Manipulatives + Literature = Mathematical Thinkers

Grade level: Kindergarten
Presented by: Kelly Flynn and Debbie Willett, Sharonville Elementary, Cincinnati, OH
Length of Unit: Yearlong

I. ABSTRACT

Through this yearlong unit, children will acquire the math vocabulary, skills, and problem solving strategies needed to become life long mathematical thinkers. For each math concept in the Core Knowledge Sequence, age appropriate activities and literature will be presented to help children develop a sense of math application in the real world. Activities will include whole group, small group, and independent center activities.

II. OVERVIEW

A. Concept Objectives

1. Patterns and Classification
2. Numbers and Number Sense
3. Money
4. Computations
5. Measurement
6. Geometry

B. Core Content

1. Patterns and classification
2. Comparing sets
3. Numbers, Number recognition, Number sense
4. Money concepts
5. Computation of whole numbers
6. Concepts of time
7. Shape recognition, geometry
8. Measurement

C. Skills Taught

1. Identifying simple patterns in our environment
2. Count and compare two or more sets
3. Recognizing numbers 11-20
4. Symbols associated with money
5. Counting money
6. Adding and subtracting whole numbers
7. Symbols associated with computation
8. Telling time a variety of ways
9. Identify a variety of shapes

III. BACKGROUND KNOWLEDGE

Kamii, Constance. Young Children Reinvent Arithmetic: Implications of Piaget's Theory. New York: Teachers College Press, 1985, ISBN0-8077-2707-5.
Core Knowledge Sequence (Revised 1995)

IV. RESOURCES

Hirsch, Jr. E.D. What Your Kindergartner Needs to Know. New York: Dell Publishing, 1996, ISBN 0-385-48117-9.

V. LESSONS

Lesson One: Patterns -Day 1

A. Objectives/Goals: The student will
   1. recognize patterns.
   2. move from concrete objects to pictorial representations.

B. Materials
   1. Pattern by Henry Pluckrose
   2. Real objects that show a pattern
   3. Camera
   4. Math journals/recording sheet
   5. Pencils and crayons

C. Key Vocabulary
   1. Pattern
   2. Repetition (of a pattern)

D. Procedures/Activities:
   1. Read Pattern by Henry Pluckrose.
   2. Review what a pattern is and brainstorm examples.
   3. Present objects in the classroom or familiar objects and have the class identify the pattern.
   4. Take a Pattern Walk. In small groups children find objects in the school and outside that show a pattern.
   5. Each group records what they found, the pattern, and where it was located. They take a picture of the pattern.
   6. Children record and identify one pattern found in their math journal.

E. Evaluation: The student will
   1. be able to find a patterned object in our environment.
   2. be able to identify the type of pattern of a given object.
   3. draw a picture of a pattern.

F. Standardized Test/State Test Connections:
   1. Use patterns to make generalizations and predictions (OH 4th Grade Proficiency, Math Outcome #2).

Lesson Two: Patterns - Day 2

A. Objectives/Goals: The student will
   1. recognize and identify a pattern.
   2. make a pictorial representation of a pattern.

B. Materials
   1. I See Patterns by Linda Benton
   2. Pictures from Pattern Walk
   3. Individual books I See Patterns at Our School
   4. Pencils/crayons

C. Key Vocabulary
   1. Patterns
   2. Repeating a pattern

D. Procedures/Activities:
   1. Read and discuss I See Patterns by Linda Benton.
   2. Show pictures taken on the Picture Walk.
   3. As a group identify the object, the pattern, and where it is located.
   4. Have children make an individual book I See Patterns at Our School.
      a. Children draw an object showing its pattern.
      b. They finish the sentence " I see a _____."

5. Center Activity: Children use stickers to make given pattern (See Appendix A).

E. Evaluation: The student will
   1. be able to name the pattern of a given object.
   2. illustrate at least two different patterns.

F. Standardized Test/State Test Connections:
   1. Use patterns to make generalizations and predictions (OH 4th Grade Proficiency Math Outcome #2).

Lesson Three: Comparing Sets

A. Objectives/Goals: The student will
   1. use concrete objects and pictorial representations to compare sets.
   2. interpret simple graphs.
   3. count a set of objects.
   4. compare two sets.

B. Materials
   1. Book Just Enough Carrots by Stuart Murphy
   2. Baggies of food
   3. Index cards
   4. Markers
   5. Class graph marked Fewer/Same/More

C. Key Vocabulary
   1. Fewer (less than)
   2. Same (equal)
   3. More than
   4. Comparing

D. Procedure/Activities:
   1. Read and discuss Just Enough Carrots by Stuart Murphy.
   2. Review the terms fewer, same, and more.
   3. Give small groups of children (2-3) a baggie with food, an index card, and a marker. Each group will have a different amount of food in their bag. The groups count the number of pieces they have and write the number on the index card.
   4. Show the teacher's bag and have each group compare their bag to it.
   5. Each group decides if their bag has fewer, the same as, or more than the teacher's bag. They record their answer by writing the word on the index card also.
   6. Make a real graph using each group's bag. The children hang their bag in the appropriate column of the graph - fewer, same, more. Discuss the graph results.
   7. Center Activity: Place different amounts of manipulatives in baggies along with a labeled graph and a baggie to use for comparison. Children put the baggies in the appropriate column. The type of manipulative, amounts in each bag, and the comparison number can be changed throughout the year.

E. Evaluation: The student will
   1. count a set of objects and compare it to a given set.
   2. correctly tell if a set of objects is fewer, the same as, or more than a given set.
   3. be able to give a fact about the graph results.

F. Standardized Test/State Test Connections
   1. Compare numbers (OH 4th Grade Proficiency, Math Outcome #6).
   2. Make comparisons from graphs (OH 4th Grade Proficiency, Math Outcome #24).

Lesson Four: Comparing Sets - Name Graphs

A. Objectives/Goals: The student will:

1. count the number of objects in a set.
2. compare the amount of objects in two sets.
3. interpret a simple graph.

B. Materials
1. Book Chrysanthemum by Kevin Henkes
2. Large piece of construction paper (12x18) divided into thirds, labeled fewer, same, and more at the top - one per child (see Appendix B).
3. Each child's name written out on graph paper - 1 per child.
4. Glue
5. Scissors

C. Key Vocabulary
1. Fewer
2. Same as
3. More than
4. Comparing
5. Graph

D. Procedures/Activities:
1. Read Chrysanthemum by Kevin Henkes and discuss the length of names.
2. Review the terms fewer, same, and more than.
3. Model making a name comparison graph using your own name. Discuss that not all the graphs will be the same because of the difference in the lengths of names.
4. Children create their own name comparison graph. First they cut out their own name and count the number of letters in it. On the construction paper graph, they glue their name under the "same" column and write the number of letters in it next to the word same. They then cut out a classmate's name, compare the number of letters to their own name, and glue the name in the appropriate column.
5. Ask children questions about their finished graph. For example, "Do most children have names with fewer, more, or the same amount of letters as you?" "How many children have the same number of letters in their name as you?"

E. Evaluation: The student will
1. count the number of letters in his/her name correctly.
2. compare his/her name to the names of classmates and classify the names as having fewer, the same, or more letters.
3. graph names correctly.
4. give two facts about his/her graph.

F. Standardized Test/State Test Connections:
1. Compare numbers (OH 4th Grade Proficiency, Math Outcome #6).
2. Make comparisons from graphs (OH 4th Grade Proficiency, Math Outcome #24).

Lesson Five: Numbers 11-20 (Day 1)

A. Objectives/Goals: The student will
1. count sets containing 11-20 items.
2. classify objects according to various attributes.
3. define a set by the common property of its elements.

B. Materials
1. Book How Many Snails? by Paul Giganti

C. Key Vocabulary
1. Attribute
2. Set

D. Procedures/Activities:
   1. Read How Many Snails? by Paul Giganti. Since this is an interactive book, reading it, answering the questions, and discussing the answers would be a lesson by itself. Make sure children understand how to count the objects when a specific attribute(s) is given.

E. Evaluation: The student will
   1. be able to correctly count a set containing 11-20 items.
   2. group objects according to a given attribute.

F. Standardized Test/State Test Connections:
   1. Sort or identify objects on multiple attributes (OH 4th Grade Proficiency Math Outcome #1).

Lesson Six: Numbers 11-20 (Day 2)

A. Objectives/Goals: The student will
   1. count sets containing 11-20 objects.
   2. classify objects according to various attributes.
   3. define a set by the common property of its elements.

B. Materials
   1. Book Each Orange Had 8 Slices by Paul Giganti.
   2. Baggie of 11-20 pictures with one variable attribute.
   3. Construction paper (12x18) - 1 per group
   4. Glue

C. Key Vocabulary
   1. Attribute
   2. Set

D. Procedures/Activities:
   1. Read Each Orange Had 8 Slices by Paul Giganti and discuss/ answer questions in the story.
   2. Have children work individually or in pairs.
   3. Give each group a baggie. Each baggie would contain a collection of 11-20 pictures of the same objects with one attribute that is different (die cut shapes in different colors work well).
   4. The groups would then design their own page using the pictures in the baggie.
   5. When finished, the child(ren) would conference with the teacher to develop and dictate at least 3 questions about the page.
   6. Compile all pages into a classbook.
   7. Have children present their page by showing it and asking the questions to the class or other classes in the building.

E. Evaluation: The student will
   1. correctly count a set containing 11-20 items.
   2. name an attribute to use for sorting a set of items.
   3. sort a group of objects according to the chosen attribute.

F. Standardized Test/State Test Connections:
   1. Sort or identify objects on multiple attributes (OH 4th Grade Proficiency Math Outcome #1).
   2. Explain or illustrate why a solution is correct (OH 4th Grade Proficiency Math Outcome #5).

Lesson Seven: Numbers 11-20

A. Objectives/Goals: The student will
   1. recognize numbers 11-20.
   2. count out a set of objects to match a given number between 11-20.

B. Materials
   1. Book The Cheerios Counting Book by Barbara Barbieri McGrath
   2. Cheerios cereal.
   3. String/yarn for necklaces - 1 per child
   4. A number card for each child with a number 11-20 written on it.

C. Key Vocabulary
   1. Set
   2. "Teen" numbers

D. Procedures/Activities:
   1. Read and discuss the book The Cheerios Counting Book.
   2. Review the "teen" numbers (11-20).
   3. Model how to make a "teen necklace."
   4. Give children a number card with a number ranging from 11-20 written on it. Children string the number card and corresponding number of Cheerios on piece of yarn or string.
   5. Center Activity: Children can make their own number flashcards. On the top of one card they trace the dotted number. On the bottom of the flashcard, there are dots corresponding to the number above. Children put stickers on the dots to make an "organized" and easy-to-count set.

E. Evaluation: The students will
   1. make a set to match a given number between 11-20.
   2. name the number.

F. Standardized Test/State Test Connections:
   1. Represent whole number value (OH 4th Grade Proficiency Math Outcome #10)

Lesson Eight: Money

A. Objectives/Goals: The student will
   1. identify a penny, nickel, dime, and quarter.
   2. identify the worth of each coin.
   3. add a set of coins.

B. Materials
   1. Pigs Will Be Pigs by Amy Axelrod
   2. Sample menus
   3. Paper (9x12) - 1 per child
   4. Pencils, markers, etc.

C. Key Vocabulary
   1. Sum
   2. Cents

D. Procedures/Activities:
   1. Read Pigs Will Be Pigs and discuss.
   2. Show actual menus from restaurants familiar to your students and discuss how menus are used.
   3. Show the class pretend/plastic food with prices marked on each one.
   4. Model making a lunch special for the class restaurant. Discuss putting items from several areas on the food pyramid (See Appendix C).
   5. Have children make their own lunch special by drawing the food and labeling the price of each item. Have children write the total of their special. Ask questions about which special is the most? The least? Are any the same price? What groups in the food pyramid are represented
   6. Display the lunch specials in the dramatic area that has been converted to a restaurant. Children order food by asking for one of the specials and counting out the appropriate amount of money to buy it.

7. Extensions: Do a unit on the food pyramid.

E. Evaluations/Assessment: The student will
count out the appropriate coins to match a given amount.
1. add the total cost of his/her lunch special.

F. Standardized Test/State Test Connections:
1. Apply the counting of collections of coins (and bills) in a buying situation (Ohio 4th Grade Proficiency Math Outcome# 18).

Lesson Nine: Money

A. Objectives/Goals: The student will
1. sort objects by various attributes.
2. identify the cents sign.
3. write money amounts using the cents sign.
4. add using concrete objects.

B. Materials
1. Jelly Beans for Sale by Bruce McMillan
2. Individual packages/cups of jelly beans - 1 per child
3. Sorting/graphing sheet - 1 per child (Appendix D)
4. Jelly Bean Math book - 1 per child (Appendix E)
5. Pencils and crayons

C. Key Vocabulary
1. Sorting
2. Addition/number sentence
3. Sum of two numbers/equals
4. Cents

D. Procedure/Activities:
1. Read Jelly Beans for Sale.
2. Model how to sort the jelly beans by color and how to complete the addition book.
3. Give each child a package/small amount of jelly beans to sort by color on the sorting sheet.
4. Once the jelly beans are sorted, the children do the first problem by reading the colors they are adding together in the Jelly Bean Math book. They write the corresponding number in the blank below the color word.
5. They illustrate the problem by coloring the appropriate number of each color of jelly beans in the jar.
6. They count the total number of jelly beans and write the answer in both addition/number sentences.
7. Children read their number sentence using the words cents after each number.
8. Extension: Check understanding by having a cup of real coins for children to show you how much a given amount of jelly beans would cost.
9. Extension: Children could use coin stickers or stamps in their addition book to show how much each set of jelly beans would cost.
10. Extension: Have children graph their jelly beans.

E. Evaluation: The student will
1. sort the jelly beans by color.
2. add two sets of jelly beans correctly.
3. write the correct amount/total for each number sentence.
4. correctly read and point to the cents sign.

F. Standardized Test/State Test Connections:
1. Sort or identify objects (OH 4th Grade Proficiency Math Outcome #1).

2. Apply the counting of collections of coins in a buying situation (OH 4th Grade Proficiency Outcome #18).
3. Add whole numbers (OH 4th Grade Proficiency Math Outcome #8).

Lesson Ten: Computation - Addition

A. Objectives/Goals: The student will
   1. add to ten using concrete objects.
   2. recognize the meaning of "+" and "="
B. Materials
   1. Book Two Little Witches by Harriet Ziefert
   2. Magic number sentences - 1 per child (Appendix F)
   3. Stickers
   4. Pencils
C. Key Vocabulary
   1. Number sentence
   2. Addition
   3. Equals
D. Procedure/Activity:
   1. Read Two Little Witches and discuss the term "number sentence."
   2. Use different attributes of the children to make number sentences (we used the children's Halloween costumes for this part, but eye color, clothing, etc. could also be used). For example 2 girls plus 3 boys equals 5 children.
   3. Give each child a "magic number sentence." Children trace the dotted numbers to reveal the addition problem.
   4. Children place stickers in the boxes to correspond to the numbers written below and write the answer in the last box.
   5. Children share their number sentence using the math vocabulary of "plus" and "equals."
   6. Note: We did this activity using a Halloween theme. Look in the bibliography section for other books to do this activity at other times of the year. This activity can be used as a Center Activity once it has been introduced.
E. Evaluation: The student will
   1. add two groups of objects correctly.
   2. demonstrate understanding of the terms "plus" and "equals" by correctly doing the activity.
F. Standardized Test/State Test Connections:
   1. Add whole numbers and illustrate (OH 4th Grade Proficiency Math Outcome #8).

Lesson Eleven: Addition

A. Objectives/Goals: The student will
   1. add two sets of concrete objects.
   2. recognize the meaning of "plus" and "equals."
   3. illustrate an addition problem.
B. Materials
   1. Book Domino Addition by Lynette Long
   2. Set of real dominos
   3. Domino Addition paper - 1per child (Appendix G)
   4. Crayons, dot stickers, or markers
C. Key Vocabulary
   1. Number sentence
   2. Addition
   3. Plus

4. Equals

D. Procedures/Activities:
   1. Read Domino Addition and discuss the terms "number sentence," "plus," and "equals."
   2. In a large group, give each child a real domino. Have each child practice saying the number/addition sentence represented on the domino (number +number = number). The teacher writes the addition problem on the board to give visual reinforcement to the term "number sentence."
   3. Children work independently to create their own domino. Give each child a Domino Addition paper and crayons (stickers or white markers). Have them make dots on each side.
      Note: Children could be given a domino to recreate or have them make their own.
   4. Have children share their domino with the class by giving the number sentence.
   5. Center Activity: Place real dominos and domino addition papers in a center for independent work. Display finished papers or compile into a class book for students to look at throughout the year.
   6. Extension: Give children a graph with numbers 2-12 on it and two dice (see Appendix H). The children roll the dice, add up the numbers on them, and mark the answer in the appropriate box on the graph. Repeat at least ten times. Have the children tell you a fact about their results.

E. Evaluation: The student will
   1. add two sets of dots correctly.
   2. recognize and say the symbols "+" and "=" when reading a number sentence.
   3. illustrate correctly a number sentence using dots on a domino.

F. Standardized Test/State Test Connections:
   1. Represent operations using models, conventional symbols, and words (OH 4th Grade Proficiency Outcome #3).
   2. Add whole numbers and illustrate computation (OH 4th Grade Proficiency Outcome #8).

Lesson Twelve:Subtraction

A. Objectives/Goals: The student will
   1. subtract from twelve using concrete objects.
   2. recognize the symbol and meaning of "-" and "=."
   3. demonstrate the concept of taking away.

B. Materials
   1. Book Elevator Magic by Stuart Murphy
   2. Elevator game boards
   3. Game tokens (any manipulative)
   4. Dice

C. Key Vocabulary
   1. Number/ subtraction sentence
   2. Minus
   3. Take away

E. Procedures/Activities:
   1. Read Elevator Magic and discuss the concept of taking away. Review the terms "subtraction" and "minus."
   2. Demonstrate how to play the Elevator Game then let the children play in small groups. Roll 2 dice (you may want to use only 1 at the beginning), add them up, and move your token that many floors down from the 12th floor. Say the subtraction number sentence out loud using the terms "minus" and "equals."
   3. Extension: Give each child/group a chalkboard to write down his/her subtraction problem.

4. Center Activity: This can be left in a center for the children to visit throughout the year.

E. Evaluation: The student will
   1. subtract several numbers from 12 correctly.
   2. use the terms "minus" and "equals" when stating a subtraction number sentence.
   3. demonstrate taking a number away from 12 using manipulatives.

F. Standardized Test/State Test Connections:
   1. Illustrate why a solution is correct (OH 4th Grade Proficiency Outcome #5).
   2. Subtract whole numbers (OH 4th Grade Proficiency Outcome #8).

Lesson Thirteen: Time

A. Objectives/Goals: The student will
   1. sequence events.
   2. read a clock face.
   3. tell time to the hour.

B. Materials
   1. Book Nine O'Clock Lullaby by Marilyn Singer
   2. Small clocks with moveable hands - 1 per child
   3. Globe or world map
   4. Chart paper divided into thirds
   5. Time flipbooks (one per child) - Appendix I
   6. Pencils, crayons, or markers

C. Key Vocabulary
   1. Before and after
   2. Hands of a clock
   3. Face of a clock

D. Procedures/Activities:
   1. Read Nine O'Clock Lullaby pointing to the different places on the globe as you read about them. Have the children set a small clock to match the time being talked about in the book.
   2. Discuss how the time of day is different around the world, but the order of day to night is the same.
   3. Divide a piece of chart paper into three (3) sections and label "before lunch," "lunch, " and "after lunch."
   4. Write "12:00 - Noon" in the "lunch" column. Brainstorm and list things that happen in our day before lunch in the "before lunch" column. Next to each activity, write down the approximate time to the hour that it happens. Do the same with the "after lunch" section.
   5. Children make flipbooks by illustrating one thing that happens before lunch, at lunch, and after lunch. They write the approximate time of the activity on the line.
   6. Extension: Stamp a blank clock on top flap. Then have children draw the clock hands to correspond to the time given.

E. Evaluation: The student will
   1. illustrate a sequence of events before, during, and after a given time.
   2. illustrate the correct position of the hour and minute hands for a given time.

F. Standardized Test/State Test Connections:
   1. Using strategies to determine time (OH 4th Grade Proficiency Math Outcome #21).
   2. Analyze simple daily cycles (OH 4th Grade Proficiency Science Outcome #5).

Lesson Fourteen: Geometry (Day 1)

A. Objectives/Goals: The student will
   1. know terms of orientation.

2. identify basic plane figures.
3. identify basic shapes in a variety of common objects and artifacts.

B. Materials
1. Book Color Farm or Color Zoo by Lois Elhert
2. Stick-um shapes (stickers of different shapes and colors)
3. 3x5 index cards - 1 per child
4. Glue

C. Key Vocabulary
1. Names of basic shapes - circle, square, rectangle, and triangle
2. Names of other shapes in sticker collection (i.e. diamond, oval, etc.)
3. Orientation words (i.e. above, below, next to, etc.)

D. Procedures/Activities:
1. Read Color Farm and/or Color Zoo (they are short enough to read both).
2. Discuss the shapes used to create each of the animals. Use positional terms when describing the placement of the shapes.
3. Show the class the stickers. Hold up and identify all the shapes. Brainstorm what parts of the animal you could have the shape represent.
4. Give each child an index card, glue, and a container of stickers.
5. Children create an animal of choice using the stickers.
6. When done, the child describes his/her animal using shape names and positional words.

E. Evaluation: The student will
1. be able to name the shapes used in his/her animal creation.
2. describe how the animal is put together using positional words.

F. Standardized Test/State Test Connections:
1. Determine properties of two-dimensional figures and compare shapes according to their characterizing properties (OH 4th Grade Proficiency Math Outcome #14).

Lesson Fifteen: Geometry (Day 2)

A. Objectives/Goals: The student will
1. know and use terms of orientation and relative position.
2. identify basic plane figures.
3. recognize shapes as the same or different.
4. make congruent shapes and designs.

B. Materials
1. Student drafts of animals from Day 1.
2. Objects to use as patterns (various sizes for each shape)
3. Construction paper (9x12) - 1 per child
4. Glue
5. Crayons, pencils, and markers.

C. Key Vocabulary
1. Positional words, such as above, below, and next to
2. Basic shape names
3. Other shape names (diamond, oval, etc.)

D. Procedures/Activities:
1. Note: Model how to take the animal draft and recreate it larger before having the children attempt it.
2. Children identify the shapes they used in their draft on the day before and the relationship between the sizes of each shape (i.e. the body is bigger than the head).
3. Children enlarge their draft by tracing and cutting out a larger version of each shape. They may use the patterns provided by the teacher or find another object in the room that fits their need.

4. Have children lay out all the shapes to recreate the animal and check size relationships before gluing them down.
5. Have children present their animal to the class. They will describe the animal by naming the shape used for different body parts and also use positional words to describe their location.
6. Extension: The pictures and the child's description can be compiled into a classbook.

E. Evaluation: The student will
1. name the shapes used in his/her animal.
2. describe where each shape is located compared to the other shapes.
3. explain the similarities in the draft and final product.

F. Standardized Test/State Test Connections:
1. Determine properties of two-dimensional figures and compare shapes according to their characterizing properties (OH 4th Grade Proficiency Math Outcome #14).

VI. BIBLIOGRAPHY

Patterns and Classification

Patterns:

Benton, Linda. I See Patterns. CA: Creative Teaching Press, Inc., 1995, ISBN 0-916119-97-1.

Murphy, Stuart. A Pair of Socks. New York: Scholastic Inc., 1996, ISBN 0-590-06259-x.

Pluckrose, Henry. Pattern. Chicago: Childrens Press, 1995, ISBN 0-516-45455-2.

Williams, Rozanne. Mr. Noisy's Book of Patterns. CA: Creative Teaching Press, Inc., 1995, ISBN 0-916119-96-3.

Numbers and Number Sense

Comparing Sets:

Cristaldi, Kathryn. Even Steven and Odd Todd. New York: Scholastic Inc., 1996, ISBN 0-590-22715-7.

Giganti, Paul. How Many Snails? New York: The Trumpet Club, 1988, ISBN 0-440-84551-3.

Keenan, Sheila. More or Less a Mess. New York: Scholastic Inc., 1997, ISBN 0-590-60248-9.

Murphy, Stuart. Just Enough Carrots. New York: Scholastic Inc., 19997, ISBN 0-590-03146-5.

Schlein, Miriam. More Than One. New York: Scholastic Inc., 1996, ISBN 0-590-10734-8.

Williams, Rozanne. We Can Make Graphs. CA: Creative Teaching Press, 1995, ISBN 1-57471-000-1.

Counting and Number Recognition:

Anno, Mitsumasa. Anno's Counting Book. New York: Thomas Y. Crowell Co., ISBN 0-690 01287-x.

Carlstrom, Nancy. Let's Count It Out, Jesse Bear. New York: Scholastic Inc, 1996, ISBN 0-590 18369-9.

Chessen, B. and Chanko, P. Counting Penguins! New York: Scholastic Inc., 1998, ISBN 0-590 76154-4.

Clement, Rod. Counting on Frank. Milwaukee, WI: Gareth Stevens Publishing, 1991, ISBN 0-8368-0960-2.

Crews, Donald. Ten Black Dots. New York: Scholastic Inc., 1986, ISBN 0-590-46479-5.

Falwell, Cathryn. Feast for 10. New York: Scholastic Inc., 1993, ISBN 0-590-48466-4.

Fleming, Denise. Count! New York: Scholastic Inc., 1992, ISBN 0-590-46880-4.

Hutchings, Richard. The Gummy Candy Counting Book. New York: Scholastic Inc., 1997, ISBN 0-590-34127-8.

Jabar, Cynthia. How Many How Many How Many. Mass: Candlewick Press, 1993, ISBN 1-56402 062-2.

McGrath, Barbara B. The Cheerios Counting Book. New York: Scholastic Inc., 1998, ISBN 0-590-68357-8.
McGrath, Barbara B. The M&M's Counting Book. Watertown, MA: Charlesbridge Publishing, 1994, ISBN 0-88106-853-5.
Pluckrose, Henry. Counting. Chicago: Children's Press, 1995, ISBN0-516-45452-8.
Pluckrose, Henry. Numbers. Chicago: Children's Press, 1995, ISBN 0-516-45454-4.
Ryan, P. and Pallotta, J. The Crayon Counting Book. Watertown, MA: Charlesbridge Publishing, 1996, ISBN 0-88106-953-1.
Sheppard, Jeff. The Right Number of Elephants. New York: Scholastic Inc., 1990, ISBN0-590-44839-0.
Wallwork, Amanda. No Dodos: A Counting Book of Endangered Animals. New York: Scholastic, 1993, ISBN 0-590-48274-2.
Walsh, E. S. Mouse Count. New York: Bantam Doubleday Dell Publishing, 1991, ISBN 0-440-83386-8.
Williams, Rozanne. A-Counting We Will Go. CA: Creative Teaching Press, Inc., 1995, ISBN 0-916119-93-9.

Counting Down:

Christelow, Eileen. Five Little Monkeys Jumping on the Bed. New York: The Trumpet Club, 1989, ISBN 0-440-84501-7.
Christelow, Eileen. Five Little Monkeys Sitting in a Tree. New York: The Trumpet Club, 1991, ISBN 0-440-83114-8.
Maccarone, Grace. Monster Math. New York: Scholastic Inc., 1995, ISBN 0-590-22712-2.
Williams, Rozanne. Five Little Monsters. CA: Creative Teaching Press, 1995, ISBN 0-916119-89-0.
Williams, Rozanne. Ten Monsters in a Bed. CA: Creative Teaching Press, 1995, ISBN 0-916119-90-4.
Williams, Rozanne. Who Took the Cookies from the Cookie Jar? CA: Creative Teaching Press, 1995, ISBN 0-916119-87-4.
Wise, William. Ten Sly Piranhas. New York: Scholastic Inc., 1993, ISBN 0-590-48123-1.

Counting by 2, 5, and 10:

Friedman, Aileen. The King's Commissioners. New York: Scholastic Inc., 1994, ISBN0-590-48990-9.
Pinczes, Elinor. A Remainder of One. New York: Scholastic Inc., 1995, ISBN 0-590-76971-5.
Pinczes, Elinor. Arctic Fives Arrive. New York: Scholastic Inc., 1996, ISBN 0-590-76973-1.
Pinczes, Elinor. One Hundred Hungry Ants. New York: Houghton Mifflin, 1993, ISBN 0-395-63116-5.
Williams, Rozanne. The Skip Count Song. CA: Creative Teaching Press, 1995, ISBN 0-916119-99-8.

Fractions*:*

Adler, David. Fraction Fun. New York: Holiday House, 1996, ISBN 0-8234-1341-1.
Leedy Loreen. Fraction Action. New York: The Trumpet Club, 1994, ISBN 0-440-83436-8.
McMillan, Bruce. Eating Fractions. New York: Scholastic Inc., 1991, ISBN 0-590-43771-2.
Murphy, Stuart. Give Me Half. New York: Scholastic Inc., 1996. ISBN 0-590-13691-7.
Pallotta, Jerry. The Hershey's Fractions Book. New York: Scholastic Inc., 1999, ISBN 0-439-13519-2.
Williams, Rozanne. Lunch with Cat and Dog. Chicago: Creative Teaching Press, Inc., 1995, ISBN 0-916119-92-0.

Money:

Axelrod, Amy. Pigs Will Be Pigs. New York: Bantam Doubleday Dell Publishing, 1994, ISBN 0 440-83428-7.

Barabas, Kathy. Let's Find Out About Money. New York: Scholastic Inc., 1997, ISBN 0-590-73803 8.

Hoban, Tana. 26 letters and 99 cents. New York: Scholastic Inc., 1987, ISBN 0-590-41831-9.

McMillan, Bruce. Jelly Beans For Sale. New York: Scholastic Inc., 1998, ISBN 0-590-86596-x.

Nagel, Karen. The Lunch Line. New York: Scholastic Inc., 1996, ISBN 0-590-60246-2.

Voirst, Judith. Alexander, Who Used to Be Rich Last Sunday. New York: Scholastic Inc., 1978, ISBN 0-590-46896-0.

Williams, Rozanne. The Magic Money Box. CA: Creative Teaching Press, Inc., 1995, ISBN 1-57471-009-5.

Williams, Vera B. A Chair For My Mother. New York: Scholastic Inc., 1982, ISBN 0-590-33155-8.

Computation:

Elhert, Lois. Fish Eyes: A Book You Can Count On. New York: The Trumpet Club, 1990, ISBN 0-440-84647-1.

Long, Lynette. Domino Addition. New York: Scholastic Inc., 1996, ISBN 0-590-33027-6.

McCourt, Lisa. Candy Counting: delicious ways to add and subtract. BridgeWater Books, 1999, ISBN 0-8167-6330-5.

Merriam, Eve. 12 Ways to Get to 11. New York: Bantam Doubleday Dell Publishing Group, Inc., 1993, ISBN 0-440-83115-6.

Murphy, Stuart. Elevator Magic. New York: Scholastic Inc., 1997, ISBN0-590-51235-8.

Murphy, Stuart. Ready, Set, Hop! New York: Scholastic Inc., 1996, ISBN 0-590-02976-2.

Williams, Rozanne. Little Number Stories: Addition. Chicago: Creative Teaching Press, Inc., 1995, ISBN 1-57471-007-9.

Williams, Rozanne. Little Number Stories: Subtraction. Chicago: Creative Teaching Press, Inc., 1995, ISBN 1-57471-008-7.

Ziefert, Harriet. Two Little Witches. New York: Scholastic Inc., 1996, ISBN 0-439-08725-2.

Measurement:

Barner, Bob. How to Weigh an Elephant. New York: Bantam Doubleday Dell, 1995, ISBN 0-553-37569-5.

Connelly, Luella. Let's Measure It. CA: Creative Teaching Press, Inc., 1995, ISBN 1-57471-006-0.

Lionni, Leo. Inch by Inch. New York: Scholastic Inc., 1960, ISBN 0-590-47991-1.

Myller, Rolf. How Big Is A Foot? New York: Dell Publishing, 1990, ISBN 0-440-40495-9.

Pluckrose, Henry. Length. Chicago: Childrens Press, 1995, ISBN 0-516-45453-6.

Time:

Axelrod, Amy. Pigs on a Blanket. New York: Scholastic Inc., 1996, ISBN 0-590-33905-2.

Carle, Eric. The Grouchy Ladybug. New York: Scholastic Inc., 1977, ISBN 0-590-31227-8.

Creighton, J. and Pariseau, P. 8 O'Cluck. New York: Scholastic Inc., 1995, ISBN 0-590-93568-2.

Hutchins, Pat. Clocks and More Clocks. New York: Scholastic Inc., 1970, ISBN 0-590-22728-9.

Keenan, Sheila. What Time Is It? New York: Scholastic Inc., 1999, ISBN 0-590-12008-5.

Muller, Robin. Hickory Dickory Dock. New York: Scholastic Inc., 1992, ISBN 0-590-47279-8.

Murphy, Stuart. Get Up and Go! New York: Scholastic Inc., 1996, ISBN 0-590-23811-6.

Pluckrose, Henry. Time. Chicago: Childrens Press, 1995, ISBN 0-516-45459-5.

Singer, Marilyn. Nine O'Clock Lullaby. New York: Scholastic Inc., 1991, ISBN 0-590-47185-6.

Slater, Teddy. Just A Minute. New York: Scholastic, Inc., 1996, ISBN 0-590-54082-3.

Williams, Rozanne L. The Time Song. CA: Creative Teaching Press, Inc., 1995,, ISBN 1-57471-004-4.
Williams, Rozanne L. What Time Is It? CA: Creative Teaching Press, Inc., 1995, ISBN 0-916119-98-x.

Geometry

Shapes:

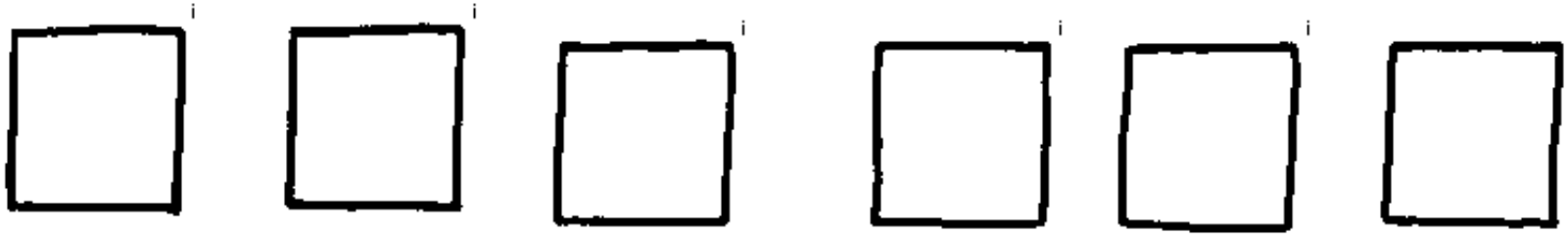
Dodds, Dayle. The Shape of Things. MASS: Candlewick Press, 1994, ISBN 1-56402-224-2.
Elhert, Lois. Color Farm. New York: Harper Collins Publishers, 1990, ISBN0-440-84709-5.
Elhert, Lois. Color Zoo. New York: The Trumpet Club, 1989, ISBN 0-440-84259-x.
Fries, Marcia. I See Shapes. CA: Creative Teaching Press, Inc., 1995, ISBN 0-916119-86-6.
Murphy, Chuck. My First Book of Shapes. New York: Scholastic Inc., 1992, ISBN 0-590-46303-9.
Pluckrose, Henry. Shape. Chicago: Childrens Press, 1995, ISBN0-516-45456-0.

Other:

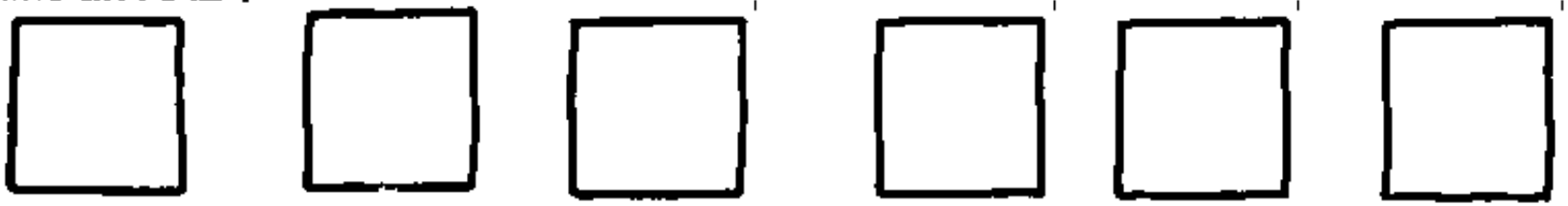
Crimi, Carolyn. Outside, Inside. New York: Scholastic Inc., 1995, ISBN 0-590-86881-0.
Rehm, K. and Koike, K. Left or Right? New York: Scholastic Inc., 1993, ISBN 0-590-46007-2.

Appendix A

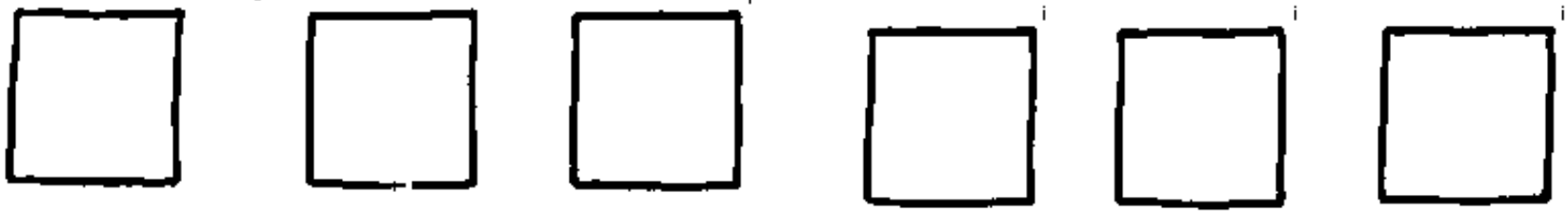
Make an AB pattern.

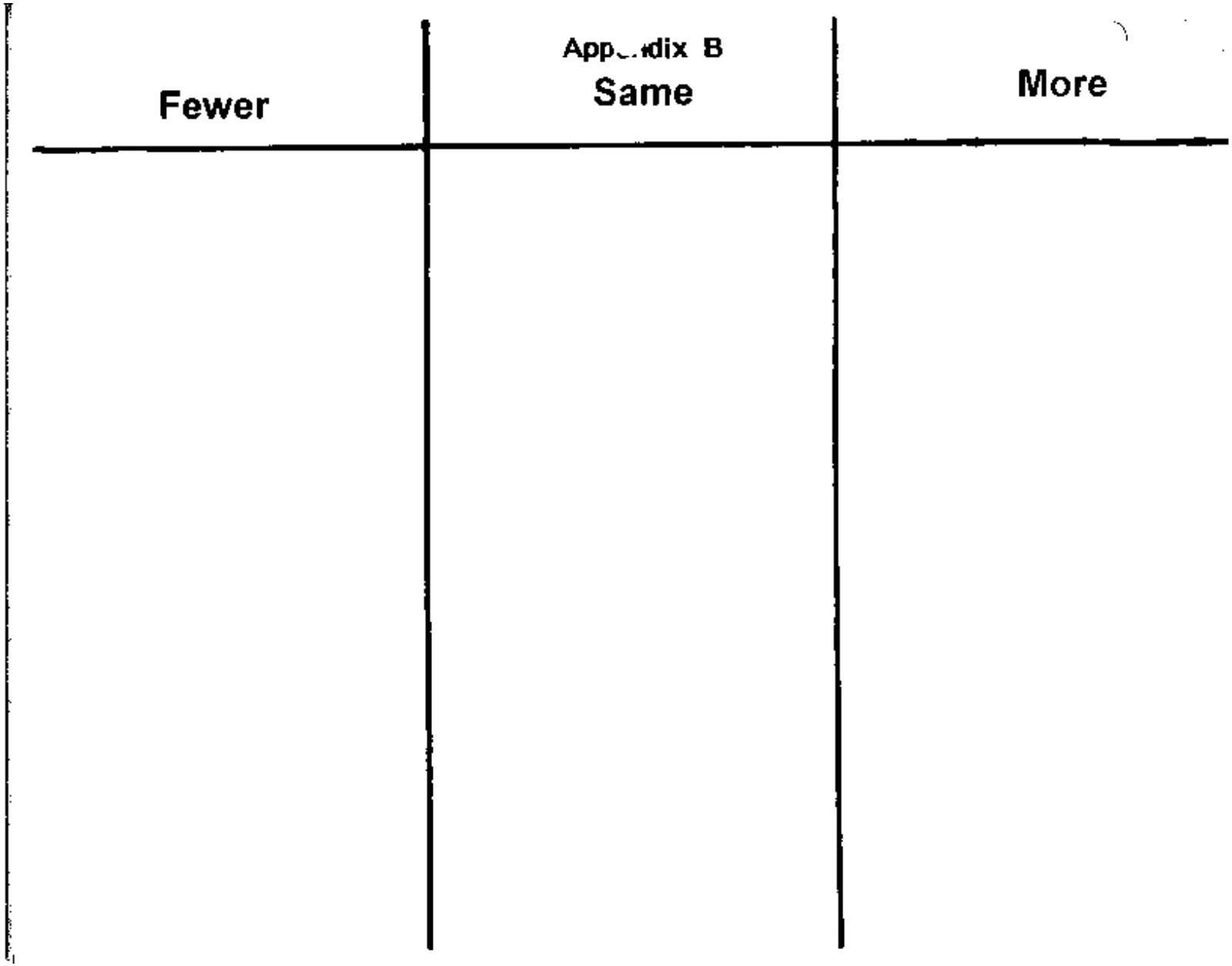


Make an AAB pattern.



Make an ABC pattern.




Fewer
Same
More

Appendix C

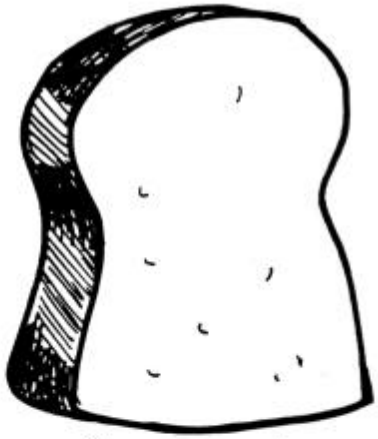
Mrs. Flynn s Lunch Special

2¢

1¢

3¢

spaghetti



bread

1¢

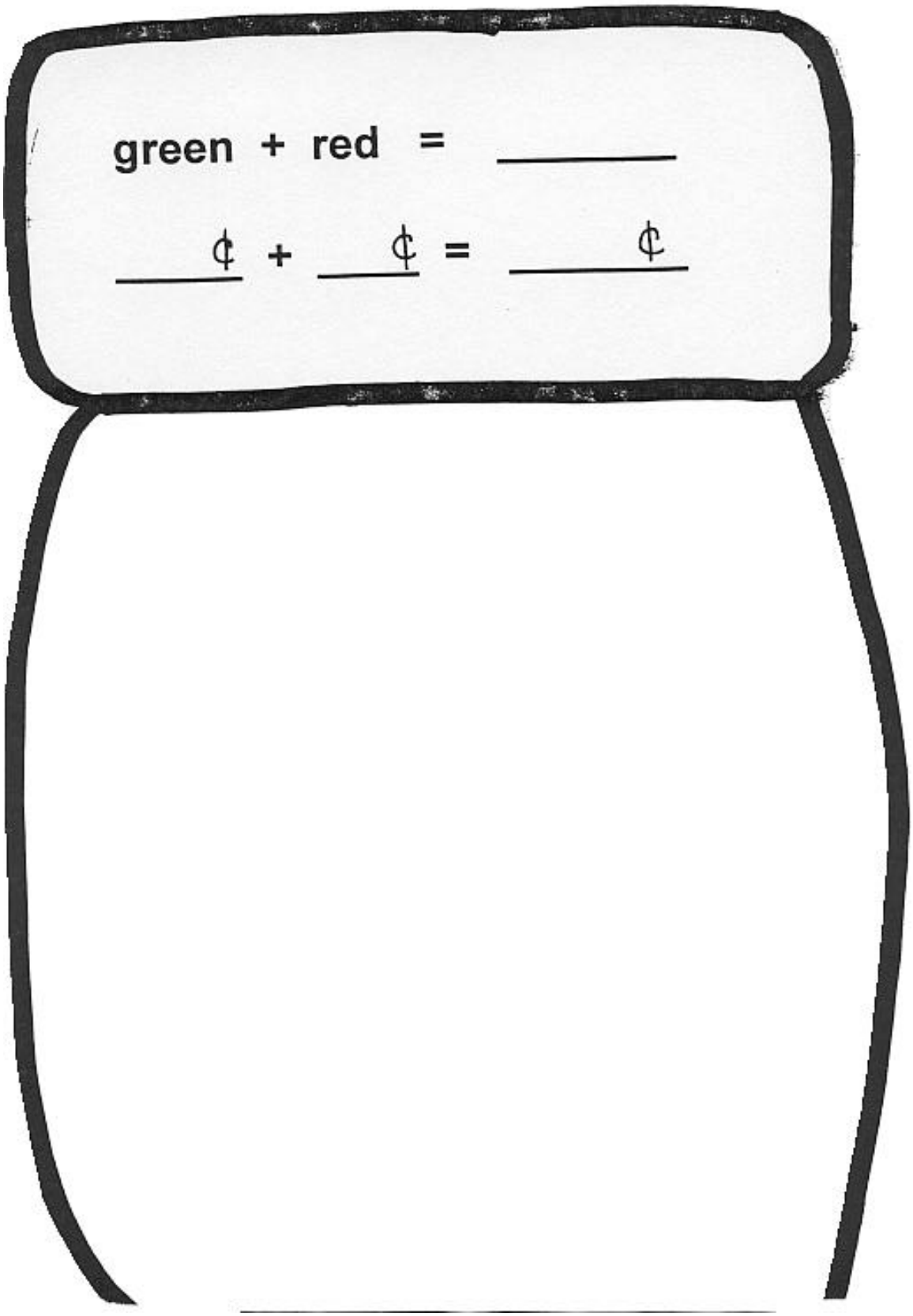
Total _____

Appendix D

Jelly Bean Math

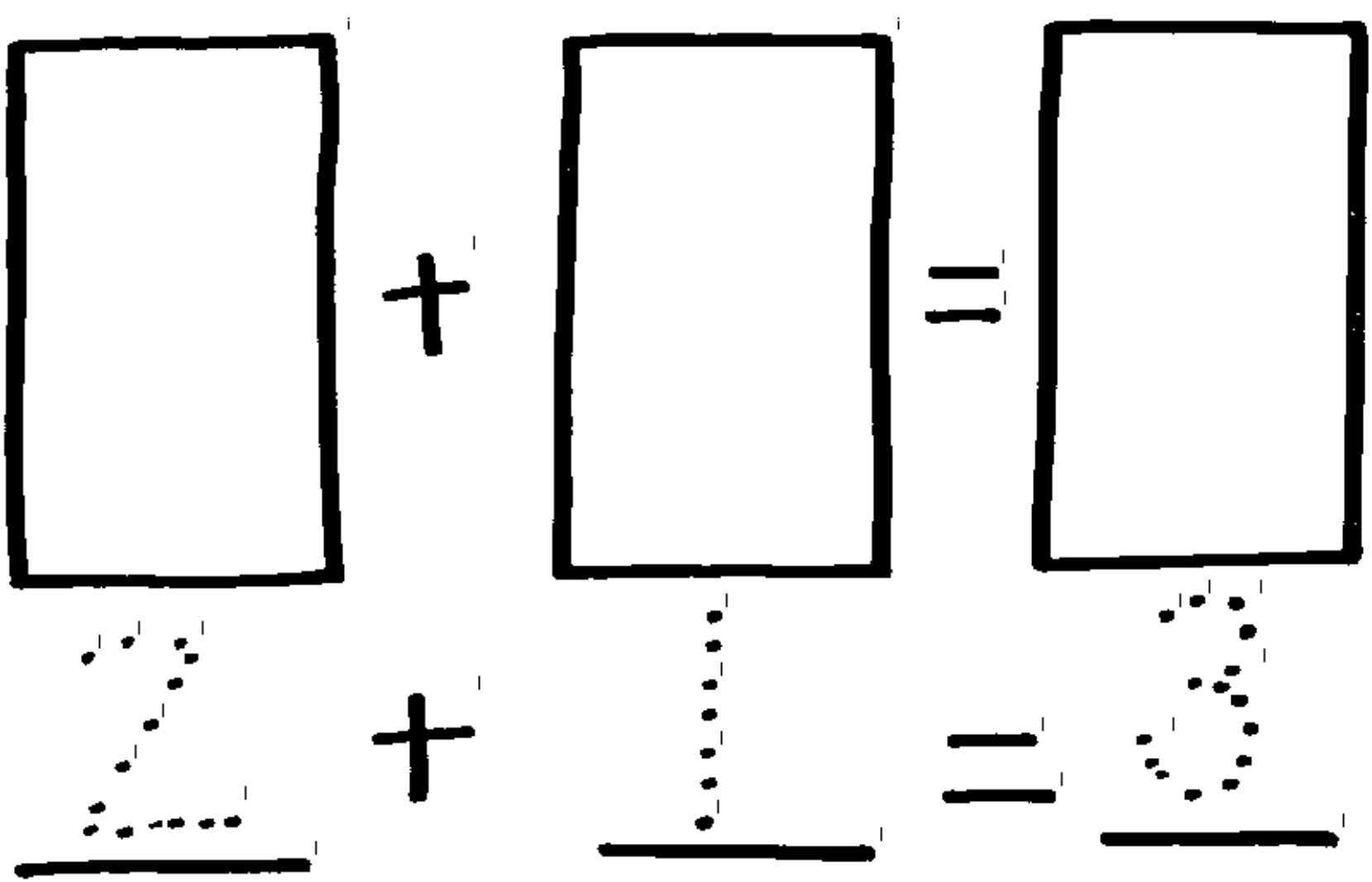
red	orange	yellow	green	purple	pink	white	black

Appendix E

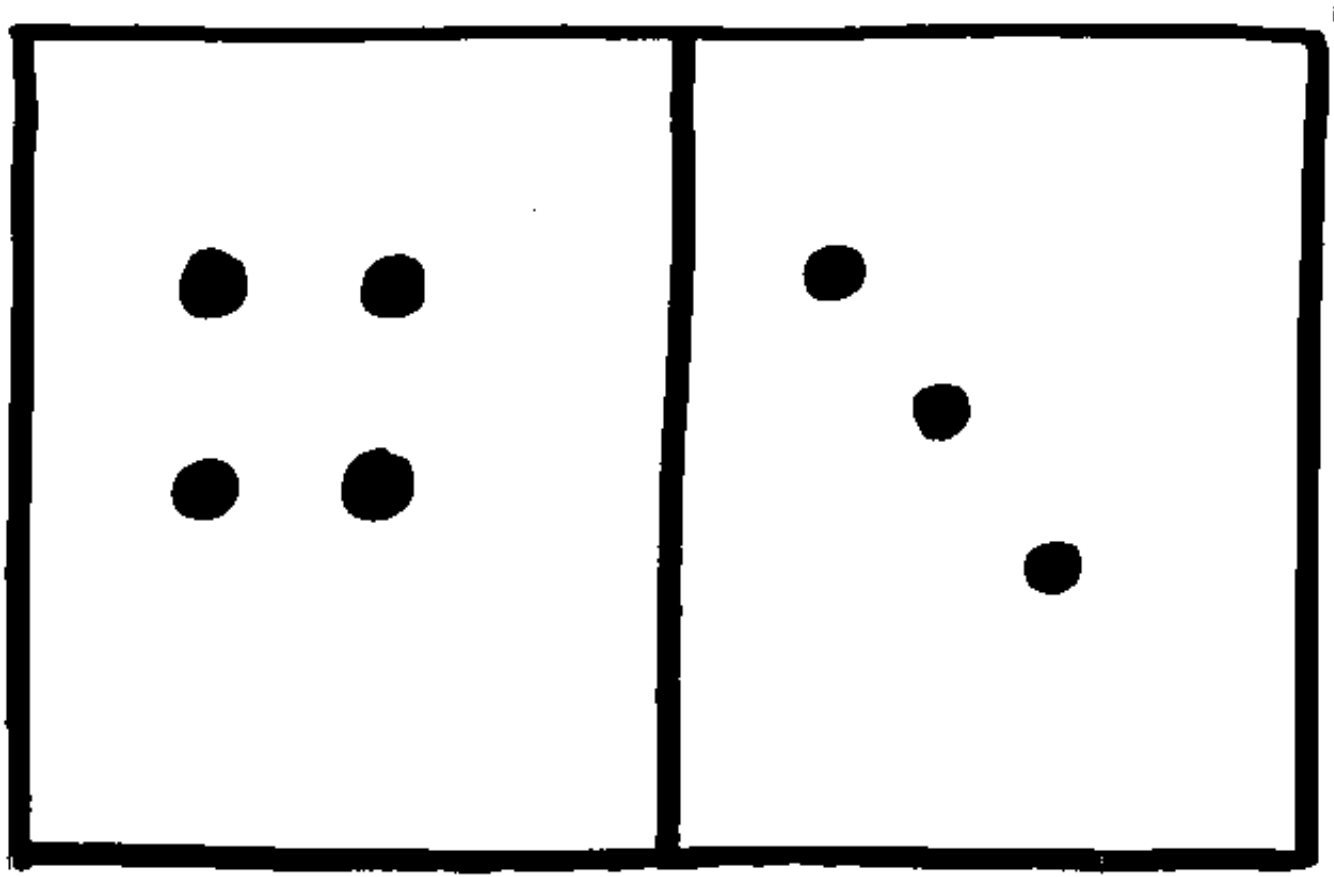


Appendix F

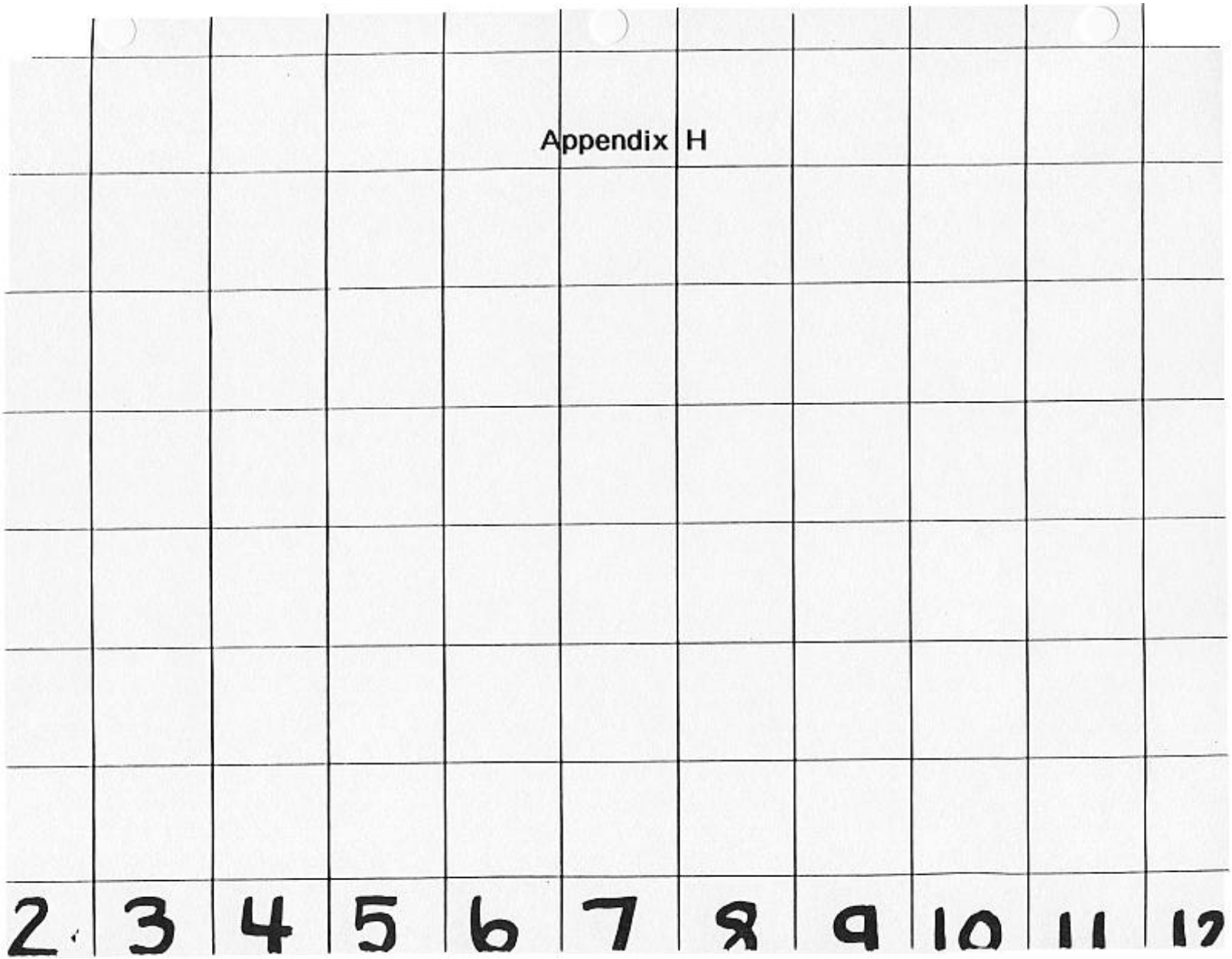
ADDITION SENTENCE



Appendix G
DOMINO ADDITION



4 + 3 = 7


Appendix H
2
3
4
5
6
7
8
9
10
11
12

Appendix