

**ACCRS: 3.1**  
 Interpret products of whole numbers, e.g., interpret  $5 \times 7$  as the total number of objects in 5 groups of 7 objects each.  
*Example:* Describe a context in which a total number of objects can be expressed as  $5 \times 7$ .

<p><b>Mastered:</b>                  Students can interpret products of whole numbers, e.g., interpret <math>5 \times 7</math> as the total number of objects in 5 groups of 7 objects.</p>	<p><b>Present:</b>                  Students will complete the Think Fast activity to demonstrate understanding of arrays.</p>	<p><b>Going Forward:</b>                  Students will complete the Triangle Tower Activity at the Web site listed below: .  <a href="http://www.mathwire.com">http://www.mathwire.com</a>.</p>
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**Present and Going Forward Vocabulary:**  
 Product, whole numbers, multiply, array

**Career Connections:**  
 Seamstress, Landscaper, Engineer

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)

**Think Fast**

*Student Instructions:* Follow the directions at each letter. Think through and record your answers carefully.

A	Make your own picture array cards (a minimum of three).
R	Write two multiplication word problems to match each card.
R	Write a multiplication number sentence to match each card.
A	Assemble a poster using your array cards to promote something that is your favorite that can be grouped in this way. <i>Example 1: Three packages of doughnuts with 6 doughnuts in each package = <math>3 \times 6</math></i> <i>Example 2: Six dogs in the window wagging tails = <math>6 \times 1</math></i>
Y	Discuss your word problems and number sentences with your partner.
S	Spot arrays in your environment. Write 2 clues to help others identify the array you have spotted. <i>Example: My array affects the brightness of the home. It has the dimensions of <math>4 \times 4</math>.</i> <i>Answer: light cover</i>

**Literature Connections/Resources:**

- Pinczes, E. *One Hundred Hungry Ants*. Boston: Sandpiper Press. 1999.
- Moore, I. *Six Dinner Sid*. Ft. Worth, TX: Aladdin Publishing. 1993.
- Neuschwander, Cindy. *Amanda Bean’s Amazing Dream: A Mathematical Story*. NY: Scholastic Press. 1998.
- Websites:
  - Triangle Tower Game: <http://www.mathwire.com>
  - Multiplication games-Batter’s Up Baseball: <http://www.mathwire.com>
  - Multiplication Math Games-any game: <http://www.math-play.com>
  - Hidden Picture-Multiplication Version-visit Game Room: <http://aplusmath.com>

**ACCRS: 3.2**

Interpret whole-number quotients of whole numbers, e.g., interpret  $56 \div 8$  as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.

*Example:* Describe a context in which a number of shares or a number of groups can be expressed as  $56 \div 8$ .

**Mastered:**

Students can interpret whole-number quotients of whole numbers.

**Present:**

Students will interpret whole-number quotients and interpret problems as the number of objects in each share when there are a number of objects left over after partitioning equally.

**Going Forward:**

Students will describe a context in which a number of shares can be expressed.

**Present and Going Forward Vocabulary:**

Whole numbers, quotient, divide, left over, remainder, groups of

**Career Connections:**

Budget Analyst, Architect, Astronaut, Climatologist

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)**Fortunately, Unfortunately Chain Story: A Birthday Adventure!***Student Instructions:*

- Research the following question:  
How can an odd number affect the distribution of makings things even?
- Read the Fortunately, Unfortunately scenario.
- Then write and illustrate the chain of events to show the positive and negative situations surrounding the scenario. You may use additional sheets of paper in order to complete the story.

**SCENARIO:** Fortunately, your friends decided to take you to the carnival for your birthday. Oh, boy! The Ninja roller coaster has empty seats! In order to ride, there must be two kids in each seat. Unfortunately, you are part of a group of 15 best friends. What will you do?

**Literature Connections/Resources:**

- Burns, Marilyn. Spaghetti and Meatballs for all! A Mathematical Story. NY: Scholastic Press. 2008.
- Dodds, D.A. The Great Divide: A Mathematical Marathon. Somerville, MA: Candlewick Press. 2005.
- Hutchins, P. The Doorbell Rang. Pine Plains, NY: Live Oak Media. 2004.
- Murphy, S. J. Divide and Ride. NY: Harper Collins. 1997.
- Website:
  - <http://aplusmath.com/Games/HiddenPicture/HiddenPicture.php?gametype=Division>
  - <http://www.kidsnumbers.com/division.php> Click any game.
  - <http://www.fun4thebrain.com/division.htm> Then choose a game.

**ACCRS: 3.3**

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.

**Mastered:**

Students can 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.

**Present:**

Students will use multiplication and division to solve word problems by using drawings and equations.

**Going Forward:**

Students will create multiplication and division word problems to solve using a symbol for the unknown number.

**Present and Going Forward Vocabulary:**

Multiply, divide, array, quantities

**Career Connections:**

Economist, Chemist Petroleum Engineer, College Professor

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)**Equal Rows in a Vegetable Garden***Student Instructions:*

1. Choose two of the following numbers; 9, 18, 27.
2. Suppose your mom planted that number of tomato plants in her garden. How many different ways could your mom arrange the seeds into equal rows?
3. Record your answers using arrays, numbers, and words.
4. Draw a picture to go with your answers.

What factors do these numbers have in common?

**Literature Connections/Resources:**

- Hutchins, Pat. *The Doorbell Rang*. Pine Plains, NY: Live Oak Media. 2004.
- Dodds, Dayle Ann. *Minnie's Diner: A Multiplying Menu*. Somerville, MA: Candlewick Press. 2007.
- Mills, Claudia. *7x9=Trouble*. NY: Farrar, Straus & Giroux. 2004.
- Mahy, Margaret. *17 Kings and 42 Elephants*. NY: Dial Press, 1987.
- Website: [www.mathplayground.com](http://www.mathplayground.com) Click on "Word Problems with Katie," Level 2.

**ACCRS: 3.4**

Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

*Example:* Determine the unknown number that makes the equation true in each of the equations,  $8 \times ? = 48$ ,  $5 = ? \div 3$ , and  $6 \times 6 = ?$ .

**Mastered:**

Students can determine the unknown whole number in a multiplication or division equation relating three whole numbers.

**Present:**

Students will determine the unknown number in multiplication or division equations.

**Going Forward:**

Students will complete a Math Story to determine the unknown number that makes the equation true.

**Present and Going Forward Vocabulary:**

Multiply, divide, equation

**Career Connections:**

Cryptanalyst, Economist, Psychometrician, Urban Planner, Purchasing Agent

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)**Math Story Starter: A Dinner Surprise**

*Student Instructions:* Answer the Multiplication and Division word problem about a day when you had more visitors than expected when you invited company for dinner. Then write and illustrate your own math story about this time when you had more visitors than expected.

We had planned to have 30 guests for dinner. They were to sit at 5 different tables. Several of the invited guests brought friends with them. When it was dinnertime, we counted 36 guests. How could 36 guests be placed at 5 tables?

How many tables would have added guests?

What equations could be used to solve the problem?

**Literature Connections/Resources:**

- Murphy, Stuart. *Safari Park*. NY: Harper Collins. 2001.
- Mills, Claudia. *7x9=Trouble*. NY: Farrar, Straus & Giroux. 2004.
- Anno, Masaichiro. *Anno's Mysterious Multiplying Jar*. NY: Penguin Books. 1999.

**ACCRS: 3.5**  
 Apply properties of operations as strategies to multiply and divide. (Students need not use formal terms for these properties.)  
*Examples:* If  $6 \times 4 = 24$  is known, then  $4 \times 6 = 24$  is also known. (Commutative property of multiplication)  $3 \times 5 \times 2$  can be found by  $3 \times 5 = 15$ , then  $15 \times 2 = 30$ , or by  $5 \times 2 = 10$ , then  $3 \times 10 = 30$  (Associative property of multiplication).  
 Knowing that  $8 \times 5 = 40$  and  $8 \times 2 = 16$ , one can find  $8 \times 7$  as  $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$ . (Distributive property).

<p><b>Mastered:</b>                  Students can apply properties of operations as strategies to multiply and divide.</p>	<p><b>Present:</b>                  Students will identify the properties of operations as strategies to multiply and divide using the Tic-Tac-Toe activity.</p>	<p><b>Going Forward:</b>                  Students will devise examples on how to solve commutative, associative, and distributive property problems.</p>
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**Present and Going Forward Vocabulary:**  
 Commutative property, distributive property, and associative property, equation, blueprint

**Career Connections:**  
 Animator, Biologist, Chemist, National Security Analyst, Forensic Analyst, Architect, Landscape Designer

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)

**Tic-Tac-Toe**

*Student Instructions:* Choose three activities in a row, column, or diagonal, just like TIC-TAC-TOE. Complete the contract to give to your teacher. You may need to plan your product using the organizational tool, Primary Project Planner, located in Appendix B.

<p>1. You are a special architect trained to design dream structures. You have been hired to design a dog house, a dollhouse, or a playhouse (<b>Choose one</b>). The owner wants the structure to be in the shape of a rectangle that is also a square.</p> <p>Draw a blueprint and record the dimensions on your structure. Show any other openings, and label with dimensions. Then draw a model of the inside and outside of the structure to showcase your “dream” designs.</p>	<p>2. As a landscape contractor, you have been asked to design a variety of rectangular enclosures for a garden, with a total of 24 square feet of space.</p> <p>Draw all possible combinations of dimensions that total 24 square feet.</p> <p>How many combinations of dimensions are possible?</p> <p>Make a recommendation to the customer about which enclosure you think would work best and why.</p>	<p>3. Write a word problem that represents the <u>associative property of multiplication</u>.</p> <p>Label a plain, white piece of paper, “Associative Property of Multiplication.”</p> <p>Write your word problem, and the equation that it represents on this sheet of paper and illustrate.</p> <p>Set this page aside in a special folder to use as a possible page for a manual on the properties of multiplication to place in the class library.</p>
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<p>4. Write number sentences that represent the <u>commutative property of multiplication</u>.</p> <p>Then place your work on a page for a manual on the properties of multiplication as explained in box # 3 of this TIC-TAC-TOE board.</p>	<p>5. In your business as specialty container designer, you are designing a variety of creative, rectangular containers with at least one dimension equal to 6.</p> <p>Draw all of the possibilities and label the dimensions. How combinations are there?</p> <p>Explain what your containers will carry. How is each uniquely designed for its special contents?</p>	<p>6. Write a list of ideas or draw a poster illustrating many ways that multiplication helps us in our everyday work and play.</p>
<p>7. How can the distributive property help you solve problems? Make a list of as many ideas as possible.</p> <p>Write your list in a decorative or creative way, and set it aside as a page for the manual described in box # 3 of this TIC-TAC-TOE board.</p>	<p>8. Using the number 36, how many squares can you make?</p> <p>Draw each and label the dimensions.</p>	<p>9. How do you determine the product of the numbers 2, 3, 4?</p> <p>Write a short math manual explaining how to do this and show the equation that represents this problem.</p>

**Literature Connections/Resources:**

- Moore, I. Six-Dinner Sid. Ft. Worth, TX: Aladdin Publishing. 1993.
- Schwartz, Richard Evan. You Can Count on Monsters. Natick, MA: A.K. Peters. 2010.
- McElligott, M. Bean Thirteen. NY: Putnam Press. 2007.

**ACCRS: 3.6**

Understand division as an unknown-factor problem.

*Example:* Find  $32 \div 8$  by finding the number that makes 32 when multiplied by 8.

**Mastered:**

Students can understand division as an unknown-factor problem.

**Present:**

Students will complete the Division Square activity to comprehend that division is an unknown-factor problem.

**Going Forward:**

Students will devise a division rule to understand an unknown-factor problem.

**Present and Going Forward Vocabulary:**

Multiply, divide

**Career Connections:**

Seamstress, Surgeon, Urban Planner, Landscaper

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)**Division Squares**

*Student Instructions:*

**Download flash cards at the Web site below or use a classroom set.**

Work with a partner. Shuffle the division cards and place them face down in a pile.

1. Player 1 takes a card, reads the problem aloud and says the answer.
2. Player 2 uses a calculator to check the answer. If the answer is correct, player 1 uses a crayon to trace over a line segment on the game board.
3. Player 2 completes steps 1-2, using a different colored crayon.
4. Players continue to take turns, always using the same colored crayon. A player who draws a line that completes a square writes their initial inside it. The player may also draw an extra line on the game board.
5. At the end of the playing time, players calculate their scores. Each box with initials is worth 1 point. The player with the most points wins.

**Materials Needed:**

- Division squares game board (laminated for use with dry erase markers)
- Set of division flashcards
- Crayon
- Calculator

**\*Web site to download flash cards:**

<http://www.k-5mathteachingresources.com/support-files/divisionsquares.pdf>

**Literature Connections/Resources:**

- McElligott, Matthew. Lion's Share. London: Walker Childrens Publishing. 2012.
- McElligott, Matthew. Bean Thirteen. NY: Putnam Press. 2007.
- More, Inga. Six-Dinner Sid. NY: Alladin Paperbacks. 1993.
- Rocklin, Joanne. One Hungry Cat (Hello Math Reader Level 3)
- Web sites:
  - <http://www.fun4thebrain.com/Division/deepdivediv.html>. (Choose any game.)
  - <http://www.k-5mathteachingresources.com/>.

**ACCRS: 3.7**

Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that  $8 \times 5 = 40$ , one knows  $40 \div 5 = 8$ ) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

**Mastered:**

Students can fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division or properties of operations.

**Present:**

Students will complete the activity to fluently multiply and divide within 100 (e.g., knowing that  $8 \times 5 = 40$ , one knows 40 divided by  $5 = 8$ ).

**Going Forward:**

Students will know from memory all products of two one digit numbers.

**Present and Going Forward Vocabulary:**

Multiply, divide, products, quotient

**Career Connections:**

Statistician, Physicists, Astronomer, Computer Scientist

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)**Math Operational Story***Student Instructions:*

1. Use the numbers provided by your teacher.
2. Write a related division story that tells about something that happened to you or someone else, involving the following actions: Sharing, Grouping
3. In your story, explain your reasoning for using the numbers as you did.
4. Write the related number sentences from your story.
5. Illustrate your story on the back of the page.

**Literature Connections/Resources:**

- McElligott, Matthew. Lion's Share. London: Walker Childrens Publishing. 2012.
- Rocklin, Joanne. One Hungry Cat (Hello Math Reader Level 3). NY: Cartwheel Books. 1997.
- McElligott, Matthew. Bean Thirteen. NY: Putnam Press. 2007.
- Website:  
<http://www.fun4thebrain.com/Division/deepdivediv.html> (Choose any game)

**ACCRS: 3.8**

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. (This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order [Order of Operations]).

**Mastered:**

Students can solve two-step word problems using the four operations.

**Present:**

Students will represent two-step word problems using the four operations and a letter standing for the unknown quantity.

**Going Forward:**

Students will assess the reasonableness of answers using mental computation and estimation strategies including rounding.

**Present and Going Forward Vocabulary:**

Rounding, add, subtract, multiply, divide

**Career Connections:**

Architect, Budget Analyst, Cost Estimator, Electrical Engineer, Stockbroker

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)

**Math Rebus Story**

*Student Instructions:* Using the Math Rebus Story Contract, write a two-step number sentence (equation). Your number sentence must use all four operations. Write your word problem (including your answer). Then write a short story that includes your choice of the pictures as the main character, story setting, the main problem in the story, and the story solution. Your story must be centered on the word problem and include the pictures you choose. If you wish, draw a picture to illustrate on the back of your story contract.

*Example: Main Character:* Row 1, Column 1 - Princess  
*Story Setting:* Row 1, Column 2 - Castle  
*Main Problem:* Row 1, Column 3 - Dragon  
*Story Solution:* Row 1, Column 4 - Knight

**Challenge:** Write a story mixing and matching pictures from Rows 1, 2, 3, and 4.

	Column 1 Main Character	Column 2 Story Setting	Column 3 Main Problem in Story	Column 4 Story Solution
Row 1				
Row 2				
Row 3				

**Literature Connections/Resources:**

- Murphy, Stuart J. Ready, Set, Hop. NY: Scholastic. 1997.
- Murphy, Stuart J. Shark Swimathon. St. Louis, MO: Turtleback Books. 2001.
- Calvert, Pam. Multiplying Menace: The Revenge of Rumpelstiltskin. Watertown, MA: Charlesbridge Publishing. 2006.

- Schwartz, Richard Evan. You Can Count on Monsters. Boca Raton, FL: A.K. Peters. 2010.
- Anno, Masaichiro. Anno's Mysterious Multiplying Jar. NY: Penguin Putnam Books. 1996.
- Website:  
<http://www.mathplayground.com/katiebegin.html> (Click on Levels 1 & 2)

**ACCRS: 3.9**

Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.

*Example:* Observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.

**Mastered:**

Students can identify arithmetic patterns (including patterns in the addition or multiplication table), and explain them using properties of operations.

**Present:**

Students will use the Drawing Multiplication Patterns activity to identify patterns.

**Going Forward:**

Students will recommend ways to identify arithmetic patterns and explain them using properties of operation.

**Present and Going Forward Vocabulary:**

Patterns, addition, multiplication, multiple, multiplication facts, digit, factor, numeric

**Career Connections:**

Engineer, Math Professor, Urban Planner, Architect

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)

**Drawing Multiplication Patterns**

*Student Instructions:*

1. Choose a number between 1 & 9 and record it on the data page provided.
2. On the One Hundreds Chart, color all the multiples of the number you chose.
3. Write out your multiplication facts for this number in the boxes provided on the data page...
4. On the lines provided, record the number in the “ones” place (the “ones” digit) in each multiple you colored.  
*Example:* If you color multiples of 3, and you write down only the ones digit, you have 3,6,9,2,5,8,1,4,7,0.  
What numeric pattern do you see?
5. Now draw your pattern. Using the Number Circle provided, a ruler, and a pencil, draw straight lines to connect the ones digits from your pattern around the edge of the circle. **Always start with your pencil on 0.**  
*Example:* For the digits above, start with your pencil at 0 at the edge of the circle, then draw a straight line from 0 to 3, then from 3 to 6, and so on. What shape pattern do you see?
6. Repeat for different numbers between 1 and 9.

**Materials Needed:**

- Data Page (provided)
- “One Hundreds Chart” (provided),
- Pencil
- Ruler
- Number Circle (provided)
- crayon.

**OR**

**Play the Multiplication Pattern Game**

*Student Instructions::*

1. Roll the dice to get a number (n).
2. Color every “nth” square on the One Hundreds Chart.  
*Example:* If I roll a 4 on the dice, I will color every 4th square yellow on the One Hundreds Chart.
3. Write the numbers you colored from the One Hundreds Chart in the table. Circle all of the digits that are in the ones.

Number rolled (Factor)	Numbers colored on the Hundreds Chart for this factor:

4. Copy the circled digits in the table on the lines below. What patterns do you see?

First roll \_\_\_\_\_

Second roll \_\_\_\_\_

Third roll \_\_\_\_\_

Fourth roll \_\_\_\_\_

5. Roll again and repeat, using different numbers and colors each time you roll the dice.

**Materials needed**

One Hundreds Chart

Pencil

Pair of dice

Several different colored crayons.

**Literature Connections/Resources:**

- Giganti, Paul Jr. Each Orange Had 8 Slices. NY: Green Willow Books. 1999.
- Moore, Inga. Six-Dinner Sid. NY: Alladin Paperbacks. 1993.
- Mills, Claudia. 7x9=Trouble. NY: Ferrar, Straus, & Giroux. 2004.
- Clements, Andrew. Frindle. NY: Athenium Books. 1998.
- Burns, Marilyn. Spaghetti And Meatballs For All! A Mathematical Story. NY: Scholastic Press. 2008.
- Website: <http://www.funbrain.com/>. (Number Cracker Game)

**ACCRS: 3.10**

Use place value understanding to round whole numbers to the nearest 10 or 100.

**Mastered:**

Students can use place value understanding to round whole numbers to the nearest 10 or 100.

**Present:**

Students will use place value understanding to round whole numbers to the nearest 1000.

**Going Forward:**

Students will use place value understanding to round decimals and fractions to the nearest whole number.

**Present and Going Forward Vocabulary:**

Round, estimate

**Career Connections:**

Party Planner, IRC Accountant, Restaurant Owner, Business Owner, Land Conservationist, Wildlife Management Personnel, Ornithologist

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)**Think Fast**

*Student Instructions:* Follow the directions at each letter. Write your answers as quickly as possible on a separate piece of paper. Answers must start with the corresponding letter in Column One.

*Example:* the answers for the first activity must start with the letter "R".

How many of these can you complete?

R	Tell five 3-digit numbers that can be rounded to the nearest 1000.
O	When do you use rounding in your life? Tell three scenarios where you round.
U	Research two careers that use rounding and explain how rounding helps them to succeed. (See Resource Web site below.)
N	Name five 4 digit numbers that can be rounded to the nearest 5,000.
D	A new student has just entered your class from another country; create a way to explain how to round.
I	Defend the statement: Rounding should not be taught in school.
N	Describe how rounding has helped you become a more fluent mathematician.
G	Write a word problem using rounding to solve.

**Literature Connections/Resources:**

- Murphy, S. J. *Coyotes All Around*. NY: Harper Collins. 2003.
- Website: [http://www.thefutureschannel.com/hands-on\\_math/hands-on\\_math\\_movies.php](http://www.thefutureschannel.com/hands-on_math/hands-on_math_movies.php)

**ACCRS: 3.11**

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.

**Mastered:**

Students can 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.

**Present:**

Students will fluently add and subtract using whole numbers and decimals to the thousandths place using strategies and algorithms based on place value, properties of operation, and/or the relationship between addition and subtraction.

**Going Forward:**

Students will be able to fluently add and subtract within 100,000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

**Present and Going Forward Vocabulary:**

Sum, difference, budget

**Career Connections:**

Accountant, Banker, Party Planner

**Advanced Understanding & Activity (Alternate activity):** (Student Pages are located in Appendix A.)**Math Story and Picture Problem***Student Instructions:*

You have a budget of \$100.00. Research and plan a dinner party including food, decorations, and party favors using only the money in your budget. Use the Plan a Party Organizer and the Plan a Party Price List to make an itemized list of each item needed. Create a picture of what party setting would look like.

**Literature Connections/Resources:**

Axelrod, Amy. Pigs Go to Market: Fun with Math and Shopping. Ft. Worth, TX: Aladdin Publishers. 1999.

**ACCRS: 3.12**

Multiply one-digit whole numbers by multiples of 10 in the range 10 - 90 (e.g.,  $9 \times 80$ ,  $5 \times 60$ ) using strategies based on place value and properties of operations.

**Mastered:**

Students can multiply one-digit whole numbers by multiples of 10 in the range using strategies based on place value and properties of operations.

**Present:**

Students will fluently add and subtract using whole numbers and decimals to the thousandths place using strategies and algorithms based on place value, properties of operation, and/or the relationship between addition and subtraction.

**Going Forward:**

Students will be able to multiply two-digit numbers by two-digit numbers using strategies based on place value and properties of operations.

**Present and Going Forward Vocabulary:**

Product, multiple, times

**Career Connections:**

Accountant, Manager, Engineers, Scientist

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)**I Can...**

*Student Instructions:* Choose one or more activities to complete. Research your topic in order to develop the products. You may want to plan your project using the Project Planner found in Appendix B.

1. Write a story problem using multiplication of two two-digit numbers about something that has happened at school. Draw a picture of the problem and solve it.
2. Make a "how to" poster about multiplying a one-digit number by a two-digit number and share it with a friend.
3. Create an Important book about multiplication.
4. Interview a person who uses multiplication in a job in which I am interested and create a report on the importance of multiplication in their world.
5. Make up a story problem about a sport I participate in. Draw a picture of the problem and solve it.
6. Create a pattern using multiplication of a one-digit number by a two-digit number.

**Literature Connections/Resources:**

Wise Brown, Margaret. The Important Book. NY: Harper Collins. 1949/1977.

**ACCRS:**

**3.13:** Understand a fraction  $1/b$  as the quantity formed by 1 part when a whole is partitioned into  $b$  equal parts; understand a fraction  $a/b$  as the quantity formed by  $a$  parts and size  $1/b$ .

**3.14:** Understand a fraction as a number on the number line; represent fractions on a number line diagram.

a. Represent a fraction  $1/b$  on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into  $b$  equal parts. Recognize that each part has size  $1/b$  and that the endpoint of the part based at 0 locates the number  $1/b$  on the number line.

b. Represent a fraction  $a/b$  on a number line diagram by marking off  $a$  lengths  $1/b$  from 0. Recognize that the resulting interval has size  $a/b$  and that its endpoint locates the number  $a/b$  on the number line.

**3.15:** Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

a. Understand two fractions as equivalent (equal) if they are the same size or the same point on a number line.

b. Recognize and generate simple equivalent fractions, e.g.,  $1/2 = 2/4$ ,  $4/6 = 2/3$ . Explain why the fractions are equivalent, e.g., by using a visual fraction model.

c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples:* Express 3 in the form  $3 = 3/1$ ; recognize that  $6/1 = 6$ ; locate  $4/4$  and 1 at the same point of a number line diagram.

d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual fraction model.

**Mastered:**  
 Students can understand a fraction  $1/b$  as the quantity formed by 1 part when a whole is partitioned into  $b$  equal parts; understand a fraction  $a/b$  as the quantity formed by  $a$  parts and size  $1/b$ ; understand a fraction as a number on the number line; represent fractions on a number line diagram; and, explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

**Present:**  
 Students will apply their knowledge of fractions by completing 3 of the Fraction Thinker Keys

**Going Forward:**  
 Students will create a poster display to communicate their learning and thoughts from the Fraction Thinker Keys.

**Present and Going Forward Vocabulary:**  
 Fraction, numerator, denominator, equivalence, equivalent

**Career Connections:**  
 Carpenter, Construction Worker, Cook, Machinist, Seamstress, Engineer, Architect

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)

**Fraction Thinker Keys**  
*Student Instructions:*  
 Complete the Student Contract, choosing at least three of the Thinker Keys. When you finish, create a poster display to share your work with the class.

What If?	What if the United States began publishing all cooking recipes using the Metric System? Make a web of the changes that would take place and tell or show how these changes would impact cooking.
Reverse Listing	Name 10 objects you cannot split into fractional parts for sharing.

Disadvantages	List the disadvantages of using fractions while cooking. Then list some ways to eliminate these disadvantages.
Combination	List the attributes of an oven and a mixing bowl. Using only half of the attributes of each object, combine the two.
BAR-Bigger, Add, Replace	Use BAR on a measuring cup.
Alphabet	List A-Z, things connected to fractions.
Variations	How many ways can you shade a square to show $\frac{1}{2}$ ?
Picture	Copy this drawing to another sheet of paper.  Add lines to it to make it into a picture related to cooking with fractions. Keep adding to your picture to make it more interesting. Then give it a clever title. Be sure that your picture fills the paper.
Predictions	Predict what would happen if half of the world's population were to disappear.
Different Uses	List 10 different uses for a customary measuring cup.
Ridiculous	Your friend wants you to split an inflated balloon in half to share. List all of the reasons this is impossible. Then solve the problem.
Commonality	List the commonalities between a fraction and your school.
Question	The answer is $\frac{3}{4}$ . What is the question?
Brainstorming	You have \$7.00 and you want to split it evenly among four people. List at least 5 ways you could make this happen.
Brick Wall	Your recipe calls for $1\frac{3}{8}$ cup of flour. You don't have a 1 cup measure or a $\frac{1}{8}$ cup measure.
Construction	Create a ruler that measures fractional parts not listed on a standard ruler.

**Literature Connections/Resources:**

Pallotta, Jerry. *Apple Fractions*. NY: Scholastic. 2002.

**ACCRS: 3.16**

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.

**Mastered:**

Students can tell and write time to the nearest minute, and measure time intervals in minutes. They can solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

**Present:**

Students can choose one activity from the I CAN and complete to share with the class.

**Going Forward:**

Students will choose another activity from the I CAN to complete or create a research project of their own to demonstrate measurement of time.

**Present and Going Forward Vocabulary:**

Minute, interval, elapsed, number line diagram

**Career Connections:**

Teachers, Air Traffic Controller, Chef, Rocket Scientist, Travel Agent

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)**I CAN...**

*Student Instructions:* Choose one or more activities to complete. Research your topic in order to develop the products. You may want to plan your project using the Project Planner located in Appendix B.

1. Research the events of 9/11. Make a timeline of events and calculate the time intervals in minutes between each event.
2. Make a worksheet with word problems about time.
3. Make an Important Book about time.
4. Create a chart to illustrate what you do on Mondays. Calculate how many minutes it takes to do each activity.
5. Research cultures and how they developed a method to tell time. Make a presentation to inform the class. (Eg. PowerPoint; podcast; poster; book.)

**Literature Connections/Resources:**

- Axelrod, Amy. Pigs on a Blanket. Ft. Worth, TX: Aladdin Publishing. 1998.
- Axelrod, Amy. Pigs Will Be Pigs. Ft. Worth, TX Aladdin Publishing. 1997.
- Carle, Eric. The Grouchy Ladybug. NY: Harper Collins. 1996.

**ACCRS: 3.17**

Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). (Excludes compound units such as  $\text{cm}^3$  and finding the geometric volume of a container.) Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. [Excludes multiplicative comparison problems (problems involving notions of “times as much”).]

**Mastered:**

Students can measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). (Excludes compound units such as  $\text{cm}^3$  and finding the geometric volume of a container.) Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (Excludes multiplicative comparison problems (problems involving notions of “times as much”).)

**Present:**

Students will write a “That’s Good! That’s Bad! chain story about a society that has no standard units of measure.

**Going Forward:**

Students will make up their own standard units of measure for volumes and masses of objects and convert from real standard units of measure to their invented one.

**Present and Going Forward Vocabulary:**

Standard units of measure, grams, kilograms, liters, compound units,  $\text{cm}^3$ , geometric volume, mass, volume

**Career Connections:**

Chef, Chemist, Physicist, Engineer, Teacher, Accountant, Physician, Scientist, Surveyor, Stock Broker, Banker

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)

**That’s Good! That’s Bad! CHAIN STORY**

*Student Instructions:* Research the following questions.

- What would happen if we lived in a society that had no standard of measurement?
- How do standards of measurement help with communication?

Then read the That’s Good! That’s Bad! scenario. Write and illustrate the chain of events to show the positive and negative situations surrounding the scenario. You may use additional sheets of paper in order to complete your story.

**SCENARIO:** You are the cook in the Kingdom of Naptilia and the king’s daughter is getting married. You are in charge of preparing the food for the grand celebration party. Oh, that’s good! No, that’s bad!,

**Literature Connections/Resources:**

- Pallotta, Jerry. *Hershey’s Milk Chocolate: Weights and Measures* NY: Cartwheel Publishing. 2003.
- Myller, Rolf. *How Big is a Foot?* NY: Yearling Press. 1991.
- Schwartz, David M. *Millions to Measure*. NY: Harper Collins. 2006.

**ACCRS: 3.18**

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.

*Example:* Draw a bar graph in which each square in the bar graph might represent 5 pets.

**Mastered:**

Students can 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.

**Present:**

Students will draw picture graphs and bar graphs to represent data in the TIC-TAC-TOE MENU.

**Going Forward:**

Students will be able to do surveys and choose the appropriate graph to present their findings.

**Present and Going Forward Vocabulary:**

Graph, bar graph, scaled bar graph, data set

**Career Connections:**

Physician, Teacher, Accountant, Doctor, Scientist, Surveyor, Stock Broker, Banker

**Advanced Understanding & Activity (Alternate activity):** (Student page is located in Appendix A.)

**TIC-TAC-TOE**

*Students Instructions:* Choose three activities in a row, column, or diagonal, just like TIC-TAC-TOE. Complete the contract and give it to your teacher. You may want to plan your products using the organizational tool, Primary Project Planner.

1. Create a picture graph to show the types of pets your classmates have. Write a word problem to compare the most and least type.	2. Create a story where a character has to use a bar graph.	3. Conduct a survey of 50 students and create a picture graph to compare the most popular monsters. Write a poem comparing the monsters.
4. Look at the shoes your classmates are wearing-make a picture graph of the types of shoes and use it in an advertisement comparing brands.	5. Create a bar graph to demonstrate what sports your classmates play. Write a sentence to compare two categories.	6. Make an advertisement which uses a picture graph of your classmates’ favorite candy bars.
7. Make a bar graph that incorporates animals found in riddles. Create a cartoon discussion between the most and least popular animals.	8. Research careers and create a bar graph to demonstrate how much money each person makes. Write a sentence to compare which careers you would and wouldn’t choose.	9. Conduct a survey to compare where your classmates traveled during the summer. Use a picture graph to demonstrate what type of transportation they used.

**Literature Connections/Resources:**

- Carlson, Nancy. Harriet’s Halloween Candy. Minneapolis: First Avenue Publishing. 2003.
- Stevens, Janet & Stevens, Susan. Cock-a-Doodle-Do. Wilton CT: Tiger Tales Publisher. 2004.
- Cushman, Jean. Do You Wanna Bet?: Your Chance to Find Out about Probability. Sandpiper Publishing: Bell-Air, CA. 2007.
- Dussling, Jennifer. Fair is Fair! Minneapolis: Kane Press. 2003.

- Long, Lynette. Great Graphs and Sensational Statistics (Grades 3-6). Pittsburgh, PA: Wiley Publishers. 2004.

<p><b>ACCRS: 3.19</b>                  Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot where the horizontal scale is marked off in appropriate units – whole numbers, halves, or quarters.</p>		
<p><b>Mastered:</b>                  Students can generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot where the horizontal scale is marked off in appropriate units – whole numbers, halves, or quarters</p>	<p><b>Present:</b>                  Students will demonstrate ability to measure lengths in halves and fourths of inches by completing the Math and Reading: Measurement student page.</p>	<p><b>Going Forward:</b>                  Students will make Excel charts and line plots to demonstrate lengths of items found in and around the school.                  OR                  Measure the lengths of items found around the school and place them on a number line according to their lengths.</p>
<p><b>Present and Going Forward Vocabulary:</b>                  Fractions, length, halves, fourths, line plot, horizontal scale</p>		

<p><b>Career Connections:</b>                  Carpenter, Seamstress, Architects, Engineers, Power Companies, Land Surveyor, Athlete, Doctor, Medical Examiner</p>
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<p><b>Advanced Understanding &amp; Activity (Alternate activity):</b> (Student pages are located in Appendix A.)  <b>Advanced Understanding &amp; Activity (Alternate activity):</b> (Student pages are located in Appendix A.)  <b>Math and Reading: Measurement:</b>  <i>Student Instructions:</i> Read a book about math and measurement. (See books in the resource list below, or find one you like. It can be a fantasy book or informational.) Then complete this form about your book.</p> <p>Name of Book: _____                  Author: _____</p> <p>Math Concepts found in book: _____                  _____</p> <p>Math Misconceptions: _____                  _____</p> <p>Questions to research:                  _____                  _____</p>
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<p><b>Literature Connections/Resources:</b></p> <ul style="list-style-type: none"> <li>• Myller, Rolf. <u>How Big is a Foot?</u> NY: Yearling Publishing. 1991.</li> <li>• Princzeb, Elinor J. <u>Inchworm and a Half.</u> London: Sandpiper Press. 2003.</li> <li>• Adler, David A. <u>How Tall, How Short, How Far Away?</u> NY: Holiday House. 2000..</li> <li>• Schwartz, David M. <u>Millions to Measure.</u> NY: Holiday House. 2003.</li> <li>• Jenkins, Steve. <u>Actual Size.</u> Oveido, FL: Sandpiper Press. 2011.</li> </ul>
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**ACCRS: 3.20**

Recognize area as an attribute of plane figures, and understand concepts of area measurement.

- a. A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area and can be used to measure area.
- b. A plane figure which can be covered without gaps or overlaps by  $n$  unit squares is said to have an area of  $n$  square units.

**Mastered:**

Students can recognize area as an attribute of plane figures, and understand concepts of area measurement.

**Present:**

Students will determine the area of simple geometric shapes. They can use graph paper to determine how many square units are in a rectangle.

**Going Forward:**

Students will explore the concept of surface area and three dimensional shapes such as a rectangular prism or box.

**Present and Going Forward Vocabulary:**

Plane, area, square, unit, figure, overlaps, gaps

**Career Connections:**

Carpenter, Architect, Engineer, Fashion Designer

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)**Fortunately, Unfortunately Chain Story**

*Student Instructions:* Research the following question:

- What items can be found on a farm that might be measured?
- What would it cost to build or purchase items to create a great farm?

Then read the scenario. Write and illustrate the chain of events to show the positive and negative situations surrounding the scenario. Include all the information you know about area, perimeter, and measurement. You may use additional sheets of paper in order to complete your story.

**SCENARIO**

You have always dreamed of living on a farm. All of your life, you have lived in a cramped apartment in a crowded city. You long for the chance to wade in clear streams, chasing frogs and crayfish; stuffing yourself on catfish you caught in your very own pond; and playing hide and seek in the woods with your friends.

Fortunately, your parents have just inherited 10 acres of land far out in the country. Your dreams have come true! Your family leaves for the farm tomorrow.

Unfortunately...

**Literature Connections/Resources:**

- Burns, Marilyn. *Spaghetti and Meatballs for All*. NY: Scholastic. 2008.
- Murphy, Stuart J. *Bigger, Better, Best (Area)*. NY: Harper Collins. 2002.

**ACCRS: 3.21**

Measure areas by counting unit squares (square cm [ $\text{cm}^2$ ], square meter [ $\text{m}^2$ ], square inch [ $\text{in.}^2$ ], square foot [ $\text{ft}^2$ ], and improvised units).

**Mastered:**

Students can measure areas by counting unit squares (square cm, square m, square in., square ft., and improvised units).

**Present:**

Students will demonstrate measurement of area by completing the Designing a Sandbox activity.

**Going Forward:**

Students will design a house and be able to measure the square footage of each room.

**Present and Going Forward Vocabulary:**

Unit, squares, area, square feet,  $\text{ft.}^2$ ,  $\text{cm}^2$ ,  $\text{m}^2$ ,  $\text{in.}^2$ ,  $\text{ft.}^2$

**Career Connections:**

Architect, Painter, Carpenter, Engineer, Designer, Land Surveyor, Builder

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)**Designing a Sandbox***Student Instructions:*

1. You have been asked to design a sandbox for a playground. The sandbox bed must:
  - be made from two different sized rectangles that are joined along one side.
  - have a total area of 30 square feet.
2. Draw a possible design for the sandbox. Be sure to include measurements.
3. Explain how you calculated the area of the sandbox.

*Materials:*

- Grid paper
- Ruler

**Literature Connections/Resources:**

- Burns, Marilyn. Spaghetti and Meatballs for All NY: Scholastic. 2008.
- Hamm, Diane Johnston. How Many Feet in the Bed? NY: Aladdin. 1994.
- Murphy, Stuart J. Bigger, Better, Best (Area). NY: Harper Collins. 2002.

**ACCRS: 3.22**

Relate area to the operations of multiplication and addition.

- Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
- Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real-world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
- Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths  $a$  and  $b + c$  is the sum of  $a \times b$  and  $a \times c$ . Use area models to represent the distributive property in mathematical reasoning.
- Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real-world problems.

**Mastered:**

Students can relate area to the operations of multiplication and addition.

**Present:**

Students will relate area to the operations of multiplication and addition by completing the Designing a Guinea Pig Pen activity.

**Going Forward:**

Students will be able to design a fenced area for a horse farm and be able to calculate the costs for building the fence.

**Present and Going Forward Vocabulary:**

Area, rectangle, distributive property, innovation

**Career Connections:**

Farmer, Architect, Surveyor, Builder, Drafter, Interior Designer

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)**Dolly's Guinea Pig Palace**

*Student Instructions:* Read the scenario below and answer the questions.

- Dolly, the guinea pig, needs a new home. Dolly's girl, Cindy, has 18 feet of fence to build a rectangular shaped enclosure for her pet. Record all the possible designs for the guinea pig enclosure. You may use the graph paper provided, if needed. Remember to record the dimensions on each model you draw.
- Which design would provide the largest grass area for Dolly? Show your work in the space provided.
- What is the difference between the largest and smallest possible grass area?

**Extension:** Now it is time for some real fun! You are a zoology specialist with a background in interior design. You have been hired by Cindy to do the interior design for Dolly's new home. Research guinea pigs to find out their needs and what they love best. What is their favorite color? What and how do they like to eat? What is their favorite pastime? Answer these research questions and more as you let your imagination run wild. On page 5, sketch Dolly's new home from inside, incorporating as many of your ideas as possible within the design. Remember to base your innovations on what the research tells you about guinea pigs. Turn Dolly's new pen into a guinea pig palace!

Research Notes for Dolly's Guinea Pig Palace

- What are some of the special needs, wants, and passions of guinea pigs according to your research?
- Sketch your interior design to incorporate what you learned about Dolly's needs and delights into her new home. Explain why you included the special design features that you did.

**Materials Needed:**

Ruler  
Graph Paper (Optional)  
Factual books about guinea pigs

**Literature Connections/Resources:**

Burns, Marilyn. *Spaghetti and Meatballs for All*. NY: Scholastic. 2008.

**ACCRS: 3.23**

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.

**Mastered:**

Students can 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.

**Present:**

Students will solve real-world problems involving perimeters of polygons by participating in an evaluation of an online game.

**Going Forward:**

Students will design concept for an online game to help teach students to solve problems about perimeters of polygons.

**Present and Going Forward Vocabulary:**

Perimeter, rectangle, polygon, length, width, area, critique

**Career Connections:**

Farmer, Convention Planner, Architect

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)

Choose Activity 1 or Activity 2 to complete.

**Activity 1: WebQuest: Why Do I Need to Know This?**

*Student Instructions:* Do a multiplication WebQuest using the following link:

<http://www.slideshare.net/lmitcham/>

OR

**Activity 2: You Be the Judge!**

- *Student Instructions:* As the entertainment editor for your school newspaper, you must review a number of computer games and decide which to recommend to your readers. Play the following online games. Choose your favorite and write a review of it for your newspaper. Answer the questions in the Review Form to help you with your critique.
- <http://calculationnation.nctm.org/Games/> [Square Off]
- [http://www.mathplayground.com/area\\_perimeter.html](http://www.mathplayground.com/area_perimeter.html) [Area and Perimeter]
- <http://www.factmonster.com/math/knowledgebox/player.html?movie=sfw50955> [Baseball Geometry]
- <http://www.factmonster.com/math/knowledgebox/player.html?movie=sfw41374> [Basketball Geometry]
- <http://www.shodor.org/interactivate/activities/ShapeExplorer/> [Shapes]

**Critical Review**

**Review Form:** Include responses to these questions as you write your review on your own paper.

Write in paragraph format.

Name of Game:

Web site address:

How do you play the game?

What is it about?

Why did you like / not like it?

Who would benefit from playing this game?

Is the game similar from any other game you have played? How is it similar?

Who might enjoy it?

What might be some of the disadvantages of playing this game?

**Literature Connections/Resources:**

- Neuschwander, Cindy. Sir Cumference and the Isle of Immeter: A Math Adventure. Watertown, MA: Charlesbridge Publishing. 2006.
- Burns, Marilyn. Spaghetti and Meatballs for All. NY: Scholastic. 2008.
- Sacher, Louis. Hole. NY: Farrar, Straus and Giroux. 2008.

**ACCRS: 3.24**

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.

**Mastered:**

Students can understand that shapes in different categories may share attributes, and that the shared attributes can define a larger category.

**Present:**

Students will understand shapes can be placed in different categories.

**Going Forward:**

Students will make up rules to categorize shapes by looking at groups of shapes arranged by a partner. Then, they will make groups of shapes that do NOT fit the rule.

**Present and Going Forward Vocabulary:**

Attributes, rhombuses, quadrilateral, trapezoid

**Career Connections:**

Engineer, Construction Worker, Architect

**Advanced Understanding & Activity (Alternate activity):** (Student page found in Appendix A)

**Thinker Keys:**

*Student Instructions:* Use your imagination to think geometrically as you respond to the questions below.

What if	What if all shapes had four sides? Make a list of your ideas, and then write a story or a skit using those ideas and illustrate.
Alphabet	Complete a list of words from A-Z of geometry words.
Variations	How many different ways can you build a square with triangles? Show your work.
Picture	Draw a picture using only circles. Be as elaborate as possible, adding things to your basic picture until you have filled your paper.
Ridiculous	Build a school using only quadrilaterals. <b>Materials needed</b> Shape blocks OR Optional resource: Go to the links below. Print and cut out your own pattern blocks to use with this activity. <a href="http://mason.gmu.edu/~mmankus/Handson/trisqrhcute.htm">http://mason.gmu.edu/~mmankus/Handson/trisqrhcute.htm</a> <a href="http://mason.gmu.edu/~mmankus/Handson/rhomcut.htm">http://mason.gmu.edu/~mmankus/Handson/rhomcut.htm</a> <a href="http://mason.gmu.edu/~mmankus/Handson/trapcut.htm">http://mason.gmu.edu/~mmankus/Handson/trapcut.htm</a> <a href="http://mason.gmu.edu/~mmankus/Handson/hexcut.htm">http://mason.gmu.edu/~mmankus/Handson/hexcut.htm</a>
Inventions	Invent a new shape and give it a name. Tell why your new shape is important and in what ways you might use it in the real world.

**Literature Connections/Resources:**

- Blaisdell, Molly. *If You were a Quadrilateral*. Mankato, MN: Picture Window Publishing. 2009.
- Wentz, Stephen. *Square and the Missing Quadrilaterals*. Bookemon. 2011.  
[http://www.bookemon.com/book\\_read\\_flip.php?book\\_id=97264&size=1.2&style=popup2](http://www.bookemon.com/book_read_flip.php?book_id=97264&size=1.2&style=popup2) . The entire book can be read at this link.

**ACCRS: 3.25**

Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.  
*Example:* Partition a shape into 4 parts with equal area, and describe the area of each part as a portion of the area of the shape.

**Mastered:**

Students can partition shapes into parts with equal areas and express the area of each part as a unit fraction of the whole.

**Present:**

Students will partition shapes into parts using unequal areas and express the area of each part as a unit fraction of the whole.

**Going Forward:**

Students will share their logic as they express the unequal areas of each part as a unit fraction of the whole.

**Present and Going Forward Vocabulary:**

Equal, unequal, partition, fraction, proportional, unit-fraction

**Career Connections:**

Chef, Engineer, Architect, Electrician, Plumber

**Advanced Understanding & Activity (Alternate activity):** (Student pages are located in Appendix A.)**RAFT**

*Student Instructions:* Choose one row. Research and write about the TOPIC from the perspective of the ROLE to the AUDIENCE using the FORMAT. You may want to plan your product using the organizational tool, Primary Project Planner.

R Role	A Audience	F Format	T Topic
Triangle	Equilateral Triangle cut into three parts	Persuasive speech	We are All the Same
Partitioned Square	Partitioned Rectangle	Comic Strip	Are we really so different?
Pieces of a Quadrilateral	A Whole Quadrilateral	How to Manual	Make Me Complete

**OR****Geoboard Activity**

*Student Instructions:*

Answer the following questions using a geoboard and rubber bands or follow the link below to the virtual geoboard.

<http://illuminations.nctm.org/Lessons/Pick/Pick-AS-GeoPaper.pdf>

1. Divide your geoboard into four equal parts. How many different ways can you find?
2. How do you determine that the parts are divided equally?

**Literature Connections/Resources:**

- Blaisdell, Molly. *If You were a Quadrilateral*. Mankato, MN: Picture Window Publishing. 2009.
- Wentz, Stephen. *Square and the Missing Quadrilaterals*. Bookemon. 2011.  
[http://www.bookemon.com/book\\_read\\_flip.php?book\\_id=97264&size=1.2&style=popup2](http://www.bookemon.com/book_read_flip.php?book_id=97264&size=1.2&style=popup2) . The entire book can be read at this link.
- National Library of Math Manipulatives: Geoboard  
<http://illuminations.nctm.org/Lessons/Pick/Pick-AS-GeoPaper.pdf>