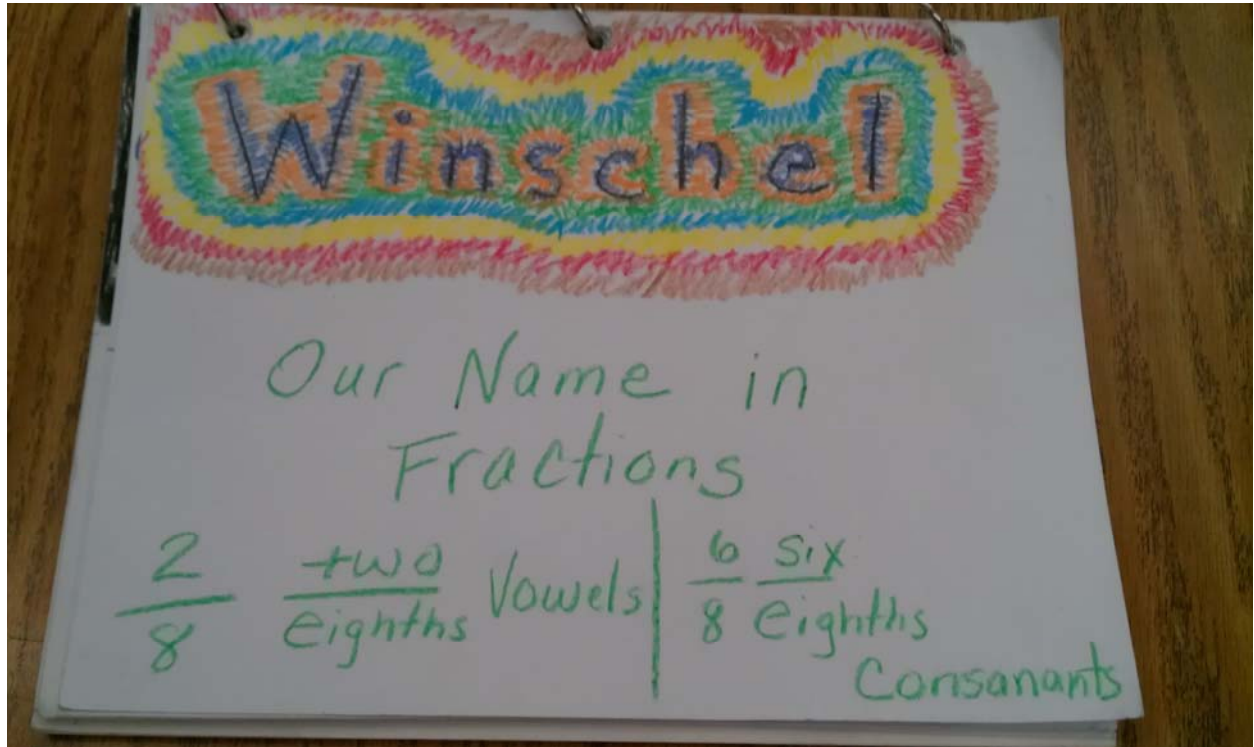
**Objective:** Use division within 100 to create word problems in situations involving equal groups, arrays by using drawings

**Materials:**

- Literature story about Thanksgiving
- Three column chart (see Resources)
- Division facts cards with product no larger than 15
- three column chart labeled: Characters(who), Setting(where), Things(what),
- Thanksgiving theme dinner napkins
- Turkey template printed on brown construction paper (see Resources)

**Activity:** Read a literature story about Thanksgiving. Use a three column chart: characters, setting, and things to list Thanksgiving associated words. Also make a list of descriptive words to describe each chart category. Use Haunting Tales directions to write problem solving stories. Final draft stories are written on turkey template. Turkey feathers use the fact family.

## Name in Fractions



**Objective:** identify fractions

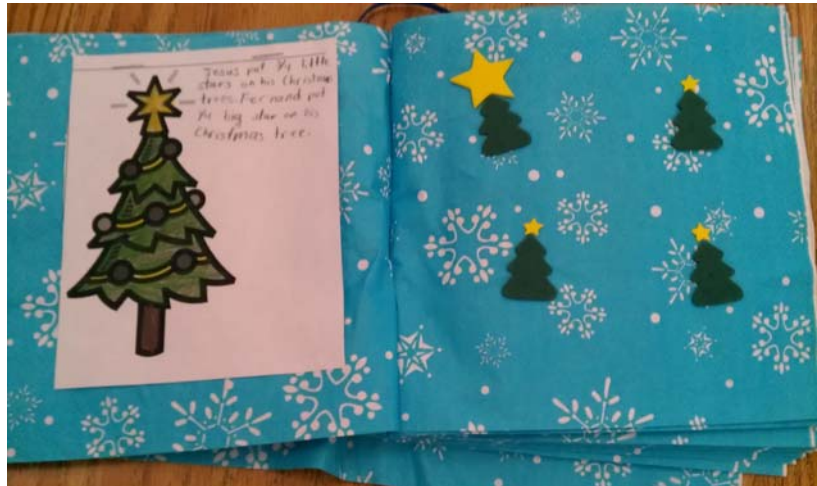
**Materials:**

- Card stock
- crayons

**Activity:** Explain to students they will use their first or last name to identify the fraction of their name that has vowels and consonant. Students can color around their name.



## Fractions Stories

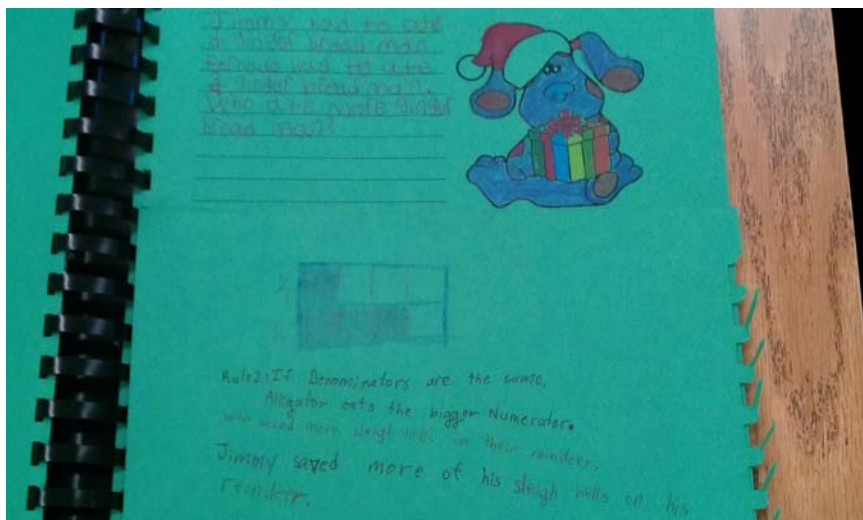


**Objective:** identify fractions

**Materials:**

- winter dinner napkins
- foam Christmas stickers
- printed Christmas pictures
- crayons, markers, color pencils, glue
- computer, printer, copy paper

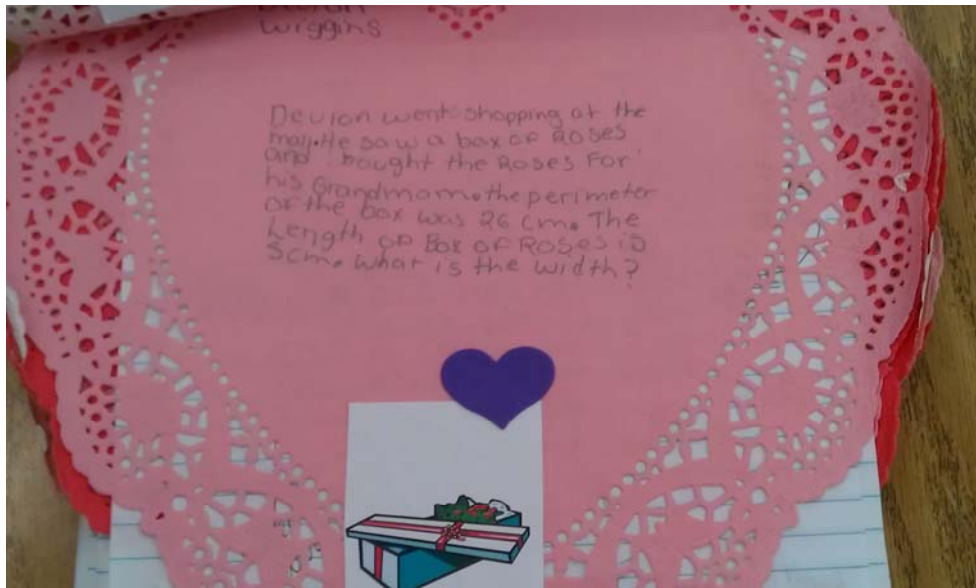
**Activity:** Use the three column chart to develop a vocabulary list about Christmas items. Students use foam Christmas sticker to represent a given fraction then write a statement about themselves that describes their representation. Statements and fraction representation are placed on winter dinner napkins and tied together in a booklet form.



### Materials:

- Activity:** Use the three column chart to develop a vocabulary list about Christmas items. Students are given 2 fractions to develop a problem solving story and question as done in previous activities. Students illustrate and write an answer statement. A book binding machine made the booklet.

## H.O.T. Perimeter



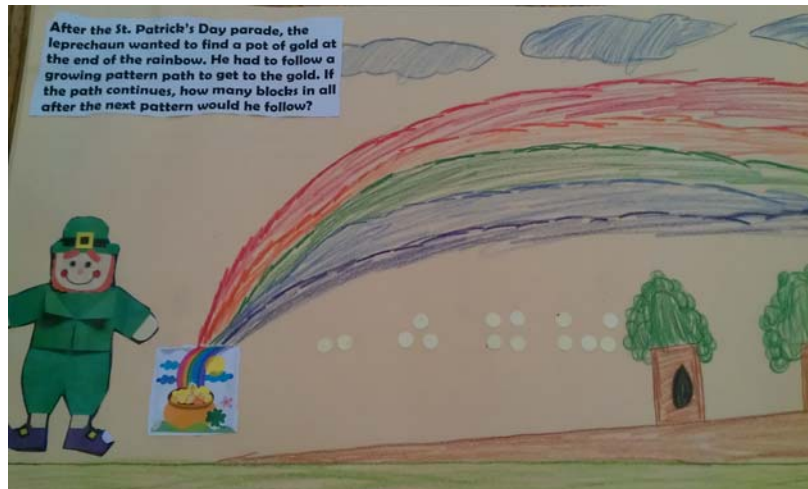
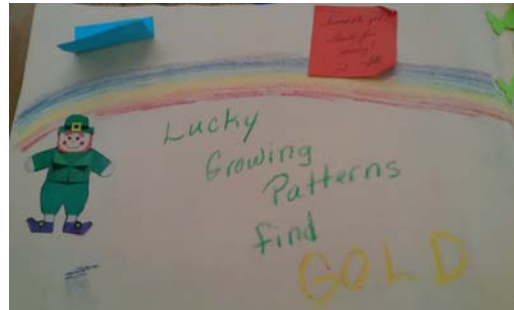
**Objective:** Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

### Materials:

- heart dollies
- crayons, markers, color pencils, glue
- printed valentine picture
- foam heart stickers

**Activity:** Use the three column chart to develop a vocabulary list about Valentine's Day. Students continue to use the problem solving story and questioning strategy to write a real world story about perimeter.

## Lucky Growing Patterns find GOLD!



**Objective:** identify growing patterns and understanding a total number in a pattern AFTER next pattern.

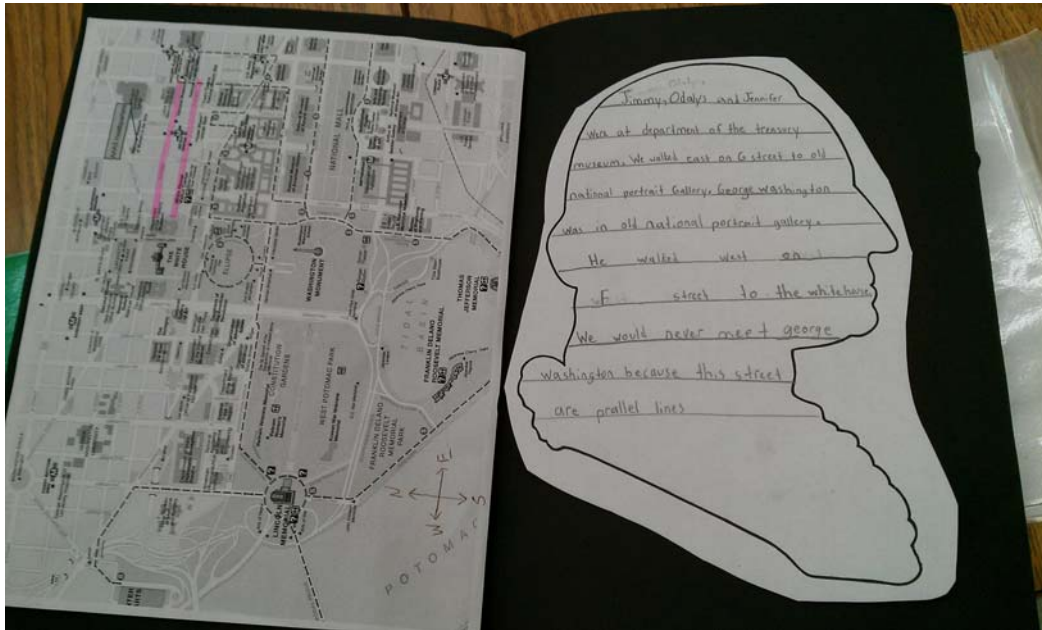
### Materials:

- color printed leprechauns and pots of gold
- crayons, markers, color pencils, glue
- hole punch dots

**Activity:** Use the three column chart to develop a vocabulary list about St. Patrick's Day. Review objective with students and write a problem solving story focusing on the questioning.



## President Washington Visits Washington D.C in 1793



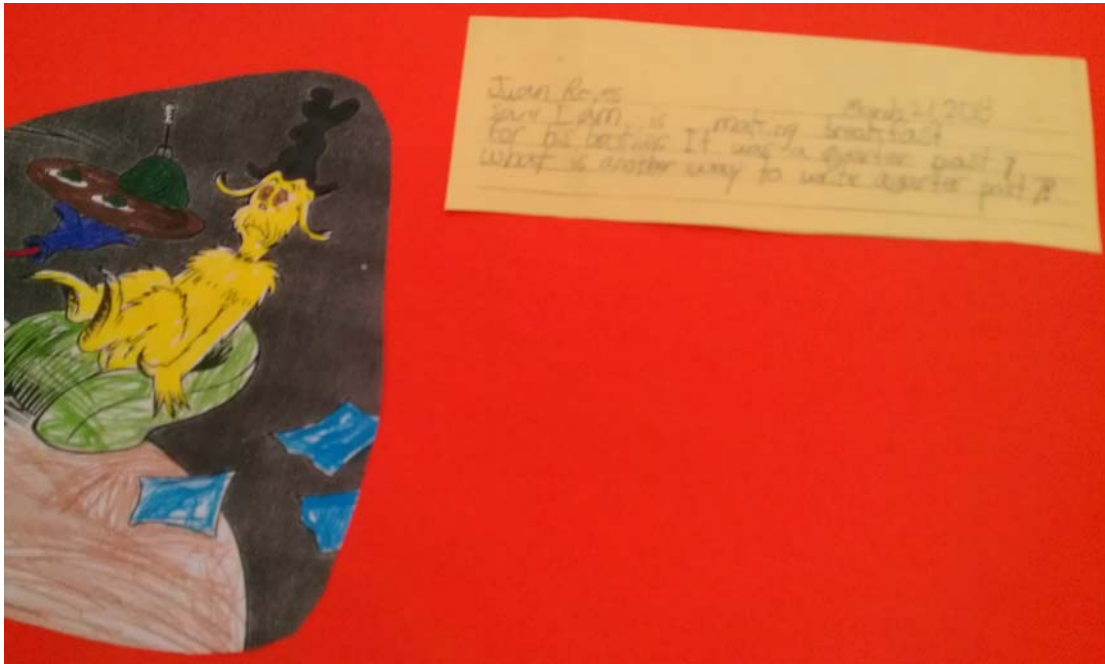
**Objective:** identify parallel, intersecting, perpendicular lines and acute, obtuse, right angles

### Materials:

- Adapted from Go Math Social Studies Cross Curricular P. 497 New Go Math TE
- Literature book-Young George Washington
- silhouette head of George Washington
- maps of Washington DC
- black construction paper
- Powerpoint presentation of President and Architect Pierre Charles L'Enfant

**Activity:** Read Young George Washington to class. Explain how Washington wanted a special city for the president and congress to work for the new country. Give PPT presentation. Display Washington DC map on smart board or overhead projector. Have students describe the types of lines and angles the streets are making. In small groups students will try to meet President Washington. Students will locate points on a map for a location they and President Washington are located as well as a point on the map they need to get to. Students will write a description of the directions everyone will travel and the types of lines and angles the traveled streets make. Completed map stories will be placed in booklet form.

## Telling Time with Sam I Am



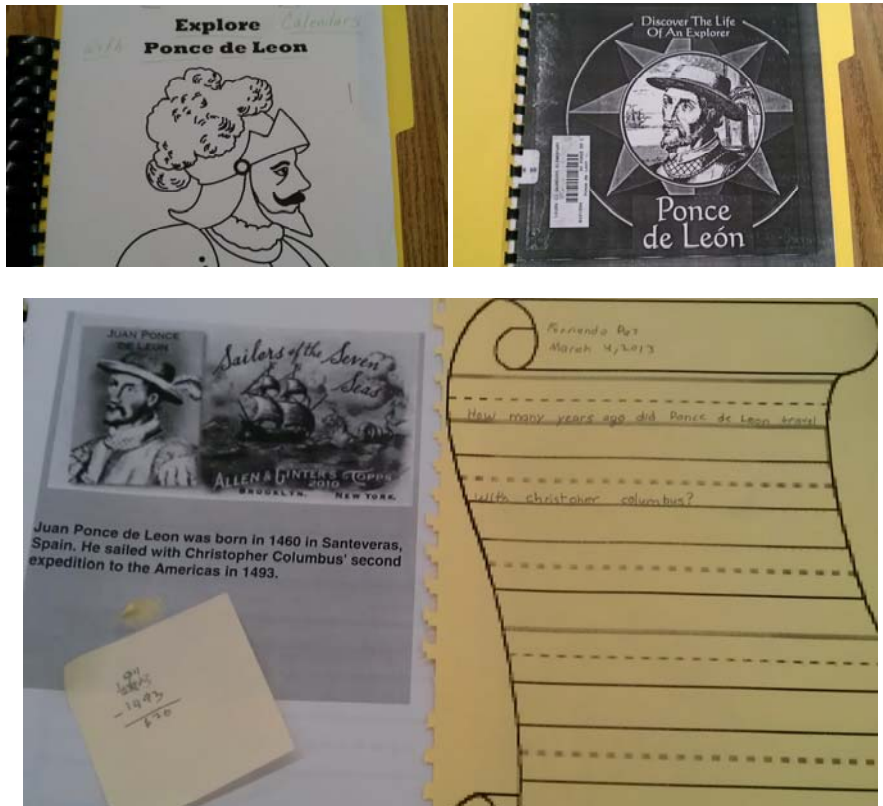
**Objective:** telling elapsed time.

**Materials:**

- Literature book-Green Eggs and Ham
- Green Eggs and Ham color pages
- crayons, markers, color pencils, glue
- orange construction paper

**Activity:** Read Green eggs and ham to class. Students select an illustration color page part of the story to write a problem solving story and question about elapsed time. Illustrations and H.O.T math story are mounted on orange construction paper. Students wrote correct answers on reverse of page.

## Exploring Calendars with Ponce de Leon



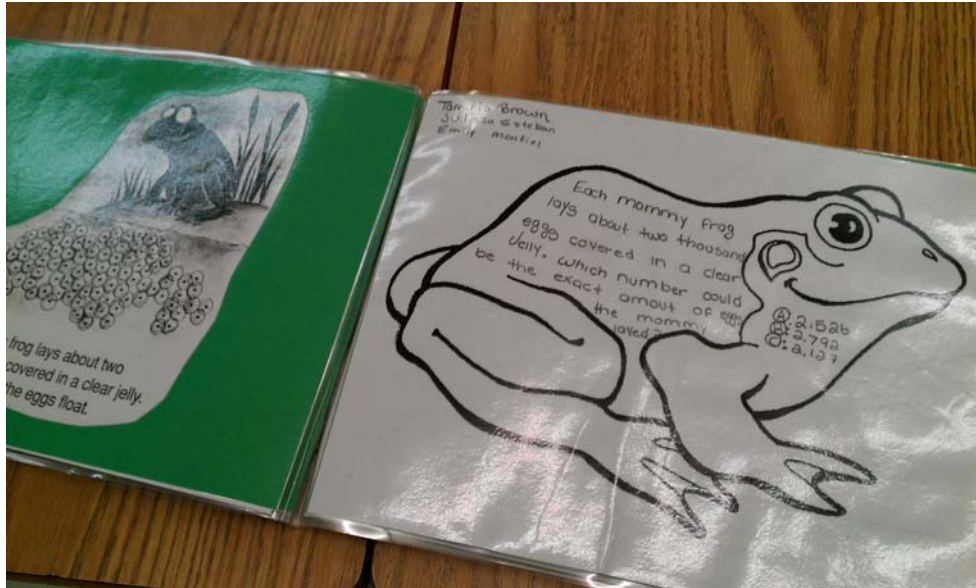
**Objective:** telling calendar time.

### Materials:

- Literature Ponce de Leon
- scroll writing paper
- feathered pens
- post it notes

**Activity:** Read Ponce de Leon to class. Discuss calendar of events that occurred in story. Students create a problem solving story and question. Students use feathered pens to write final draft on scroll writing paper. Students use post it notes to solve the problems.

## H.O.T Froggy Hoppin' Math Stories



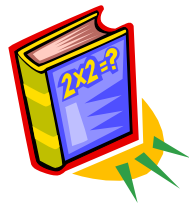
**Objective:** test taking skills

### Materials:

- non-fiction Literature books about frogs
- frog template
- green construction paper

**Activity:** To celebrate National Frog month, students will work in partners to read a non-fiction literature story about frogs. They will take notes of important math related facts. Partner's conference with teacher about a frog fact they learned that could be turned into a problem solving story and question. Once students have written their Froggy Hoppin math story, in preparation for FCAT, students will also have to develop a bank of 3-4 possible answers. Teacher will demonstrate how test answers could all be possible answers and that careful reading of question and key information will help them solve and choose the correct answer. Partners will share their Froggy Hoppin story with the class. Create a class book of Froggy Hoppin Math Stories.

# Resources



The materials needed to complete the booklets associated with ***H.O.T Math Stories*** are included with each activity. The literature was found from Media Center or local book stores. The table below has stores that many materials were purchased. Worksheets and PowerPoint presentations can be requested by email: [Tminer@dadeschools.net](mailto:Tminer@dadeschools.net)

Dollar Store/Wal-Mart	Office store supplies	Art/Craft Supplies
Leaf foam stickers Large paper leaves, pumpkin felt cutouts, seasonal printing paper, dollies, napkins,	color copy paper, cardstock, pencil colors, folders, brass fasteners, color printer and ink	Construction Paper glue, glue sticks, crayons

## Websites for additional resources

Math Literature books - <http://www.kanepress.com/intro-mm.html>

## Three Column Chart:

Clip art can be changed for each activity as needed.

Name \_\_\_\_\_ Date \_\_\_\_\_

## Haunting Math Tales



Character	Setting	Thing	
			Descriptive

Plot: \_\_\_\_\_

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Problem Solving Question: \_\_\_\_\_

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# Adapter Grant

