Newark Charter School
Units/Lessons

Mathematics ~ Grade 5

Newark Charter School Instructional Unit

Unit Title: What's Math Got to Do With It?

Content Area: Mathematics

Grade Level(s): Grade 5

Length of Unit: Six lessons, 50 minutes each

Unit Summary:
This sixth grade unit utilizes practical applications of mathematics in the "real world." During this interactive approach to learning "math wisdom," students will gain knowledge of number sense, computation, ratios and proportions, probabilities and statistics, and money. The students will experience various critical thinking scenarios that build upon the Core Knowledge Math Curriculum.

Common Core State Standards:

CCSS.Math.Content.5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm.

CCSS.Math.Content.5.NBT.B.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

CCSS.Math.Content.5.NBT.B.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

CCSS.Math.Content.5.NF.A.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)

CCSS.Math.Content.5.NF.A.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.

CCSS.Math.Content.5.NF.B.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

CCSS.Math.Content.5.NF.B.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.1

CCSS.ELA-Literacy.RI.5.3 Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

CCSS.ELA-Literacy.W.5.4 Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.

Big Ideas:
Math computation skills, knowledge of fractions, decimals, and percents can all be used to solve real-world word problems.

Enduring Understandings:
Thinking, talking, and writing about math strengthens problem solving ability.
It is possible to use the math skills one has to solve math problems in daily life.

Essential Question(s):
How do math skills enable us to solve problems each day as we go about our activities?

Knowledge and Skills:

Students will need to know...
1. Numbers and Number Sense (Gr. K-4)
2. Money (Gr. K-4)
3. Computation (Gr. K-4)
4. Fractions (Gr. 2) and Decimals (3rd–4th Gr.)
5. Reading and Writing(Gr. K-3), Grammar and Usage (4th Gr.)
6. Poetry (Gr. K-4) (from the Core Knowledge Sequence)

Student will be able to do...
Concept Objectives
1. Students understand and apply basic concepts of numbers and computation.
2. Students understand and apply basic concepts of probability and statistics, and of ratios and proportion.
3. Students understand how reading provides insights into his/her own life and into other times, people, and ideas.
4. Students understand to communicate, orally and in writing, for a variety of purposes and audience.

Content from the Core Knowledge Sequence (pages 109, 123, 124, 125)
Ratio and Percent (page 123)
1. Determine and express simple ratios.
2. Use ratio to create a simple scale drawing
3. Recognize the percent sign (%) and understand percent as "per hundred."
4. Express equivalences between fractions, decimals, percents, and know common equivalences:
   a. 1/10 = 10%
   b. 1/4 = 25%
   c. 1/2 = 50%
   d. 3/4 = 75%
5. Find the given percent of a number. Fractions and Decimals (page 124)
6. Add and subtract decimals through ten-thousandths.
7. Multiply decimals: by 10, 100, and 1000; by another decimal
Computation (page 124)
8. Addition - Commutative and associative properties: know the names and understand the properties.
9. Multiplication - Commutative, associative, and distributive properties: know the names and understand the properties; multiply two factors of up to four digits; solve word problems involving multiplication.
10. Division - Understand multiplication and division as inverse operations; know

what it means for one number to be "divisible" by another number.
11. Solve word problems with multiple steps.
12. Solve problems with more than one operation. Probability and Statistics (page 125)
13. Understand probability as a measure of the likelihood that an event will happen; using simple models, express probability of a given event as a fraction, as a percent, and as a decimal between 0 and 1.
14. Find the average (mean) of a given set of numbers. Writing and Research
15. Produce a variety of types of writing—including reports, summaries, letters, descriptions, research essays, essays that explain a process, stories, poems—with a coherent structure or story line.

Skill Objectives

1. Students will demonstrate how reading provides insights into his/her own life and into other times, places, people, and ideas by writing a story problem connecting their daily experiences
2. Students will verbally recite projects to the class.
3. Students will formulate and solve word problems with multiple steps and operations.
4. Students will apply basic concepts of numbers sense to apply estimate and/or to justify the reasonableness of solutions to problems involving whole numbers, fractions, mixed numbers, and decimals.
5. Students will use paper and pencil to add, subtract, multiply, and divide whole numbers, common fractions, and mixed numbers.
6. Students will use oral/written language to communicate an understanding of operations.
7. Students will determine the probability of a simple event assuming equally likely outcomes.
8. Students will model situations by devising and carrying out experiments or simulations to predict probabilities
9. Students will compute the value of money and make change

Assessment Evidence

Performance or Transfer Tasks:

Students should transfer stronger computational skills, ability to use percents in problem solving events, and will improve their math discourse as they problem solve.

Rubrics:

See appendices

Other Evidence:

See appendices

Student Self-Assessment:

See appendices

Learning Plan

Key Learning Events:

Lesson One: The Math Curse (approximately 50-60 minutes)

A. Daily Objectives

1. Concept Objective(s)
   a. Students understand and apply basic concepts of numbers and computation.
   b. Students understand how reading provides insights into his/her own life and into other times, people, and ideas.
   c. Students understand to communicate, orally and in writing, for a variety of purposes and audience.
2. Lesson Content
   a. Solve word problems with multiple steps.
   b. Solve problems with more than one operation.
   c. Produce a variety of types of writing with a coherent structure or story line.
3. Skill Objective(s)
   a. The students will demonstrate how reading provides insights into his/her own life and into other times, places, people, and ideas by writing a story problem connecting their daily experiences.
   b. The students will verbally recite their projects to the class.
   c. The students will formulate and solve word problems with multiple steps and operations.

B. Materials

1. Several copies of the book The Math Curse by Jon Scieszka
2. Appendices A and B for each student

C. Key Vocabulary

None

D. Procedures/Activities

1. Announce to the class: "You know, you can think of almost everything as a math problem." (For example, if it takes me two minutes to make a peanut butter and jelly sandwich, how many sandwiches can I make in 20 minutes?) Ask what they think this means, have them discuss with a partner or group, and then share their thoughts.
2. Read The Math Curse out loud. Pass out a copy of the book to each group. Hand out Appendix A (problems from the book). Discuss/solve the various math problems the main character encounters in the book together. There are a combination of critical thinking and whimsical problems—so have fun with it.
3. Place the students in pairs or groups, and have them discuss what types of problems they would encounter if they had their very own "Math Curse." For example: "The time is 7 am. If it takes me 15 minutes to get dressed, 10 minutes to eat breakfast, and I decide to take the scenic route to school, which takes me
45 minutes, will I be on time for my 8 am class?"
4. Hand out Appendix B. Explain to the students that they will write a short story problem that connects to their everyday life. The story should have multiple steps and/or operations. For example: "If I bake a dozen cookies and I want to share them with three other friends, how many cookies will we each get?" Emphasize creativeness and use their daily observations to create their stories. (Option—create a story problem together as a class, or prepare one ahead

of time). The students may work alone or in pairs.
5. Have students present their story problems. Challenge the audience to solve theproblem.

E. Assessment/Evaluation
1. Assess Appendix A using answer key.
2. Assess story problems in Appendix B using My Very Own Math Curse rubric.

Lesson Two: What Does Math Mean To You? (approximately 50-60 minutes)

A. Daily Objectives
1. Concept Objective(s)
a. Students understand how reading provides insights into his/her own life and into other times, people, and ideas.
b. Students write to communicate, orally and in writing, for a variety of purposes and audience.
2. Lesson Content
a. Produce a variety of types of writing with a coherent structure or storyline.
3. Skill Objective(s)
a. The students will demonstrate how reading provides insights into his/her own life and into other times, places, people, and ideas by writing a story problem connecting their daily experiences.
b. The students will verbally recite to communicate for a variety of purposes and audiences by presenting their projects to the class.

B. Materials
1. Appendix C for each student: Carl Sandburg's poem, "Arithmetic"
2. Appendix D for each student (Interviewing your parents about math)

C. Key Vocabulary
None

D. Procedures/Activities
1. Announce to the class that you will be sharing a math poem with them, CarlSandburg's "Arithmetic."
2. After sharing the poem with the class,discuss what this poem means to the author (Does the author like/dislike math? What are his feelings about the poem?). Invite the students to write their own poems or statements about what math means to them.
3. Have students share their poems, and let the audience reflect on the presenter's feelings and thoughts about math. (Is the presenter excited about math? Does he/she dislike math? Does it come easy for them?)
4. After everyone shares their math poem, emphasize to the class that what is important is not being the best but being able to use math for different reasons. Many different types of people experience different forms of math everyday—like your parents.
5. Hand out Appendix D. Request that the students interview their Mom or Dad in order for them to witness the importance math plays in their daily lives. Have them record their answers to the interview questions and assemble a well-constructed paragraph on whatthey have learned about their parent's occupation.

E. Assessment/Evaluation

1. Assess Appendix D using Math Interview Rubric.

Lesson Three: Math of Your Business! (approximately 50-60 minutes)

A. Daily Objectives

1. Concept Objective(s)
    a. Students understand and apply basic concepts of numbers and computation.
2. Lesson Content
    a. Addition - Commutative and associative properties: know the names and understand the properties.
    b. Solve word problems with multiple steps.
    c. Solve problems with more than one operation.
3. Skill Objective(s)
    a. Students will formulate and solve word problems with multiple steps and operations.
    b. Students will apply basic concepts of numbers sense to apply estimate and/or to justify the reasonableness of solutions to problems involving whole numbers, fractions, mixed numbers, and decimals.
    c. Students will compute the value money and make change.
    d. The students will verbally recite their projects to the class.

B. Materials

1. Several copies of Appendix E for each GROUP (Math of Your Business)
2. Old magazines, catalogs, Sunday paper ads, market ads
3. Paper
4. Pencils
5. Markers
6. Poster boards
7. Scissors
8. Tape or glue

C. Key Vocabulary

None

D. Procedures/Activities

1. Announce to the class: "Now that you are familiar with math from your parents' businesses, it's your turn to experience the business world!"
2. Divide the class into groups of four. Explain that each group will start a business that buys and sells merchandise. Each business will start with a whopping $1,000 in their bank account!
3. Have them choose or assign them a specific business (food, toys, clothes,vacation, etc.) Once the business has been chosen, have the groups look through the magazines, catalogs, or ads, and clip out pictures of items their business would like to sell. The groups are limited to sell 10 items related to their business. Have them glue or tape each item to a poster board.
4. Ask students to assign a price to each item. Set a price range; say $20 to $500. Have them create a sign for their business, and decorate their item posters to make it attractive to buyers.
5. Hand out several copies of Appendix E for each group. Review the elements of check writing and recording. Have one group at a time inspect the merchandise of all the other groups. If the

group wants to buy an item, they need to write a check to the other business.
6. The students will have to record the items they bought, the amount spent, and the amount they have left in their business check book. Remind them that it might be easier to write individual checks for each item they buy so they can easily track the amounts spent and remaining.
7. Limit each groups' buying (and check writing) time to five minutes. At the end of the sale, ask each group to report on what they bought, why they bought it, how much money, they have left over. Discuss as a class the benefits of setting fair prices and the drawbacks of setting high or low ones. For example, if prices are too low, they end up selling everything and making little money. If prices are too high, no wants to buy the items! (Adapted from "Big Business Checkup," pg. 17, Brain Boosting Math Activities by Joseph D'Agnese).

E. Assessment/Evaluation
1. Assess Appendix E using Math of Your Business! Rubric.

Lesson Four: Meal Deal! (approximately 50-60 minutes)

A. Daily Objectives
1. Concept Objective(s)
a. Students understand and apply basic concepts of numbers and computation.
2. Lesson Content
a. Recognize the percent sign (%) and understand percent as "per hundred."
b. Express equivalences between fractions, decimals, percents, and know common equivalences:
i. 1/10 = 10%
ii. 1/4 = 25%
iii. 1/2 = 50%
iv. 3/4 = 75%
c. Find the given percent of a number.
d. Addition - Commutative and associative properties: know the names and understand the properties.
e. Multiplication - Commutative, associative, and distributive properties: know the names and understand the properties; multiply two factors of up to four digits; solve word problems involving multiplication.
f. Division - Understand multiplication and division as inverse operations; know what it means for one number to be "divisible" by another number
g. Add and subtract decimals through ten-thousandths.
h. Multiply decimals: by 10, 100,and 1000; by another decimal
i. Solve word problems with multiple steps.
j. Solve problems with more than one operation.
3. Skill Objective(s)
a. Students will formulate and solve word problems with multiple steps and operations.
b. Students will apply basic concepts of numbers sense to apply estimate and/or to justify the reasonableness of solutions to problems involving whole numbers, fractions, mixed numbers, and decimals.
c. Students will compute the value money and make change.
d. The students will verbally recite their projects to the class.

B. Materials
1. Appendix F for each student
2. A variety of restaurant menus (6-8)

3. Calculator (optional)

C. Key Vocabulary
None

D. Procedures/Activities
1. Announce to the class that they will continue with their real life math applications and that in the next couple of days, they will be studying math at the mall....the Math Mall! Today they will pretend to visit several restaurants with a group of friends, and they try to find the best meal deal!
2. Divide the class into groups of three or four. Provide each group with menus from the same restaurant. Hand out Appendix F (Math Menu) to each student. Tell the students to observe each section of their menus. First, ask them to select their own meal and the price of each (include appetizers, entrée, beverage, dessert, etc.) Have them compute the cost of their meal, and present their findings to their group. What was the most expensive meal?
3. Then have the students determine the cost of meal for someone who is on a tight budget. Have them include appetizers, entrée, beverage, dessert. What is the most inexpensive meal? Encourage students to look for ways to save money. For example, does the menu include any specials? Can they save money by ordering those specials instead of regular entrees?
4. Review the equivalences of decimals and percents. For example, the students should realize that 0.10 = 10%. Explain that the total cost of their meal includes tax. This is usually 7%. In addition,mtell the students that tipping is a way of saying "thank you" to someone who provides a service. The standard tip for restaurants is 15%. If you are extremely happy with the service, you can tip more (20% or above). If the service was poor, you can tip less or none at all.
5. Review multiplying decimals
6. Model how the meal cost + meal tax + tip = total cost by using the following example:
Chicken Sandwich $5.50
Lemonade $1.50
Ice cream sundae $2.00
Subtotal $9.00
Tax (7%) $0.63 (0.07 X $9.00)
Total $9.63
Tip (15%) $1.44 (0.15 X $9.63)
Total Cost + Tip $11.07 ($9.63 + $1.44)
7. Have the students re-compute their original meal with tax (7%) and tip (15%) included. Provide other scenarios for practice with this new concept. For example, if you only had $10.00, what type of meal can you afford without going over? (Don't forget to include tax and tip).
8. Continue by distributing menus from different restaurants and repeat the activities described above. Also, have students share their projects with the class.

E. Assessment/Evaluation
1. Assess Appendix F using Meal Deal Rubric.

Lesson Five: Collect Them All! (approximately 50-60 minutes)

A. Daily Objectives
1. Concept Objective(s)
a. Students understand and apply basic concepts of numbers and computation.
b. Students understand and apply basic concepts of probability and statistics, and of

ratios and proportion.

2. Lesson Content

a. Probability and Statistics - Understand probability as a measure of the likelihood that an event will happen; using simple models, express probability of a given event as a fraction, as a percent, and as a decimal between 0 and 1; collect and organize data in graphic form (bar, line, and circle graphs); find the average (mean) of a given set of numbers.

b. Addition - Commutative and associative properties: know the names and understand the properties.

c. Division - Understand multiplication and division as inverse operations; know what it means for one number to be "divisible" by another number

d. Solve problems with more than one operation.

3. Skill Objective(s)

a. Students will determine the probability of a simple event assuming equally likely outcomes.

b. Students will formulate and solve word problems with multiple steps and operations.

c. Students will apply basic concepts of numbers sense to apply estimate and/or to justify the reasonableness of solutions to problems involving whole numbers, fractions, mixed numbers, and decimals

d. Students will model situations by devising and carrying out experiments or simulations to predict probabilities.

e. The students will verbally recite their projects to the class.

B. Materials

1. Appendix G for each student
2. Dice or number cube labeled 1-6 for each student

C. Key Vocabulary

None

D. Procedures/Activities

1. Announce to the class, "Has anyone ever tried to collect items (toys, glasses, etc.) from fast food restaurants? Some restaurants offer a set number of collectibles. They try to persuade you to buy their food so you can collect the whole set! Today we will find out if it's easier said than done!"

2. Hand out Appendix G to each student. Tell them that a fast food restaurant, Burger Queen, is giving away a free "Finding Meno" puffed animal with the purchase of a super-sized burger. There are six different puffed animals in the collection. When you buy your super-sized burger, you never know which puffed animal you're going to receive.

3. Ask the students to predict how many super-sized burgers they'd have to buy to get all six puffed animals. Have them write their prediction on Appendix G (Collect Them All!).

4. Explain to the students that in this activity, the six numbers on the dice will represent the six different stuffed animals. Each toss of the dice represents the animal the student would receive. For example, if a student rolls a two, he/she would receive puffed animal number two.

5. Have the students toss the dice and make a tally mark on the table in the Trial 1 row under the number rolled. Students should keep tossing the dice and marking the results in the table. Trial 1 is over when every number of the cube has been rolled at least once. When the students have finished Trial 1, have record the total number of rolls in the trial.

6. Tell the students to do nine more trials, each time keeping a tally of the number of rolls and recording the total number of rolls.

7. Review averaging a group of numbers. For example, if they received test grades of 100%, 90%, and 80%, they would add up all the numbers (270) and then divide this by the number of grades added (270 divided by 3 = an average of 90%). When finished reviewing, have students

compute the average of the total number of rolls for all ten trials and write the average in the designated space on the record sheet. (Total rolls of all ten trials divided by ten)
8. As a class, determine the average of all the individual averages. Have the students write that number where indicated on the record sheet. Ask the students to discuss what they have learned. When they get puffed animals randomly, what can they say about their chances of getting a complete set? The students should understand that the final average represents a good idea of the number of super-sized burgers they'd have to buy to get all six "Finding Meno" puffed animals. Finally, have the students share their observations and findings.

E. Assessment/Evaluation
1. Assess Appendix G using the Collect Them All Rubric.

Lesson Six: Shopping Abroad (approximately 50-60 minutes)

A. Daily Objectives
1. Concept Objective(s)
a. Students understand and apply basic concepts of numbers and computation.
b. Students understand and apply basic concepts of probability and statistics, and of ratios and proportion.
2. Lesson Content
a. Multiplication - Commutative, associative, and distributive properties: know the names and understand the properties; multiply two factors of up to four digits; solve word problems involving multiplication
b. Addition - Commutative and associative properties: know the names and understand the properties.
c. Add and subtract decimals through ten-thousandths.
d. Multiply decimals: by 10, 100, and 1000; by another decimal
e. Determine and express simple ratios.
f. Use ratio to create a simple scale drawing
g. Solve problems with more than one operation.
3. Skill Objective(s)
a. Students will use paper and pencil to add, subtract, multiply, and divide whole numbers, common fractions, and mixed numbers.
b. Students will compute the value of money and make change
c. Students will formulate and solve word problems with multiple steps and operations.
d. Students will apply basic concepts of numbers sense to apply estimate and/or to justify the reasonableness of solutions to problems involving whole numbers, fractions, mixed numbers, and decimals.
e. The students will verbally recite their projects to the class

B. Materials
1. Appendices H and I for each student
2. Various grocery and drug store ads for each student
3. Foreign currency equivalents chart (newspaper financial section or on-line at www.2travlang.com/money/) for each student
4. Calculator (optional)

C. Key Vocabulary
None

D. Procedures/Activities

1. Announce to the class, "You are going on a trip to another country! First, you must shop for items that you want to bring. There's only one condition: you must spend currency/money from another country!" Explain that while people in the U.S. use dollars as their main unit of money, people in other countries use different units with different values. The students should see how dollars and various foreign money units relate to one another by using ratios and percents.
2. Distribute store ads and Appendix H (Shopping Spree) to each student. Have the students list the item and its price. Examples of items to buy are clothing, film, books, toiletries, etc. Set a price or item limit on their shopping spree. For example, "Your Limit is $50.00", or "Your Limit is 15 items." Have them answer the questions about their items. As an extension, students may enjoy a debate about buying "brand name" items versus generic items. For example, are Gap clothes really better than Wal-Mart clothes?
3. After the students have finished computing their items, hand out Appendix I (Shopping Abroad) to each student. As a class, fill in the Ratio of U.S. dollar to currency column by using the newspaper or www.2travlang.com/money/ to find the current values of each currency that is listed. Make sure students express each value as a ratio of one dollar to the other currency's exchange.
4. Have students find the amount they would have to pay to purchase their items in each currency by setting up and solving proportions. For example, if the ratio of a dollar to an Indian rupee is 1 to 46.7, and a student's items cost 47.99, he/she could set up the following proportion: 1/46.7 = 47.99/x. Solve for x by cross multiplying: 1x = (46.7 X 47.99). By solving for x and rounding to the nearest hundredth, students find they would spend 2,241.13 rupees for their items! If the students are having trouble understanding or converting, emphasize that for every 1 U.S. dollar, an Indian rupee is worth 46.7 rupees. If their shopping spree cost only 1 U.S. dollar, then they would have to pay 46.7 rupees. If it was 2 U.S. dollars, then they would have to pay 93.4 rupees (46.7 X 2).
5. Have the students find the value of their shopping spree cost in each currency and record them on appendix I. After that, have students compare findings and discuss results. (Adapted from Brain Boosting Math Activities by Jennifer Nichols).

E. Assessment/Evaluation

1. Assess Appendices H and I using Shopping Abroad Rubric)

CULMINATING ACTIVITY

A. Plan a Math Party! Students can be divided into committees: Planning, Supply, Food, Baking etc. The planning committee may be in charge of setting up the room, sending out invitations (with a story problem), and creating math games. The supply committee may be in charge of buying paper plates, utensils, napkins, decorations, etc. Provide ads from various stores to buy supplies. Have the students list: prices, amount needed (in proportion to attendance at the party), and savings (compare two stores). The food/baking committee may be in charge of buying/baking party food (cake, cookies, pizza, beverages etc.) If buying, provide ads from various stores to buy food. Then, have them list prices of food items, amount (in proportion to attendance at the party), and savings (compare two stores). If baking, same as above, but in addition, have them show the ratio of the recipes for larger amount of people. Invite parents and present their findings.
B. Provide the final assessment to the students, which are based on the concepts learned throughout the entire the unit.

Resources:

A. D'Agnese, Joseph.Brain Boosting Math Activities -Grade 5 (Lesson Four)
B. Nichols, Jennifer. Brain Boosting Math Activities - Grade 6 (Lesson Five and Six)

C. Apelman, Maja and King, Julie. Exploring Everyday Math (Lesson Five)
D. Lee, Martin, Miller, Marcia, and Novelli, Joan. Instant Activities for Math That Kids Really Love! (Lesson Three)
E. McMorrow, Scott. Ten-Minute Real World Math (Lesson Three)

Handouts:
A. Appendix A: The Math Curse (four pages)
B. Appendix B: My Very Own Math Curse and Rubric (two pages)
C. Appendix C: Math Poem – "Arithmetic" by Carl Sandburg
D. Appendix D: Math Interview and Rubric (two pages)
E. Appendix E: Math of Your Business and Rubric (two pages)
F. Appendix F: Meal Deal and Rubric (three pages)
G. Appendix G: Collect Them All and Rubric (two pages)
H. Appendix H: Shopping Spree
I. Appendix I: Shopping Abroad
J. Appendix J: Shopping Spree/Abroad Rubric
K. Appendix K: Final Assessment and Key (four pages)

Bibliography:
A. D'Agnese, Joseph. Brain Boosting Math Activities -Grade 5. New York: Scholastic, 1999. 0-590-065-459
B. Nichols, Jennifer. Brain Boosting Math Activities - More Than 50 Great Activities That Reinforce Problem-Solving and Essential Math Skills: Grade 6. New York: Scholastic,1999. 0-5900-6546-7
C. Lee, Martin, Miller, Marcia, and Novelli, Joan. Instant Activities for Math That Kids Really Love! New York: Scholastic, 1999. 0590399470
D. McMorrow, Scott. Ten-Minute Real World Math. California: Monday Morning Books, 2000. 157612021X
E. Scieszka, Jon. The Math Curse . New York: Viking Children's Books, 1995. 0-670-861-944
F. Hirsch Jr., E.D. What Your 5th Grader Needs to Know. New York: Dell, 1993. 0-385-31464-7.
G. Apelman, Maja and King, Julie. Exploring Everyday Math. New Hampshire: Heinemann, 1993. 0-435-08341-4.
H. Guthrie, Donna and Stiles, Jan. Real World Math. Connecticut: The Millbrook Press, 1998. 0-7613-0251-4.I.
Sandburg, Carl. "Arithmetic." New York: Harcourt, 1972. 0151207739

Differentiation:
Partner students together at any time appropriate, placing a stronger students with one who struggles for modeling and reteaching.

Technology Integrations:
Smart lessons could be prepared from these plans, if the Smart Board technology is available.

Content Connections:
Intersperse information at the students' level of understanding about economics connections such as supply/demand and personal finance responsibility.

The Math Curse Questions

(Adapted from *The Math Curse* by Jon Scieszka)

1. I wake up at 7:15am. It takes me 10 minutes to get dressed, 15 minutes to eat my breakfast, and 1 minute to brush my teeth.
    a. If my bus leaves at 8:00am, will I make it on time? _____
    b. How many minutes in 1 hour? _____
    c. How many teeth in 1 mouth? _____ (on average)

2. I look in my closet, and the problems get worse: I have 1 white shirt, 3 blue shirts, 3 striped shirts, and that I ugly plaid shirt my Uncle Zeno sent me.
    a. How many shirts is that all together? _____
    b. How many shirts would I have if I threw away that awful plaid shirt? _____
    c. *When will Uncle Zeno quit sending me such ugly shirts? _____

3. I take the milk out for my cereal and wonder:
    a. How many quarts in a gallon? _____
    b. How many pints in a quart? _____
    c. How many inches in a foot? _____
    d. How many feet in a yard? _____
    e. *How many yards in a neighborhood? _____
    f. How many inches in a pint? _____
    g. How many feet in my shoes? _____

4. *I try to get on the bus without thinking about anything, but there are 5 kids already on the bus, 5 kids get on at my stop, 5 more get on at the next stop, and 5 more get on at the last stop. TRUE or FALSE: What is the bus driver's name?

5. Mrs. Fibonacci has this chart of what month everyone's birthday is in:

    a. Which month has the most birthdays? _____
    b. Which month has the fewest? _____
    c. *Why doesn't February have a *w*? _____
    d. *Don't you think this chart sort of looks like a row of buildings? _____ (refer to the book)
    e. *Do you ever look at clouds and think they look like something else? _____
    f. *What does this inkblot look like to you? _____

6. There are 24 kids in my class. I just know someone is going to bring cupcakes to share. We sit in 4 rows with 6 desks in each row.

    a. What if Mrs. Fibonacci rearranges the desks to make 6 rows? How many desks will be in each row? _____
    b. What if Mrs. Fibonacci rearranges the desks to make 8 rows? How many desks will be in each row?? _____
    c. 3 rows? How many desks will be in each row? _____
    d. 2 rows? How many desks will be in each row?? _____

7. Jake scratches his paper with one **finger.** How many **fingers** are in our class?_____

8. Casey pulls Eric's ear. How many ears are in our class? _____

9. The new girl, Kelly, sticks her tongue out at me. How many tongues in our class? _____

Appendix A, page 2

10. Lunch is pizza and apple pie. Each pizza is cut into 8 equal slices. Each pie is cut into 6 equal slices. And you know what that means: FRACTIONS.

    a. If I want 2 slices of pizza should I ask for:
       A. 1/8 B. 2/8 C. 2 slices of pizza
    b. *What is another way to say ½ of an apple pie?
       A. 2/6 B. 3/6 C. la moitte d'une tarte aux pommes

    c. *Which tastes greater? A. ½ a pizza B. ½ an apple pie

11. Social Studies is a geography problem:
    The Mississippi River is about 4,000 kilometers long. An M&M is about 1 centimeter long. There 100 centimeters in a meter, and 1,000 meters in a kilometer.
    a. Estimate how many M&Ms it would take to measure the length of the Mississippi River.

       _____

    b. Estimate how many M&Ms you would eat if you had to measure the Mississippi River with M&Ms. _____

12. English is a word problem:
    *If mail + box = mailbox:
    a. Does lipstick – stick = lip? _____
    b. Does tunafish + tunafish = fournafish? _____

13. Phys. Ed. is a sports problem:
    In 1919, Babe Ruth hit 29 home runs, batted .322, and made $40,000.
    In 1991, the average major league baseball player hit 15 home runs, batted .275, and made $840,000.
    Circle the correct answer:
    a. Babe Ruth < The average modern baseball player
    b. Babe Ruth > The average modern baseball player
    c. Babe Ruth = The average modern baseball player

14. What are the next FIVE numbers in each sequence:
    a. Russell counts on his fingers: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, ____, ____, ____, ____, ____
    b. Molly says: 2, 4, 6, 8, 10, ____, ____, ____, ____, ____
    c. Mrs. Fibonacci says: 1, 1, 2, 3, 5, 8, 13, ____, ____, ____, ____, ____
    d. But on planet Tetra, kids have only 2 fingers on each hand. They count:
       1, 2, 3, 10, ____, ____, ____, ____, ____
    e. And on the planet Binary, kids have only 1 finger on each hand. They count: 1, 10, ____, ____, ____, ____, ____
    f. *Do you think Mrs. Fibonacci has been to the planet Tetra?_____
    g. *How would you bowl if you lived on the planet Binary? _____

15. *I have a $5 bill, a $1 bill, a quarter, and a penny. George Washington is on both the quarter and the $1 bill. Abraham Lincoln is on both the penny and the $5bill.
    So which is true:
    a. 1 Washington equals 25 Lincolns
    b. 5 Washingtons equal 1 Lincoln
    c. 1 Washington equals 100 Lincolns
    d. 1 Lincoln equals 20 Washingtons

*Extra Credit: How do you think Thomas Jefferson feels about this?

---

*Answers will vary

Answer Key

(Adapted from *The Math Curse* by Jon Scieszka)

1. I wake up at 7:15am. It takes me 10 minutes to get dressed, 15 minutes to eat my breakfast, and 1 minute to brush my teeth.
    a. If my bus leaves at 8:00am, will I make it on time? **Yes**
    b. How many minutes in 1 hour? **60**
    c. How many teeth in 1 mouth? **32** (on average)

2. I look in my closet, and the problems get worse: I have 1 white shirt, 3 blue shirts, 3 striped shirts, and that I ugly plaid shirt my Uncle Zeno sent me.
    a. How many shirts is that all together? **8**
    b. How many shirts would I have if I threw away that awful plaid shirt? **7**
    c. *When will Uncle Zeno quit sending me such ugly shirts? **Never**

3. I take the milk out for my cereal and wonder:
    a. How many quarts in a gallon? **4**
    b. How many pints in a quart? **2**
    c. How many inches in a foot? **12**
    d. How many feet in a yard? **3**
    e. *How many yards in a neighborhood? **A LOT!**
    f. How many inches in a pint? **NONE!**
    g. How many feet in my shoes? **2**

4. *I try to get on the bus without thinking about anything, but there are 5 kids already on the bus, 5 kids get on at my stop, 5 more get on at the next stop, and 5 more get on at the last stop. TRUE or FALSE: What is the bus driver's name? **TRUE**

5. Mrs. Fibonacci has this chart of what month everyone's birthday is in:

    a. Which month has the most birthdays? **April**
    b. Which month has the fewest? **June**
    c. *Why doesn't February have a *w*? **Just because!**
    d. *Don't you think this chart sort of looks like a row of buildings? **Sometimes!** (refer to the book)
    e. *Do you ever look at clouds and think they look like something else? **Once in a While!**
    f. *What does this inkblot look like to you? **A face!**

6. There are 24 kids in my class. I just know someone is going to bring cupcakes to share. We sit in 4 rows with 6 desks in each row.

    a. What if Mrs. Fibonacci rearranges the desks to make 6 rows? How many desks will be in each row? **4**
    b. What if Mrs. Fibonacci rearranges the desks to make 8 rows? How many desks will be in each row?? **3**
    c. 3 rows? How many desks will be in each row? **8**
    d. 2 rows? How many desks will be in each row?? **12**

7. Jake scratches his paper with one **finger.** How many **fingers** are in our class? **192 (8x24)**

8. Casey pulls Eric's ear. How many ears are in our class? **48**

9. The new girl, Kelly, sticks her tongue out at me. How many tongues in our class? **24**

10. Lunch is pizza and apple pie. Each pizza is cut into 8 equal slices. Each pie is cut into 6 equal slices. And you know what that means: FRACTIONS.

    a. If I want 2 slices of pizza should I ask for: **C**
       A. 1/8 B. 2/8 C. 2 slices of pizza

    b. *What is another way to say ½ of an apple pie? **B and C**
       A. 2/6 B. 3/6 C. la moitte d'une tarte aux pommes

    c. *Which tastes greater? A. ½ a pizza B. ½ an apple pie **A or B**

11. Social Studies is a geography problem:
    The Mississippi River is about 4,000 kilometers long. An M&M is about 1 centimeter long. There 100 centimeters in a meter, and 1,000 meters in a kilometer.
    a. Estimate how many M&Ms it would take to measure the length of the Mississippi River. **4×10^8**
    b. Estimate how many M&Ms you would eat if you had to measure the Mississippi River with M&Ms. **364, 290**

12. English is a word problem:
    *If mail + box = mailbox:
    a. Does lipstick – stick = lip? **Probably**
    b. Does tunafish + tunafish = fournafish? **Yes**

13. Phys. Ed. is a sports problem:
    In 1919, Babe Ruth hit 29 home runs, batted .322, and made $40,000.
    In 1991, the average major league baseball player hit 15 home runs, batted .275, and made $840,000.
    Circle the correct answer: **B**
    a. Babe Ruth < The average modern baseball player
    b. Babe Ruth > The average modern baseball player
    c. Babe Ruth = The average modern baseball player

14. What are the next FIVE numbers in each sequence:
    a. Russell counts on his fingers:
       1, 2, 3, 4, 5, 6, 7, 8, 9, 10, **11, 12, 13, 14, 15**
       Molly says:
       2, 4, 6, 8, 10, **12, 14, 16, 18, 20**
    b. Mrs. Fibonacci says:
       1, 1, 2, 3, 5, 8, 13, **21, 34, 55, 89, 144**
    c. But on planet Tetra, kids have only 2 fingers on each hand. They count:
       1, 2, 3, 10, **11, 12, 13, 20, 21**
    d. And on the planet Binary, kids have only 1 finger on each hand. They count: 1, 10, **11, 100, 101, 111**
    e. *Do you think Mrs. Fibonacci has been to the planet Tetra? **Answer will vary!**
    f. *How would you bowl if you lived on the planet Binary? **Answer will vary!**

15. *I have a $5 bill, a $1 bill, a quarter, and a penny. George Washington is on both the quarter and the $1 bill. Abraham Lincoln is on both the penny and the $5bill.
    So which is true: **ALL!**
    a. 1 Washington equals 25 Lincolns
    b. 5 Washingtons equal 1 Lincoln
    c. 1 Washington equals 100 Lincolns
    d. 1 Lincoln equals 20 Washingtons

Extra Credit: How do you think Thomas Jefferson feels about this? **Answer will vary!**

Appendix B, page 1
My Very Own Math Curse

Name _____ Date _____

My Very Own Math Curse!

Directions: Create your own story problem that makes a connection to your everyday life. The problems should have multiple steps and/or operations. Use your creativeness and your daily observations to create your problems. In addition, you may draw a picture of your story below.

On Monday in math class, _____ says, "You know, you can
(Insert your math teacher's name)
think of almost everything as a math problem." On Tuesday I start having problems.

Draw a picture of your story problem:

Appendix B, page 2
My Very Own Math Curse Rubric

Name_____ Date _____

CATEGORY	4	3	2	1
Strategy/Procedures	Typically, uses an efficient and effective strategy to formulate word problems with multiple steps and operations that stem from everyday life.	Typically, uses an effective strategy to formulate word problems with multiple steps and operations that stem from everyday life.	Sometimes uses an effective strategy to formulate word problems with multiple steps and operations that stem from everyday life, but does not do it consistently.	Rarely uses an effective strategy to formulate word problems with multiple steps and operations that stem from everyday life.
Mathematical Concepts	Explanation shows complete understanding of the mathematical concepts used to create the word problem(s).	Explanation shows substantial understanding of the mathematical concepts used to create the word problem(s).	Explanation shows some understanding of the mathematical concepts used to create the word problem(s).	Explanation shows very limited understanding of the underlying concepts needed to create the word problem(s) OR is not written.
Mathematical Terminology and Notation	Correct terminology and notation are always used, making it easy to understand what was done.	Correct terminology and notation are usually used, making it fairly easy to understand what was done.	Correct terminology and notation are used, but it is sometimes not easy to understand what was done.	There is little use, or a lot of inappropriate use, of terminology and notation.
Neatness and Organization	The work is presented in a neat, clear, organized fashion that is easy to read.	The work is presented in a neat and organized fashion that is usually easy to read.	The work is presented in an organized fashion but may be hard to read at times.	The work appears sloppy and unorganized. It is hard to know what information goes together.

Appendix C
Math Poem

Arithmetic

(From *The Complete Poems of Carl Sandburg)*

Arithmetic is where numbers fly
like pigeons in and out of your head
Arithmetic tells you how many you lose or win
if you know how many you had
before you lost or won.
Arithmetic is seven eleven all good children
go to heaven—or five six bundle of sticks.
Arithmetic is numbers you squeeze from your
head to your hand to your pencil to your paper
till you get the right answer....
If you have two animal crackers, one good and one bad,
and you eat one and a striped zebra
with streaks all over him eats the other,
how many animal crackers will you have
if somebody offers your five six seven and you say
No no no and you say Nay nay nay
and you say Nix nix nix?
If you ask your mother for one fried egg
for breakfast and she gives you
two fried eggs and you eat
both of them, who is better in arithmetic,
you or your mother?

--Carl Sandburg

Appendix D, page 1
Math Interview

Name_____ Date_____

Directions: Interview your Mom and/or Dad to see the importance math plays in their daily lives. Record the answers to the following questions and then write a well-constructed paragraph on what you learned.

1. Where do you work? _____
2. What is your job title? _____
3. Briefly explain your job. _____
4. What skills in math are important to your job? _____
5. Please give examples of when you use these skills. _____
6. On a scale of 1 to 10 (1 being low and 10 being high), how important is math to your job? Why?
7. Problem solving is a life-skill. When do you problem solve in your job? _____
8. What do you see as important in the study of math? _____
9. Why is the study of math important in school? _____
10. Did you have any good or bad experiences with math while in school or work? Please explain.

Write your paragraph here:

Ideas and Content _____
Organization_____
Voice_____

Word Choice_____
Sentence Fluency_____
Conventions_____

Appendix D, page 2
Math Interview Rubric

Name_____ Date _____

CATEGORY	4	3	2	1
Focus on Topic (Content)	There is one clear, well-focused topic. Main idea stands out and is supported by detailed information.	Main idea is clear but the supporting information is general.	Main idea is somewhat clear but there is a need for more supporting information.	The main idea is not clear. There is a seemingly random collection of information.
Transitions (Organization)	A variety of thoughtful transitions are used. They clearly show how ideas are connected.	Transitions clearly show how ideas are connected, but there is little variety.	Some transitions work well; but connections between other ideas are fuzzy.	The transitions between ideas are unclear or nonexistent.
Recognition of Reader (Voice)	The reader's questions are anticipated and answered thoroughly and completely.	The reader's questions are anticipated and answered to some extent.	The reader is left with one or two questions. More information is needed to "fill in the blanks".	The reader is left with several questions.
Word Choice	Writer uses vivid words and phrases that linger or draw pictures in the reader's mind, and the choice and placement of the words seems accurate, natural and not forced.	Writer uses vivid words and phrases that linger or draw pictures in the reader's mind, but occasionally the words are used inaccurately or seem overdone.	Writer uses words that communicate clearly, but the writing lacks variety, punch or flair.	Writer uses a limited vocabulary that does not communicate strongly or capture the reader's interest. Jargon or clichés may be present and detract from the meaning.
Sentence Structure (Sentence Fluency)	All sentences are well-constructed with varied structure.	Most sentences are well-constructed with varied structure.	Most sentences are well-constructed but have a similar structure.	Sentences lack structure and appear incomplete or rambling.
Grammar and Spelling (Conventions)	Writer makes no errors in grammar or spelling that distract the reader from the content.	Writer makes 1-2 errors in grammar or spelling that distract the reader from the content.	Writer makes 3-4 errors in grammar or spelling that distract the reader from the content.	Writer makes more than 4 errors in grammar or spelling that distract the reader from the content.

Appendix E, page 1
Math of Your Business!

CHECKBOOK RECORD OF: _____

(Insert business name here)

BALANCE FORWARD

Check Number	DATE	ISSUED TO/FOR	AMOUNT	Record Starting Amount Here

NAME OF BUSINESS _____ *CHECK NO.* _____

ADDRESS _____

CITY/STATE _____ *DATE* _____ *20*____

PAY to
the order of _____ **$** _____

_____ *DOLLARS*

BANK OF CORE KNOWLEDGE
801 E. High Street, Charlottesville, VA

For _____
:101100110: :1001001001: _____
SIGNATURE

Appendix E, page 2
Math of Your Business! Rubric

Name_____ Date _____

CATEGORY	4	3	2	1
Mathematical Concepts: Check Writing	All parts of sample check are written correctly and clearly, and could be "cashed."	Minor errors appear in sample check and/or may not be clearly written but nothing interferes with "cashing" of check	Minor errors and/or legibility interfere with "cashing" of check	Major errors and/or legibility make check not negotiable
Mathematical Concepts: Check Recording	Lists all data, and calculates with absolute accuracy.	Lists important data necessary and calculates to a reasonable degree of accuracy	Data listed is incomplete or unclear, and calculations appear inaccurate or unclear	Data and calculations are not meaningful
Mathematical Reasoning: Solving for Real Life	Uses complex and refined mathematical reasoning.	Uses effective mathematical reasoning	Some evidence of mathematical reasoning.	Little evidence of mathematical reasoning.

Working with Others	Student was an engaged partner, listening to suggestions of others and working cooperatively throughout lesson.	Student was an engaged partner but had trouble listening to others and/or working cooperatively.	Student cooperated with others, but needed prompting to stay on-task.	Student did not work effectively with others.
Neatness and Organization	The work is presented in a neat, clear, organized fashion that is easy to read.	The work is presented in a neat and organized fashion that is usually easy to read.	The work is presented in an organized fashion but may be hard to read at times.	The work appears sloppy and unorganized. It is hard to know what information goes together.

Appendix F, page 1
Meal Deal!

Name_____ Date_____

Directions – Record the restaurant name, and observe the menu with your group.

RESTAURANT NAME_____

PART 1: Select your favorite meal; include appetizers, entrée, beverage, dessert, etc. List all the food you "ordered" and their price. Compute the total cost of the meal.

Food Ordered	$Price$
Total Cost	$

Discuss with your group about your findings. Who had the most expensive meal?

PART 2: Pretend that you are on a tight budget. Select your favorite meal with this in mind; include appetizers, entrée, beverage, dessert, etc. List all the food you "ordered" and their price. Compute the total cost of the meal.

Food Ordered	$Price$
Total Cost	$

Discuss with your group about your findings. Who had the most inexpensive meal? Are there anymore ways you can save money? Does the menu have any specials? Can you save any money by ordering a "special" instead of a regular entrée?

Appendix F, page 2

PART 3: Re-compute your order from PART 1 and include meal tax (7%) and tip (15%).

Food Ordered	$Price$
Subtotal	$
Tax (7%) = 0.07 X Subtotal	$
Total (Subtotal + Tax)	$
Tip (15%) = 0.15 X Total	$
Total Cost + Tip	$

How much **more** did you have to pay with tax and tip?

PART 4: Observe your menu and solve the following problem: If you only had $10.00, what type of meal can you afford without going over? (Don't forget to include tax and tip).

Food Ordered	$Price$
Subtotal	$
Tax (7%) = 0.07 X Subtotal	$
Total (Subtotal + Tax)	$
Tip (15%) = 0.15 X Total	$
Total Cost + Tip	$

PART 5 When you are finished, start another Menu Math Hunt Worksheet with a different restaurant menu! Determine which restaurant serves the most inexpensive meal with tax and tip included! After comparing both restaurants, tell your parents about the best meal deal in town!

Appendix F, page 3
Meal Deal Rubric

Name_____ Date _____

CATEGORY	4	3	2	1
Mathematical Concepts: Number Sense and Money	Explanation shows complete understanding of the mathematical concepts used to solve the problem(s).	Explanation shows substantial understanding of the mathematical concepts used to solve the problem(s).	Explanation shows some understanding of the mathematical concepts needed to solve the problem(s).	Explanation shows very limited understanding of the underlying concepts needed to solve the problem(s) OR is not written.
Mathematical Reasoning: Solving for Real Life	Uses complex and refined mathematical reasoning to solve real life situations.	Uses effective mathematical reasoning to solve real life situations.	Some evidence of mathematical reasoning to solve real life situations.	Little evidence of mathematical reasoning to solve real life situations.
Strategy/Procedures: Solving for Multiple Steps/Operations	Typically, uses an efficient and effective strategy to solve the problem(s).	Typically, uses an effective strategy to solve the problem(s).	Sometimes uses an effective strategy to solve problems, but does not do it consistently.	Rarely uses an effective strategy to solve problems.
Working with Others	Student was an engaged partner, listening to suggestions of others and working cooperatively throughout lesson.	Student was an engaged partner but had trouble listening to others and/or working cooperatively.	Student cooperated with others, but needed prompting to stay on-task.	Student did not work effectively with others

Appendix G
Collect Them All!

Name _____ Date _____

COLLECT THEM ALL!

How many super-sized burgers would you have to buy to get all six "Finding Meno" puffed animals?

My Prediction (or guess):_____

Now roll your dice. Make a tally mark under the number you get. For each Trial, keep rolling until you get all six numbers. Then count up the total number of rolls for that Trial. Complete all 10 Trials. Find the average for all ten trials.

NUMBER ROLLED	Animal#1 	Animal#2 	Animal#3 	Animal#4 	Animal#5 	Animal#6 	TOTAL NUMBER OF ROLLS
Trial 1							
Trial 2							
Trial 3							
Trial 4							
Trial 5							
Trial 6							
Trial 7							
Trial 8							
Trial 9							
Trial 10							
AVERAGE OF ROLLS FOR ALL TEN TRIALS (The average number of super-sized burgers you have to buy in order to "collect them all!")							
CLASSROOM AVERAGE (The average number of super-sized burgers our class has to buy in order to "collect them all!")							

1. What are your chances of collecting all six puffed animals?
2. What does this say about fast food restaurants that pressure little "customers" to collect them all?

Appendix G, page 2
Collect Them All Rubric

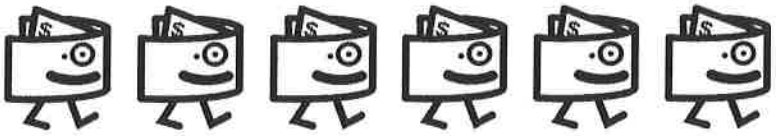
Name_____ Date _____

CATEGORY	4	3	2	1
Mathematical Concepts: Probability and Statistics	Exhibits complete understanding of the mathematical concepts used to solve the problem(s).	Exhibits substantial understanding of the mathematical concepts used to solve the problem(s).	Exhibits some understanding of the mathematical concepts needed to solve the problem(s).	Exhibits very limited understanding of the underlying concepts needed to solve the problem(s) OR is not written.
Mathematical Reasoning: Solving for Real Life	Uses complex and refined mathematical reasoning to solve real life situations.	Uses effective mathematical reasoning to solve real life situations.	Some evidence of mathematical reasoning to solve real life situations.	Little evidence of mathematical reasoning to solve real life situations.
Strategy/Procedures: Solving for Multiple Steps/Operations	Typically, uses an efficient and effective strategy to solve the problem(s).	Typically, uses an effective strategy to solve the problem(s).	Sometimes uses an effective strategy to solve problems, but does not do it consistently.	Rarely uses an effective strategy to solve problems.
Neatness and Organization	The work is presented in a neat, clear, organized fashion that is easy to read.	The work is presented in a neat and organized fashion that is usually easy to read.	The work is presented in an organized fashion but may be hard to read at times.	The work appears sloppy and unorganized. It is hard to know what information goes together.

Appendix H
Shopping Spree!

Name _____ Date _____

SHOPPING SPREE!



Directions: Use the ads to find items that you want to buy for your trip to another country.

YOUR SHOPPING LIMIT IS: _____

ITEM	PRICE
TOTAL COST OF YOUR SHOPPING SPREE	$

3. What is the most expensive and least expensive item that you bought?

4. Find two items that are similar from two different ads. Which brand is least expensive? Is this a "brand name" product? Would you still buy it if it wasn't?

Appendix I, page 1
Shopping Abroad

Name _____ Date _____

 SHOPPING ABROAD 

Directions: Take your **Total Cost of Your Shopping Spree** amount and write it where it is indicated below. Fill in the Ratio of U.S. dollar to currency column using the Foreign Currency Equivalents Chart provided by your teacher. The values are expressed as a ratio of one U.S. dollar to other currency's exchange. For example, if 1 U.S. dollar = 10.45 Mexican pesos, then 2 U.S. dollars would exchange to 20.90 Mexican pesos. In this activity, you are converting your **Total Cost of Your Shopping Spree** amount to each country's currency. So, if your **Total Cost of Your Shopping Spree** amount is 40 U.S. dollars, then your proportions would look like the following:

$$\frac{1\text{(U.S. dollar)}}{10.45\text{ (Mexican pesos)}} = \frac{40\text{ U.S. dollars (}\textbf{Total Cost of Your Shopping Spree}\text{)}}{x}$$

Solve for x and round to the nearest hundred**th**: 1(U.S. dollar) x = 40 U.S. dollars (**Total Cost of Your Shopping Spree**) X 10.45 (Mexican pesos). The **Total Cost of Your Shopping Spree** IN MEXICAN PESOS is 418 pesos. Please find the value of the **Total Cost of Your Shopping Spree** in each currency.

Total Cost of Your Shopping Spree:
$_____

Country	Name of Currency	Ratio of U.S. Dollar to Currency	Cost of Your Shopping Spree
MEXICO	peso	10.45	418.00 **pesos**
FRANCE			
GERMANY			
GREECE			
INDIA			
ITALY			
JAPAN			
NETHERLANDS			
SPAIN			
UNITED KINGDOM			

Appendix J
Shopping Spree/Abroad Rubric

Name_____ Date _____

CATEGORY	4	3	2	1
Mathematical Concepts: Ratio and Proportion	Exhibits complete understanding of the mathematical concepts used to solve the problem(s).	Exhibits substantial understanding of the mathematical concepts used to solve the problem(s).	Exhibits some understanding of the mathematical concepts needed to solve the problem(s).	Exhibits very limited understanding of the underlying concepts needed to solve the problem(s) OR is not written.
Mathematical Reasoning: Solving for Real Life	Uses complex and refined mathematical reasoning to solve real life situations.	Uses effective mathematical reasoning to solve real life situations.	Some evidence of mathematical reasoning to solve real life situations.	Little evidence of mathematical reasoning to solve real life situations.
Strategy/Procedures: Solving for Multiple Steps/Operations	Typically, uses an efficient and effective strategy to solve the problem(s).	Typically, uses an effective strategy to solve the problem(s).	Sometimes uses an effective strategy to solve problems, but does not do it consistently.	Rarely uses an effective strategy to solve problems.
Neatness and Organization	The work is presented in a neat, clear, organized fashion that is easy to read.	The work is presented in a neat and organized fashion that is usually easy to read.	The work is presented in an organized fashion but may be hard to read at times.	The work appears sloppy and unorganized. It is hard to know what information goes together.

Appendix K, page 1
Final Assessment

Name _____ **Date**_____

1. A glass jar contains 6 red, 5 green, 8 blue, and 3 yellow M&Ms. If one M&M is chosen at random from the jar, what is the probability that it is red? green? blue? yellow? Which color M&M are you **most** likely to pick? Which color M&M are you **least** likely to pick?

2. Your teacher has to be at school by 7:30 a.m. and it takes him 25 minutes to get dressed, 20 minutes to eat and 20 minutes to drive to work. What time should he get **up?**

3. You took five math tests in the first quarter. Your grades were: 95%, 83%, 65%, 90%, and 87%. What is your average grade for the first quarter?

4. There are 80 students who bought candy in the school cafeteria. One-half bought Snickers, one-fourth bought Reese's, one-tenth bought M&Ms, and the rest bought Kit Kat. How many students bought Kit Kat?

5. Create your own math problem using multiple steps/operations that relates to your own life. Please provide the answer to your problem.

Appendix K, page 2
Final Assessment

6. Your family goes to Pizzas 'R Us restaurant to celebrate your dad's birthday. You order the following: Two large all-meat pizzas for $9.99 each, two medium veggie pizzas for $7.88 each, four large waffle fries for $1.79 each, four large drinks for $3.96 and a huge ice cream cake for $12.88. The restaurant charges a 6% tax for all food items, and since you everyone loved the service, you decide to tip 20%. Calculate the total amount, and use the check below to write out your payment.

NAME _____ CHECK NO. _____
ADDRESS _____
CITY/STATE _____
DATE _____ 20____
PAY to
the order of _____ $

_____ DOLLARS

BANK OF CORE KNOWLEDGE
801 E. High Street, Charlottesville, VA

For _____
:101100110: :1001001001: _____
SIGNATURE

7. Let's pretend that Pizza's R Us declines your check because they have changed their currency and only accepts Mexican pesos. You remember the following formula from your Math Class:

$$\frac{1 \text{(U.S. dollar)}}{10.45 \text{ (Mexican pesos)}} = \frac{\textbf{(Total Cost of Your Family Dinner in dollars)}}{x}$$

Solve for x and round to the nearest hundredth: 1(U.S. dollar) x = 40 U.S. dollars **(Total Cost of Your Family Dinner in dollars)** X 10.45 (Mexican pesos). The **Total Cost of Your Family Dinner** IN MEXICAN PESOS is _____ pesos.

Appendix K, page 3
Final Assessment Key

1. A glass jar contains 6 red, 5 green, 8 blue, and 3 yellow M&Ms. If one M&M is chosen at random from the jar, what is the probability that it is red? green? blue? yellow? Which colored M&M are you **most** likely to pick? Which colored M&M are you **least** likely to pick?

$$P(\text{red}) = \frac{\text{number of ways to choose red}}{\text{total number of M\&Ms}} = \frac{6}{22} = \frac{3}{11}$$

$$P(\text{green}) = \frac{\text{number of ways to choose green}}{\text{total number of M\&Ms}} = \frac{5}{22}$$

$$P(\text{blue}) = \frac{\text{number of ways to choose blue}}{\text{total number of M\&Ms}} = \frac{8}{22} = \frac{4}{11}$$

$$P(\text{yellow}) = \frac{\text{number of ways to choose yellow}}{\text{total number of M\&Ms}} = \frac{3}{22}$$

The outcomes in this experiment are not equally likely to occur. You are much more likely to choose a blue M&M than any other colored M&M. You are least likely to choose a yellow M&M.

2. Your teacher has to be at school by 7:30 a.m. and it takes him 25 minutes to get dressed, 20 minutes to eat and 20 minutes to drive to work. What time should he get **up?** **6:25a.m.**

3. You took five math tests in the first quarter. Your grades were: 95%, 83%, 65%, 90%, and 87%. What is your average grade for the first quarter? **84%**

4. There are 80 students who bought candy in the school cafeteria. One-half bought Snickers, one-fourth bought Reese's, one-tenth bought M&Ms, and the rest bought Kit Kat. How many students bought Kit Kat? *Snickers: 1/2 x 80 = **40 students**; Reese's: 1/4 x 80 = **20 students**; M&Ms: 1/10 x 80 = **8 students***; **Kit Kat: 80 – 68 = 12 students**

5. Create your own math problem using multiple steps/operations that relates to your own life. Please provide the answer to your problem. **Problems will vary.**

6. Your family goes to Pizzas 'R Us restaurant to celebrate your dad's birthday. You order the following: Two large all-meat pizzas for $9.99 each, two medium veggie pizzas for $7.88 each, four large waffle fries for $1.79 each, four large drinks for $3.96 and a huge ice cream cake for $12.88. The restaurant charges a 6% tax for all food items, and since you everyone loved the service, you decide to tip 20%. Calculate the total amount, and use the check below to write out your payment.

Two large all-meat pizzas for $9.99 each = 19.98
Two medium veggie pizzas for $7.88 each = 15.76
Four large waffle fries for $1.79 each = 7.16
Four large drinks = 3.96
Huge ice cream cake = 12.88.
Subtotal = $59.74
6% tax = 0.06 X $59.74 = $3.58
Total (with tax) = $63.32
20% tip = 0.20 X $63.32 = $12.66
Total Cost (with 20% tip and 6% tax) = $75.98

NAME ***Bobby Lee*** CHECK NO. ***12***
ADDRESS ***123 Cool Ave***
CITY/STATE ***Denver, CO 80126***
DATE ***May 22,*** 20 ***03***
PAY to ***$75.98***
the order of ***Pizzas R'Us***
Seventy-five dollars and ninety-eight cents ---------- DOLLARS
BANK OF CORE KNOWLEDGE
801 E. High Street, Charlottesville, VA
For ***Family dinner***
:101100110: :1001001001: ***Bobby Lee***
SIGNATURE

7. Let's pretend that Pizza's R Us declines your check because they have changed their currency and only accepts Mexican pesos. You remember the following formula from your Math Class:

$$\frac{1 \text{(U.S. dollar)}}{10.45 \text{ (Mexican pesos)}} = \frac{\$75.98}{x}$$

Solve for x and round to the nearest hundredth:
1(U.S. dollar) x = 40 U.S. dollars $75.98 X 10.45 (Mexican pesos).
*The **Total Cost of Your Family Dinner** IN MEXICAN PESOS is 793.99 pesos.*