ELEMENTARY
CORE Academy
UTAH STATE OFFICE OF EDUCATION & UTAH STATE UNIVERSITY

Participant Handbook

ELEMENTARY CORE ACADEMY · ELEMENTARY CORE ACADEMY · ELEMENTARY CORE ACADEMY · ELEM

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2006

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Acknowledgements

UTAH STATE OFFICE OF EDUCATION
Leadership...Service...Accountability

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Dear CORE Academy Teachers:

Thank you for your investment in children and in building your own expertise as you participate in the Elementary CORE Academy. I hope your involvement helps you to sustain a laser-like focus on student achievement.

Teachers in Utah are superb. By participating in the Academy, you join a host of teachers throughout the state who understand that teaching targeted on the core curricula, across a spectrum of subjects, will produce results of excellence. The research is quite clear–the closer the match of explicit instruction to core standards, the better the outcome on core assessments.

I personally appreciate your excellence and your desire to create wonderful classrooms of learning for students. Thank you for your dedication. I feel honored to associate with you and pledge my support to lead education in ways that benefit all of our children.

Sincerely,

Patti Harrington, Ed.D.
State Superintendent of Public Instruction

Funding Sources

Appreciation is expressed for the tremendous educational input and monetary commitment of several organizations for the successful delivery of the Elementary CORE Academy. This year's Elementary CORE Academy was developed and funded through a variety of sources. The Utah State Office of Education (USOE), in collaboration with Utah State University (USU) and local school districts of Utah, have supported kindergarten through sixth grade teachers with professional development experiences that will enhance the educational experience for Utah children.

Major funding for the Academy comes from the following sources:

Federal/State Funds:

Utah State Office of Education
    Staff Development Funds
    Special Education Services Unit

ESEA Title II

Utah Math Science Partnership

WestED Eisenhower Regional Consortium

District Funds:

Various sources including Quality Teacher Block, Federal ESEA Title II, and District Professional Development Funds

School Funds:

Trust land, ESEA Title II, and other school funds
Utah State Office of Education Special Education Services

The state and district funds are allocations from the state legislature. ESEA is part of the "No Child Left Behind" funding that comes to Utah.

Additionally, numerous school districts, individual schools, and principals in Utah have sponsored teachers to attend the Academy. Other educational groups such as the Utah Division of Water Resources, National Energy Foundation, Utah Energy Office, and the Utah Mining Association have assisted in the development and delivery of resources in the Academy.

Most important is the thousands of teachers who take time from their summer to attend these professional development workshops. It is these teachers who make this program possible.

Goals of the Elementary CORE Academy

Overall

The purpose of the Elementary CORE Academy is to create high quality teacher instruction and improve student achievement through the delivery of professional development opportunities and experiences for teachers across Utah.

The Academy will provide elementary teachers in Utah with:

1. Models of exemplary and innovative instructional strategies, tools, and resources to meet the Core Curriculum standards, objectives, and indicators.

2. Practical models and diverse methods of meeting the learning needs of all children, with instruction implementation aligned to the Core Curriculum.

3. Meaningful opportunities for collaboration, self-reflection, and peer discussion specific to innovative and effective instructional techniques, materials, teaching strategies, and professional practices in order to improve classroom instruction.

Learning a limited set of facts will no longer prepare a student for real experiences encountered in today's world. It is imperative that educators have continued opportunities to obtain instructional skills and strategies that provide methods of meeting the needs of all students. Participants of the Academy experience will be better equipped to meet the challenges faced in today's classrooms.

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Second Grade
Core Curriculum

K-2 Core Curriculum

Introduction

Most students enter school confident in their own abilities; they are curious and eager to learn more. They make sense of the world by reasoning and problem solving. Young students are active, resourceful individuals who construct, modify, and integrate ideas by interacting with the physical world as well as with peers and adults. They learn by doing, collaborating, and sharing their ideas. Students' abilities to communicate through language, pictures, sound, movement, and other symbolic means develop rapidly during these years.

Literacy requires an understanding of listening, speaking, reading, writing, and viewing in many forms including print and electronic images. Today, more than ever, students must have the ability to think critically while applying new information to existing knowledge. Therefore, school literacy programs need to involve students in learning to read and write in situations that foster critical thinking and the use of literacy for independent learning in all content areas.

Young students are building beliefs about what mathematics is, about what it means to know and do mathematics, and about themselves as mathematical learners. Mathematics instruction needs to include more than short-term learning of rote procedures. Students must use technology and other mathematical tools, such as manipulative materials, to develop conceptual understanding and solve problems as they do mathematics. Students, as mathematicians, learn best with hands-on, active experiences throughout the instruction of the mathematics curriculum.

Language Arts and Mathematics are the tools for doing work in other areas. These content areas need to be integrated into other curriculum areas to provide students with optimal learning. The curriculum becomes more relevant when content areas are connected rather than taught in strict isolation. For this reason, the content areas of the Fine Arts, Health Education, Physical Education, Science, and Social Studies have been combined to enable teachers to teach more efficiently and students to learn in a real-life context that enhances lifelong learning.

The Kindergarten through Second Grade Core describes what students should know and be able to do at the end of each of the kindergarten, first, and second grade levels. It has been developed, critiqued, and revised by a community of Utah teachers, university

- Young children learn by doing, collaborating, and sharing their ideas.

educators, State Office of Education specialist, and an advisory committee representing a wide variety of people from the community. The Core reflects the current philosophy of education that is expressed in national documents developed by the International Reading Association, National Council of the Teachers of Mathematics, National Standards for Arts Education, Information Power, National Association for Sport and Physical Education, American Association for the Advancement of Science, National Council for the Social Studies, International Society for Technology and Education, and Early Childhood Standards.

Organization of the
K-2 Core:

- Intended Learning Outcomes

- Standard

- Objective

- Indicator

Organization of the K-2 Core

The Core is designed to help teachers organize and deliver instruction.

- Each grade level begins with a brief course description.

- The Kindergarten, First, and Second Grade INTENDED LEARNING OUTCOMES describe the goals for students to gain knowledge and understand their world. They are found at the beginning of each grade level, are an integral part of the Core, and should be included as part of instruction.

- The first Core area consists of the Language Arts curriculum.

- The second Core area consists of the Mathematics curriculum.

- The third Core area consists of the subject areas of the Fine Arts, Health Education, Physical Education, Science, and Social Studies.

- A STANDARD is a broad statement of what students are expected to understand. Several Objectives are listed under each Standard.

- An OBJECTIVE is a more focused description of what students need to know and be able to do at the completion of instruction. If students have mastered the Objectives associated with a given Standard, they have mastered that Standard at that grade level. Several Indicators are described for each Objective.

- An INDICATOR is a measurable or observable student action that enables one to assess whether a student has mastered a particular Objective. Indicators are not meant to be classroom activities, but they can help guide classroom instruction.

Guidelines Used in Developing the K-2 Core

The Core is:

Consistent With the Nature of Learning

The main intent in the early grades is for students to value learning and develop the skills to gain knowledge and understand their world. The Core is designed to produce an integrated set of Kindergarten, First, and Second Grade Intended Learning Outcomes for students, with specific goals in all content areas.

- By emphasizing depth rather than breadth, the Core seeks to empower students.

Coherent

The Core has been designed so that, wherever possible, the ideas taught within a particular grade level have a logical and natural connection with each other and with those of earlier grades. Efforts have also been made to select topics and skills that integrate well with one another appropriate to grade level. In addition, there is an upward articulation of concepts, skills, and content. This spiraling is intended to prepare students to understand and use more complex concepts and skills as they advance through the learning process.

Developmentally Appropriate

The Core takes into account the psychological and social readiness of students. It builds from concrete experiences to more abstract understandings. The Core focuses on providing experiences with concepts that students can explore and understand in depth to build the foundation for future learning experiences.

Reflective of Successful Teaching Practices

Learning through play, movement, and adventure is critical to the early development of the mind and body. The Core emphasizes student exploration. The Kindergarten, First, and Second Grade Intended Learning Outcomes are central in each standard. The Core is designed to encourage instruction with students working in cooperative groups. Instruction should recognize the importance of each Core area in the classroom, school, and community.

Comprehensive

The Kindergarten, First, and Second Grade Core does not cover all topics that have traditionally been in the Kindergarten, First, and Second Grade curriculum; however, it provides a basic foundation of knowledge and skills in all content areas. By emphasizing depth

rather than breadth, the Core seeks to empower students rather than intimidate them with a collection of isolated and eminently forgettable facts. Teachers are free to add related concepts and skills, but they are expected to teach all the standards and objectives specified in the Core for their grade level.

Feasible

Teachers and others who are familiar with Utah students, classrooms, teachers, and schools have designed the Core. It can be taught with easily obtained resources and materials. A Teacher Handbook is also available for teachers and has sample lessons on each topic for each grade level. The Teacher Handbook is a document that will grow as teachers add exemplary lessons aligned with the new Core.

Useful and Relevant

This curriculum relates directly to student needs and interests. Relevance of content areas to other endeavors enables students to transfer skills gained from one area of instruction into their other school subjects and into their lives outside the classroom.

Reliant Upon Effective Assessment Practices

Student achievement of the standards and objectives in this Core is best assessed using a variety of assessment instruments. Performance tests are particularly appropriate to evaluate student mastery of thinking processes and problem-solving skills. A variety of classroom assessment approaches should be used by teachers in conjunction with the Criterion Referenced Tests (CRT) that are administered to first and second grade students in Language Arts and Mathematics, and with the pre- and post-tests administered in kindergarten. Observation of students engaged in instructional activities is highly recommended as a way to assess students' skills as well as attitudes toward learning. The nature of the questions posed by students provides important evidence of their understanding.

Engaging

In the early grades, children are forming attitudes and habits for learning. It is important that instruction maximizes students' potential and gives them understanding of the intertwined nature of learning. Effective elementary instruction engages students actively in enjoyable learning experiences. Instruction should be as thrilling an experience for a child as seeing a rainbow, growing a flower, or describing a toad. In a world of rapidly expanding knowledge and technology, all students must gain the skills they will need to understand and function responsibly and successfully in the world. The Core provides skills in a context that enables students to experience the joy of learning.

The Second Grade Core Curriculum

Second grade core concepts should be integrated across all curriculum areas. Reading, writing, and mathematical skills should be emphasized as integral to the instruction in all other areas. Personal relevance of content is always an important part of helping students to value learning and should be emphasized.

In second grade, students are immersed in a literature-rich environment, filled with classical and contemporary fiction and nonfiction selections, which relate to all areas of learning and interest. Students listen and speak effectively in classroom discussions. They continue to work on fluency and expression and use a combination of strategies for reading and comprehension.

- Reading, writing, and mathematical skills should be emphasized as integral to the instruction in all other areas.

Second graders extend their study of number and spatial sense to include three-digit numbers and three-dimensional figures. They make measurements and collect, organize, and display data. They use graphs to answer questions and make summary statements and predictions based on their experiences. While learning mathematics, students will be actively engaged in using concrete materials and appropriate technologies such as calculators and computers.

In second grade, students learn about their relationship to the classroom, school, family, and community. Students develop the skills of questioning, gathering information, constructing explanations, and drawing conclusions. They learn basic body control while developing motor skills and moving in a variety of settings. Students become aware of strength, endurance, and flexibility in different parts of their bodies. They express thoughts and ideas creatively, while challenging their imagination, fostering reflective thinking, and developing disciplined effort and problem-solving skills.

K-2 Intended Learning Outcomes

- Intended learning outcomes provide a direction for general classroom instruction, management, culture, environment, and inclusion.

The main intent at the early grades is for students to value learning and develop the skills to gain knowledge and understand their world.

The Intended Learning Outcomes described below reflect the belief that kindergarten, first, and second grade education should address the intellectual, social, emotional, physical, and ethical development of children. While the Kindergarten, First, and Second Grade Core Curriculum focuses primarily on content and the intellectual development of children, it is important to create a classroom culture that fosters development of many aspects of a person. By nurturing development in these interrelated human domains, young people will be healthy and discover varied and exciting talents and dreams. They will be socially and civically competent and able to express themselves effectively.

The outcomes identified below are to provide a direction for general classroom instruction, management, culture, environment, and inclusion. These outcomes should be interwoven throughout the Kindergarten, First, and Second Grade Core Curriculum, which offers more specific and measurable standards for instruction.

Beginning in kindergarten and by the end of second grade students will be able to:

1. **Demonstrate a positive learning attitude.**
   a. Display a sense of curiosity.
   b. Practice personal responsibility for learning.
   c. Demonstrate persistence in completing tasks.
   d. Apply prior knowledge and processes to construct new knowledge.
   e. Voluntarily use a variety of resources to investigate topics of interest.

2. **Develop social skills and ethical responsibility.**
   a. Respect similarities and differences in others.
   b. Treat others with kindness and fairness.
   c. Follow classroom and school rules.
   d. Include others in learning and play activities.
   e. Participate with others when making decisions and solving problems.
   f. Function positively as a member of a family, class, school, and community.

3. **Demonstrate responsible emotional and cognitive behaviors.**
    a. Recognize own values, talents, and skills.
    b. Express self in positive ways.
    c. Demonstrate aesthetic awareness.
    d. Demonstrate appropriate behavior.
    e. Express feelings appropriately.
    f. Meet and respect needs of self and others.

4. **Develop physical skills and personal hygiene.**
    a. Respect physical similarities and differences in self and others.
    b. Learn proper care of the body for health and fitness.
    c. Develop knowledge that enhances participation in physical activities.
    d. Display persistence in learning motor skills and developing fitness.
    e. Use physical activity for self-expression.

5. **Understand and use basic concepts and skills.**
    a. Develop phonological and phonemic awareness.
    b. Decode, read, and comprehend written text and symbols.
    c. Develop vocabulary.
    d. Develop reasoning and sequencing skills.
    e. Demonstrate problem-solving skills.
    f. Observe, sort, and classify objects.
    g. Make and interpret representations, graphs, and models.
    h. Recognize how content ideas interconnect.
    i. Make connections from content areas to application in real life.

6. **Communicate clearly in oral, artistic, written, and nonverbal form.**
    a. Share ideas using communication skills.
    b. Predict an event or outcome based on evidence.
    c. Use appropriate language to describe events, objects, people, ideas, and emotions.
    d. Listen attentively and respond to communication.
    e. Use mathematical concepts to communicate ideas.
    f. Use visual art, dance, drama, and music to communicate.

Second Grade Language Arts Core Curriculum

Standard I:
  Oral Language—
  Students develop
  language for the
  purpose of effectively
  communicating
  through listening,
  speaking, viewing,
  and presenting.

Standard I: **Oral Language—Students develop language for the purpose of effectively communicating through listening, speaking, viewing, and presenting.**

Objective 1: Develop language through listening and speaking. Identify specific purpose(s) for listening (e.g., to gain information, to be entertained).

  a. Listen and demonstrate understanding by responding appropriately (e.g., follow multiple-step directions, restate, clarify, question, summarize).

  b. Speak clearly and audibly with expression in communicating ideas.

  c. Speak in complete sentences with appropriate subject-verb agreement.

Objective 2: Develop language through viewing media and presenting.

  a. Identify specific purpose(s) for viewing media (i.e., to identify main idea and details, to gain information, distinguish between fiction/nonfiction).

  b. Use a variety of formats (e.g., drama, sharing of books and personal writings, choral readings, informational reports, retelling experiences, and stories in sequence) in presenting with various forms of media (e.g., pictures, posters, charts, ads, newspapers).

Standard II: **Concepts of Print—Students develop an understanding of how printed language works.**

Objective 1: Demonstrate an understanding that print carries "the" message.

    a. Recognize that print carries different messages.

    b. Identify messages in common environmental print (e.g., signs, boxes, wrappers).

Objective 2: Demonstrate knowledge of elements of print within a text.

    a. Discriminate between letters, words, and sentences in text.

    b. Match oral words to printed words while reading.

    c. Identify punctuation in text (i.e., periods, question marks, and exclamation points).

Standard II:
    Concepts of Print—Students develop an understanding of how printed language works.

Standard III:
Phonological and
Phonemic
Awareness—
Students develop
phonological
and phonemic
awareness.

Standard III: Phonological and Phonemic Awareness—Students develop phonological and phonemic awareness.

Objective 1:   Demonstrate phonological awareness.

   a. Count the number of syllables in words.

   b. Count the number of syllables in a first name.

Objective 2:   Recognize like and unlike word parts (oddity tasks).

   a. Identify words with same beginning consonant sounds (e.g., man, sat, sick) and ending consonant sounds (e.g., man, sat, ten) in a series of words.

   b. Identify words with same medial sounds in a series of words (e.g., long vowel sound: take, late, feet; short vowel sound: top, cat, pan; middle consonant sound: kitten, missing, lesson).

Objective 3:   Orally blend word parts (blending).

   a. Blend syllables to make words (e.g., /ta/…/ble/, table).

   b. Blend onset and rime to make words (e.g., /p/…/an/, pan).

   c. Blend individual phonemes to make words (e.g., /s/   /a/   /t/, sat).

Objective 4:   Orally segment words into word parts (segmenting).

   a. Segment words into syllables (e.g., table, /ta/…/ble/).

   b. Segment words into onset and rime (e.g., pan, /p/…/an/).

   c. Segment words into individual phonemes (e.g., sat, /s/…/a/…/t/).

Objective 5:   Orally manipulate phonemes in words and syllables (manipulation).

   a. Substitute initial and final sound (e.g., replace first sound in mat to /s/, say sat; replace last sound in mat with /p/, say map).

   b. Substitute vowel in words (e.g., replace middle sound in map to /o/, say mop).

   c. Delete syllable in words (e.g., say baker without the /ba/, say ker).

   d. Deletes initial and final sounds in words (e.g., say sun without the /s/, say un; say hit without the /t/, say hi).

   e. Delete initial phoneme and final phoneme in blends (e.g., say step without the /s/, say tep; say best without the /t/, say bes).

Standard IV: **Phonics and Spelling—Students use phonics and other strategies to decode and spell unfamiliar words while reading and writing.**

Objective 1: Demonstrate an understanding of the relationship between letters and sounds.

   a. Identify and pronounce all vowel diphthongs (e.g., oi, oy, aw, au) and consonant digraphs (e.g., ch, sh, th, wh) accurately in words.

   b. Identify and pronounce sounds for short and long vowels, using patterns (e.g., cvc, cvvc, cvcv, cvc-silent e), and vowel digraphs (e.g., ea, ee, ie, oa, ai, ay, oo, ow) accurately in two-syllable words.

   c. Identify and pronounce r-controlled vowel patterns in words (e.g., ar, or, er).

   d. Identify and blend letter sounds to pronounce words.

Objective 2: Use knowledge of structural analysis to decode words.

   a. Identify and read grade level contractions and compound words.

   b. Identify sound patterns and apply knowledge to decode words (e.g., blends, digraphs, vowel patterns, r-controlled vowels).

   c. Demonstrate an understanding of representing the same sound with different patterns by decoding these patterns accurately in isolation and in text (e.g., ee, ea, ei, e).

   d. Use knowledge of root words and prefixes (e.g., re, un, mis) and suffixes (e.g., s, es, ed, ing, est, ly) to decode words.

   e. Use letter and syllable patterns to pronounce multisyllabic words.

Objective 3: Spell words correctly.

   a. Use knowledge of word families, patterns, and common letter combinations to spell new words.

   b. Spell words with short and long vowel sounds, r-controlled words, words with consonant blends, consonant and vowel digraphs.

   c. Spell an increasing number of grade level high-frequency and irregular words correctly (e.g., believe, answer).

   d. Learn the spellings of irregular and difficult words (e.g., because, animals, before, answer, weight).

Standard IV:
   Phonics and Spelling—Students use phonics and other strategies to decode and spell unfamiliar words while reading and writing.

Objective 4:   Use spelling strategies to achieve accuracy (e.g., prediction, visualization, and association).

a. Use knowledge about spelling to predict the spelling of new words.

b. Visualize words while writing.

c. Associate the spelling of new words with that of known words and word patterns.

d. Use spelling generalities to assist spelling of new words (e.g., one vowel between two consonants, silent "e" on the end of a word, two vowels together).

Standard V: **Fluency—Students develop reading fluency to read aloud grade level text effortlessly without hesitation.**

Objective 1:   Read aloud grade level text with appropriate speed and accuracy.

    a. Read grade level text at a rate of approximately 80 wpm.

    b. Read grade level text with an accuracy rate of 95-100%.

Objective 2:   Read aloud grade level text effortlessly with clarity.

    a. Read grade level text in three- to four-word phrases using intonation, expression, and punctuation cues.

    b. Read with automaticity 200 second grade high-frequency/ sight words.

Standard V: Fluency—Students develop reading fluency to read aloud grade level text effortlessly without hesitation.

Standard VI: Vocabulary—Students learn and use grade level vocabulary to increase understanding and read fluently.

Objective 1:   Learn new words through listening and reading widely.

   a. Use new vocabulary learned by listening, reading, and discussing a variety of genres.

   b. Learn the meaning of a variety of grade level words (e.g., words from literature, social studies, science, math).

Objective 2:   Use multiple resources to learn new words by relating them to known words and/or concepts.

   a. Use multiple resources to determine the meanings of unknown words (e.g., simple dictionaries, glossaries).

   b. Relate unfamiliar words and concepts to prior knowledge to increase vocabulary (e.g., liquid: milk, water, punch).

Objective 3:   Use structural analysis and context clues to determine meanings of words.

   a. Identify meanings of words using prefixes and suffixes (e.g., do/undo, write/rewrite, happy/happiness, help/helper/helpful).

   b. Use context to determine meanings of unknown key words (e.g., The store clerk glared at the children as they looked at the toys.).

   c. Use context to determine meanings of synonyms, antonyms, homonyms (e.g., sun/son) and multiple-meaning words (e.g., ring).

Standard VII: **Comprehension—Students understand, interpret, and analyze narrative and informational grade level text.**

Objective 1: Identify purposes of text.

    a. Identify purpose for reading.

    b. Identify author's purpose.

Objective 2: Apply strategies to comprehend text.

    a. Relate prior knowledge to make connections to text (e.g., text to text, text to self, text to world).

    b. Ask questions about text read aloud and independently.

    c. Form mental pictures to aid understanding of text.

    d. Make and confirm predictions while reading using title, picture clues, text, and/or prior knowledge.

    e. Make inferences and draw conclusions from text.

    f. Identify topic/main idea from text; note details.

    g. Summarize important ideas/events; summarize supporting details in sequence.

    h. Monitor and clarify understanding applying fix-up strategies while interacting with text.

    i. Compile information from text.

Objective 3: Recognize and use features of narrative and informational text.

    a. Identify characters, setting, sequence of events, problem/resolution.

    b. Identify different genres: fairy tales, poems, realistic fiction, fantasy, fables, folk tales.

    c. Identify information from pictures, captions, diagrams, charts, graphs, and table of contents.

    d. Identify different structures in texts (e.g., compare/contrast, cause/effect).

    e. Locate facts from a variety of informational texts (e.g. newspapers, magazines, books, other resources).

Standard VII: Comprehension—Students understand, interpret, and analyze narrative and informational grade level text.

Standard VIII: Writing—Students write daily to communicate effectively for a variety of purposes and audiences.

Objective 1:   Prepare to write by gathering and organizing information and ideas (pre-writing).

   a. Generate ideas for writing by reading, discussing literature and informational text, and reflecting on personal experiences.

   b. Select topics from generated ideas.

   c. Identify audience, purpose, and form for writing.

   d. Use simple graphic organizers to organize information.

Objective 2:   Compose a written draft.

   a. Draft ideas on paper in an organized manner utilizing words and sentences (e.g., beginning, middle, end; main idea; details).

   b. Use voice in writing (e.g., express feelings, opinions).

   c. Select appropriate words to convey meaning.

Objective 3:   Revise by elaborating and clarifying a written draft.

   a. Revise draft to add details, strengthen word choice, and reorder content.

   b. Enhance fluency by using complete sentences.

   c. Revise writing, considering the suggestions of others.

Objective 4:   Edit written draft for conventions.

   a. Edit writing for capitals in names, first word of a sentence, and the pronoun "I", correct punctuation of sentence endings, greetings and closings of letters, dates, and contractions.

   b. Edit for spelling of grade-level appropriate words.

   c. Edit for standard grammar (e.g., subject-verb agreement).

   d. Edit for appropriate formatting features (e.g., margins, indentations, titles).

Objective 5:   Use fluent and legible handwriting to communicate.

   a. Write demonstrating mastery of all upper- and lower-case manuscript letters and numerals using proper form, proportions, and spacing.

   b. Increase fluency in forming manuscript letters and numerals.

   c. Produce legible documents with manuscript handwriting.

Objective 6:   Write in different modes and genres.

   a. Produce personal writing (e.g., journals, friendly notes and letters, personal experiences, family stories, literature responses).

   b. Produce traditional and imaginative stories, narrative and formula poetry as an individual/shared writing activity.

   c. Produce informational text (e.g., ABC books, how-to books, observations).

   d. Produce writing to persuade (e.g., express opinions).

   e. Produce functional texts (e.g., lists, labels, signs).

   f. Share writing with others using illustrations, graphs, and/or charts to add meaning.

   g. Publish four to six individual products.

Second Grade Mathematics Core Curriculum

Standard I: **Students will acquire number sense and perform operations with whole numbers.**

Objective 1: Represent whole numbers in a variety of ways.

a. Relate number words to the numerals that represent the quantities 0-100.

b. Represent whole numbers up to 1,000 in groups of hundreds, tens, and ones using base ten models, and write the numeral representing the set.

c. Read and write a three-digit numeral, relating it to a set of objects and a pictorial representation.

d. Write a numeral to 999 in expanded form (e.g., 539 is 5 hundreds, 3 tens, 9 ones or 500+30+9).

e. Identify the place and the value of a given digit in a three-digit numeral (e.g., the two in 281 means 2 hundreds or 200).

f. Demonstrate multiple ways to represent numbers using symbolic representations (e.g., thirty is the same as two groups of 15, the number of pennies in three dimes, or 58-28).

Objective 2: Identify simple relationships among whole numbers.

a. Identify the number that is one more, one less, ten more, or ten less than any whole number up to 100.

b. Write number sentences using the terms "greater than," "less than," or "equal to," to compare numbers.

c. Order four whole numbers less than 100 from least to greatest and from greatest to least.

d. Use ordinal numbers 1st through 10th.

Objective 3: Model and illustrate meanings of the operations of addition and subtraction and describe how they relate.

a. Demonstrate the joining and separating of sets with eighteen or fewer objects and record the results with pictures or symbols.

b. Model three meanings of subtraction: separating of sets ("take away"), comparison of sets ("how many more/

fewer"), and missing addends using objects, pictorial representations, and symbols.

 c. Separate a given set of objects into two, three, five, or ten groups of equal size.

 d. Model addition and subtraction of two-digit whole numbers in a variety of ways.

 e. Select an addition or subtraction sentence to solve a problem involving joining or separating of sets with eighteen or fewer objects.

 f. Recognize that addition number sentences have related subtraction sentences (e.g., 8-5=3, 3+5=8).

Objective 4: Use fractions to identify parts of the whole.

 a. Separate geometric shapes and sets of objects into halves, thirds, and fourths using a variety of models and illustrations.

 b. Specify a region of a geometric shape (e.g., as "___ out of ___ equal parts") when given four or fewer equal parts.

 c. Represent the unit fractions 1/2, 1/3, and 1/4 with objects, pictures, and symbols.

Objective 5: Solve whole number problems using addition and subtraction in vertical and horizontal notation.

 a. Use a variety of methods and tools to facilitate computation (e.g., estimation, mental math strategies, paper and pencil, calculator).

 b. Compute accurately with basic number combinations for addition and subtraction facts to eighteen.

 c. Add three whole numbers with sums to eighteen.

 d. Find the sum of two-digit whole numbers and describe the process used.

Standard II: **Students will identify and use patterns and relations to represent mathematical situations.**

Objective 1: Recognize and represent patterns having multiple attributes.

  a. Sort, classify, and label objects by three or more attributes.

  b. Identify and label repeating and growing patterns using objects, pictures, and symbolic notation (e.g., ABAABBAAABBB . . .).

  c. Identify repeating and growing patterns in the environment.

  d. Construct models and skip count by twos, threes, fives, and tens and relate to repeated addition.

Objective 2: Recognize and represent relations using mathematical symbols.

  a. Recognize that "π" indicates a relationship in which the quantities on each side are not of equal value.

  b. Recognize that symbols such as □, △, or ◇ in an addition or subtraction equation represent a value that will make the statement true (e.g., □ +3=6, 5+7=△, 7=9-◇).

  c. Demonstrate that changing the order of addends does not change the sum (e.g., 3+2+7=12, 7+3+2=12) and that changing the grouping of three or more addends does not change the sum (e.g., (2+3)+7=12, 2+(3+7)=12).

Standard III: **Students will describe, identify, and create geometric shapes and describe spatial relationships.**

Objective 1:   Describe, identify, and create geometric shapes.

   a. Identify, name, draw, sort, and compare circles, triangles, and parallelograms.

   b. Identify and name spheres, cones, and cylinders.

   c. Find and identify familiar geometric shapes in the students' environment.

   d. Determine whether a circle, triangle, square, or rectangle has a line of symmetry.

Objective 2:   Describe spatial relationships.

   a. Create and use verbal or written instructions to move within the environment.

   b. Find and name locations using coordinates (A, 1).

   c. Identify shapes in various orientations (e.g., $\triangle$ and ∇).

Standard III:
Students will describe, identify, and create geometric shapes and describe spatial relationships.

Standard IV: Students will understand and use measurement tools and techniques.

Objective 1:   Identify measurable attributes of objects and units of measurement.

   a. Sequence a series of events of a day in order by time (e.g., breakfast at 7:00, school begins at 9:00).

   b. Identify the name and value of a penny, nickel, dime, quarter, and dollar.

   c. Estimate length, capacity, and weight using customary units.

Objective 2:   Use appropriate techniques and tools to determine measurements.

   a. Compare and order objects, using nonstandard units, according to their length, weight, or capacity.

   b. Measure length using inches and feet, weight using pounds, and capacity using cups.

   c. Determine the value of a set of up to five coins that total $1.00 or less (e.g., two quarters and one dime equals 60¢; three dimes, one nickel, and one penny equals 36¢).

   d. Read, tell, and write time to the hour and half-hour.

   e. Use a calendar to determine the day of the week and date.

   f. Determine the perimeter of a square, triangle, and rectangle by measuring with nonstandard units.

Standard V: **Students will collect and draw conclusions from data and understand basic concepts of probability.**

Objective 1: Collect, organize, and display simple data.

  a. Gather data by vote or survey.

  b. Sort, classify, and organize data in a variety of ways.

  c. Use a variety of methods to organize, display, and label information, including keys, using pictographs, tallies, bar graphs, and organized tables.

  d. Report information from a data display.

Objective 2: Determine the likelihood of an event.

  a. Predict events that will be the same in one day or one week.

  b. Predict the outcome when there are only two possible outcomes (e.g., tossing a coin).

Second Grade Fine Arts, Health, Physical Education, Science and Social Studies Core Curriculum

Standard I: Students will develop a sense of self.

Objective 1:   Describe and adopt behaviors for health and safety.

   a. Explain the importance of balance in a diet.

   b. Distinguish communicable from noncommunicable diseases (e.g., chicken pox, common cold, flu; asthma, cancer, diabetes).

   c. Relate behaviors that can help prevent disease (e.g., hand washing, good nutrition, fitness, universal precautions).

   d. Identify the harmful effects of tobacco on self and others (e.g., death, heart and lung disease, shortness of breath).

   e. Adopt basic safety habits (e.g., wear a seatbelt, practice bicycle safety, find adult help in an emergency).

Objective 2:   Develop and apply skills in fine and gross motor movement.

   a. Participate daily in sustained periods of physical activity that requires exertion (e.g., one to five* minutes of walking, jogging, jump roping).

   b. Perform fundamental locomotor and nonlocomotor skills in movement sequences and game applications (e.g., walk-hop-skip, run-stretch-skate, run-hop-lay up).

   c. Perform manipulative skills exhibiting a majority of correct technique components (e.g., soccer kick: eyes on ball, step with foot opposite to kicking foot, contact ball with inside of foot, follow through).

   d. Identify components of physical fitness (i.e., strength, endurance, flexibility) and corresponding activities.

   e. Create and perform unique dance movements and sequences that expand physical skills while demonstrating personal and spatial awareness.

Objective 3:   Develop and use skills to communicate ideas, information, and feelings.

   a. Express personal experiences and imagination through dance, storytelling, music, and visual art.

    b. Create, with improving accuracy, works of art depicting depth (e.g., close objects large, distant objects small) using secondary and tertiary colors.

    c. Develop ability to sing in tune with relaxed strength and clarity.

    d. Develop consistency in rhythmic accuracy of body percussion and instrument playing.

*   Some students may not be able to sustain activity for one minute due to various medical concerns.
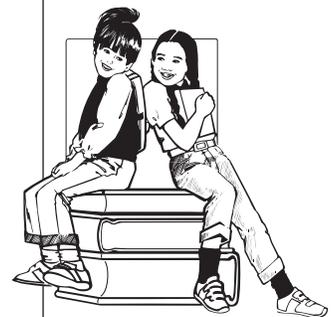
Standard II:
   Students will
   develop a sense
   of self in relation
   to families and
   community.

Standard II: Students will develop a sense of self in relation to families and community.

Objective 1:   Describe behaviors that influence relationships with family and friends.

   a. Describe characteristics of healthy relationships (e.g., caring, responsibility, trust, respect).

   b. Identify benefits of cooperating and sharing.

   c. Explain how families and communities change over time.

   d. Recognize how choices and consequences affect self, peers, and family.

   e. Identify behaviors that might create conflict situations and ways to resolve them.

Objective 2:   Examine important aspects of the community and culture that strengthen relationships.

   a. Explain why families, schools, and communities have rules.

   b. Compare rural, suburban, and urban communities.

   c. Relate goods and services to resources within the community.

   d. Participate in activities that promote public good (e.g., respect cultural and ethnic differences, identify community needs) and recite the Pledge of Allegiance.

   e. Recognize the positive and negative impact of media.

Objective 3:   Express relationships in a variety of ways.

   a. Describe traditions, music, dances, artwork, poems, rhymes, and stories that distinguish cultures.

   b. Develop an acting ability to relate to characters' thoughts and feelings (e.g., needs, hopes, frustrations, fears) in stories and plays.

   c. Create and perform/exhibit dances, visual art, music, and dramatic stories from a variety of cultures expressing the relationship between people and their culture.

Standard III: Students will develop an understanding of their environment.

Objective 1:   Investigate relationships between plants and animals and how living things change during their lives.

   a.   Observe and describe relationships between plants and animals.

   b.   Describe the life cycle of local plants and animals using diagrams and pictures.

   c.   Create pictures and stories about real animals and compare them to make-believe stories about animals.

Objective 2:   Observe and describe weather.

   a.   Observe and describe patterns of change in weather.

   b.   Measure, record, graph, and report changes in local weather.

   c.   Describe how weather affects people and animals.

   d.   Draw pictures and create dances and sounds that represent weather features (e.g., clouds, storms, snowfall).

Objective 3:   Investigate the properties and uses of rocks.

   a.   Describe rocks in terms of the parts that make up the rocks.

   b.   Sort rocks based upon color, hardness, texture, layering, and particle size.

   c.   Identify how the properties of rocks determine how people use them.

   d.   Create artworks using rocks and rock products.

Objective 4:   Demonstrate how symbols and models are used to represent features of the environment.

   a.   Identify and use information on a map or globe (i.e., map key or legend, compass rose, physical features, continents, oceans).

   b.   Use an atlas and globe to locate information.

   c.   Locate continents and oceans on a map or globe (i.e., North America, Antarctica, Australia, Africa, Pacific Ocean, Atlantic Ocean).

Standard III: Students will develop an understanding of their environment.

K-6 Elementary Mathematics Core Curriculum in Table Format

Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade
Standard 1: Students will understand simple number concepts and relationships.	**Standard 1:** Students will acquire number sense and perform simple operations with whole numbers.	**Standard 1:** Students will acquire number sense and perform operations with whole numbers.	**Standard 1:** Students will acquire number sense and perform operations with whole numbers and simple fractions.	**Standard 1:** Students will acquire number sense and perform operations with whole numbers, simple fractions, and decimals.	**Standard 1:** Students will acquire number sense and perform operations with whole numbers, simple fractions, and decimals.	**Standard 1:** Students will acquire number sense and perform operations with rational numbers.
Objective 1: Identify and use whole numbers. a. Relate a *numeral* to the number of objects in a set (e.g., □ □ □ = 3). b. Construct models of numbers to 10 with physical objects or manipulatives. c. Make pictorial representations of numbers to 10 (e.g., draw four circles, draw six squares). d. Recognize and write numerals from 0 to 10. e. Manipulate objects to demonstrate and describe multiple ways of representing a number (e.g., 5 can be 3 and 2 more, 5 can also be 2 and 2 and 1).	**Objective 1:** Represent whole numbers in a variety of ways. a. Relate number words to the *numerals* that represent the quantities 0 to 10. b. Sort objects into groups of tens and ones and write the numeral representing the set. c. Represent *whole numbers* up to 100 in groups of tens and ones using objects. d. Write a numeral when given the number of tens and ones. e. Write a numeral to 99 in *expanded form* (e.g., 39 is 3 tens and 9 ones or 30+9). f. Use zero to represent the number of elements in the empty set or as a placeholder in a two-digit numeral.	**Objective 1:** Represent whole numbers in a variety of ways. a. Relate number words to the *numerals* that represent the quantities 0–100. b. Represent *whole numbers* up to 1,000 in groups of hundreds, tens, and ones using base ten models, and write the numeral representing the set. c. Read and write a three-digit numeral, relating it to a set of objects and a pictorial representation. d. Write a numeral to 999 in *expanded form* (e.g., 539 is 5 hundreds, 3 tens, 9 ones or 500+30+9). e. Identify the place and the value of a given digit in a three-digit numeral (e.g., the two in 281 means 2 hundreds or 200). f. Demonstrate multiple ways to represent numbers using symbolic representations (e.g., thirty is the same as two groups of 15, the number of pennies in three dimes, or 58-28).	**Objective 1:** Represent whole numbers in a variety of ways. a. Model, read, and write *whole numbers* up to 10,000 using base ten models, pictures, and symbols. b. Write a *numeral* when given the number of thousands, hundreds, tens, and ones. c. Write a number up to 9,999 in expanded form (e.g., 6,539 is 6 thousands, 5 hundreds, 3 tens, 9 ones or 6000+500+30+9). d. Identify the place and the value of a given digit in a four-digit numeral. e. Demonstrate multiple ways to represent numbers using models and symbolic representations (e.g., fifty is the same as two groups of 25, the number of pennies in five dimes, or 75-25).	**Objective 1:** Represent whole numbers and decimals in a variety of ways. a. Model, read, and write numerals from tenths to 100,000. b. Write a *whole number* up to 99,999 in *expanded form* (e.g., 76,539 is 7 ten-thousands, 6 one-thousands, 5 hundreds, 3 tens, 9 ones or 70,000 + $6{,}000 + 500 + 30 + 9$). c. Identify the place and the value of a given digit in a five-digit numeral, including decimals to tenths. d. Demonstrate multiple ways to represent numbers by using models and symbolic representations (e.g., 36 is the same as the square of six, three dozen, or 9x4). e. Identify *square numbers* using models.	**Objective 1:** Represent whole numbers and decimals in a variety of ways. a. Model, read, and write numerals from hundredths to one millions. b. Write a *whole number* up to 999,999 in expanded form (e.g., $876{,}539 = 8$ hundred-thousands, 7 ten-thousands, 6 thousands, 5 hundreds, 3 tens, 9 ones or $8 \times 100{,}000 + 7 \times 10{,}000 + 6 \times 1{,}000 + 5 \times 100 + 3 \times 10 + 9$). c. Demonstrate multiple ways to represent whole numbers by using models and symbolic representations (e.g., $108 = 2 \times 50 + 8$; $108 = 10^2 + 8$). d. Classify whole numbers from 2 to 20 as *prime or composite* and 1 as neither prime nor composite, using models. e. Represent repeated factors using *exponents* up to three (e.g., $8 = 2 \times 2 \times 2 = 2^3$).	**Objective 1:** Represent whole numbers and decimals in a variety of ways. a. Change *whole numbers* with exponents to *standard form* (e.g., $2^4 = 2^4 = 16$) and recognize that $10^0 = 1$. b. Read and write *numerals* from thousandths to one billion. c. Write a whole number to 999,999 in *expanded form using exponents* (e.g., $876{,}539 = 8 \times 10^5 + 7 \times 10^4 + 6 \times 10^3 + 5 \times 10^2 + 3 \times 10^1 + 9 \times 10^0$). d. Express numbers in *scientific notation* using positive powers of ten. e. Classify whole numbers to 100 as *prime, composite, or neither.* f. Determine the *prime factorization* for a whole number up to 50.

Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade
Objective 2: **Identify simple relationships among whole numbers.** a. Develop strategies for *one-to-one* correspondence and keeping track of quantities. b. Compare two sets of objects to determine whether they have the same, fewer, or more elements. c. Order sets of objects from 1 to 9. d. Estimate quantities less than 10.	**Objective 2:** **Identify simple relationships among whole numbers.** a. Identify the number that is one more or one less than any *whole number* from 1 to 99. b. Use the vocabulary "greater than," "less than," and "equal to" when comparing sets of objects or numbers. c. Order sets of objects and numbers from 0 to 20. d. Use *ordinal numbers* 1st through 5th (i.e., 1st, 2nd, 3rd, 4th, 5th).	**Objective 2:** **Identify simple relationships among whole numbers.** a. Identify the number that is one more, one less, ten more, or ten less than any *whole number* up to 100. b. Write number sentences using the terms "greater than," "less than," or "equal to," to compare numbers. c. Order four whole numbers less than 100 from least to greatest and from greatest to least. d. Use *ordinal numbers* 1st through 10th.	**Objective 2:** **Identify relationships among whole numbers.** a. Use a variety of strategies to determine whether a number is even or odd. b. Identify the number that is ten more, ten less, 100 more, or 100 less than any *whole number* up to 1,000. c. Compare the relative size of numbers (e.g., 31 is large compared to 4, about half as big as 60, close to 27). d. Compare whole numbers up to four digits using the symbols $<$, $>$, and $=$. e. Order and compare whole numbers on a number line.	**Objective 2:** **Identify relationships among whole numbers and decimals.** a. Identify the number that is 100 more, 100 less, 1,000 more, or 1,000 less than any *whole number* up to 10,000. b. Compare the relative size of numbers (e.g., 100 is small compared to a million, but large compared to 5). c. Compare whole numbers up to five digits using the symbols $<$, $>$, and $=$. d. Identify a whole number that is between two given whole numbers. e. Order and compare whole numbers and decimals to tenths on a number line.	**Objective 2:** **Identify relationships among whole numbers, fractions, decimals, and percents.** a. Order and compare *whole numbers*, fractions (including mixed numbers), and decimals using a variety of methods and symbols. b. Rewrite mixed numbers and improper fractions from one form to the other. c. Find the least common denominator for two fractions. d. Represent commonly used fractions as decimals and percents in various ways (e.g., objects, pictures, calculators).	**Objective 2:** **Identify relationships among whole numbers, fractions (rational numbers), decimals, and percents.** a. Find the *greatest common factor and least common multiple* for two numbers using a variety of methods (e.g., list of multiples, prime factorization). b. Order and compare *rational numbers*, including mixed numbers, using a variety of methods and symbols. c. Locate positive rational numbers on a number line. d. Convert common fractions, decimals, and percents from one form to another (e.g., 3/4= 0.75 = 75%).

Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade
Objective 3: Model and illustrate meanings of the operations of addition and subtraction and describe how they relate. a. Demonstrate the joining and separating of sets of objects to solve problems. b. Describe the joining or separating of sets with informal language when using models. c. Record pictorially the results from the joining or separating of sets.	**Objective 3:** Model and illustrate operations of addition and subtraction and describe how they relate. a. Demonstrate the joining and separating of sets with twelve or fewer objects and record the results with pictures or symbols. b. Model two meanings of subtraction: separating of sets ("take away") and comparison of sets ("how many more/fewer") using objects, pictorial representations, and symbols. c. Use correct vocabulary and symbols to describe addition (i.e., add, "and," plus, +, sum), subtraction (i.e., subtract, minus, –, take away, how many more/fewer), and equals (i.e., =, same as). d. Use zero in addition and subtraction sentences.	**Objective 3:** Model and illustrate operations of addition and subtraction and describe how they relate. a. Demonstrate the joining and separating of sets with eighteen or fewer objects and record the results with pictures or symbols. b. Model three meanings of subtraction: separating of sets ("take away"), comparison of sets ("how many more/fewer"), and missing addends using objects, pictorial representations, and symbols. c. Separate a given set of objects into two, three, five, or ten groups of equal size. d. Model addition and subtraction of two-digit whole numbers in a variety of ways. e. Select an addition or subtraction sentence to solve a problem involving joining or separating of sets with eighteen or fewer objects. f. Recognize that addition and subtraction number sentences have related subtraction sentences (e.g., 8–5=3, 3+5=8).	**Objective 3:** Model and illustrate meanings of the operations of addition, subtraction, multiplication, and division and describe how they relate. a. Model addition and subtraction of two- and three-digit *whole numbers* in a variety of ways. b. Model multiplication of a one-digit *factor* by a one-digit factor using various methods (e.g., repeated addition, rectangular *arrays*, manipulatives, pictures) and connect the representation to an *algorithm.* c. Model division as sharing equally and as repeated subtraction using various methods (e.g., rectangular arrays, manipulatives, number lines, pictorial representations). d. Demonstrate, using objects, that multiplication and division are inverse operations (e.g., 3x4=12; thus, 12÷4=3 and 12÷3=4). e. Select and write an addition, subtraction, or multiplication sentence to solve a problem related to the students' environment, and write a story problem that relates to a given equation. f. Demonstrate the effects of place value when multiplying whole numbers by 10.	**Objective 3:** Model and illustrate meanings of the four operations and describe how they relate. a. Use models to represent multiplication of a one- or two-digit *factor* by a two-digit factor (up to 30) using a variety of methods (e.g., rectangular *arrays*, manipulatives, pictures) and connect the representation to an *algorithm.* b. Recognize that division by zero is not possible (e.g., 6÷0 is undefined). c. Select and write a multiplication or division sentence to solve a problem related to the students' environment and write a story problem that relates to a given equation. d. Represent division of a two-digit *dividend* by a one-digit *divisor,* including whole number remainders, using various methods (e.g., rectangular arrays, manipulatives, pictures) and connect the representation to an algorithm. e. Demonstrate that multiplication and division are inverse operations (e.g., 3x4=12; thus, 12÷4=3 and 12÷3=4). f. Describe the effect of place value when multiplying whole numbers by 10 and 100.	**Objective 3:** Model and illustrate meanings of operations and describe how they relate. a. Identify the *dividend, divisor, and quotient* regardless of the division symbol used. b. Determine whether a whole number is divisible by 2, 3, 5, 9, and/or 10, using the *rules of divisibility.* c. Represent remainders as *whole numbers,* decimals, or fractions and describe the meaning of remainders as they apply to problems from the students' environment (e.g., If there are 53 people, how many vans are needed if each van holds 8 people?). d. Model addition, subtraction, and multiplication of fractions and decimals in a variety of ways (e.g., using objects and a number line). e. Select or write the number sentences that can be used to solve a two-step problem. f. Model different strategies for whole number multiplication (e.g., partial product, lattice) and division (e.g., partial quotient). g. Describe the effect on place value when multiplying and dividing whole numbers and decimals by 10, 100, and 1,000.	**Objective 3:** Model and illustrate meanings of operations and describe how they relate. a. Represent division of a multi-digit *dividend* by two-digit *divisors,* including decimals, using models, pictures, and symbols. b. Model addition, subtraction, multiplication, and division of fractions and decimals in a variety of ways (e.g., objects, a number line). c. *Apply rules of divisibility.* d. Select or write a number sentence that can be used to solve a multi-step problem and write a word problem when given a two-step expression or equation.

Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade
	Objective 4: Use fractions to identify parts of the whole. a. Share sets of up to ten objects between two students and identify each part as half. b. Divide geometric shapes into equal parts, identifying halves and fourths.	**Objective 4:** Use fractions to identify parts of the whole. a. Separate geometric shapes and sets of objects into halves, thirds, and fourths using a variety of models and illustrations. b. Specify a region of a geometric shape (e.g., as "___ out of ___ equal parts" when given four or fewer equal parts. c. Represent the unit fractions 1/2, 1/3, and 1/4 with objects, pictures, and symbols.	**Objective 4:** Use fractions to communicate parts of the whole. a. Identify the denominator of a fraction as the number of equal parts in the whole region or set. b. Identify the numerator of a fraction as the number of equal parts being considered. c. Divide regions and sets of objects into equal parts using a variety of models and illustrations. d. Name and write a fraction to represent a portion of a unit whole for halves, thirds, fourths, sixths, and eighths. e. Determine which of two fractions is greater using models or illustrations.	**Objective 4:** Use fractions to communicate parts of the whole. a. Divide regions and sets of objects into equal parts using a variety of models and illustrations. b. Name and write a fraction to represent a portion of a unit whole for halves, thirds, fourths, fifths, sixths, eighths, and tenths. c. Relate fractions to decimals that represent tenths. d. Determine which of two fractions is greater using models or illustrations. e. Find equivalent fractions for one-half, one-third, and one-fourth using manipulatives and pictorial representations.	**Objective 4:** Use fractions to communicate parts of the whole. a. Divide regions, sets of objects, and line segments into equal parts using a variety of models and illustrations. b. Name and write a fraction to represent a portion of a unit whole for halves, thirds, fourths, fifths, sixths, eighths, tenths, and twelfths. c. Represent the simplest form of a fraction in various ways (e.g., objects, pictorial representations, symbols). d. Represent mixed numbers and improper fractions in various ways (e.g., rulers, objects, number lines, symbols). e. Rename *whole numbers* as fractions with different denominators (e.g., 5=5/1, 3=6/2, 1=7/7). f. Model and calculate equivalent forms of a fraction and describe the process used.	**Objective 4:** Use fractions and percents to communicate parts of the whole. a. Divide regions, sets of objects, and *line segments* into equal parts using a variety of models and illustrations. b. Name and write a fraction to represent a portion of a unit whole for halves, thirds, fourths, fifths, sixths, eighths, tenths, twelfths, and sixteenths. c. Write a fraction or ratio in simplest form. d. Name equivalent forms for fractions (halves, thirds, fourths, fifths, tenths), ratios, percents, and decimals, including repeating or terminating decimals. e. Relate percents less than 1% or greater than 100% to equivalent fractions, decimals, *whole numbers*, and mixed numbers.

Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade
	Objective 5: Solve whole number problems using addition and subtraction in horizontal and vertical notation. a. Compute addition and subtraction facts to twelve. b. Add three whole numbers with sums to twelve.	**Objective 5:** Solve whole number problems using addition and subtraction in vertical and horizontal notation. a. Use a variety of methods and tools to facilitate computation (e.g., estimation, mental math strategies, paper and pencil, calculator). b. Compute accurately with basic number combinations for addition and subtraction facts to eighteen. c. Add three *whole numbers* with sums to eighteen. d. Find the sum of two-digit whole numbers and describe the process used.	**Objective 5:** Solve whole number problems using addition, subtraction, multiplication, and division in vertical and horizontal notation. a. Use a variety of methods and tools to facilitate computation (e.g., estimation, mental math strategies, paper and pencil, calculator). b. Find the sum of any two *addends* with three or fewer digits, including monetary amounts, and describe the process used. c. Find the *difference* of two-digit *whole numbers* and describe the process used. d. Find the *product* for multiplication facts through ten times ten and describe the process used.	**Objective 5:** Solve whole number problems using addition, subtraction, multiplication, and division in vertical and horizontal notation. a. Determine when it is appropriate to use estimation, mental math strategies, paper and pencil, or a calculator. b. Find the sum and difference of four-digit numbers, including monetary amounts, and describe the process used. c. Multiply two- and three-digit *factors* by a one-digit factor and describe the process used. d. Divide a two-digit *whole number dividend* by a one-digit *divisor*, with a *remainder* of zero and describe the process used.	**Objective 5:** Solve problems using the four operations with whole numbers, decimals, and fractions. a. Determine when it is appropriate to use estimation, mental math strategies, paper and pencil, or a calculator. b. Use estimation strategies to determine whether results obtained using a calculator are reasonable. c. Multiply up to a three-digit whole number by a one- or two-digit whole number. d. Divide up to a three-digit *whole number dividend* by a one-digit *divisor*. e. Add and subtract decimals with digits to the hundredths place (e.g., 35.42+7.2; 75.2–13.45). f. Add, subtract, and multiply fractions. g. Simplify *expressions*, without exponents, using the *order of operations*.	**Objective 5:** Solve problems using the four operations with whole numbers, decimals, and fractions. a. Determine when it is appropriate to use estimation, mental math strategies, paper and pencil, or a calculator. b. Use estimation strategies to determine whether results obtained using a calculator are reasonable. c. Multiply up to a three-digit *factor* by a one- or two-digit factor including decimals. d. Divide up to a three-digit *dividend* by a one- or two-digit *divisor* including decimals. e. Add and subtract decimals to the thousandths place (e.g., 34.567+3.45; 65.3-5.987). f. Add, subtract, multiply, and divide fractions and mixed numbers. g. Solve problems using ratios and proportions. h. Simplify *expressions*, with exponents, using the *order of operations*.

Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade
					Objective 6: Model and illustrate integers. a. Identify, read, and locate *integers* on a number line. b. Describe situations where integers are used in the students' environment.	**Objective 6:** Model, illustrate, and perform the operations of addition and subtraction of integers. a. Recognize that the sum of an *integer* and its opposite is zero. b. Model addition and subtraction of integers using manipulatives and a number line. c. Add and subtract integers.
Standard II: Students will identify and use patterns to represent mathematical situations.	**Standard II:** Students will identify and use patterns and relations to represent mathematical situations.	**Standard II:** Students will identify and use patterns and relations to represent mathematical situations.	**Standard II:** Students will use patterns and relations to represent mathematical situations.	**Standard II:** Students will use patterns and relations to represent mathematical situations.	**Standard II:** Students will use patterns and relations to represent and analyze mathematical situations using algebraic symbols.	**Standard II:** Students will use patterns, relations, and functions to represent and analyze mathematical situations using algebraic symbols.
Objective 1: Identify and sort objects according to common attributes. a. Sort objects into groups by color, shape, size, number, or other *attributes*. b. Identify which attribute was used to sort objects into a group. c. Find multiple ways to sort and classify a group of objects.	**Objective 1:** Recognize and represent patterns with one or two attributes. a. Sort and classify objects by one or two *attributes*. b. Identify, create, and label simple patterns using manipulatives, pictures, and symbolic notation (e.g., ABAB . . ., □ O △ □ O △ . . .). c. Identify patterns in the environment. d. Identify horizontal and vertical patterns on hundreds charts. e. Use patterns to establish skip counting by twos to 20 and by fives and tens to 100. f. Count backward from 10 to 0 and identify the pattern.	**Objective 1:** Recognize and represent patterns having multiple attributes. a. Sort, classify, and label objects by three or more *attributes*. b. Identify and label repeating and growing patterns using objects, pictures, and symbolic notation (e.g., ABAABBAAABBB...). c. Identify repeating and growing patterns in the environment. d. Construct models and skip count by twos, threes, fives, and tens and relate to repeated addition.	**Objective 1:** Recognize and create patterns with given attributes. a. Create and extend *repeating and growing* patterns using objects, numbers, and tables. b. Record results of patterns created using manipulatives, pictures, and numeric representations and describe how they are extended.	**Objective 1:** Recognize, describe, and use patterns and identify the attributes. a. Represent and analyze repeating and growing patterns using objects, pictures, numbers, and tables. b. Recognize and extend multiples and other number patterns using a variety of methods.	**Objective 1:** Recognize, analyze, and use patterns and describe their attributes. a. Analyze and make predictions about patterns involving *whole* numbers, decimals, and fractions using a variety of tools including organized lists, tables, objects, and variables. b. Extend patterns and describe a rule for predicting the next element.	**Objective 1:** Recognize, analyze, and use multiple representations of patterns and functions and describe their attributes. a. Analyze patterns on graphs and tables and write a generalization to predict how the patterns will continue. b. Create tables and graphs to represent given patterns and algebraic *expressions*. c. Draw a graph from a table of values or to represent an equation. d. Write an algebraic expression from a graph or a table of values.

Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade
Objective 2: **Identify and use patterns to describe numbers or objects.** a. Use patterns to count orally from 1 to 20 and backward from 10 to 0. b. Identify simple patterns in the environment. c. Predict what comes next in an established pattern and justify thinking. d. Duplicate, extend, and create simple patterns using objects and pictorial representations.	**Objective 2:** **Recognize and represent relations using mathematical symbols.** a. Recognize that "=" indicates a relationship in which the quantities on each side of an equation are equal. b. Recognize that symbols such as $\square$, $\triangle$, or $\diamond$ in an addition or subtraction equation represent a missing value that will make the statement true (e.g., $\square$ + 3 = 6, 5 + 7 = $\triangle$, 4 = 5 − $\diamond$). c. Demonstrate that changing the order of *addends* does not change the *sum* (e.g., 3+2=5 and 2+3=5).	**Objective 2:** **Recognize and represent relations using mathematical symbols.** a. Recognize that "≠" indicates a relationship in which the quantities on each side are not of equal value. b. Recognize that symbols such as $\square$, $\triangle$, or $\diamond$ in an addition or subtraction equation represent a value that will make the statement true (e.g., $\square$ +3=6, 5+7=$\triangle$, 7=9−$\diamond$). c. Demonstrate that changing the order of *addends* does not change the *sum* (e.g., 3+2+7=12, 7+3+2=12) and that changing the grouping of three or more *addends* does not change the *sum* (e.g., (2+3)+7=12, 2+(3+7)=12).	**Objective 2:** **Recognize and represent mathematical situations using patterns and symbols.** a. Recognize that symbols such as $\square$, $\triangle$, or $\diamond$ in an addition, subtraction, or multiplication equation, represent a value that will make the statement true (e.g., 5+7=$\triangle$, $\square$−3=6, $\diamond$=2x4). b. Solve equations involving equivalent expressions (e.g., 6+4 = $\square$+7). c. Use the >, <, and = symbols to compare two expressions involving addition and subtraction (e.g., 4+6 $\square$ 3+2; 3+5 $\diamond$ 16−9). d. Demonstrate that grouping three or more *addends* does not change the *sum* (e.g., 3+(2+7)=12, (7+3)+2=12) and changing the order of *factors* does not change the *product* (e.g., 3x7=21, 7x3=21). e. Use a variety of manipulatives to model the *identity property of addition* (e.g., 3+0=3), the *identity property of multiplication* (e.g., 7x1=7), and the *zero property of multiplication* (e.g., 6x0=0).	**Objective 2:** **Recognize, represent, and solve mathematical situations using patterns and symbols.** a. Solve equations involving equivalent expressions (e.g., 6x2= $\square$x3 or 6x$\square$=9+9). b. Use the <, >, = symbols to compare two expressions involving addition, subtraction, multiplication, and division (e.g., 5x4$\diamond$9+3). c. Recognize that a given variable maintains the same value throughout an equation or expression (e.g., $\square$+$\square$=8; $\square$=4). d. Demonstrate that changing the order of factors does not change the product (e.g., 2x3=6, 3x2=6) and that the grouping of three or more *factors* does not change the *product* (e.g., (2x3)x1=6; 2x(3x1)=6). e. Demonstrate the distribution of multiplication over addition using a rectangular *array* (e.g., 8x14=8 rows of 10 plus 8 rows of 4).	**Objective 2:** **Represent, solve, and analyze mathematical situations using algebraic symbols.** a. Recognize a variety of symbols for multiplication and division including x, •, and * as symbols for multiplication and ÷, —, and a fraction bar (/ or −) as division symbols. b. Recognize that a variable ($\diamond$, n, x) represents an unknown quantity. c. Solve one-step equations involving *whole numbers* and a single variable (e.g., n÷7=3). d. Recognize that the answer to a multiplication problem involving a factor of zero is equal to zero (e.g., 0x45=0). e. Use expressions or one-step equations to represent real-world situations. f. Use the *associative, commutative,* and *distributive properties* to compute with whole numbers.	**Objective 2:** **Represent, solve, and analyze mathematical situations using algebraic symbols.** a. Recognize that a number in front of a variable indicates multiplication (e.g., 3y means 3 times the quantity y). b. Solve two-step equations involving *whole numbers* and a single variable (e.g., 3x+4=19). c. Recognize that "≠" indicates a relationship in which the quantities on each side are approximately of equal value (e.g., π≈3.14). d. Recognize that an *exponent* can be represented in the following ways: 4^3 or 4^3. e. Evaluate expressions and formulas, substituting given values for the variables (e.g., 2x+4; x=2; therefore, 2(2)+4=8). f. Recognize that if the *product* is zero, then one or more *factors* equal zero (i.e., if ab=0 then either a=0 or b=0 or a and b=0).

Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade
Standard III: Students will identify and create simple geometric shapes and describe spatial relationships.	**Standard III:** Students will describe, identify, and create and simple geometric shapes and describe spatial relationships.	**Standard III:** Students will describe, identify, and create geometric shapes and describe spatial relationships.	**Standard III:** Students will use spatial reasoning to describe, identify, and create geometric shapes.	**Standard III:** Students will use spatial reasoning to recognize, describe, and identify geometric shapes.	**Standard III:** Students will use spatial reasoning to recognize, describe, and identify geometric shapes and principles.	**Standard III:** Students will use spatial and logical reasoning to recognize, describe, and identify geometric shapes and principles.
Objective 1: Identify and create simple geometric shapes. a. Identify circles, triangles, rectangles, and squares. b. Combine shapes to create *two-dimensional* objects. c. Draw circles, triangles, rectangles, and squares. d. Recognize circles, triangles, rectangles, and squares in the students' environment.	**Objective 1:** Describe, identify, and create simple geometric shapes. a. Identify, name, draw, create, and sort circles, triangles, rectangles, and squares. b. Identify circles, triangles, rectangles, and squares in the students' environment. c. Recognize that combining simple geometric shapes can create more complex geometric shapes.	**Objective 1:** Describe, identify, and create geometric shapes. a. Identify, name, draw, sort, and compare circles, triangles, and *parallelograms*. b. Identify and name spheres, cones, and cylinders. c. Find and identify familiar geometric shapes in the students' environment. d. Determine whether a circle, triangle, square, or rectangle has a *line of symmetry*.	**Objective 1:** Describe, identify, and create geometric shapes. a. Identify and draw *points, lines, line segments, and endpoints*. b. Identify and draw *lines of symmetry* on triangles, squares, circles, and rectangles. c. Determine whether an angle is *right, obtuse, or acute* by comparing the angle to the corner of a rectangle. d. Classify polygons (e.g., *quadrilaterals*, pentagons, hexagons, octagons) by the number of sides and corners. e. Identify, make, and describe cubes (e.g., a cube has 6 square *faces, 8 vertices, and 12 edges*).	**Objective 1:** Describe, identify, and analyze characteristics and properties of geometric shapes. a. Identify and draw *parallel lines and intersecting lines*. b. Identify and draw lines of symmetry on a variety of polygons. c. Identify and describe quadrilaterals (i.e., rectangles, squares, rhombuses, trapezoids, kites). d. Identify right, obtuse, and acute angles. e. Compare two polygons to determine whether they are congruent or similar. f. Identify and describe cylinders and rectangular prisms.	**Objective 1:** Describe, identify, and analyze characteristics and properties of geometric shapes. a. Identify and draw *perpendicular lines*. b. Draw, label, and describe rays and describe an angle as two rays sharing a common endpoint. c. Label an angle as *acute, obtuse, right, or straight*. d. Identify and describe *equilateral, isosceles, scalene, right, acute, and obtuse triangles*. e. Identify the vertex of an angle or the *vertices* of a polygon. f. Compare *corresponding angles* of two triangles and determine whether the triangles are *similar*. g. Identify and describe *pyramids and prisms*.	**Objective 1:** Identify and analyze characteristics and properties of geometric shapes. a. Identify the *midpoint of a line segment*. b. Identify *concave* and *convex polygons*. c. Identify the center, *radius, diameter, and circumference of a circle*. d. Identify the number of *faces, edges, and vertices of pyramids and prisms*.

Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade
Objective 2: Describe simple spatial relationships. a. Visualize how to fit a shape into a design. b. Use and demonstrate words to describe position with objects (i.e., on, over, under, above, below, top, bottom, up, down, in front of, behind, next to, beside). c. Use and demonstrate words to describe distance with objects (i.e., far, near).	**Objective 2: Describe simple spatial relationships.** a. Use and demonstrate words to describe position (i.e., between, before, after, middle, left, right). b. Use and demonstrate words to describe distance (i.e., closer, farther).	**Objective 2: Describe spatial relationships.** a. Create and use verbal or written instructions to move within the environment. b. Find and name locations using coordinates (A, 1). c. Identify shapes in various orientations (e.g., △ and ▽).	**Objective 2: Describe spatial relationships.** a. Give directions to reach a location. b. Use coordinates (A, 1) or regions to locate positions on a map. c. Demonstrate and use horizontal and vertical lines.	**Objective 2: Specify locations and describe spatial relationships using grids and maps.** a. Locate positions on a map of Utah using coordinates or regions. b. Give the *coordinates* or *regions* of a position on a map of Utah.	**Objective 2: Specify locations and describe spatial relationships using coordinate geometry.** a. Locate points defined by ordered pairs in the first quadrant. b. Write an ordered pair for a point in the first *quadrant*. c. Specify possible paths between locations on a *coordinate grid* and compare distances of the various paths.	**Objective 2: Specify locations and describe spatial relationships using coordinate geometry.** a. Graph points defined by ordered pairs in all four quadrants. b. Write the ordered pair for a point in any quadrant.
			Objective 3: Visualize and identify geometric shapes after applying transformations. a. Demonstrate the effect of a slide (translation) or flip (reflection) on a figure, using manipulatives. b. Determine whether two polygons are *congruent* by sliding, flipping, or turning to physically fit one object on top of the other. c. Identify *two-dimensional* shapes (*nets*) that will fold to make a cube. d. Create a *polygon* that results from combining other polygons.	**Objective 3: Visualize and identify geometric shapes after applying transformations.** a. Identify a *slide* (*translation*) or *flip* (*reflection*) on a figure using manipulatives. b. Relate *cubes, cylinders, cones,* and *rectangular prisms* to the *two-dimensional* shapes (*nets*) from which they were created.	**Objective 3: Visualize and identify geometric shapes after applying transformations.** a. Identify a *slide* (*translation*) or *flip* (*reflection*) on a figure across a line. b. Demonstrate the effect of a *turn* (*rotation*) on a figure using manipulatives. c. Relate pyramids and prisms to the *two-dimensional* shapes (*nets*) from which they were created.	**Objective 3: Visualize and identify geometric shapes after applying transformations.** a. *Turn* (*rotate*) a shape around a point and identify the location of the new vertices. b. *Slide* (*translate*) a polygon either horizontally or vertically on a coordinate grid and identify the location of the new vertices. c. *Flip* (*reflect*) a shape across either the x- or y-axis and identify the location of the new vertices.

Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade
Standard IV: Students will understand and use simple measurement tools and techniques.	Standard IV: Students will understand and use simple measurement tools and techniques.	Standard IV: Students will understand and use measurement tools and techniques.	Standard IV: Students will understand and use measurement tools and techniques.	Standard IV: Students will understand and use measurement tools and techniques.	Standard IV: Students will understand and apply measurement tools and techniques.	Standard IV: Students will understand and apply measurement tools and techniques.
Objective 1: Identify measurable attributes of objects and units of measurement.	Objective 1: Identify measurable attributes of objects and units of measurement.	Objective 1: Identify measurable attributes of objects and units of measurement.	Objective 1: Identify and describe measurable attributes of objects and units of measurement.	Objective 1: Identify and describe measurable attributes of objects and units of measurement.	Objective 1: Identify and describe measurable attributes of objects and units of measurement.	Objective 1: Identify and describe measurable attributes of objects and units of measurement.
a. Identify clocks and calendars as tools to measure time.	a. Identify the appropriate tools for measuring length, weight, capacity, temperature, and time.	a. Sequence a series of events of a day in order by time (e.g., breakfast at 7:00, school begins at 9:00).	a. Recognize the two systems of measurement: *metric* and *customary*.	a. Describe the relationship among metric units of length (i.e., millimeter, centimeter, meter), between *metric* units of capacity (i.e., milliliter, liter), and between metric units of weight (i.e., gram, kilogram).	a. Describe the relationship among *metric* units of length (i.e., millimeter, centimeter, meter, kilometer).	a. Compare a meter to a yard, a liter to a quart, and a kilometer to a mile.
b. Identify a day, week, and month on a calendar.	b. Identify the values of a penny, nickel, dime, and quarter.	b. Identify the name and value of a penny, nickel, dime, quarter, and dollar.	b. Describe the relationship between metric units of length (i.e., centimeter, meter).	b. Identify a mile as a measure of distance and its relationship to other *customary* units of length.	b. Describe the relationship among *customary* units of weight (i.e., ounce, pound).	b. Identify π as the ratio of the *circumference* to *diameter* of a circle.
c. Identify pennies, nickels, dimes, and quarters as units of money.	c. Estimate the length of an object by comparing to a nonstandard unit (e.g., How many new pencils wide is your desk?).	c. Estimate length, capacity, and weight using customary units.	c. Describe the relationship among customary units of length (i.e., inch, foot, yard) and the relationship between customary units of *capacity* (i.e., cup, quart).	c. Describe the relationship among customary units of *capacity* (i.e., cup, pint, quart, gallon).	c. Identify the correct units of measurement for *volume*, *area*, and *perimeter* in both metric and customary systems.	c. Explain how the size of the unit used in measuring affects the precision.
			d. Estimate length, capacity, and weight using metric and customary units.	d. Estimate length, capacity, and weight using metric and customary units.	d. Estimate length, volume, weight, and area using metric and customary units.	d. Estimate length, volume, weight, and area using *metric* and customary units.
					e. Convert units of measurement within the metric system and convert units of measurement within the customary system.	

Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade
Objective 2: Use appropriate techniques and tools to determine measurements.	**Objective 2:** Use appropriate techniques and tools to determine measurements.	**Objective 2:** Use appropriate techniques and tools to determine measurements.	**Objective 2:** Use appropriate techniques and tools to determine measurements.	**Objective 2:** Determine measurements using appropriate tools and formulas.	**Objective 2:** Determine measurements using appropriate tools and formulas.	**Objective 2:** Determine measurements using appropriate tools and formulas.
a. Compare two objects (e.g., shorter/longer, heavier/lighter, larger/ smaller, more/less).	a. Compare objects, using nonstandard units, according to their length, weight, or volume (e.g., pencils/ length, books/weight, boxes/volume).	a. Compare and order objects, using nonstandard units, according to their length, weight, or capacity.	a. Measure the length of objects to the nearest centimeter, meter, half-inch, foot, and yard.	a. Measure the length of objects to the nearest centimeter, meter, quarter-inch, foot, and yard.	a. Measure length to the nearest 1/8 of an inch and to the nearest centimeter.	a. Measure length to the nearest one-sixteenth of an inch and to the nearest millimeter.
b. Find the length of an object using nonstandard units (e.g., pencils, paper clips).	b. Read and tell time to the nearest hour.	b. Measure length using inches and feet, weight using pounds, and capacity using cups.	b. Measure *capacity* using cups and quarts, and measure weight using pounds.	b. Measure *capacity* using milliliters, liters, cups, pints, quarts, and gallons and measure weight using grams, kilograms, and pounds.	b. Measure *volume* and *weight* using *metric* and *customary* units.	b. Estimate and measure an angle to the nearest degree.
c. Name the days of the week in order.	c. Name the days of the week, months of the year, and seasons in order.	c. Determine the value of a set of up to five coins that total $1.00 or less (e.g., two quarters and one dime equals 60¢; three dimes, one nickel, and one penny equals 36¢).	c. Determine the value of a combination of coins and bills that total $5.00 or less and write the monetary amounts using the dollar sign and decimal notation.	c. Read, tell, and write time to the nearest minute, identifying a.m. and p.m.	c. Measure angles using a protractor.	c. Calculate the *circumference* of a circle using a given formula.
d. Sort pennies, nickels, dimes, and quarters.	d. Determine the value of a set of the same coins that total 25¢ or less (e.g., a set of 14 pennies equals 14¢, a set of 5 nickels equals 25¢, a set of 2 dimes equals 20¢).	d. Read, tell, and write time to the hour and half-hour.	d. Identify the number of hours in a day, the number of days in a year, and the number of weeks in a year.	d. Read and record the temperature to the nearest degree, in Fahrenheit, using a thermometer.	d. Calculate *elapsed time* within a.m. or p.m. time periods.	d. Calculate *elapsed time* across a.m. and p.m. time periods.
		e. Use a calendar to determine the day of the week and date.	e. Read, tell, and write time to the quarter-hour.	e. Determine the value of a combination of coins and bills that total $20.00 or less.	e. Read and record the temperature to the nearest degree (above and below zero) when using a thermometer with a Celsius or Fahrenheit scale.	e. Calculate the *areas* of triangles, rectangles, and *parallelograms* using given formulas.
		f. Determine the *perimeter* of a square, triangle, and rectangle by measuring with nonstandard units.	f. Identify any given day of the month (e.g., the third Wednesday of the month is the 18th).	f. Count back change for a single-item purchase and determine the amount of change to be received from a multiple-item purchase.	f. Calculate the *perimeter* of rectangles and triangles.	f. Calculate the *surface area and volume* of right, rectangular prisms using given formulas.
			g. Read and record the temperature to the nearest ten degrees using a Fahrenheit thermometer.	g. Determine possible *perimeters*, in whole units, for a rectangle with a fixed *area* and determine possible areas when given a rectangle with a fixed perimeter.	g. Calculate the *area* of squares and rectangles using a formula.	
			h. Estimate and measure the *perimeter* and area of rectangles by measuring with nonstandard units.			

Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade
Standard V: Students will collect and draw conclusions from data and understand basic concepts of probability.	Standard V: Students will collect and draw conclusions from data and understand basic concepts of probability.	Standard V: Students will collect and draw conclusions from data and understand basic concepts of probability.	Standard V: Students will collect and organize data to make predictions and identify basic concepts of probability.	Standard V: Students will collect and organize data to make predictions and use basic concepts of probability.	Standard V: Students will collect, analyze, and draw conclusions from data and apply basic concepts of probability.	Standard V: Students will collect, analyze, and draw conclusions from data and apply basic concepts of probability.
Objective 1: Collect, organize, and display simple data. a. Collect, organize, and record data using objects and pictures. b. Represent data in a variety of ways (e.g., graphs made from people, *pictographs*, bar graphs) and interpret the data (e.g., more people like red than blue).	Objective 1: Collect, organize, and display simple data. a. Collect physical objects to use as data. b. Collect, represent, and interpret data using tables, tally marks, *pictographs*, and bar graphs.	Objective 1: Collect, organize, and display simple data. a. Gather data by vote or survey. b. Sort, classify, and organize data in a variety of ways. c. Use a variety of methods to organize, display, and label information, including keys, using *pictographs*, tallies, bar graphs, and organized tables. d. Report information from a data display.	Objective 1: Collect, organize, and display data to make predictions. a. Collect, read, represent, and interpret data using tables, graphs, and charts, including keys (e.g., pictographs, bar graphs). b. Make predictions based on a data display.	Objective 1: Collect, organize, and display data to make predictions and answer questions. a. Identify a question that can be answered by collecting data. b. Collect, read, and interpret data from tables, graphs, charts, surveys, and observations. c. Represent data using tables, line plots, line graphs, and bar graphs. d. Identify and distinguish between *clusters* and *outliers* of a data set.	Objective 1: Formulate and answer questions using statistical methods to compare data. a. Formulate a question that can be answered by collecting data. b. Collect, compare, and display data using an appropriate format (i.e., *line plots*, bar graphs, pictographs, circle graphs, line graphs). c. Identify minimum and *maximum* values for a set of data. d. Identify or calculate the *mean, mode,* and *range*. e. Propose and justify inferences based on data.	Objective 1: Design investigations to reach conclusions using statistical methods to make inferences based on data. a. Design investigations to answer questions by collecting and organizing data in a variety of ways (e.g., bar graphs, line graphs, frequency tables, stem and leaf plots). b. Collect, compare, and display data using an appropriate format (i.e., bar graphs, line graphs, *line plots*, circle graphs, scatter plots). c. Compare two similar sets of data on the same graph and compare two graphs representing the same set of data. d. Recognize that changing the scale influences the appearance of a display of data. e. Develop and evaluate inferences and predictions based on data.

Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade
Objective 2: **Determine the likelihood of events.** a. Describe events encountered in books read as possible or not possible. b. Describe events as likely or unlikely (e.g., It is likely to snow today. It is unlikely an elephant will be in school).	**Objective 2:** **Determine the likelihood of an event.** a. Compare events to decide which are more likely, less likely, and equally likely. b. Relate past events to future events (e.g., The sun set about 6:00 last night, so it will set about the same time tonight).	**Objective 2:** **Determine the likelihood of an event.** a. Predict events that will be the same in one day or one week. b. Predict the outcome when there are only two possible outcomes (e.g., tossing a coin).	**Objective 2:** **Identify basic concepts of probability.** a. Describe the results of events using the terms "certain," "equally likely," and "impossible." b. Predict outcomes of simple activities (e.g., a bag contains three red marbles and five blue marbles. If one marble is selected, is it more likely to be red or blue?).	**Objective 2:** **Use basic concepts of probability.** a. Describe the results of investigations involving random outcomes as simple ratios (e.g., 4 out of 9, 4/9). b. Predict outcomes of simple experiments, including with and without replacement, and test the predictions.	**Objective 2:** **Apply basic concepts of probability.** a. Describe the results of investigations involving random outcomes using a variety of notations (e.g., 4 out of 9, 4/9, 4:9). b. Recognize that outcomes of experiments and samples are fractions between 0 and 1. c. Predict the probability of an outcome in a simple experiment.	**Objective 2:** **Apply basic concepts of probability.** a. Write the results of a probability experiment as a fraction, ratio, or percent between zero and one. b. Compare experimental results with anticipated results (e.g., experimental: 7 out of 10 tails; whereas, anticipated 5 out of 10 tails). c. Compare individual, small group, and large group results for a probability experiment.

K-2 Mathematics Glossary

addend	Any number being added. In 32+4=36, 32 and 4 are *addends*.
capacity	The maximum amount that can be contained by an object. Often refers to measurement of a liquid.
cylinder	A three-dimensional figure with two circular bases that are *parallel* and *congruent*.
difference	The amount that remains after one quantity is subtracted from another.
e.g.	This abbreviation means "for example." When used in the Core, *e.g.* is not limited to the examples given.
expanded form	A way to write numbers that shows the place value of each digit. 263 = 200 + 60 + 3 or 263 is 2 hundreds, 60 tens, and 3 ones.
growing pattern	A pattern that grows or increases.
i.e.	This abbreviation means "that is to say." When used in the Core, *i.e.* is limited to the specific examples given.
line of symmetry	A line that divides a figure into two *congruent* halves that are mirror images of each other.
numeral	A symbol used to represent a number.
obtuse angle	An angle with a measure greater than 90º and less than 180º.
obtuse triangle	A triangle with one *obtuse angle*.
one-to-one correspondence	The relationship between the spoken word and the written symbol.
ordinal number	A *whole number* that names the position of an object in sequence. First, second, and third are *ordinal numbers*.
parallelogram	A *quadrilateral* with two pairs of *parallel* and *congruent* sides.
perimeter	The distance around a figure.
pictograph	A graph that uses pictures to show data.

repeating pattern	A pattern of a group of items that repeats over and over.
sum	The answer to an addition problem. In 32+4=36, 36 is the *sum*.
two-dimensional	A figure that has length and width, but not height. Having *area*, but not *volume*. The image on a movie screen is *two-dimensional*.
whole number	Any of the numbers 0, 1, 2, 3, 4, 5, and so on.

Facilitated

Activities

Math I-1

Activities

Whole Numbers

Place Value is as Easy as Pie!

Standard I:
> Students will acquire number sense and perform operations with whole numbers.

Objective 1:
> Represent whole numbers in a variety of ways.

Intended Learning Outcomes:
> 1. Demonstrate a positive learning attitude.
> 5. Understand and use basic concepts and skills.

Content Connections:
> Content Core 2-2

Math Standard I

Objective 1

Connections

Background Information

Each teacher will have a representation of a cherry tree that they will use to model the concept of place value. Cherries will be placed on the cherry tree for students to pick and regroup. The tree can be used as an ongoing activity to practice place value and regrouping. The tree can be used for whole group, small group or math center activities. As students become proficient with the basic concepts of place value, the activity can be used to model more difficult skills.

Place Value is a difficult concept for students to understand. This activity provides a basic hands-on introduction to place value.

Research Basis

Cotter J. (2002). Using language and visualization to teach place value. *National Council of Teachers of Mathematics.*

Recognizing and replicating patterns contributes to the success of being able to determine how many objects there are without having to stop and count each one individually. Manipulatives create a visual of the base ten number system that enables students to visualize the quantity when the manipulatives are no longer used.

Schmidt, M.E. (1995). Mathematics intervention: Second grade place value concepts. *Education*.Volume 116 (Issue 2), p.229.

Second graders who are in need of remediation are able to reach criterion of the second grade place value objectives. This can be accomplished by involving them in place value games and activities that meet their appropriate levels of understanding.

Invitation to Learn

Provide each table with a set of small counters and instruct them to develop a counting strategy and record it in their math journal or tell

Materials

- ❏ Small counters
- ❏ Cherry Tree chart
- ❏ Place Value Dice
- ❏ *Race for the Pie*
- ❏ *Cherry Cards (100s, 10s, 1s)*
- ❏ Twenty suction cup hooks
- ❏ Portion cups, paper cups, pie tin
- ❏ *Cherry Game Board*

it to a friend. Ask specific questions. "Could we pick up quickly where we left off if we had to stop counting and go out to recess? What if we put two groups together? Which counting strategy would be most helpful?" (If students can't agree on a strategy try some out.) These types of questions will help guide students to select groups of 10 for their counting strategy, but it is more powerful because the students are the ones making the decision.

Instructional Procedures

1. Introduce the lesson by telling the students that they will be hearing a story about a boy named Chett who learns the importance of using place value.

2. Read the story *Race for the Pie* aloud to the students.

3. Model the skill by having students help you count Chett's cherries using the Cherry Tree chart.

4. Teacher can place as many *1s Cherry Cards* as desired on the tree the first day. Use the Cherry Tree chart to practice counting and regrouping. Using the 1s Cherry Cards, pick ten cherries and group them into a ten. Show this grouping by exchanging the ten cherries for a 10s card. Repeat this process by having the students continue to regroup the ones cherries and exchange them for a 10 card and the tens are exchanged for a 100s card. When the students have exchanged ten 1s for a ten card, punch a hole in the center of the tens card and hang it on one of the hooks (continue to hang the cards as far as you want to count with students). Teacher could draw a basket to represent the tens and a bushel basket to represent the hundreds on the board to put the hooks in. Ten hooks in the basket and ten hooks in the bushel basket.

5. Play *Race for the Pie*—Separate students into small groups and give each group a set of small portion cups and small counters to represent cherries (e.g. bingo chips). Have students separate counters into groups of tens and place into small portion cups. The ones will remain separated. As a whole group, combine tens to make hundreds. For every ten portion cups, place them into a large cup to represent a hundred. Place ten 100 cups into a pie tin to represent 1000.

6. Following the Race for the Pie activity introduce the place value dice. Roll the dice and build the indicated number on the Cherry Chart using the cherry cards. Show students how to write the number.

7. Provide students with a copy of the *Cherry Board*, place value dice, and small counters (e.g. Red Hots, dried cherries). Instruct the students to roll the dice and place their counters on their tree to represent the number they rolled.

Assessment Suggestions

- Place Value Ladder Book-Create a ladder book. Each scaffold should include various number representations (e.g. Create the number _____ using numbers, pictures, or words).

- Place Value Questions

Curriculum Extensions/Adaptations/ Integration

- Extensions can be made by having students build numbers to the thousands place.

- Students with special needs could be given extra practice, more individualized help, or work with a buddy.

- *Cherry Challenge Game*—Match cherry to correct pie tin

- In a journal have students create a story using their own counting strategy.

Family Connections

- Following the Cherry Board activity, invite each student to take their game board home to practice with their family. Teacher could provide Red Hots, dried cherries etc. for students to use as counters.

- Assign each student a number to take home and build a visual representation using objects from home. Invite them to share with the class.

Additional Resources

Web sites

http://www.arcytech.org

http://matcentral.com

http://www.iit.edu

http://www.newbridgeonline.com

      All About Math – Set 2 (Counting to 100 Topic Set)

All About Math – Set 2 (Working With Numbers Topic Set)

Books

Math Fables. Tang, G. (2004). Scholastic Press. (0439453992)

Math Appeal. Tang, G. (2003). Scholastic Press. (0439210461)

Making tens: Groups of gollywomples (math monsters). Burnstein, J. (2003). Weekly Reader Early Learning Library. (0836838122)

Race for the Pie!
Written By
Keri Greener and Valerie Josephson

A long time ago in the town of Chesterville, a tradition was started. You see, the town was famous for its cherries. People would come from miles around for a taste of their sweetness.

Chesterville also hosted their county's fair. It was around this same time, that their trees were ripe with cherries, so of course, this was the time when most people bought their cherries.

The cherry farmers were happy to have such a popular item to sell, but were having a hard time being able to pick them fast enough for all of the people who wanted them.

One day, Farmer Chuck came up with an idea. He called all of the townspeople together for a meeting. He talked with them about having a cherry challenge day. This would be a competition that would be held to see who could pick 1,000 cherries the fastest. Each competitor would be assigned a counter to be sure that the cherry picker counted the cherries correctly. When 1,000 cherries had been picked, the cherry picker would have to race to the town square and ring the bell. The winner's cherries would be given to Mrs. Chumley who would make the prize, one of her famous cherry pies, whose recipe just happened to call for 1,000 cherries!

This competition would help the farmers be able to have the help they needed to pick all the cherries, and would also start a fun tradition.

It was decided that this was a good idea, so a day was chosen, and it was announced to the people of the town.

The day finally arrived. Chett had been counting down the day for weeks! He could already taste the cherry pie. He was assigned a counter and the two of them talked about the best way to count the cherries. Every time Chett picked ten cherries from the tree, his hands would be too full to hold them all, so he would hand them to the counter, who would put them into his bucket. When the bucket was filled with 100 cherries, the bucket would be too full and would need to be dumped into a bushel that would be able to hold 1,000 cherries before it was too full. This would continue until ten buckets had been filled and dumped into the bushel.

As the two of them waited by the assigned tree for the signal, Chett's counter suddenly had to leave. Our class is going to have to be his counters. Let's help Chett win that cherry pie!
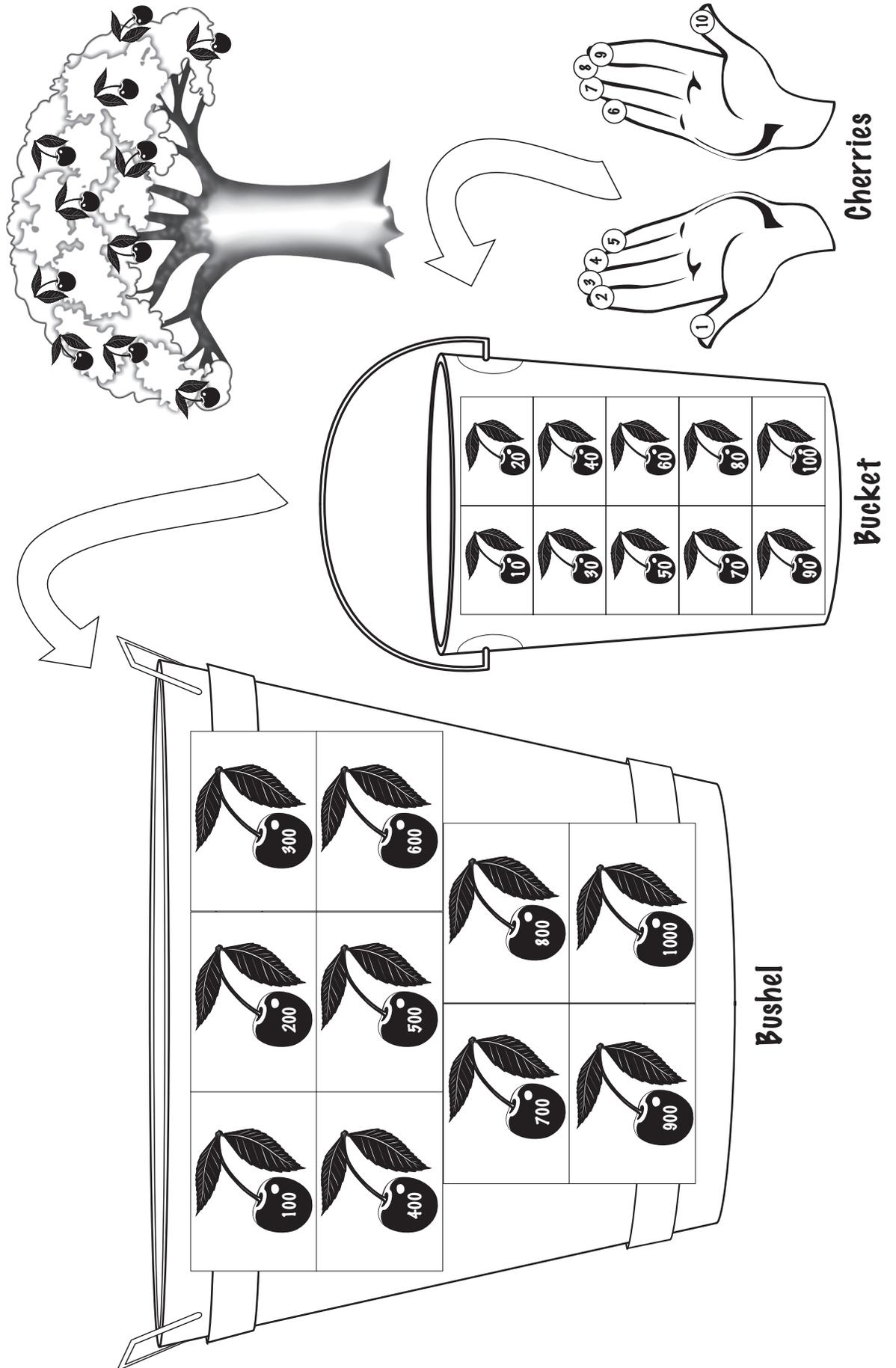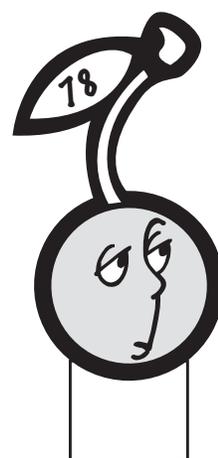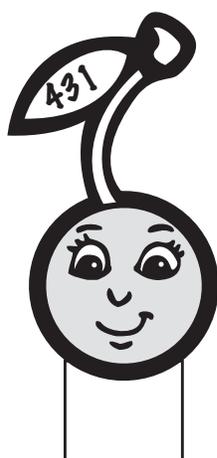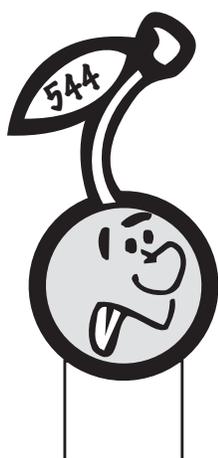
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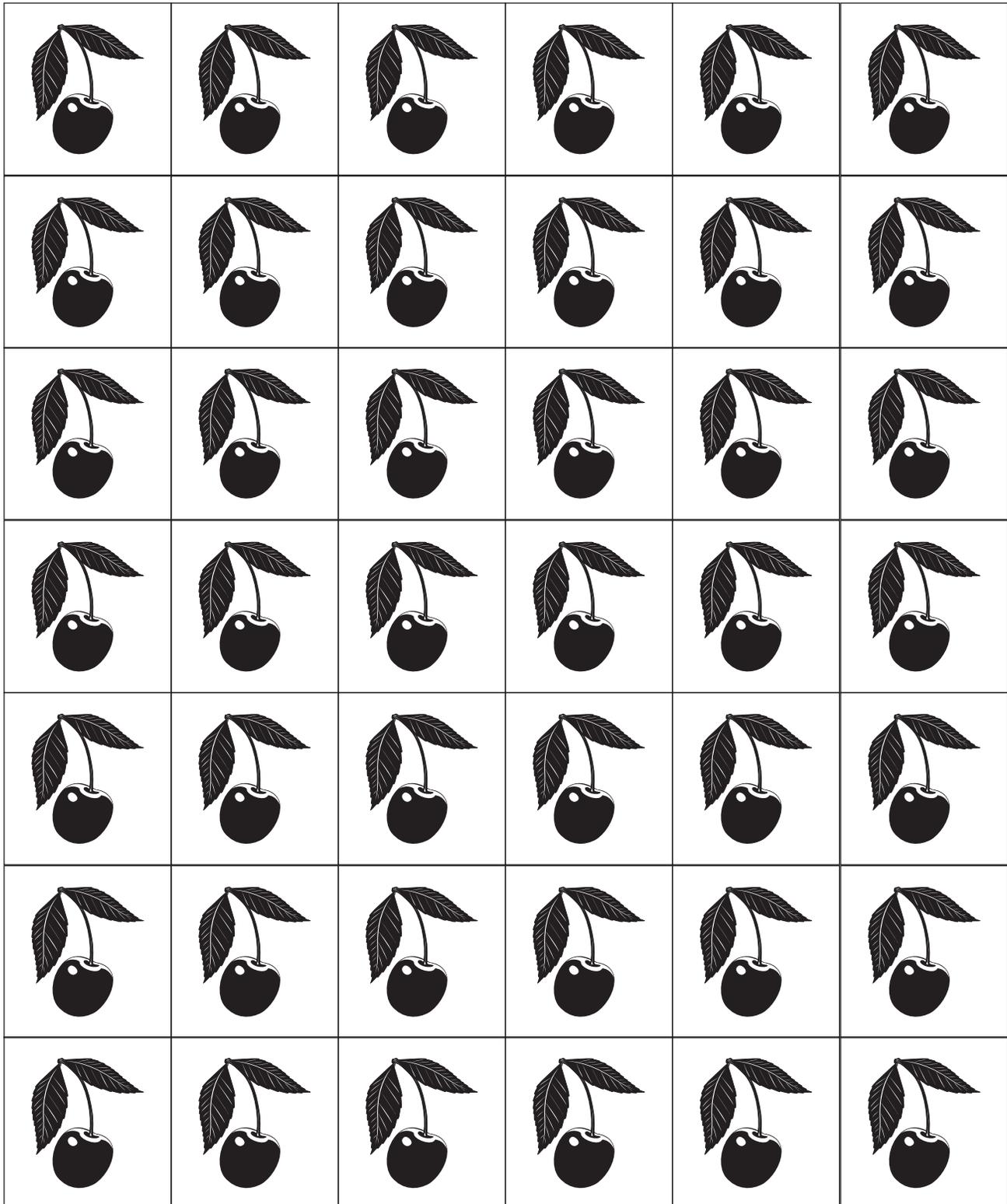
Cherry Cards (10s)
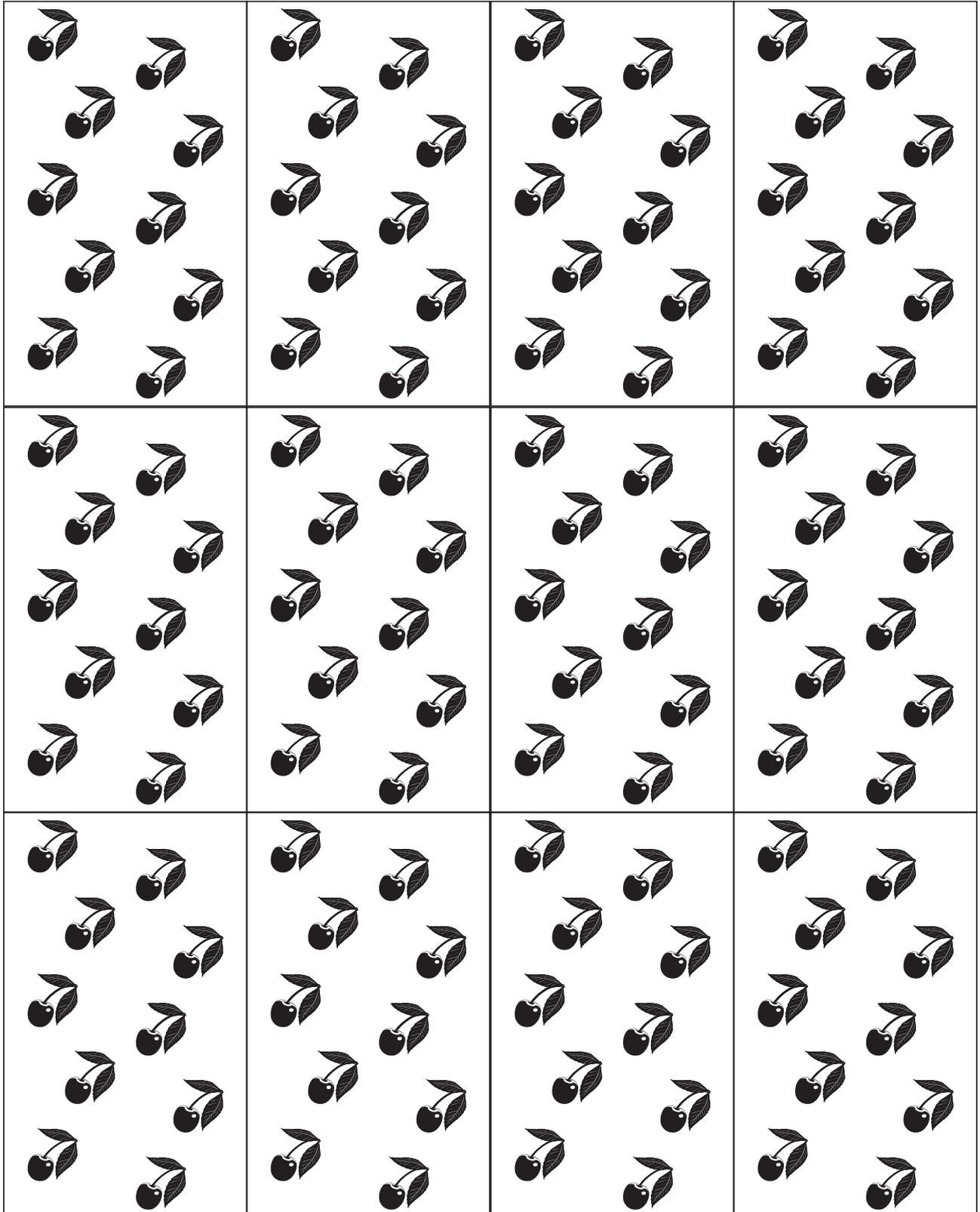
Cherry Cards (100s)

Cherries

Cherry Game Board

Bucket

Bushel

Cherry Challenge Game 2

59

611

102

45

283

42

224

29

544

32

431

78
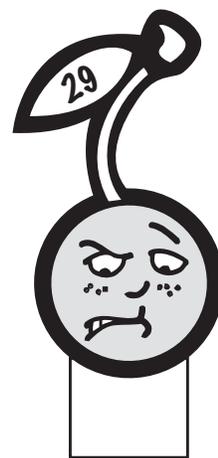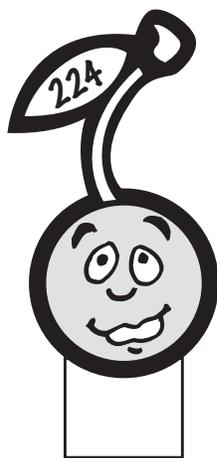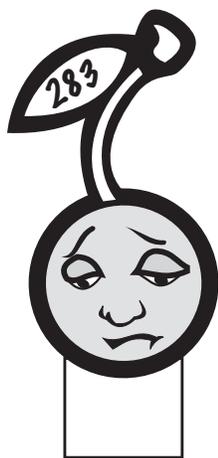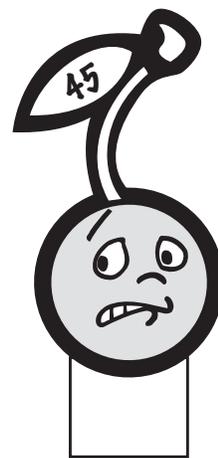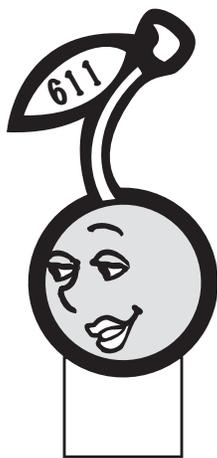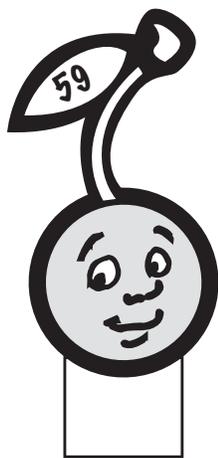
Cherry Challenge Game Pie Tins
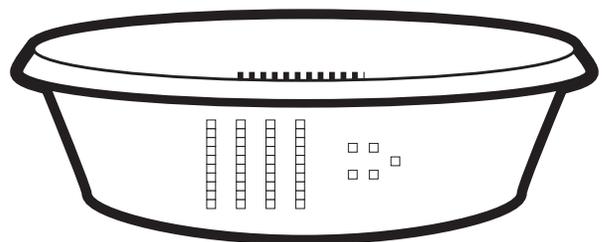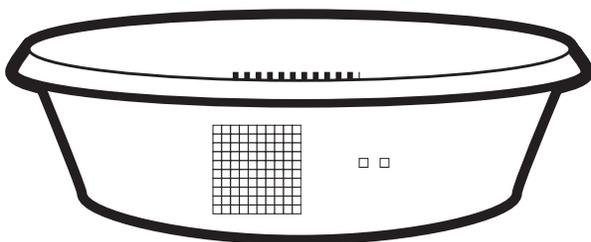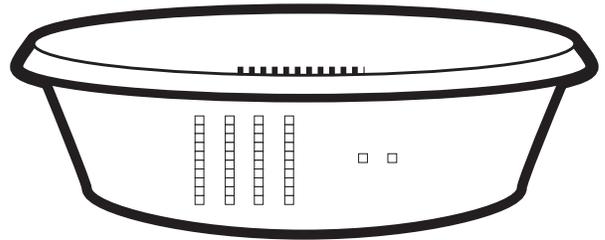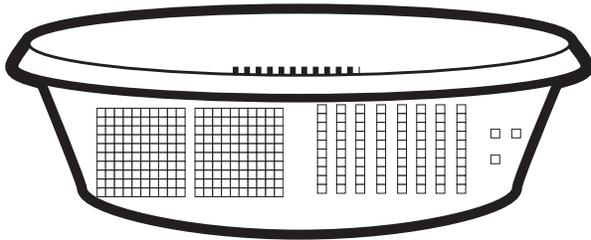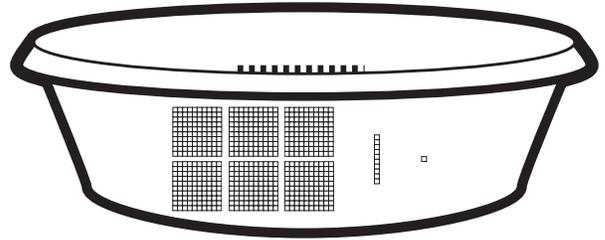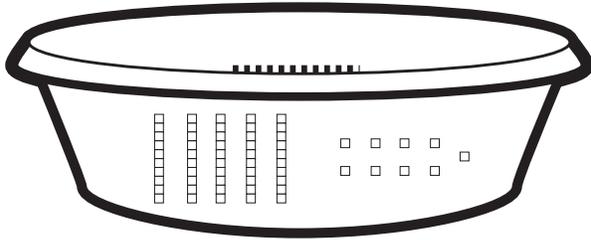
Cherry Challenge Game Pie Tins
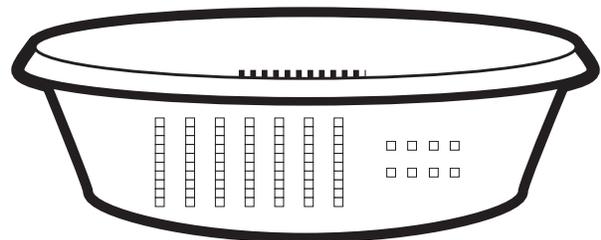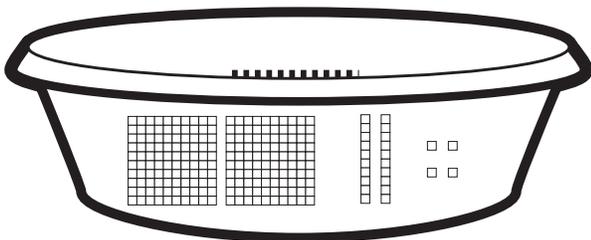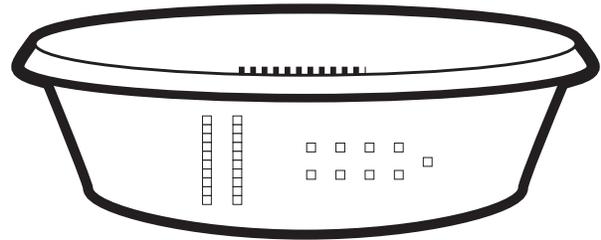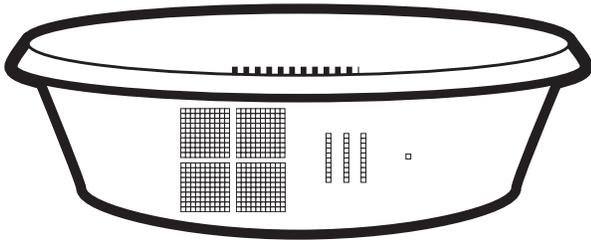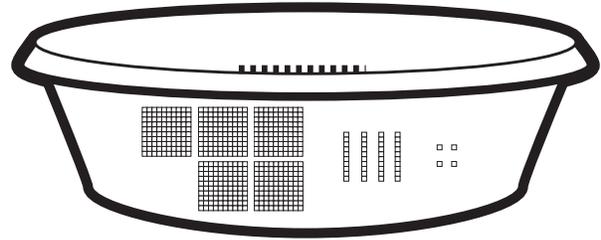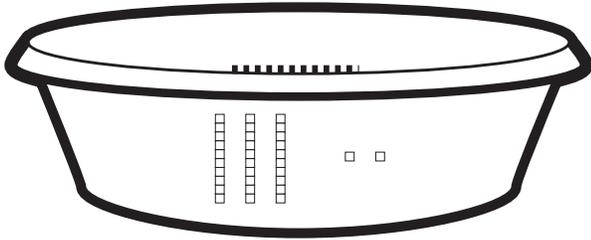
Name _____

Place Value Questions

1. How many cherries do I have if I have 4 full buckets, 2 handfuls, and 3 cherries?

2. How many cherries do I have if I have 8 full buckets, 5 handfuls, and 2 cherries?

3. How many cherries do I have if I have 7 buckets?

4. Does 2 full buckets and 4 handfuls = 2 full buckets and 40 cherries? Explain why or why not.

5. Does 40 cherries = 4 buckets? Explain why or why not.

6. Roll two dice and write the number down and write or draw the number in at least three ways.

7. Roll three dice and write the number down and write or draw the number in at least three ways.

Go In and Out the Windows with Place Value

Math Standard I

Objective 1

Standard I:

Students will acquire number sense and perform operations with whole numbers.

Objective 1:

Represent whole numbers in a variety of ways.

Intended Learning Outcomes:

1. Demonstrate a positive learning attitude.
5. Understand and use basic concepts and skills.

Content Connections:

Language Arts I-1 Oral Language

Connections

Background Information

The teacher will need to introduce place value vocabulary: vertical, horizontal, expanded form, and standard form. This activity will give students hands-on experience to reinforce and practice place value skills.

Research Basis

Cotter J. (2002). Using language and visualization to teach place value. *National council of teachers of mathematics*.

Recognizing and replicating patterns contributes to the success of being able to determine how many objects there are without having to stop and count each one individually. Using manipulatives helps students create a visual of the base ten number system that will enable them to help visualize the quantity in their minds when the manipulatives are no longer used.

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Second graders who are in need of remediation are able to reach criterion of the second grade place value objectives. This can be accomplished by involving them in place value games and activities that meet their appropriate levels of understanding.

Invitation to Learn

Give half of the students a card with a two or three digit number. Give the other half a card with the numbers built with 100 squares, ten rods and single squares. The object is for the partners to match up their numbers with their visual representations.

Materials

❏ *Picture/Number Cards* (two and three digit numbers with their matching visual representations)

❏ *Window Board*

❏ *Number Cards*

❏ Place Value Dice

❏ *Place Value Game Boards, Game Board Cards,* dice, place markers

❏ *Place Value Game Recording Sheet.*

Instructional Procedures

1. Tell the students that they are going to be learning how to read and build numbers in expanded form and standard form both horizontally and vertically.

2. Show the students a picture representation of 300. Ask the students how they would write it. Do the same for 400, 500, etc. Ask the students if they notice a pattern. Do the same with 20, 30, 40, etc. Ask the student if they notice a pattern. Place a number on the board and write what each digit looks like (321=300 + 20 + 1). Place an addition sign between numbers to show them that this number contains all of the numbers added together.

3. Make an overhead of the *Window Board* and *Number Cards*. Using the *Window Board*, model how to build a number in expanded form both vertically and horizontally. Using place value dice have the students practice creating numbers as a whole group. Model this procedure a few times.

4. Pass out the *Window Board* and *Number Cards* and teacher and students will build numbers together.

5. Separate students into small groups and distribute each group a set of dice. Then have students practice making the numbers that they roll on their Window Boards.

6. To provide students with more practice with this skill, use the *Place Value Game*. Distribute the game board, cards, game markers, die, and recording sheets (one per student) to each group of four to five students. One set of cards is three digit numbers. The second set of cards is instructions of what they are to do with the numbers. Before the game begins, each player draws a number card. The first player must draw an instruction card and be able to follow the directions (e.g."what number is in the tens place?") Students should record their answers on their recording sheets. If the player answers correctly, they can shake the die and move the number of spaces designated on the die. If they do not get it correct, the group helps the player to succeed, but the player doesn't get to shake the die and move on the game board. After each turn place the *Number Card* at the bottom of the deck and draw a new card (each player must <u>always</u> have a *Number Card*).The

first player to get to the finish wins the game. Cards can be adapted to the capabilities of students.

Assessment Suggestions

- Teacher can do an informal assessment when students are building numbers with their *Window Boards.* Have the students hold up their *Window Board* at the same time so that you will be able to see if students are able to build the assigned number in the correct format.

- In their journals have the students draw a picture representation of the numbers they build on their *Window Boards.*

- Have students create additional task cards that can be used with the *Place Value Game.* Have them record the answer on a post-it note. Have them place the post-it note on the card that they created so you can check for understanding and accuracy before it is placed in the collection of cards for the game.

Curriculum Extensions/Adaptations/ Integration

- In and Out the Window PE Activity. Make cards representing numbers in their various forms (standard form, expanded form, written, picture). Make enough sets of cards to distribute to the class, one per student. Tell the students that when you give the go signal, that they are to find the other students that have cards that match with their individual number forms. When all number forms have been found, students are going to hold up their window (hula hoop) and make sure that every member of the team goes through the window twice representing going in and out the window. When students have completed this, they will race to a designated location and be declared the winners. You may shuffle the cards and redistribute them for another round of In and Out the Window.

- Students with special needs can concentrate on building smaller numbers or work with a buddy.

Family Connections

- The teacher could provide a game board, cards, die and markers for the students to take home to practice with their families.

Additional Resources

Books

Math Fables. Tang, G. (2004). Scholastic Press. (0439453992)

Math Appeal. Tang, G. (2003). Scholastic Press. (0439210461)

Making tens: Groups of gollywomples (math monsters). Burnstein, J. (2003). Weekly Reader

 Early Learning Library. (0836838122)

Web sites

http://www.arcytech.org

http://www.mathcentral.com

http://www.itt.edu

http://www.newbridgeonline.com

 All About Math – Set 2 (Counting to 100 Topic Set)

 All About Math – Set 2 (Working With Numbers Topic Set)
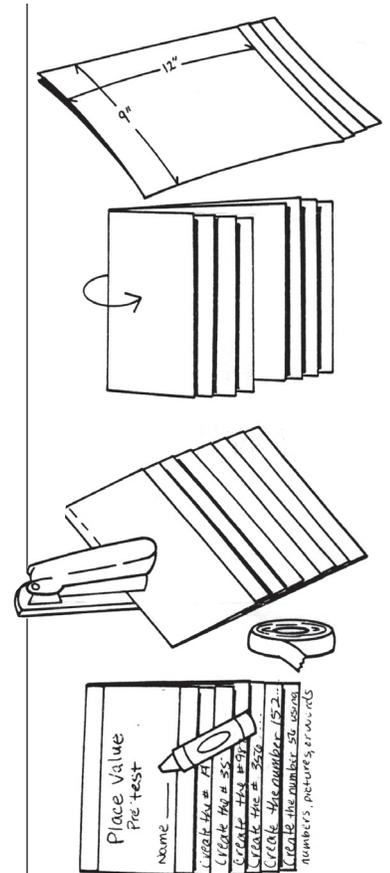
1. Lay four 9" by 12" sheets of different colored construction paper or typing paper on top of one another. Overlap the ends, leaving approximately 1/2" of each color showing.

2. Fold the left side of the pages over to the right to create four more "ladder step" pages.

3. Staple the pages along the left side of the fold. Cover the staples with colored tape.

4. Title and decorate the top page. Write the story and draw illustrations on the following pages.

Picture/Number Cards
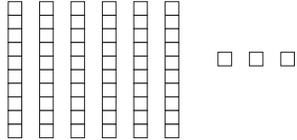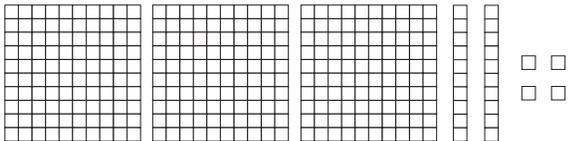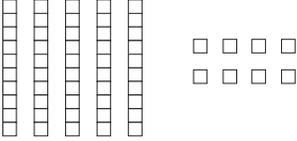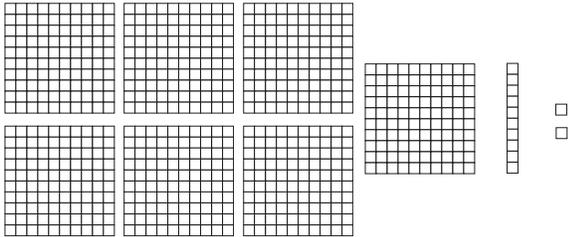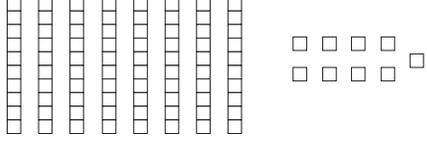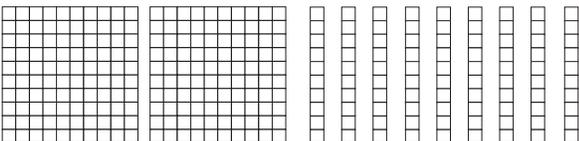
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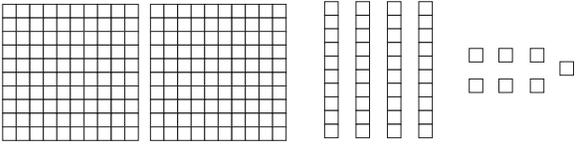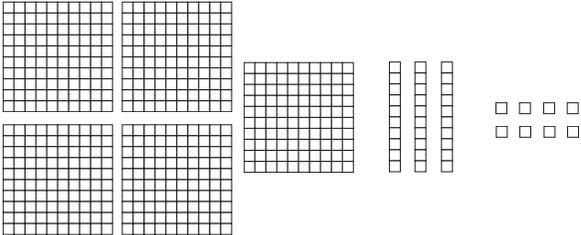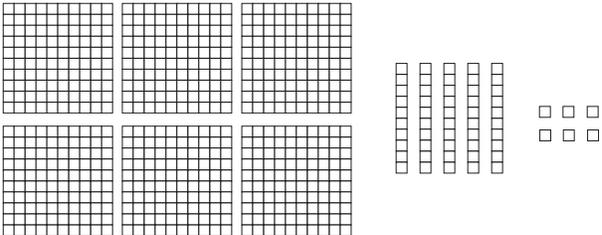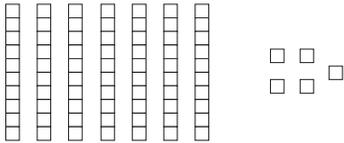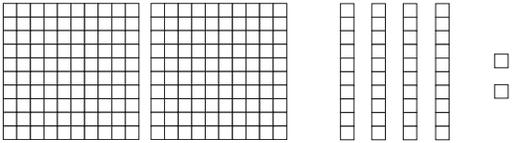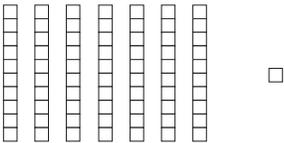
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Picture/Number Cards
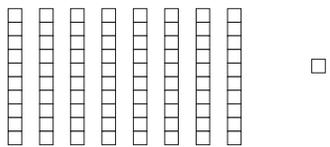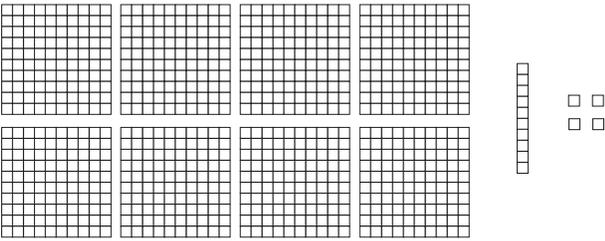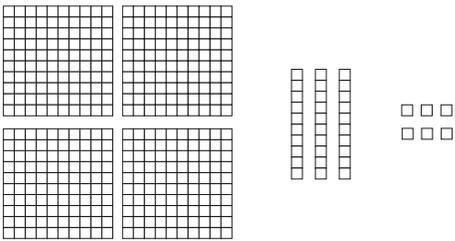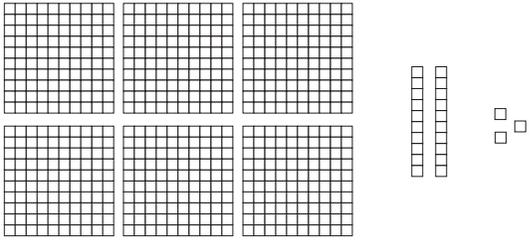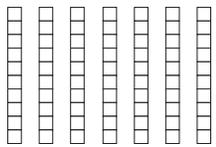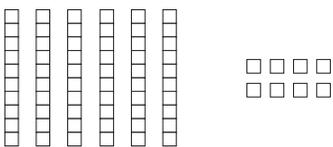
	81
	814
	436
	623
	70
	68

Window Board

Vertical Expanded Form

Standard Form

Horizontal Expanded Form

Number Cards

Make one copy of this for each student.
Students need three sets of numbers (0-9) for the Window Board activity.

0	1	2	3	4
5	6	7	8	9
0	1	2	3	4
5	6	7	8	9
0	1	2	3	4
5	6	7	8	9

Instruction Cards

Read your number aloud and then write it.	Say and write how many 100s are in your number.	Say and write how many 10s are in your number.
Say and write how many 1's are in your number.	Make a picture of your number.	Write your number vertically in expanded form.
Write your number horizontally in expanded form.	Say and write which digit of your number is in the 10s place.	Say and write which digit of your number is in the 1s place.
Say and write which digit of your number is in the 100s place.	What is the value of the number in the 10s place?	Trade your card with the player to your right. Say and write the number.
Trade your card with the player to the left. Say and write how many 100s there are.	Trade your card with the player to the right. Say and write how many 10s there are.	Trade your card with a player who is smiling. Say and write how many 1s there are.

Instruction Cards Continued

Trade your card with a person who loves math. Write the number in expanded form.	Trade your card with a player who loves reading. Which digit is in the 1's place?	Trade your card with a player who likes ice cream. Which digit is in the 10s place?
Trade your card with someone who has a pet. Which digit is in the 100's place?	Bonus move: Move ahead two extra spaces if you can say your number while you hop.	Bonus move: Move ahead one extra space if you can say your number while laughing.
Bonus Move: Move ahead three extra spaces if you can sing and write your number. Write number vertically in expanded form.	Write your number vertically in expanded form.	Write your number horizontally in expanded form.
Say and write how many 10s are in the number of the player across from you.	Trade your card with a player who is wearing blue. Draw a picture of the number.	Say and write which digit of your number is in the 10s place.
Say and write which digit of your number is in the 100s place.	What is the value of the number in the 100s place?	Trade your card with a player who ate cereal today. How many 10s are there?

Numbers

325	741	432
178	874	643
455	115	923
875	777	624
322	465	692

Name _____

Place Value Game Recording Sheet

1st turn Number _____ Answer:	2nd turn Number _____ Answer:	3rd turn Number _____ Answer:
4th turn Number _____ Answer:	5th turn Number _____ Answer:	6th turn Number _____ Answer:
7th turn Number _____ Answer:	8th turn Number _____ Answer:	9th turn Number _____ Answer:

Content III-4

Activities

Maps & Symbols

Welcome to My World!

Standard III:
Students will develop an understanding of their environment.
Objective 4:
Demonstrate how symbols and models are used to represent features of the environment.
Intended Learning Outcomes:
5.   Understand and use basic concepts and skills
Content Connections:
Math III-2

Content Standard III

Objective 4

Connections

Background Information

Students in second grade have been exposed to map making skills in kindergarten and first grade. This activity takes what they have learned and adds to their knowledge and skills of being able to use information from maps to locate information. It also adds to their knowledge of using maps and how it is important in their lives.

An Atlas is a collection of maps and in some cases contains interesting information that will add to the understanding of a specific place. Through making their own atlas, students will build a schema to help them gain a lasting knowledge of specific continents and oceans. By completing a hands-on project, they will be using different senses in which to make valuable connections within the brain that will help them with their understanding of maps and globes.

Political maps basically show borders, while topographical maps give information showing physical features.

Research Basis

Sutton, J., Krueger, A. (2002). What role does active hands-on learning play in mathematics instruction? *Edthoughts: what we know about mathematics teaching and learning*, p 90-91.

Young students learn a great deal through sense perception and concrete experience. Using concrete materials helps them receive data through the senses. This makes more connections in the brain and helps the students better understand new ideas.

Rockman, et.al, (2002). The academic value of hands-on craft projects in elementary schools, *Academic search primer*. Retrieved December 12, 2005 from http://web8.epnet.com.

Through this study of 76 teachers and 1600 students it was concluded that hands-on learning projects function as learning

Materials
- ❏ Earth pictures
- ❏ *Continent/Ocean Cards*.
- ❏ Continents cut outs
- ❏ *It Looked Like Spilt Milk*
- ❏ My Atlas booklets
- ❏ *Discovery Box Answer Sheet*
- ❏ *Teacher Map Guide*
- ❏ Crayons
- ❏ Scissors
- ❏ Pencils

anchors and result in a greater ability to transfer skills to new contexts. Also, hands-on learning accommodates students with different learning styles.

Invitation to Learn

Read the story, *It Looked Like Spilt Milk*. Comment on how the clouds could look like objects students are familiar with. Explain that Astronauts in space can look down on Earth from the sky and see shapes on the planet that may remind them of other things.

Show the students the pictures of the Blue Marble Earth and have them share what they see when they see the continents. Blue Marble Earth pictures can be found at the website in the Additional Resources section. It may not be easy to see the outlines of the continents on this map so after pointing them out on the picture, you could cut out the continent shapes from the Continent/Ocean Cards and place them on the overhead. If you do not have a picture of the earth, use the map of the world and point to the different continents.

Instructional Procedures

1. This is an activity that will take several days to complete. Each continent should be a one-day activity.

2. Show students a flat map of the world and a globe. Explain to them that a flat map is a two-dimensional version of the three-dimensional globe map. Take whatever time you need to discuss and review what is on the maps.

3. Point to the continents and remind them they are the largest land masses on Earth.

4. Hand out pre-made *My Atlas Booklets* to each student.

5. Discuss what an Atlas is and explain that they will be making their own Atlas to record information that they can later draw from to locate important information.

6. Start with the cover and the glossary. Help students recognize that the North American Continent in the globe on the cover is where they live. Color the cover. Work together to fill in the blank lines on the glossary page. (See answer sheet.)

7. Have students color the map of the world on page two of their atlas. Color the continents of North America, Antarctica, Africa, and Australia yellow. Color the water blue and the other continents green. Explain that we will be putting extra effort

in to learning the yellow continents and the Pacific and Atlantic Ocean.

8. Work as a whole group discussing and completing the Discovery Boxes. This will give the opportunity to discuss unique features of each continent or ocean. Discovery Boxes can be given to each student as part of the Atlas or the teacher can just use one copy to lead the students through the activity. (See *Teacher Map Guide* and *Discovery Box Answer Sheet*)

9. While completing the Discovery Boxes, add the features to the maps and map keys.

Assessment Suggestions

- Use a *rubric* to assess following directions and completeness of the *My Atlas Booklet*.

- Assess the student's ability to locate and mark physical features by checking the completed booklet.

- Assess the student's understanding of map keys by checking keys against symbols put on the maps.

- Pre-assess student understanding of what maps are and what they are used for by using a K-W-L chart before beginning the lesson.

- Play a flash card game using *Continent Cards*.

- Have student glue a Continent Card at the top of a sheet of writing paper. Have them write three clues that would help someone discover which continent is pictured.

- In a student journal, have students design a Venn diagram representing the differences and similarities in continents or similarities and differences between the continents and oceans.

Curriculum Extensions/Adaptations/ Integration

- Advanced students could research and add information to the Discovery Box.

- Advanced students could add the three other continents to their Atlas.

- The student *My Atlas Booklet* could be adapted to help students with special needs by having the physical features already drawn on the maps.

- Students with special needs who still need to work on a concrete level could add sand and other tangible materials to their continent pages. They could also outline their continents with Wikki Stix.

- Students with special needs could work with a buddy to work on their Atlas.

- Having students fill in the blank spaces of the Discovery Box rather than writing the entire sentence is helpful to the student with special needs.

- By having students locate the correct placement of physical features on their maps, they will be using skills taught in Math Standard III-2, find and name locations using coordinates.

- Students will be using the Content Standard of I-3, Develop and use skills to communicate ideas and spatial awareness.

Family Connections

- Use a commercial Atlas at home to help plan an imaginary family vacation.

- Play a game of "Where's the (physical feature, city, map key item, etc.)" by using the coordinates on the maps from an Atlas.

Additional Resources

Books

It Looked Like Spilt Milk, by Charles G. Shaw; ISBN0-590-42875-6

Scholastic Atlas Of The World, by Scholastic Reference; ISBN 0-439-52797-X

The Children's World Atlas, by Barnes and Noble Books; ISBN 0-7607-5929-4

The Nystrom Nystronaut Atlas, by Herff Jones, Inc.; ISBN 0-7825-0662-3

Web sites

http://www.solarviews.com

http://www.nationalgeographic.com

Continent/Ocean Cards
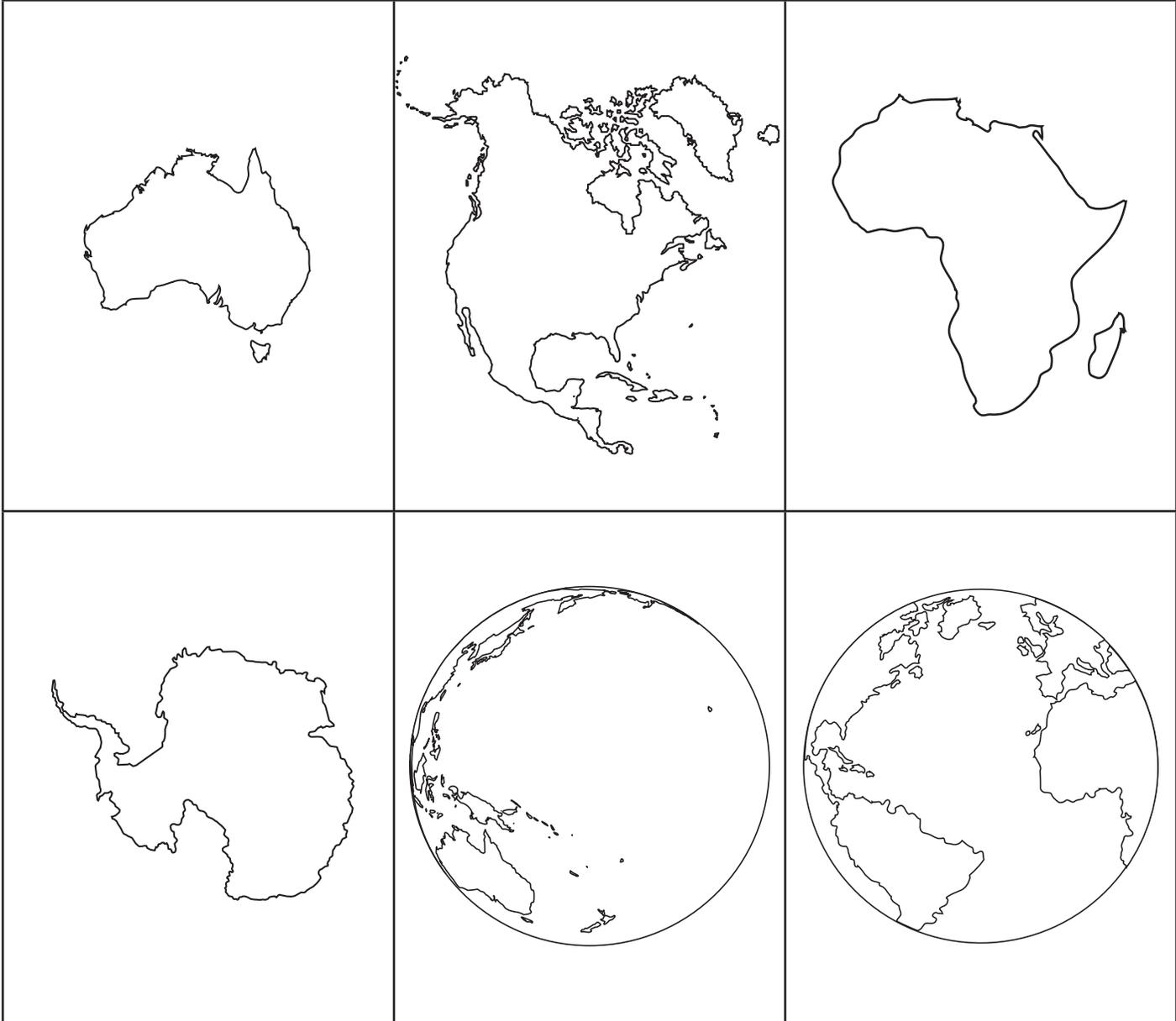
Name _____

My Atlas

Table of Contents

- Map of the world

- North America

- Africa

- Antarctica

- Australia

- Atlantic Ocean

- Pacific Ocean

- Glossary

My World

Asia

Europe

Indian Ocean

South America

North America, Antarctica, Africa, Australia, Pacific Ocean, and Atlantic Ocean

North America

_____ largest continent

9

8

7

6

5

4

3

Map Key

Desert
Mountains
Rain Forest
Capital City

2

1   It looks like _____

| A | B | C | D | E | F | G |

Discovery Box
North America

It is the _____largest continent.

It lies between the _____ Ocean

and the _____Ocean.

There are _____, _____

___, and _____ in North America.

In the _____ you will find icebergs

and in the _____you will find tropical

islands.

The _____ is in North America. I live

here!

People in _____break Piñatas.

People in _____are very cold.

One Capital city is Washington D.C.

- Write the ordinal number, 3rd, under the title on the North American map.

- Color the oceans blue and label them.

- Draw sand where there are deserts and add the desert symbol to the map key

- Add mountains to the map of North America and add the mountain symbol to the key.

- Add bananas where there are rain forests and add a banana to the key.

- Add a star near Washington D.C. and add a star to the key. Add the symbol to the key

- Draw a picture of you in the U.S.

- Add a piñata to Mexico.

- Add mittens to Alaska.

Africa

9

_____ largest continent

8

7

6

5

4

3
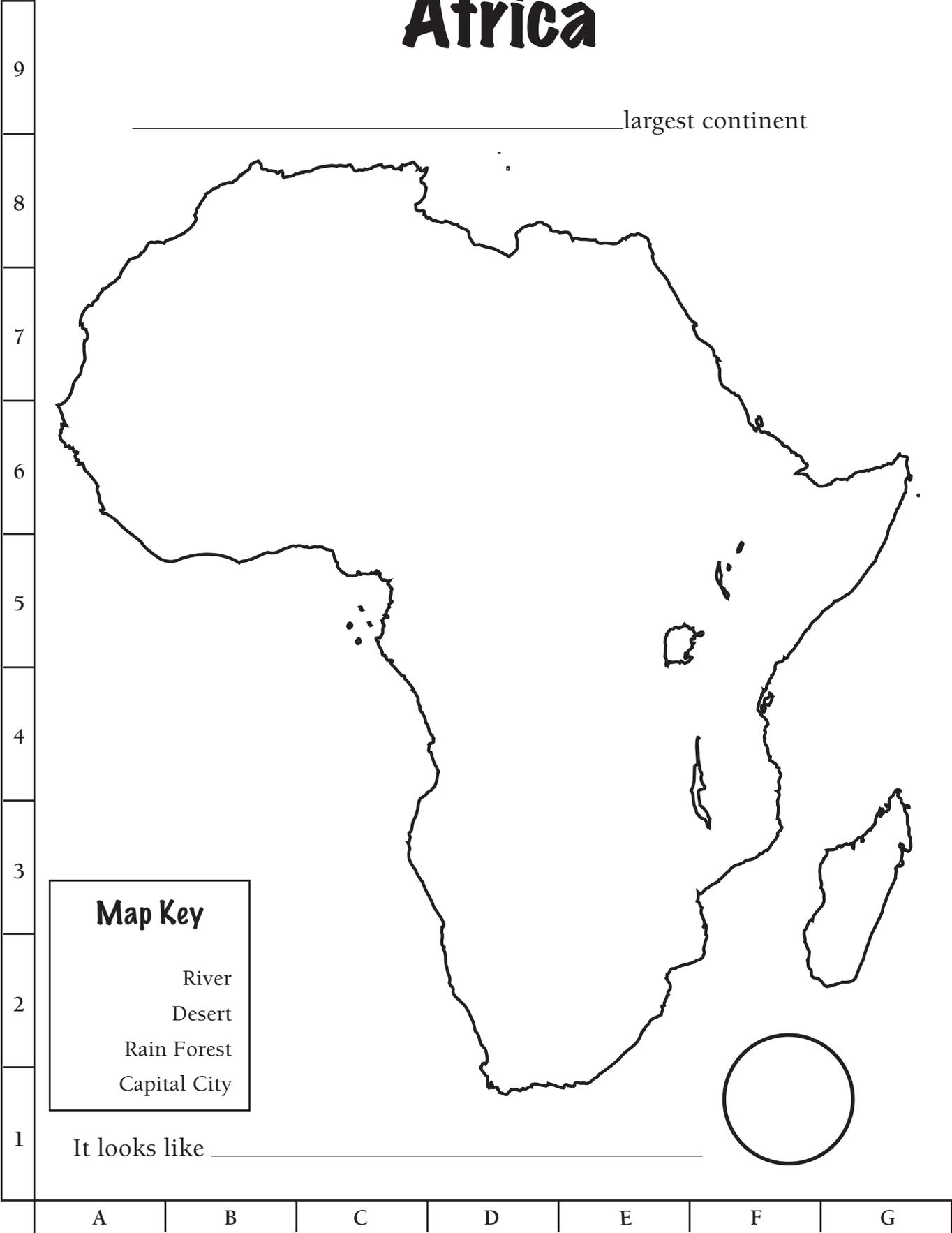
| **Map Key** |
| River |
| Desert |
| Rain Forest |
| Capital City |

2

1   It looks like _____

| A | B | C | D | E | F | G |

Discovery Box
Africa

It is the _____largest continent.

It lies between the _____

Ocean and the _____Ocean.

The Nile is the longest _____ in

the world.

There are huge _____in

Africa.

Big animals such as _____, ___

_____, and _____ live in

Africa.

There are dense _____ _____ in

Africa.

One capital city in Africa is Nairobi.

- Write the ordinal number, 2nd, under the title on the Africa map.

- Color the oceans blue and label them.

- Draw the Nile River with a blue crayon and label it. Add the river symbol to the map key.

- Draw sand where there are deserts and add the desert symbol to the map key

- Add wild animals to the map of Africa.

- Add bananas where there are rain forests and add a banana to the key.

- Add a star near Nairobi and add a star to the key.

Antarctica

_____ continent

9

8

7

6

5

4

3

Map Key

Research Station
Ice Shelf
South Pole

2

1   It looks like _____

| A | B | C | D | E | F | G |
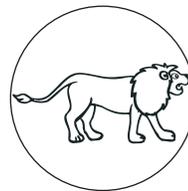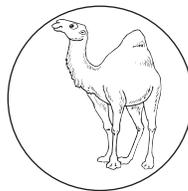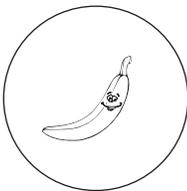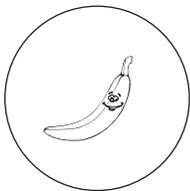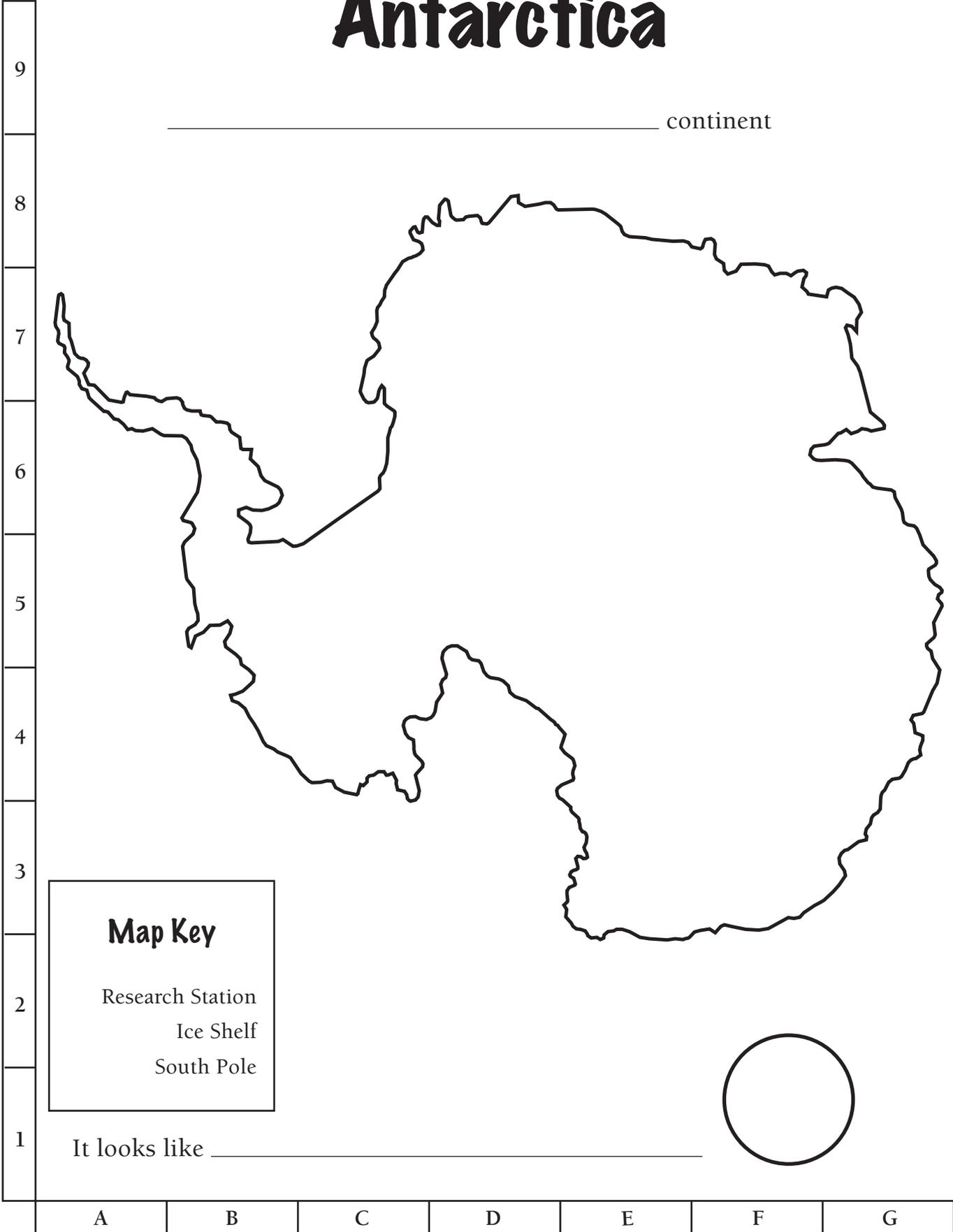
Discovery Box Antarctica

Antarctica is at the _____ of the earth.

It is the _____and _____

place on earth.

_____lives in Antarctica.

_____visit to study Antarctica.

_____live by the seashores.

Many _____float in the water.

_____ _____surround Antarctica.

It is surrounded by _____ oceans.

The _____Pole is here.

- Write the word *coldest* under the title on the Antarctica map.

- Place flags around Antarctica to represent Research Stations. Add a flag symbol to the map key.

- Color, cut, and glue penguins along the seashores of Antarctica.

- Put Icebergs in the water.

- Color the water surrounding Antarctica blue and label the oceans.

- Surround the coastline of Antarctica with a symbol for an ice shelf. Add the symbol to the map key.

- Add a star to mark the South Pole and add the star symbol to the key.

Australia

9

8

_____ continent

7

6

5

4

3
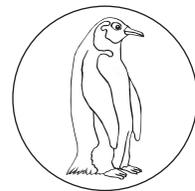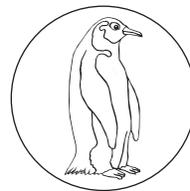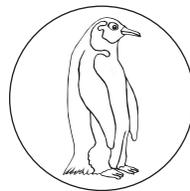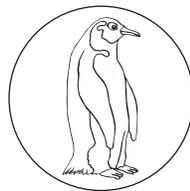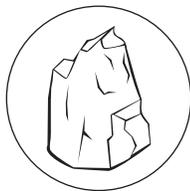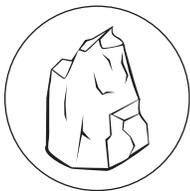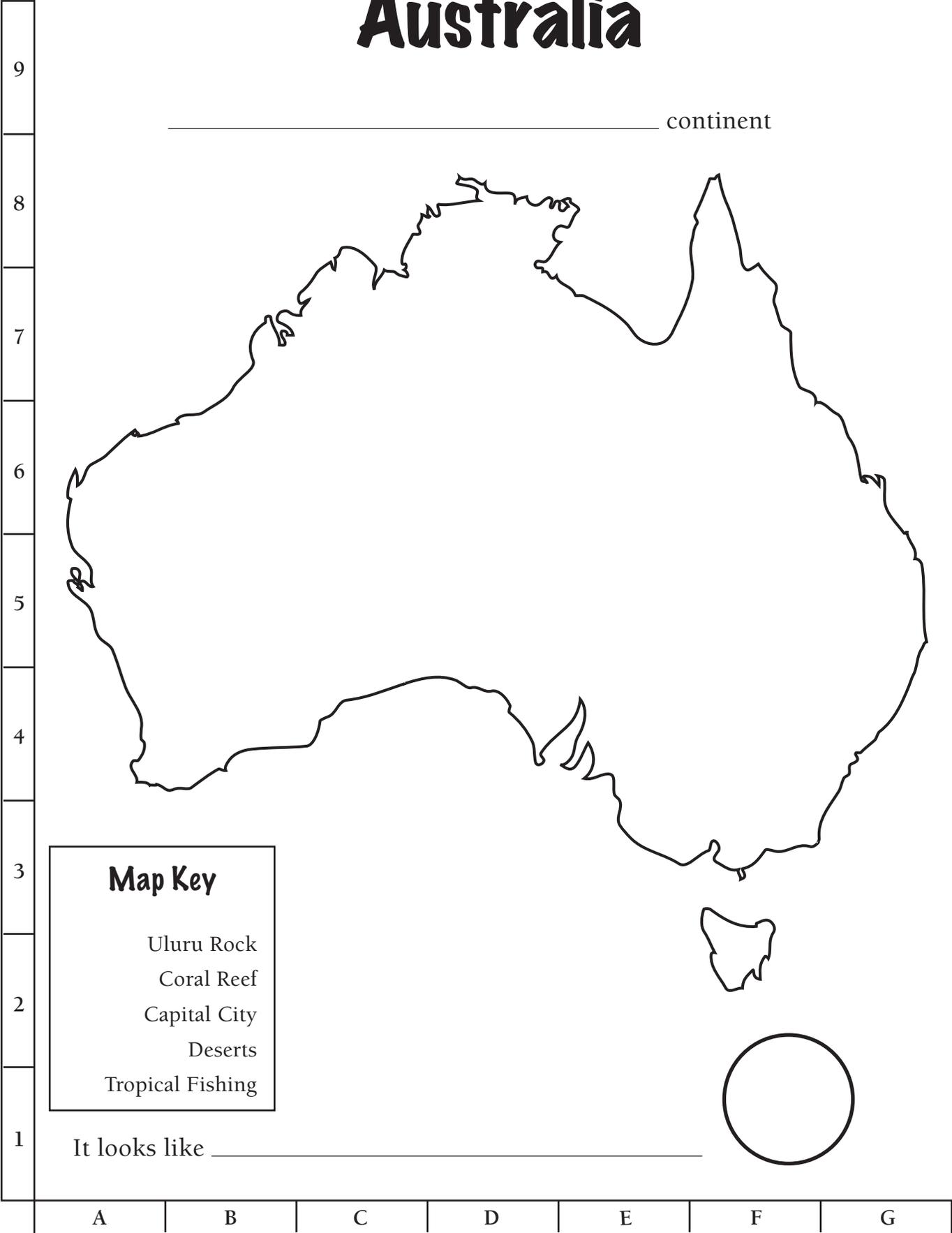
Map Key

Uluru Rock
Coral Reef
Capital City
Deserts
Tropical Fishing

2

1 It looks like _____

A	B	C	D	E	F	G

Discovery Box Australia

It is the _____ continent.

The _____Ocean is on the _____ side of Australia and on the West side is the Indian Ocean.

There is a lot of _____land in Australia.

Koalas and Kangaroos live in the bush land of Australia.

Off the East Coast of Australia is a great _____. Many Tropical fish live there.

One of the Capital cities in Australia is Canberra. Uluru, the largest rock in the world is in Australia.

- Write the word smallest under the title of the Australia map.

- Color the oceans blue and label them.

- Draw sand where there are deserts and add the desert symbol to the map key.

- Add Koalas and Kangaroos to the map of Australia.

- Color and add a coral reef on the east side of the Australian coast then add a coral symbol to the key.

- Add the fish by the reef.

- Add a star near Canberra and add a star to the key.

- Add the rock Uluru on the map and a symbol on the key.

Atlantic Ocean

_____ ocean

North America

Africa

South America

Map Key

Coastline

Island

It looks like _____

| A | B | C | D | E | F | G |
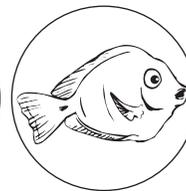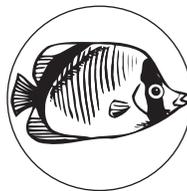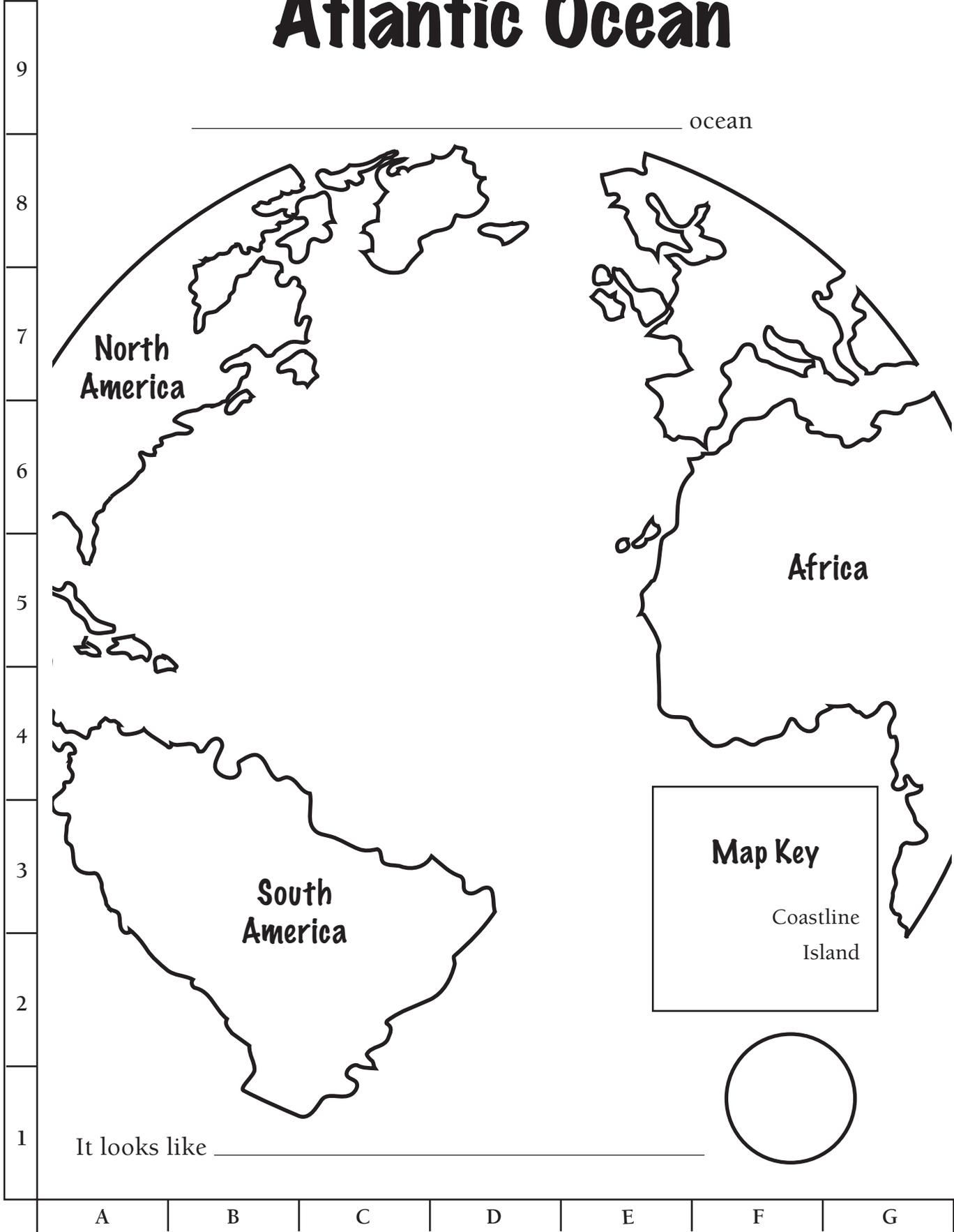
Discovery Box
Atlantic Ocean

It is the _____ largest ocean.

It divides _____ from

_____.

There are many _____ in the

Atlantic _____.

Many _____are caught in the

_____Ocean for food.

Most _____stay in the

_____ _____ in the

winter.

- Write the ordinal number, 2nd, under the title of the Atlantic Ocean map.

- Outline the African and North American coastline.

- Color the Atlantic Ocean blue.

- Draw a palm tree on the islands.

- Color, cut and glue the fish in the water.

- Color, cut and glue the whale in the water.

Content Standard III-4–Activities

Pacific Ocean

_____ ocean

Asia

North
America

South
America

Map Key

Coastline
Island

Australia

It looks like _____

| A | B | C | D | E | F | G |
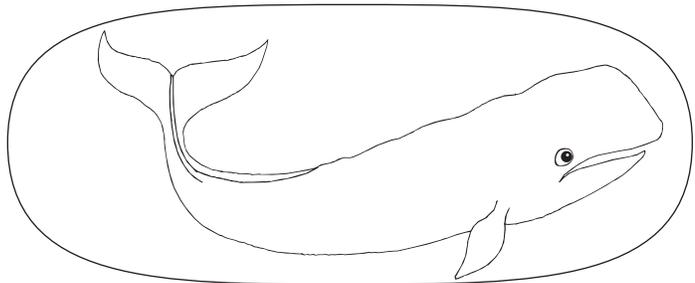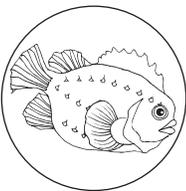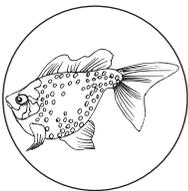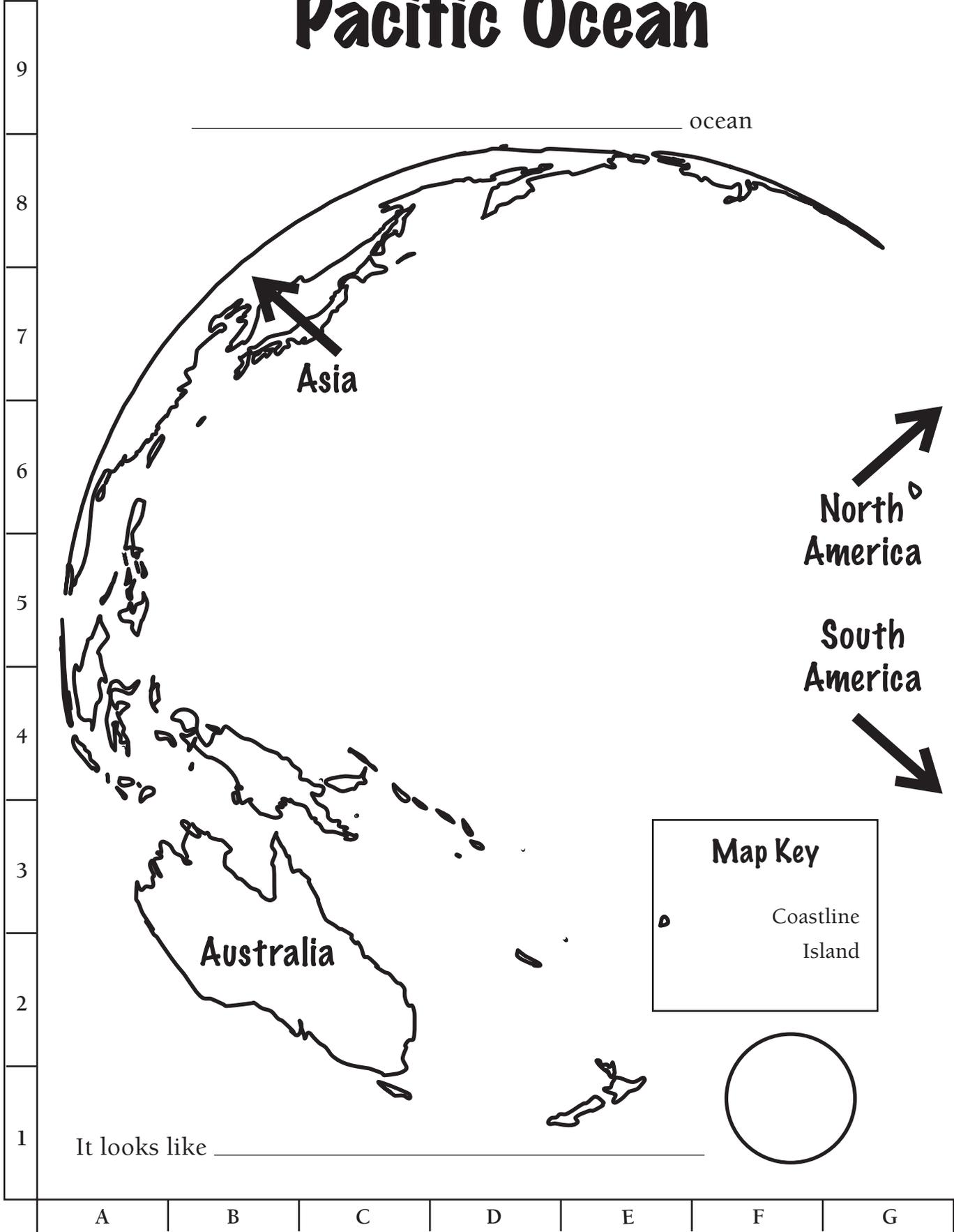
Discovery Box
Pacific Ocean

The _____Ocean is the _____

ocean in the world.

It touches _____ _____, ___

_____, and _____.

You can find _____ _____

_____ in the waters of the Pacific

Ocean.

There are also _____ _____.

There are many islands in the _____

_____ _____ and people like to go

there on vacations.

- Write the word *largest* under the title of the Pacific Ocean map.

- Color the ocean blue .

- Outline the North American, Antarctica, and Australian coastlines.

- Add palm trees to the islands.

- Color, cut and glue the shark and place it the water.

- Color, cut and glue the flying fish and place them flying over the water.
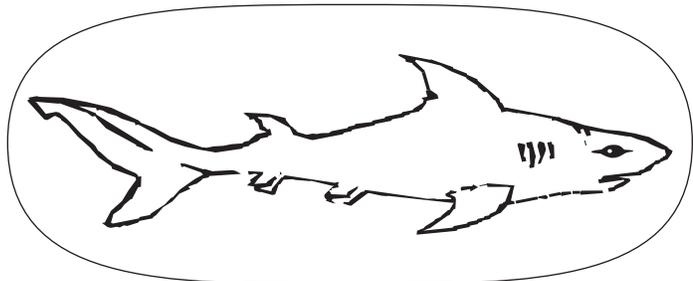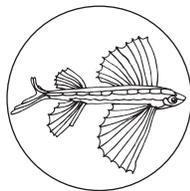
Atlas Glossary

atlas   A book of _____.

boundary   Where two states or countries _____ It is shown as a

                       _____ on a map.

coastline   The edge of a continent along a sea or an _____.

compass rose   A set of arrows that point _____, _____,

                       _____, and _____ on a map.

continent   One of the seven _____ land areas.

globe   A model of the earth that is _____.

map   A drawing of all or part of the _____ as seen from above. It

                       uses colors and symbols to show where _____ and things are

                       located.

map key   Shows the _____ used on the map.

physical features Natural _____ and water forms such as lakes, rivers, and

                       mountains.

Word Bank

maps	land	North	symbols	places
earth	South	ocean	line	round
West	meet	East	largest	

Discovery Box Answer Sheet

Africa

It is the <u>second</u> largest continent.
It lies between the <u>Atlantic</u> Ocean and the <u>Indian</u> Ocean.
The Nile is the longest <u>river</u> in the world.
There are huge <u>deserts</u> in Africa.
Big animals such as <u>lions</u>, <u>zebras</u>, and <u>camels</u> live in Africa.
There are dense <u>rain forests</u> in Africa.
One capital city in Africa is Nairobi.

Australia

It is the <u>smallest</u> continent.
The <u>Pacific</u> Ocean is on the <u>East</u> side of Australia and on
The west side is the Indian Ocean.
There is a lot of <u>desert</u> land in Australia.
Koalas and Kangaroos live in the bush land of Australia.
Off the East Coast of Australia is a great <u>coral reef.</u>
Many tropical fish live there.
One of the Capital cities in Australia is Canberra.

Antarctica

Antarctica is at the <u>bottom</u> of the earth.
It is the <u>coldest</u> and <u>windiest</u> place on earth.
<u>Nobody</u> lives in Antarctica.
<u>Scientists</u> visit to study Antarctica.
<u>Penguins</u> live by the seashores.
Many <u>icebergs</u> float in the water.
<u>Ice Shelves</u> surround Antarctica.
It is surrounded by <u>three</u> oceans.
The <u>South</u> Pole is here.

North America

It is the <u>third</u> largest continent.
It lies between the <u>Pacific</u> Ocean and the <u>Atlantic</u> Ocean.
There are <u>mountains, deserts,</u> and <u>forests</u> in North America.
In the <u>North</u> you will find icebergs and in the <u>South</u> you will find tropical islands.
The <u>U.S.</u> is in North America. I live here!
People in <u>Mexico</u> break Piñatas.
People in <u>Alaska</u> are very cold.
One Capital city is Washington D.C.

Pacific Ocean

The <u>Pacific</u> Ocean is the <u>largest</u> ocean in the world.
It touches <u>North America, Antarctica,</u> and <u>Australia</u>.
You can find <u>Great White Sharks</u> in the waters of the Pacific Ocean.
There are also flying fish.
There are many islands in the <u>Pacific Ocean</u> and people like to go there on vacations.

Atlantic Ocean

It is the <u>second</u> largest ocean.
It divides <u>Africa</u> from <u>North America.</u>
There are many <u>islands</u> in the Atlantic <u>Ocean.</u>
Many <u>fish</u> are caught in the <u>Atlantic</u> Ocean for food.
Most <u>whales</u> stay in the <u>Atlantic Ocean</u> in the winter.

Teacher's Map Guide

Australia

Pacific Ocean

rock

Anarctica

Atlantic Ocean

Pacific Ocean

North America

Pacific Ocean

Atlantic Ocean

Africa

Atantic Ocean
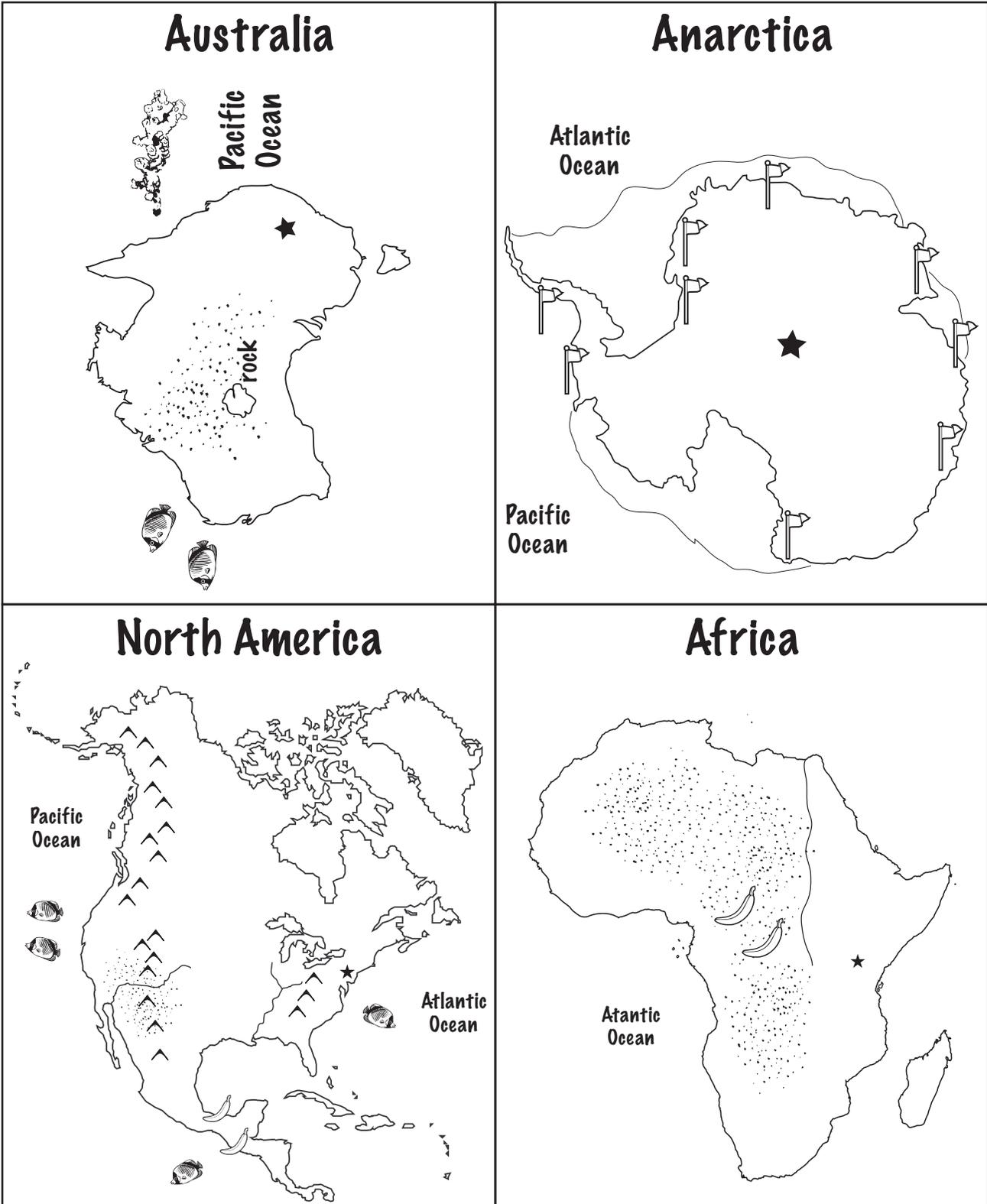
Scoring Rubric: My Atlas	

Organization: Name is written on front cover.
        All pages are in order.
        Each map is followed by a Discovery Box page.
        All pieces are glued on.	

Neat Work: Written work is neat.
        Best effort in coloring and cutting and gluing.
        Best effort in spelling.	

Complete: All writing is correct and complete on each page.
        Coloring, cutting and gluing are complete.
        All answers are correct.	

Total:	

Off to See the World!

Standard III:
Students will develop an understanding of their environment.
Objective 4:
Demonstrate how symbols and models are used to represent features of the environment.
Intended Learning Outcomes:
5. Understand and use basic concepts and skills.
Content Connections:
Language Arts 1-1, VII-3, Math III-2

Content Standard III

Objective 4

Connections

Background Information

Before doing these activities, it will be necessary for students to have completed their personal atlas from the Welcome to My World activity. Playing games in a cooperative group is a fun way to learn to use the atlas and the globe to locate information. As students look through their atlas to answer game questions, they will be able to use the tools of the compass rose and map key to help them come up with the correct answers.

By using cooperative groups to help answer the questions, students will be able to learn with their peers how to use their atlas and how to find answers. It will make all students feel that they are contributors and to be able to use their particular skills to help the group. Many second-grade students will not have the life experiences to help them with understanding geography, being in small groups will give the students a chance to learn from some diverse life experiences of those in their group.

Keeping the cooperative groups small and structured will enable the teacher to observe and assess the individual contributions to the group. It is also necessary to use small groups to help second grade students who are just learning to manage themselves and get along with others in a working situation.

This activity contains two games played in cooperative groups that will give them an opportunity to use the information collected in their personal atlases.

Research Basis

Lindauer, P., Petrie, G., (1997). A review of cooperative learning: an alternative to everyday instructional strategies. *Journal of instructional psychology*. Volume 24.3, p 183.

Materials
- ❏ *My Atlas*
- ❏ *Where's the Tourist Clue Cards*
- ❏ Six World maps
- ❏ Six Globes
- ❏ Markers
- ❏ *Where's the Tourist Cooperative Learning Job Tags*
- ❏ Pocket Chart
- ❏ *Atlas Academy Game Category Title Cards*
- ❏ *Atlas Academy Game Category Value Cards*
- ❏ *Atlas Academy Game Question Cards*
- ❏ Response sticks
- ❏ *Continent/Ocean Cards*
- ❏ *Continent/Ocean Riddle Match-up Cards*
- ❏ *Learning Center Activities*

This article focuses on cooperative learning as an instructional strategy. It discusses the flexibility teachers can have in choosing how and what goals need to be accomplished. It also gives examples of effective cooperative learning strategies.

Castle, S., & Arends, R.I., The practice of teaching: cooperative learning. *ERIC Source* (ED350277). Retrieved November 21, 2005, from http://www.eric.ed.gov

This is an analysis of the input of teachers who belong to a cooperative learning network. The data collected indicates that: (1) use of cooperative learning in schools has increased; (2) instruction has moved toward a more active, student-centered activity; and (3) teachers' knowledge about cooperative learning has increased.

Invitation to Learn

Take the class on a ride. Have them place their chairs as if they are riding in a car. Tell them you are going on a journey. The teacher is the driver. As you drive along, point out different sites you see. At some point, pull the car over and tell them that you are lost and don't know which way to go. Ask the students what you could do to help you reach your destination, leading the discussion to the importance of knowing how to use maps to help you get to where you want to go.

Suggested Car Riding Sequence

- Get in the car and explain you need to find a particular amusement park.
- Buckle seat belts.
- Roll down your window so you can get a good view.
- Start the car.
- Drive.
- Spot a grocery store.
- Spot a post office.
- Make a left turn.
- Spot a zoo.
- Spot a fire station.
- Make a right turn.
- Make another right turn.
- Make another right turn.
- It should be right here but it is not.
- Try the dirt road.

- Hit lots of bumps.

- Hit a skunk.

- This is probably not the way to the amusement park.

- Try a steep hill.

- Go down the steep hill.

- Drive on the winding road.

- I give up. I don't think we can find the amusement park this way.

- I wonder what we could do to find the amusement park.

Instructional Procedures

Where's The Tourist?

1. Each student needs their *My Atlas* made from the *Welcome to My World* activity.

2. Place a map of the world, a globe, a set of clues and a tourist marker on each group table.

3. Divide the class into six cooperative groups of four students each. Double up students on jobs within the group if you have too many students.

4. Give each member of the group a job tag.

5. If needed, discuss the duties of each job.

6. Hand out the clues to the reader of each group.

7. Give the students time to work together to read the clues and look through their atlases or on their globes to discover where to put their tourist marker, indicating they have found the tourist.

8. When they have placed their tourist marker, the group raises their hands and the teacher checks for the accuracy of the placement of their marker.

9. Students put a sticker on the appropriate continent or ocean on their world map page of their atlas indicating where they found the tourist. You can stamp or mark the map in some way if stickers are not available.

10. When all groups have had their world maps checked, the teacher switches clues and the group starts over with new clues.

11. Play the game until each group has had each set of clues.

Atlas Academy

1. Students need their *My Atlas* made in the *Welcome to My World* activity.

2. Divide the students into groups of three.

3. Give each group a response stick.

4. Post the Pocket Chart with the game cards inserted at the front of the room.

5. Explain the point values of the cards. The higher the point value that is positioned in the front of each pocket, the more difficult the question.

6. Call on a student to choose a topic and a question card.

7. Read the question and the entire class must find the answer in their atlas.

8. Each member of the group must know where the spot in the atlas is before the team can raise their response stick.

9. The teacher recognizes the first group to raise their stick and calls on anyone within that team to show where the answer is found and orally answer the question.

10. The points will be tallied on the board.

11. The team with the correct answer gets to pick the next topic and question.

12 Choose an appropriate award for the team with the most points at the end of the game.

Assessment Suggestions

• Assessment can be made by observing students as they play the games. Watch for the ease or difficulty in locating the information as well as arriving at the correct answers. Also watch for individual participation within the cooperative group.

• Journal entry: If you were in North America and you wanted to go to Antarctica, tell how you would dress, which direction you would travel and what you might see on your way.

• Make a copy of the world map from the *Welcome to My World* activity and have students cut out and glue the labels on the map from memory.

• Have Students use *Continent/Ocean Riddle Match-up Cards* and *Continent/Ocean Cards* to match up clues with the correct continent.

Curriculum Extensions/Adaptations/ Integration

- Students could make their own, *Where's the Tourist* books and give to other students to find the tourist.

- When grouping students for cooperative games, place students with special needs with those students who would be most helpful, kind, and a good model for the special needs student.

- When playing the game, *Atlas Academy*, add questions that would require students to find things and places using coordinates.

- Independent *Learning Center Activities* can be used to help students with special needs or those students who need enrichment. These activities will also help students who need reinforcement of map concepts taught in kindergarten and first grade. These are included in this lesson and instructions are written on each activity.

Family Connections

- Students can play a different version of the *Where's the Tourist* game at home with their family by having the student decide on a place for their tourist to be and letting a family member ask questions until they find where the tourist is.

- Students can take copies of the game cards from *Atlas Academy* home and ask parents or family members to find the answers by using the student's atlas.

Where's the Tourist Clue Cards
Clues for Antarctica

#1 It's very cold today.	**#2** There's no one to keep me company.
#3 The compass rose shows I've gone South.	**#4** I'll try not to slip on the ice.

Where's the Tourist Clue Cards
Clues for North America

#1 If I go west, I can swim in the Pacific Ocean.	**#2** In the South, I can enjoy bananas in the rain forest.
#3 I am West of the continent of Africa and the Atlantic Ocean.	**#4** Hey! I can see your house!

Where's the Tourist Clue Cards
Clues for Australia

#1	#2
Wow! Look at that rock!	I think I am on the smallest continent in the world.
#3	**#4**
I'll try to catch a tropical fish around the coral reef.	If I go east, I can swim in the Pacific Ocean.

Where's the Tourist Clue Cards
Clues for Africa

#1 This is a huge place!	**#2** If I go for a swim in the river, I will be swimming for a long, long time.
#3 I will need to take a camel across the desert.	**#4** I can go fishing in the Atlantic Ocean.

Where's the Tourist Clue Cards
Clues for Pacific Ocean

#1 I'm ready for a swim!	**#2** I have to be careful when I swim, I might be chased by a great white shark!
#3 I've got to take a picture of these flying fish!	**#4** If my arms were long enough, I could touch North America, Antarctica, and Australia!

Where's the Tourist Clue Cards
Clues for Atalantic Ocean

#1

This is the
2nd largest place to
take a swim.

#2

If I swim here
in the winter,
I might be able to see
the whales.

#3

I am going
to explore all
of those islands.

#4

When I look to the
West, I can see the
continent you live on.

Where's the Tourist Clue Cards Cooperative Learning Job Tags

Reader

Locator

Atlas Searcher

Signaler

Atlas Academy

Continents	
Directions	Oceans
Physical Features	Map Tools

Atlas Academy
Game Category Title Cards

5	5	5	5
5	10	10	10
10	10	15	15
15	15	15	20
20	20	20	20

Atlas Academy Question Cards
Map Tools

What should you look at to understand what symbols on a map mean?	**What shows directions on a map?**
What is the symbol for mountains?	**What is the symbol for rivers?**
What is the direction on the top of the compass rose?	**What is the direction on the bottom of the compass rose?**
What continent is the farthest south?	**According to the map key, what symbol separates land from Oceans?**

Atlas Academy Question Cards
Directions

Which way is the arrow pointing to show east on the compass rose?	**Which way is the arrow pointing to show west on the compass rose?**
What ocean is east of North America?	**What ocean is West of Africa?**
What continent is east of North America?	**What continent is east of Africa?**
On the continent of Africa, does the Nile River start at the North or South end of the continent?	**Is the Pacific Ocean east or west of Australia?**

Atlas Academy Question Cards
Continents

What is the second largest continent in the world?	**Which continent has coral reefs?**
Which continent is the smallest in the world?	**Which continent is between the Atlantic and Pacific Oceans?**
Which continent is the third largest in the word?	**Which continent do we live on?**
Which continent is at the southern end of Earth?	**Which continent is frozen?**

Atlas Academy Question Cards
Oceans

What is the largest ocean in the world?	**The Great White Shark is found in which ocean?**
What is the second largest ocean in the world?	**Where do most whales go in the winter?**
Which ocean is west of North America?	**Which ocean divides North America and Africa?**
The Pacific ocean is on the East side of Australia or North America?	**Which continent is surrounded by 3 oceans?**

Atlas Academy Question Cards
Physical Features

What river is in Africa?	**Name one physical feature found in North America?**
What physical feature can be found around the coasts of Antarctica?	**What types of land are in the Atlantic and Pacific Ocean?**
What is floating in the water around Antarctica?	**What physical feature is off the east coast of Australia?**
What symbol does the banana stand for?	**What kind of physical feature is just North of Nairobi, Africa?**

Continent/Ocean Riddle Match-Up Cards

I'm small.
I am surrounded by water.
I am North of Antarctica.

Which continent am I?

_____

I am a very cold continent.
I have icy beaches.
You must tip the globe up to find me.

Which continent am I?

_____

I am connected to another continent.
The Atlantic Ocean is on my east side.
I am the continent where you live.

Which continent am I?

_____

I am a very large continent.
I am between North America and Australia.
Right below me you will find Antarctica.

Which continent am I?

_____

I am the ocean that is between North America and Africa.
I am the 2nds largest ocean.

Which ocean am I?

_____

I am the largest ocean in the world.
I touch North America on its west side.

Which ocean am I?

_____

Math I-3&4

Activities

Equal Groups & Fractions

Picnic Field Day

Standard I: Students will acquire number sense and perform operations with whole numbers. **Objective 3:** Model and illustrate meanings of the operations of addition and subtraction and describe how they relate. **Intended Learning Outcomes:** 5. Understand and use basic concepts and skills. **Content Connections:** Content I-2 physical education	*Math Standard I* *Objective 3*

Background Information

Connections

There are two types of division problems: *Measurement Division* and *Partitive Division*. It is critical teachers understand the difference between the two types of problems because children typically solve the problems in very different ways.

Measurement Division problems state the total number of objects and the number of objects in each group. The unknown is the number of groups. (e.g. There are eighteen marbles. Each bag holds six marbles. How many bags are there?)

Partitive Division problems state the total number of objects and the number of groups. The unknown is the number of objects in each group. (e.g. There are eighteen marbles and three bags. How many marbles are in each bag?)

In this activity students are asked to complete *Partitive Division* problems.

Research Basis

Carpenter, T.P., Frank, M.L., Jacobs, V.R., Fennema, E., & Empson, S.B. (1999). *Children's mathematics: Cognitively guided instruction,* Heinemann, Portsmouth, NH. 33-52.

Children typically begin to solve *Partitive Division* problems with direct modeling. Students will often deal objects into groups however, many do not deal systematically one by one. Children often rely on trial and error rather than counting strategies such as repeated addition and doubling, which is typical for students solving *Measurement Division* problems. Base ten manipulatives can be helpful for children solving *Partitive Division* problems. They will often begin by separating the tens and unbundling the remaining ones.

Materials

- ❏ Thirty cookies
- ❏ Thirty laminated cookies
- ❏ *100 Hungry Ants*
- ❏ 100 plastic ants
- ❏ *100 Hungry Ants Worksheet*
- ❏ Five food baskets one per group
- ❏ Sets of laminated *Picnic Foods* (30 grapes, watermelon, cookies, sandwiches, and chips)
- ❏ Picnic Food Question Cards
- ❏ *Food Plan Recording sheet*
- ❏ *Picnic Games Question Cards*
- ❏ *Game Plan Recording Sheet*
- ❏ *Picnic Pass Paper*

Mulligan, J.T., Mitchelmore, M.C., (1998). Young children's intuitive models of multiplication and division, *journal for research in mathematics education*, Volume 28.3 p. 309-330.

Students intuitively link multiplication and division problems together. The teacher's task is to assist students as they widen their repertoire of calculation strategies. First, teachers should provide word problems that allow students to use direct modeling strategies. Next, students should be encouraged to use grouping strategies such as repeated addition or doubling. Finally, when students display competency using initial strategies, the standard operations can be introduced.

Invitation to Learn

Show the class a plate of real cookies. Tell them that you want to share with a group of people and ask them if they have any ideas on how you could share. Listen to several ideas. Set the plate of cookies aside and start the lesson.

Instructional Procedures

1. Separate your class into four groups: one group of 10, one group of five, one group of three and one group of two. Have each of the groups sit together where they can see all of the other groups. If you have extra students, they can be your cookie experts and help you write answers on the board. Divide your chalkboard or whiteboard into four sections labeled 10, 5, 3, and 2. Do only one group, starting with the group of 10. Using your *30 laminated cookies* ask the students to discover how they will share the cookies equally among the group. Have your cookie experts record all strategies for dividing the cookies among the group. Repeat for each group. Discuss how the size of the group affected their fair share. Which group would they want to be a part of? At the end you could use your whole class as the group you pick to share with. Give each student a cookie as his or her fair share.

2. Divide the students into small groups. Give each group one set of 100 plastic ants and each student a copy of the *100 Hungry Ants* recording sheet.

3. Read *100 Hungry Ants*. As you read the story, stop each time the ants divide and have your students model the division with their plastic ants. Allow them time to draw a representation of how the ants divided into groups. Have them record this on their *100 Hungry Ants* recording sheet. When you have finished

reading the story ask students if there are any other ways that the ants could divide into equal groups.

4. After you have read the story invite your class on a "picnic." Provide five baskets of food; place one type of food in each basket. Use real food, plastic food, or the pictures of food that are provided. (five foods copied on colored sheets, laminate and cut out). As a review and to model the *Picnic Food Question Cards*, divide the chips together as a class. Model how they could divide the 30 chips between ten, five, three, and two friends. Model how to record the question and the strategies used to solve it.

5. Divide your class into four groups. Provide each group with one basket, related *Picnic Food Question Cards* and *Food Plan Recording Sheets* to record their solutions. Students are to work together to solve the problem and record their solutions. When all groups are finished the baskets can be rotated to the next group.

6. Tell the class, now that we have eaten, it is time for the picnic games. Divide your class into five groups. Pass out the *Picnic Game Question Cards* one to each group, and a *Game Plan Recording Sheet* one per student. Pass out manipulatives to represent the students playing the game. Students are to work together to solve the problem and record their solutions. When all groups are finished the questions can be rotated to the next group.

7. Ask students what food would you bring to the picnic to share? Allow them to choose their own number and item to bring. If they cannot think of one, provide the students a choice of a food item and the amount that they will bring. If you provide them a number it should be multiples of two, three, five, or 10 (e.g., six, eight, 10, 12, 15, 20, 21, 25, 27, or 30). Students should write the food they are bringing, the amount they are bringing, and how they will divide it on their *Picnic Pass Paper.*

Assessment Suggestions

- Check individual work as students divide the ants. Are they able to divide when the specific model or picture is given?

- Check the students' *Picnic Pass Papers.* What number did they choose and how did they divide the objects. Do they show understanding of the concept?

- Have students come up with other games they could play at the picnic. and how they would allow all 30 kids to play their games.

Curriculum Extensions/Adaptations/ Integration

- Use the picnic pass food items and numbers that students chose (without solutions). Have students pull problems from your *Picnic Pass* collection to solve. They may solve the same way or use a different number of friends to share with.

- Have a monthly Division Jar. Place items in the jar to divide as a class. Keep a Journal of what was in the jar and how it was divided. Keep in mind the larger the number the more time you will need to divide it as a class.

- Divide your class into groups, and have them line up for recess. Say, "I will take the class to recess when you are divided into even groups of two (three, five, or 10). Only choose one number per day and choose a number that works with your number of students. Have a few children stay out if the numbers require it.

Family Connections

- Send home a number. Invite students to divide their number as many ways as they can with someone at home. (60, 90, 120, and 150 are large numbers that are divisible by two, three, five, and 10)

- Send the division jar home with students. Have them return it with items to divide and share. Remind students that the items will not be returned.

Additional Resources

Books

100 Hungry Ants, by Elino J. Pincze; ISBN 0395631165,

Websites
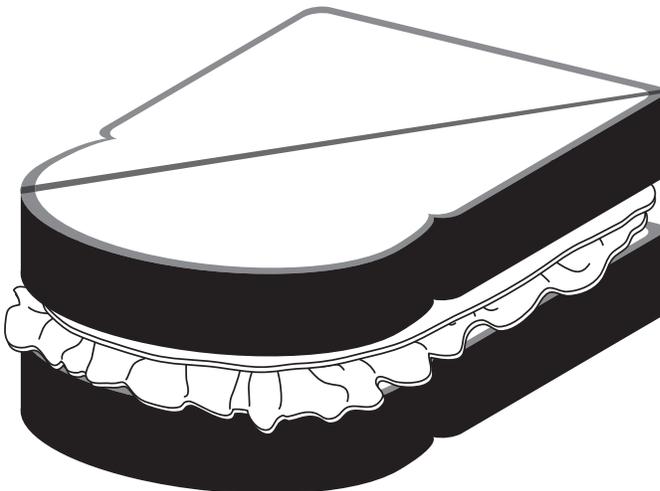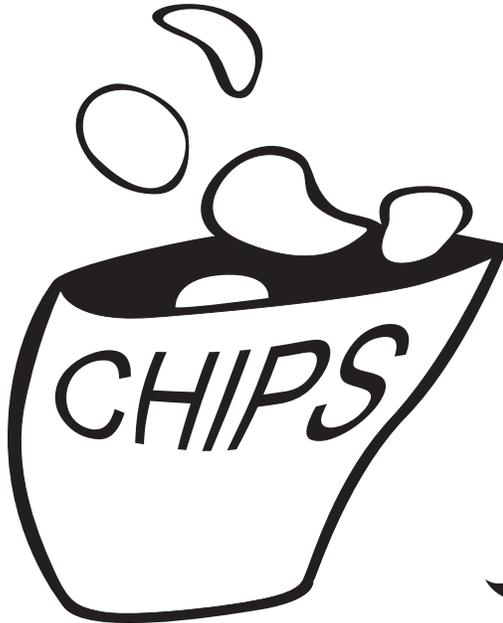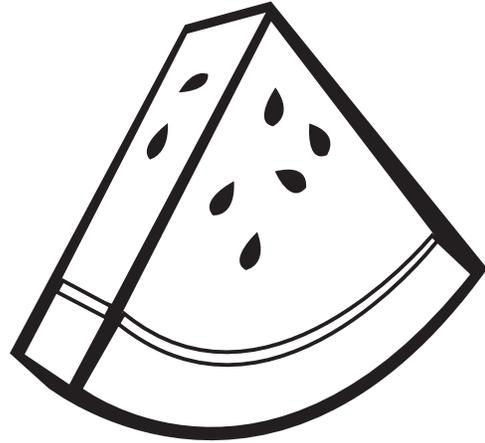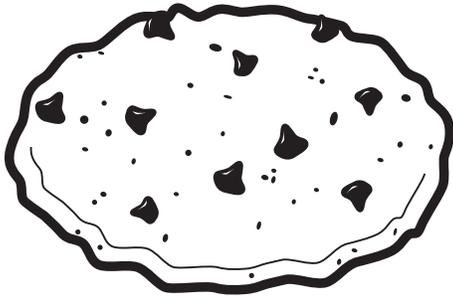
http://www.edhelper.com/math

http://www.harcourtschool.com

5 Picnic Foods

Name _____ Date _____

FOOD PLAN RECORDING SHEET

Write the number of items in your basket and the amount of friends you are sharing with on the top of your paper. Please draw a picture showing how you divided your items among your friends. Write the number of items each friend got on the bottom line of your paper.

I have _____ number of _____ and _____ friends that want to eat my food. This is how I separated it.

Each friend got _____ amount of _____

Name _____ Date _____

GAME PLAN RECORDING SHEET

Write the number of pieces of equipment you have for your game, and how many friends want to play on the top of your paper. Please draw a picture showing how you divided your teams with your friends. Write the number of how many people will be using one piece of the equipment for your game on the bottom of your paper.

I have _____ pieces of equipment. I have _____ friends that want to play. This is how I separated it.

I made _____ teams with _____ friends on each team.

Picnic Food Questions

You have 60 grapes. If 2 of your friends liked them, how many would each person get?	You have 60 grapes. If 5 of your friends liked them, how many would each person get?
You have 60 grapes. If 3 of your friends liked them, how many would each person get?	You have 60 grapes. If 10 of your friends liked them, how many would each person get?
You have 10 oranges. If 2 of your friends liked them, how many would each person get?	You have 10 oranges. If 5 of your friends liked them, how many would each person get?
You have 15 cookies. If 3 of your friends liked them, how many would each person get?	You have 15 cookies. If 5 of your friends liked them, how many would each person get?

Picnic Food Questions continued

You have 12 sandwiches. If 2 of your friends liked them, how many would each person get?

You have 12 sandwiches. If 3 of your friends liked them, how many would each person get?

You have 30 chips. If 2 of your friends liked them, how many would each person get?

You have 30 chips. If 3 of your friends liked them, how many would each person get?

You have 30 chips. If 5 of your friends liked them, how many would each person get?

You have 30 chips. If 10 of your friends liked them, how many would each person get?

You have 40 pretzels. If 2 of your friends liked them, how many would each person get?

You have 40 pretzels. If 5 of your friends liked them, how many would each person get?

Picnic Food Questions continued

You have **40** pretzels.
If **10** of your friends liked them, how many would each person get?

You have **50** noodles.
If **2** of your friends liked them, how many would each person get?

You have **50** noodles.
If **5** of your friends liked them, how many would each person get?

You have **50** noodles.
If **10** of your friends liked them, how many would each person get?

You have **20** carrots.
If **2** of your friends liked them, how many would each person get?

You have **20** carrots.
If **5** of your friends liked them, how many would each person get?

You have **24** pop cans.
If **2** of your friends liked them, how many would each person get?

You have **24** pop cans.
If **3** of your friends liked them, how many would each person get?

Picnic Food Questions continued

You have **18** candy bars. If **2** of your friends liked them, how many would each person get?	You have **18** candy bars. If **3** of your friends liked them, how many would each person get?

Picnic Game Questions

You have **2** baseballs. If **30** of your friends wanted to play, how many teams could you make? How many would be on each team?	You have **5** Frisbees. If **30** of your friends wanted to play, how many teams could you make? How many would be on each team?
You have **3** footballs. If **30** of your friends wanted to play, how many teams could you make? How many would be on each team?	You have **10** basketballs. If **30** of your friends wanted to play, how many teams could you make? How many would be on each team?

Fabulous Fraction Fun!

Standard I:
    Students will acquire number sense and perform operations with whole numbers.

Objective 4:
    Use fractions to identify parts of the whole.

Intended Learning Outcomes:
    5.   Understand and use basic concepts and skills

Content Connections:
    Math I-3 Division

Connections

Background Information

Fractions are defined in relation to a whole. This whole can be just one object such as a pizza, or it can be a collection of objects, such as a bunch of bananas. The whole can also be a quantity such as a quantity of water, or it can simply be the number one. It is important for children to understand the part-whole relationship.

This understanding begins to develop at an early age and continues to develop through hands-on activities and explicit instruction. Clearly, students can invent equivalence-reasoning strategies that have the potential to be transformed into more generalized symbolic procedures, but that transformation is not guaranteed.

Teachers must guide the transformation by acknowledging and valuing the meaning and variety of student generated strategies in equal sharing and emphasizing a common focus on constructing strategies that work for as many different number combinations and problem contexts as possible. For any invented strategy, a teacher should raise at least two mathematical questions for class discussion. One is whether the strategy makes sense mathematically. The other is whether the strategy can be generalized and, if so, to what problems.

Materials

❏ *Fraction Action*
❏ One bag of counters per group
❏ Play-doh
❏ Wax paper squares
❏ Popsicle sticks
❏ Toothpicks
❏ *World Wide Fractions*
❏ *"Stamp"ede Fractions*
❏ *Fabulous Fraction Search*

Research Basis

Empson, S., (March 2001). Equal share and the roots of fraction equivalence, *teaching children mathematics*. Volume 7.7 pp. 421-425.

This article presents examples of children's invented equal-sharing strategies. The examples highlight some of the different ways that children think about division and show how that thinking helps them reason about fraction equivalence. The article addresses the teacher's role in supporting, refining, and extending these connections. Empson also addresses some of the mathematical issues involved in

generalizing invented strategies into more powerful, symbolically driven procedures.

Saxe, G.B., Taylor, E.V., McIntosh, C., Gearhart M., (2005). Representing fractions with standard notations; a developmental analysis, *journal for research in mathematics education.* Volume 36.2 pp. 137-157.

This Article showed that students' knowledge of conventional notation and part-whole relations can develop independently. It found that some students used unconventional notational forms to refer to part-whole relations, and some students used conventional forms to refer to relations that were not part-whole. This study found that students in inquiry classrooms made greater progress than those in traditional classrooms within their representation of part-whole relations.

Invitation to Learn

Instruct your students that you are going to talk about fractions. Give them a sheet of white paper. Have them fold it in half and color one side of their paper their favorite color. Inform them that they have just colored half of their paper. Tell them they will be doing more of this today, and invite them to the floor and start your lesson.

Instructional Procedures

Fraction Action!

1. Read *Fraction Action.* Ask them to look for the different ways that you can make a fraction.

2. After you have read the story, separate the students into groups of four. If you have groups that do not have four, have them make a fraction (ghost) friend, by placing their share on an empty chair. Have a bag of candy or counters for the groups to separate evenly among themselves.

3. Have the students separate the items among their groups. Tell them you will invite each group to share how they separated their items among themselves. Try and encourage them to come up with a way that the book did not think of.

4. Invite them to share how they separated the items and record their answers on the chalkboard. Tell them that they have just separated their bag into fractions, and they each got one fourth of the items in their bag. Invite them all to sit back at their seats.

Take Part

1. Tell the students they are going to become fraction experts. As an expert, they will be able to identify fractions around them and share items with each other.

2. Pass out Play-doh to the students. Working on waxed paper, have each student separate their dough into three equal parts and form rectangles out of each part.

3. Using their popsicle stick, have them cut one of the rectangles into two equal sized parts, pointing out that there is more than one way to do this.

4. Walk around the room and invite the students to the chalkboard to draw how they separated their rectangles.

5. Using one of the ideas that they have presented, demonstrate how to write "1/2" on the board. While students will not be assessed on the terms, it is important to explain the meaning of the denominator and the numerator.

6. Have students use a toothpick to write the fraction on each half of the square.

7. Repeat this activity introducing "1/3" and "1/4" with the remaining two rectangles.

World Wide Fractions

1. Discuss how fractions are found in everything—not just in math class. Show a few examples of real-world fractions such as one-fourth an apple cut into quarters, one fifty-cent piece out of two is half of a dollar, one wheel is a third of the wheels on a tricycle.

2. Write 1/2, 1/3, and 1/4 on the board leaving space between them. Have the students brainstorm what other fractions they can see in life that are part of a whole. Discuss at least four for each fraction.

3. Tell them they get to be reporters for our classroom world wide fraction book. Pass out a *World Wide Fractions* page to each student. Have them write and illustrate two items for each fraction to put in the class book. Bind all pages in the book for the class to share.

"Stamp"ede Fractions

1. Separate your class into partners. Provide each person with a stamp and a copy of the *"Stamp"ede Stamps* and a green and blue marker each.

2. Have them use their green marker to write their name on the top of their stampede paper. In the one-half section, have them place two stamps and use their green marker to circle one half of their stamps. Repeat this in the one-third and one-fourth sections.

3. When they have finished, have them trade their paper with their partner.

4. The partner writes his name in blue on the top of the paper. The partner—using his blue marker—then labels the part of the stamps in each section that are circled. The paper is then returned to the partner.

5. Invite the partners to check each other's work and make sure that they have labeled their fractions correctly.

Assessment Suggestions

- Use your students' *Fabulous Fraction Search Worksheets* as ideas for students to solve for you.

- Walk around to assess how students separate their pieces into thirds and fourths during "Take Part."

- Check the blue fractions to see if the partner with the blue name understands how to write a fraction in the "Stamp"ede activity, while checking that the green partner can circle the fraction of the whole that they are looking for.

- Work with the Unifix® cubes and ask them to show you a fraction that is one-half, one-third, one-fourth of one color of the whole. Maybe only do four or five a day, as time permits.

Curriculum Extensions/Adaptations/ Integration

- Place your spelling words, names, sports, colors, etc. into fractions by consonants and vowels.

- Allow them to explore on their own with Unifix® cubes. Tell them to draw and record what fractions they found.

- Have a Fabulous Fraction Day and encourage students to dress as a fraction, such as wearing two different colored socks so half of their socks is red, and half of their socks is blue. Allow the children to share all the fractions they have brought with them. You may also want to share an assortment of cracker mix and have them identify the fractional part of each variety.

Family Connections

- Family-Styled Fractions—Pass out white art paper to each student. Invite them to explore another type of group—their family. Have students choose an attribute such as hair or eye color to describe themselves and their family members. Write and draw the fraction. Invite them to take this home and think of other fractions that are about their family. Bring it back to school to be displayed for all to see.

Dear Parents,
   We have had a fun time in class learning about fractions. They have all become fraction experts. For their assignment they are going to explore the fractional part of their family. To do this your student should choose an attribute such as hair or eye color by which to describe themselves and their family members. On provided paper, they draw their family in two or more sets by the chosen attribute. Then label each set with the corresponding fraction. So if you did brown eyes you would draw all the people with brown eyes together and all the other colored eyes together. Under them you would write: two-fifths of my family have brown eyes, and three-fifths of my family do not have brown eyes. Thanks for all you do. They have had a lot of fun learning about fractions in our world.

Second grade teachers

- Keep a fraction diary for a week and record fractions they see in their everyday life.

Additional Resources

Books

Fraction Action, by Loreen Leedy; ISBN 0-8234-1109-5

Fraction Fun, by David A. Adler; ISBN 0-8234-1259-8

Give Me Half, by Stuart J. Murphy; ISBN 0-06-025873-X

Jump Kangaroo Jump!, by Stuart J. Murphy; ISBN 0-06-027614-2

World-Wide Fractions

by _____

1/2	1/3	1/4

"Stamp"ede Fractions

Stamp 2		
Stamp 3		
Stamp 4		

Fraction Words

Word	Fraction of Vowels	Fraction of Consonants

Fabulous Fraction Search

1 / 2		
1 / 3		
1 / 4		

Content II-3

Activities

Cultures & Art

Community Culture Trunk

Standard II:
> tudents will develop a sense of self in relation to families and community.

Objective 3:
> Express relationships in a variety of ways.

Intended Learning Outcomes:
> 6.   Communicate clearly in oral, artistic, written, and nonverbal form.

Content Connections:
> Content III-4 Maps

Content Standard II

Objective 3

Connections

Background Information

The different and varied cultures represented in each classroom provide an opportunity for students to learn about others and themselves. Targeting specific cultures represented in individual classrooms validates student's backgrounds and gives them a chance to understand and appreciate one another. When teaching about cultures it is important to be sensitive and not to stereotype. Use your culture trunk to compile information and artifacts of the cultures you want to represent. Let the diversity of your class guide your decisions and discussions. It is important to integrate discussion about appreciating, valuing, and respecting differences of cultures.

During this lesson the teacher will need to have a bulletin board featuring continents of the world. Each continent will have a string connecting that part of the world to their community in North America. Students will be asked to place different cultural items/pictures/words on the corresponding continents. Teachers may want to review the terms culture and community before beginning the lesson.

Research Basis

> Singer, Judith. The potential of multicultural literature: changing understanding of self and others. *Multicultural perspectives*, Volume 5.2, pp. 17-23.

Utilizing literature that is multi cultural helps to create a climate that welcomes diversity in the classroom, whatever the racial, gender, or cultural constituency of the class. Multicultural children's literature provides self-affirmation for readers when it conveys that people like themselves have lives worth knowing about and worth sharing with others.

Materials

❏   Suitcase or box filled with artifacts, books, pictures, artwork, and music that represent the cultures in your community.

❏   *When I First Came to America*

❏   Post-it Notes

❏   Three prong folder

❏   *Student Culture Trunk*

❏   *Student Continent Culture Map*

Invitation to Learn

Unpack your culture suitcase. Pull out items such as a pair of chopsticks, a tortilla, a pair of moccasins, an African drum, a woven poncho, a beret, a soccer ball, a menu from an ethnic restaurant, something written in another language, a CD of Irish music, candy treats from another country, a multicultural folktale, etc. Each time you pull an item out of the suitcase ask the students where they think it came from. Once everything is out of the case reveal that all of the items were collected from right there in their own community. Ask students to predict how so many different kinds of items arrived in their community?

Instructional Procedures

1. Read *When I First Came to America* or another book about coming to America.

2. Ask the students if they were moving far away what important items would they want to take with them so they could "do the best they could" in their new surroundings but still remember their original way of life. Give each student one to three Post-it Notes and ask them to write one answer on each sheet.

3. Have students share their items. On the board help the children sort the Post-it Notes into like categories. Help students name and title each category (e.g. toys/games, family, clothes, pets).

4. Ask students if there are other things they might bring with them but wouldn't necessarily need to pack in a bag (e.g. traditions, languages, celebrations, stories, physical features). Add new suggestions to the board.

5. Tell the children they are going to be packing their own culture trunk as they learn more about the cultural contributions found in their community.

6. Create the student trunk by gluing the *Student Culture Trunk Cover* to the front of a three prong folder. Put the *Student Continent Culture Map* inside of the folder.

Part 1: Languages

1. Open the cultural trunk and start pulling out word cards with foreign origins (Europe—macaroni, ballet, camouflage; Asia—ketchup, magic, karaoke; Australia—koala, kangaroo, boomerang; Africa—aardvark, jumbo, banjo; South America— yo-yo, cocoa, barbecue; North America—moccasin, tortilla,

Materials

- ❏ *Word Cards*
- ❏ *"Hello To All The Children Of The World"*
- ❏ *Hello Cards*
- ❏ *Hello Around the World Recording Sheet*
- ❏ Continent Bulletin Board
- ❏ Yarn

Utah).   Ask the students how these words became a part of our language. After revealing the origin of the word, have students post the card on the appropriate continent located on the bulletin board.

2. Let the children know that if they were to move to another country the first thing they would need to do is learn how to communicate with others who might not speak the same language. Tell students this is what happened as people began to move to this land and began building new communities. They had to learn each other's languages. We still share languages today. Many children speak different languages in the home and are able to learn new languages at school. Books and movies are even available in different languages here in America.

3. Tell the students one way to welcome someone into a new community is to greet them with a friendly hello. Ask students if they know of any other ways to say hello.

4. Learn the song *"Hello to all the Children of the World."* (lyrics available at http://lyricsandsongs.com)

5. Give each child a *Hello Card*. As students greet each other they can sign their greeting on the *Hello Around the World Recording Sheet* to place in the *Student Culture Trunk*.

6. At the end of the lesson have students place their hello card on the appropriate continent and record the greetings on the *Student Continent Culture Map*.

Part 2: Games/Sports

1. Ask the students if they realize that many of the activities they participate in each day are influenced from other cultures.

2. Open the cultural trunk and start pulling out *Game Word Cards* (you can add samples or pictures). After each item tell students where the game originated and have them place a picture or the word on the correct continent (e.g. darts/ England, cat's cradle/Africa, mancala/Egypt, Rocks, Paper, Scissors/Japan, Parcheesi/India, thumb wrestling/Japan, video games/Japan, hopscotch/Italy, leapfrog/England, Chineese jump rope/China).

3. Even today other cultures continue to influence our community. Tell students that we are going to be playing a game from Egypt. Introduce the game of Seega. Ask students if the game reminds them of any games they are already familiar with.

Materials
- ❏ *Game Word Cards*
- ❏ *Seega Game Board*
- ❏ Two color counters twelve per student

4. Students can play Seega on their *Seega* Game Board

5. Record games on their *Student Continent Culture Map* under the appropriate continent heading.

Wrap Up: Cultural Snapshots of my Community

1. Repeat the invitation to learn.

2. After students have identified that all of the items came from their community via other cultures, review souvenir pages, and continent bulletin board.

3. Introduce the *Culture Cam.* Tell students they will be creating a minimum of three to four round snapshot pages for their camera. The pictures should be of cultural contributions to their community.

4. Students can draw, or use cut out pictures, or write about cultural contributions found in their community.

5. Assemble the book by stapling their snapshots to the lens of the camera.

6. Students can share their cameras and place them in their folders.

Materials

❏ Culture trunk with the items from the invitation to learn

❏ *Culture Cam*

Assessment Suggestions

- Ask students to create a travel brochure advertising the cultural diversity found in their community.

- Cultures in My World paper plate book. Each student will receive eight mini paper plates. Decorate the first plate with the book's title and appropriate illustration. Label the remaining plates with the name of each continent. Students will demonstrate knowledge of contributions to their community by writing or illustrating pictures for each page.

Curriculum Extensions/Adaptations/ Integration

- Teachers can continue to spotlight topics such as literature, music, dance, holidays, homes, transportation, clothing, fashion, hairstyles, pets, religions, food, and art.

- Share different episodes of *Postcards from Buster*. Buster from the Arthur series visits several cities in America and learns more about various cultures and how they contribute to that community.

- Invite guest speakers to come and share more about their individual cultures.

- Use poetry and songs from other cultures in fluency lessons.
- Share stories and literature from other cultures for comprehension lessons and for read alouds.
- Show a familiar video that uses a different language.

Family Connections

- Invite parents to take children to the grocery store and point out different food items from different cultures. Sample foods from other countries at home or in a restaurant.
- Invite children to create a cultural suitcase with their families. Students will be invited to fill the case with items from their own cultural heritage. Tell the student to keep the cultural origins a secret while sharing. Other classmates can guess which cultures thier contributions come from.

Additional Resources

Books

When I First Came to this Land, by Harriet Ziefert; ISBN 0-439-05284-X

People, by Peter Spier; ISBN 0-385-24469-X

Children Just Like Me, by Baranabas and Anabel Kindersley: ISBN 0-7894-0201-7

Hello World! Greetings in 42 Languages Around the Globe, by Manya Stojic; ISBN 0-439-51-743-5

Children's Games From Many Lands, by Nina Millen Out Of Print but can be found on Amazon.com

Videos

Postcards From Buster, 1-800-866-5852, www.utahitv.orgwww.utahity.org

Maya & Miguel, 1-800-866-5852, www.utahitv.org

American Cultures For Children Videos, 1-800-867-0307, Newbridge

Web sites
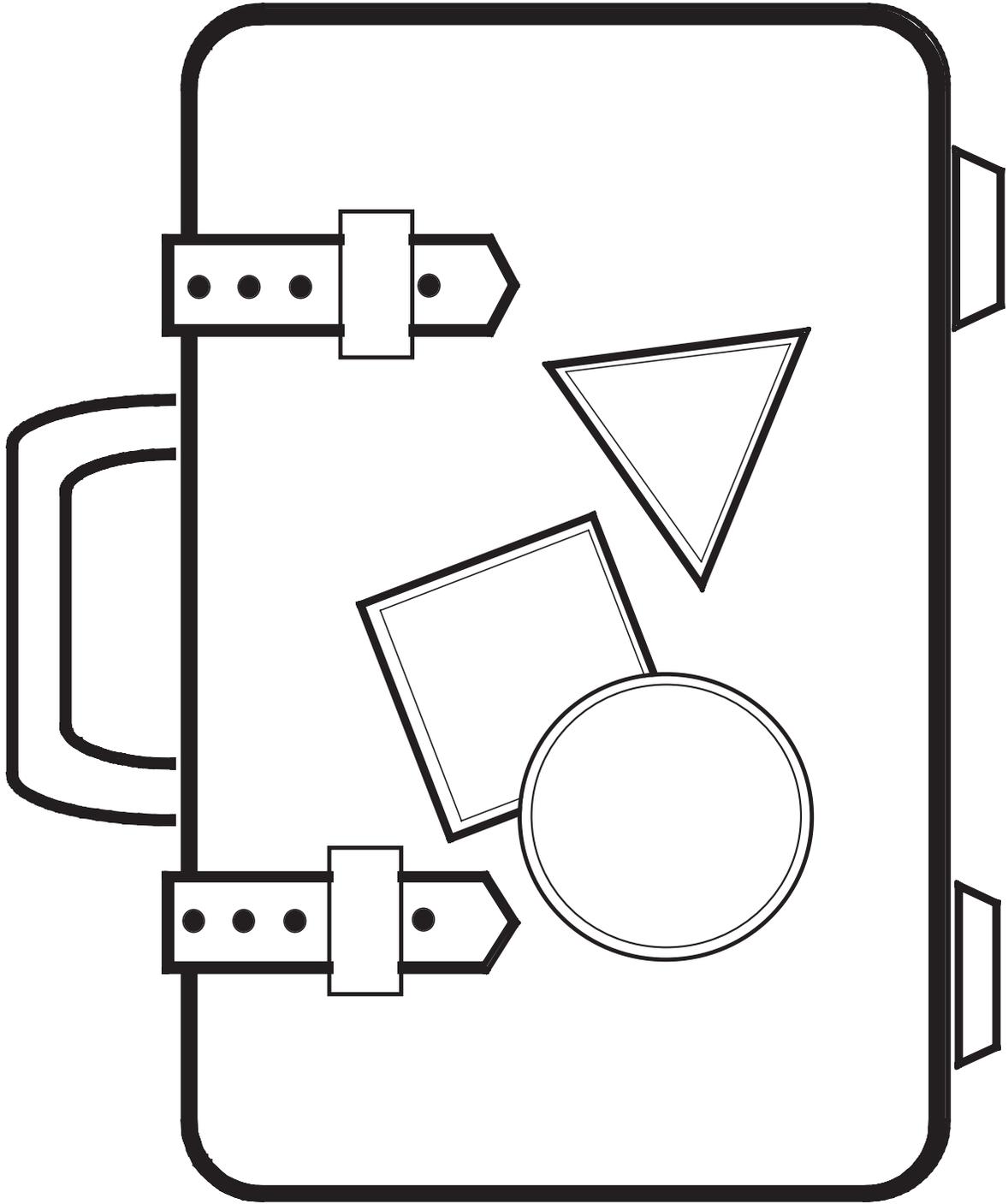
http://www.learningwithliterature.ualberta.ca/mcl.htm

http://www.multiculturalchildrenslit.com/

http://www.ncrel.org/sdrs/areas/issues/educatrs/presrvce/pe3lk28.htm

http://www.mamlisa.com

http://www.pittschools.org/aes/PE-LP96.HTML

http://lyricsandsongs.com

http://krysstal.com/borrow.html

http://mamalisa.com

Student Culture Trunk

Student Continent Culture Map

Europe

Asia

Australia

Africa

North America

South America

Word Cards

Aardvark
Jumbo
Banjo
Ballet
Macaroni
Camouflage
Ketchup
Karaoke
Magic

Word Cards continued

Tortilla
Utah
Moccasin
Boomerang
Koala
Kangaroo
Barbecue
Cocoa
Yo-yo

Hello Cards from Around the World

Konichiwa **(koh-NEE-chee-WAH)** **Japanese** **Japan**	**Shalom** **(shah-LOHM)** **Hebrew**
Aloha **(ah-LOH-hah)** **Hawaiian** **Hawaii**	**Guten Tag** **(GOO-tehn TAHK)** **German** **Germany**
Kianan **(kee-AH-nah)** **Inuktitut** **Alaska North America**	**O-si-yo** **(oh-see-YOH)** **Cherokee** **North America**
Hello **(he-LOH)** **English** **North America**	**Olaj** **(OH-lah)** **Yucateco** **Mexico**
Geia Sou **(YAH soo)** **Greek** **Greece**	**Zdravstvuite** **(ZZDRAHST-vet-yet)** **Russian** **Russia**

Hello Cards from Around the World cont.

Merhaba **(MER-hah-bah)** **Turkish** **Turkey**	**Salaam** **(sah-LAHM)** **Arabic** **Middle East**
Sawubona **(sah-woo-BOH-nah)** **Zulu** **Africa**	**Zdravo** **(ZDRAH-voh)** **Serbian** **Serbia**
Sawatdi **(sah-waht-DEE)** **Thai** **Thailand**	**Chao** **(DZHOW)** **Vietnamese** **Vietnam**
Wei **(way)** **Chinese** **China**	**G'Day** **(gu-DAY)** **Australian** **Australia**
Privet **(preev-YHT)** **Russian** **Russia**	**Bonjour** **(bohn-ZHOOR)** **French** **France**

Hello Cards from Around the World cont.

Nih hao **(nee HAOW)** **Mandarin** **Chinese**	**Talofa** **(ta-LOH-fa)** **Samoan** **Samoa**
Kia Ora **(kee-ah OH-rah)** **Maori** **New Zealand**	**Jambo** **(JAHM-boh)** **Swahili** **Africa**
Bok **(BOHk)** **Croatian** **Croatia**	**Ya at eeh** **(YAH-AHT-AY)** **Navajo** **North America**
Ciao **(CHOW)** **Italian** **Italy**	**Oi** **(Oy)** **Portuguese** **South America, Portugal**
Zdravo **(ZDRAD-vo)** **Slovenian** **Slovakia**	**Hola** **(OH-lah)** **Spanish** **Mexico**

Hello Cards from Around the World cont.

Mique **(Mak)** **Ute** **North America**	**Bore da** **(BOY-ray DAH)** **Welsh** **Wales**
Bula **(boo-LAH)** **Fijian** **Fiji**	**Hallo** **(he-LOH)** **Dutch** **Netherlands**
Hei **(HAY)** **Danish** **Netherlands**	

Hello Around the World

Arabic	Al Salaam a'alaykum	Ahl sah-LAHM ah ah-LAY-koom
Armenian	Barev	Bar-ev
Bulgarian	Zdraveite	ZZ-DRA-veyt
Cantonese	Nei Hou	Nay Hoe
Cherokee		Oh-see-YOH
Croatian	Bok	BOHk
Czech	Dobry den	DO-bry den
Danish	Goddag	Go dah
Dutch	Hallo	Hal-low
Estonian	Tere	TER-e
Finnish	Terve	TER-vey
French	Bonjour	Bohn-ZHOOR
German	Guten Tag	GOOT-en Tahk
Greek	Kalimera	Kah-lee-MEH-rah
Hawaiian	Aloha	Ah-LOH-hah
Hebrew	Shalom	Sha-LOHM
Hindi	Namaste	Nah-mah-STAY
Hungarian	Szia	ZEE-yah
Icelandic	Hallo	Hal-lo
Indonesian	Assalamu alai kum	Ahl sah-LAHM ah-LAY-koom
Italian	Buon giorno	Bwohn JOR-noh
Japanese	Konnichiwa	Kon-NEE-chee wah
Korean	Annyong ha shimnikka	An-YOH HASHim-ni-kah
Lithuanian	Labas	Lah-bahs
Mandarin	Ni Hao	Knee how
Mayan	Ba'ax ka wa'alik	BAH-ah shko-WAH al-LEEK
Mohawk	Sekoh	SHE-goh
Navajo	Ya at eeh	YAH-AHT-AY
Norwegian	God dag	Goo-dagh
Persian	Selam	She-lam
Polish	Czesc	Chesht
Portuguese	Oi	Oy
Romanian	Buna ziua	BOO-nuh ZEE-wa
Russian	Zdraustvuite	ZzDRAST-voyt-yah
Samoan	Talofa lava	Tah-lo-fa la-va
Serbian	Zdravo	ZDRAH-vo
Slovak	Dobry den	Dobree den
Slovenian	Zdravo	ZDRAD-vo
Spanish	Hola	OH-la
Swahili	Jambo	JAM-bo
Swedish	God dag	Goo dag
Tagalog	Magandang tanghali po	Ma-gan DANG tang-HA-lee poh
Turkish	Merhaba	MER-ha-ba
Ukranian	Pryvit	Pri-veet
Ute	Mique	Mak
Welsh	Bore da	BOY-ray DAH

Hello Around the World Recording Sheet

Greeting	Origin	Name

Game Word Cards

Darts

Cat's Cradle

Mancala

Rock Paper Scissors

Video Games

Game Word Cards continued

Parcheesi

Thumb Wrestling

Leapfrog

Chineese Jump Rope

Hopscotch

Seega
a game from Egypt

Materials: Game Board and 12 stones per player
Directions:

1. Players take turns laying their stones down two at a time starting at x and o.

2. When the board is full take turns moving your piece side to side or up and down (not diagonal).

3. You can capture your opponents rocks when it is sandwiched between two of your pieces after you move your piece. Sandwiches resulting from set up (step 1) don't count.

The game is over when a player only has one piece left.

		X		
0				0
		X		

This game reminds me of _____.

Culture Cam
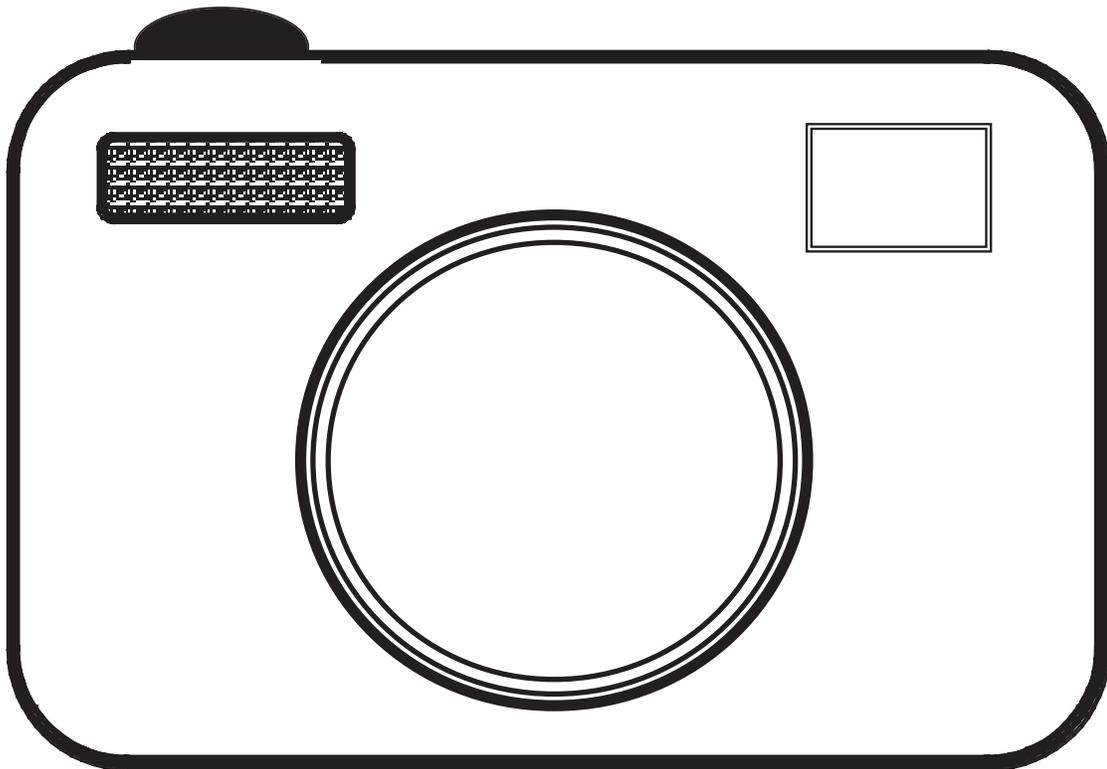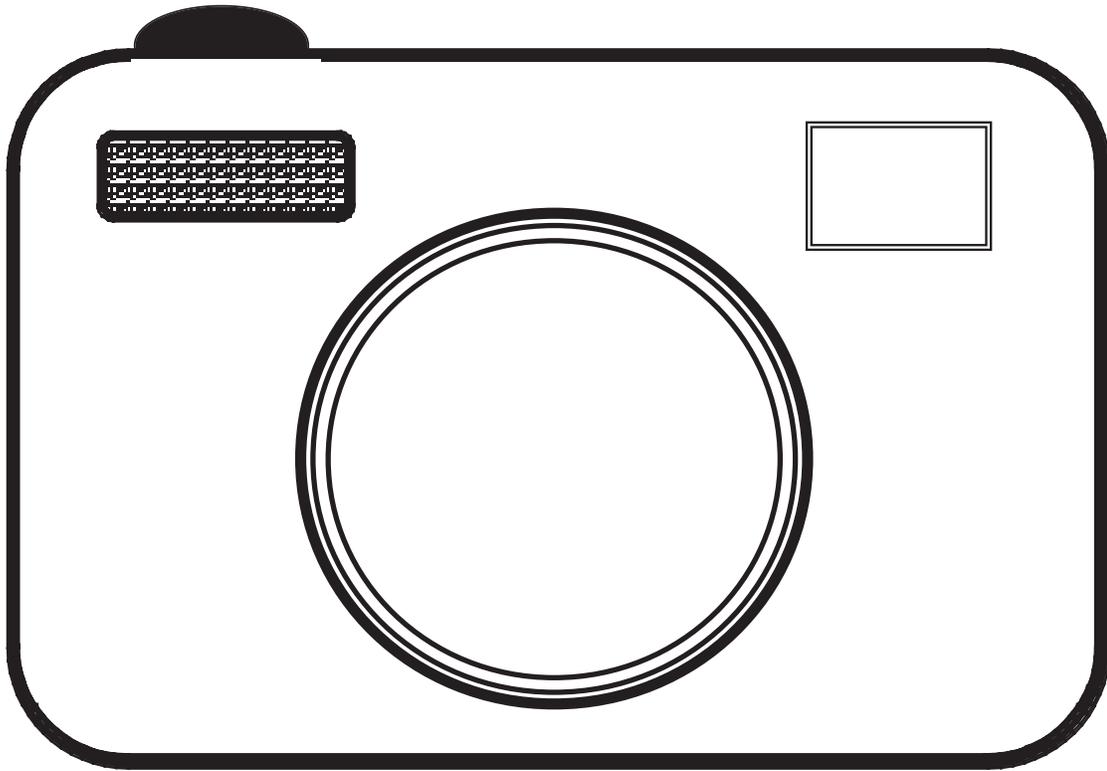
Culture Cam Cont'
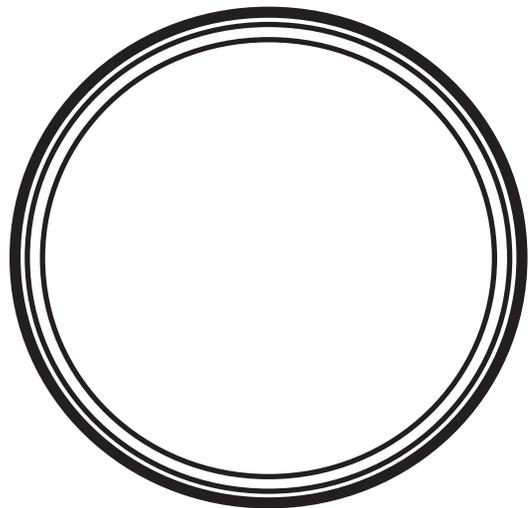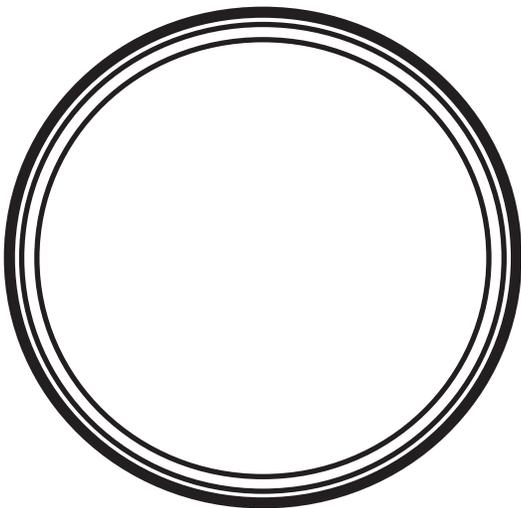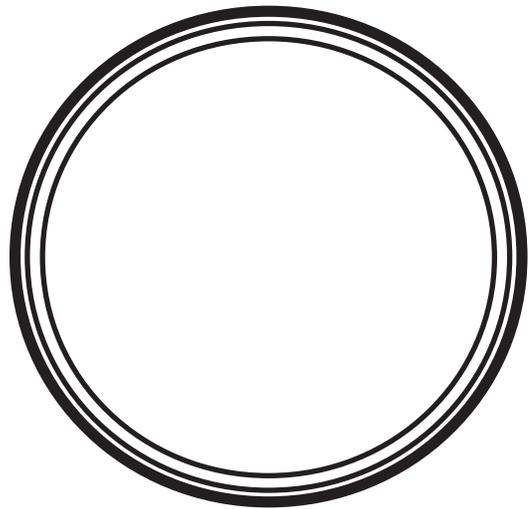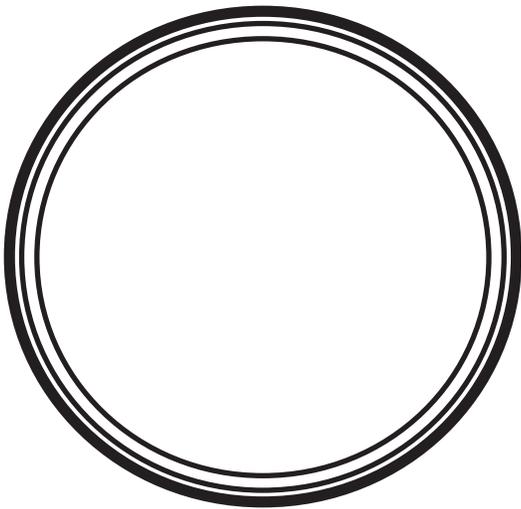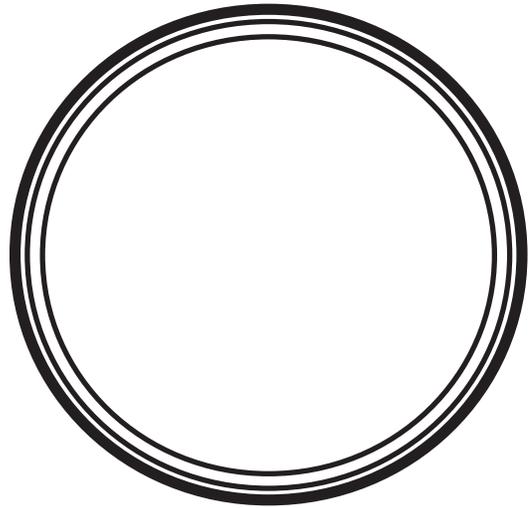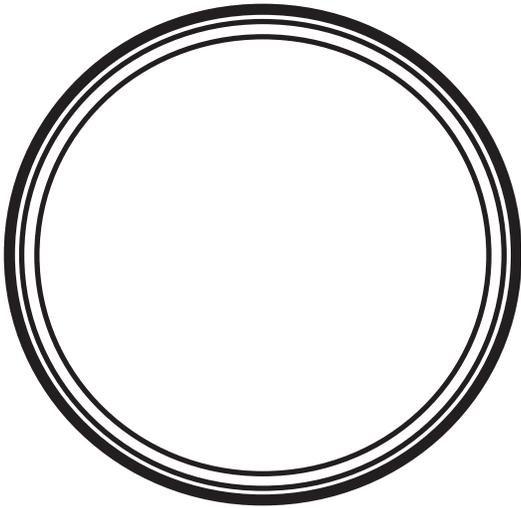
Cultural Museum

Standard II:
Students will develop a sense of self in relation to families and community.
Objective 3:
Express relationships in a variety of ways.
Intended Learning Outcomes:
6.   Communicate clearly in oral, artistic, written, and nonverbal form.
Content Connections:
Content I-3 art

Content Standard II

Objective 3

Connections

Background Information

Artists are influenced by they world around them. Their culture, families, environment, and experiences are often evident in their completed work. Art is an excellent way for children to see the world from a different perspective. Consider the cultures in your classroom when selecting art prints and art forms to study. The emphasis on the lessons is for students to reflect their culture through art. As young children are exposed to a variety of art forms not only will their appreciation for fine art grow but their willingness to experiment with different techniques and styles will develop as well.

Research Basis

Anderson, Tom. A rational for multicultural art education focused on the florida model. *Ed 467 607*. Retrieved February 13, 2006 from http://www.eric.ed.gov

A primary way societies construct and transmit their cultures from one generation to the next includes ways of making, perceiving, interpreting and valuing the arts. Because they are constructed and agreed upon, not given, the arts—like other cultural institutions, must be learned from generation to generation. This is, or should be one of the primary purposes of art education. In this context, from a multi/intercultural perspective, the point to made here is that one can and should learn not only about oneself and one's own cultural heritage through art, but also that of others.

Stewart, Rhon. The REACH Center and multicultural (multi-ethnic) art education. *ED 365 618*. Retrieved February 13, 2006 from http://www.eric.ed.gov

Multicultural education is not based on the melting pot theory of assimilation that aimed at eradicating cultural differences; but, it is based on the social theory of acculturation. Acculturation is a dynamic process of intercultural exchange that blends diverse people into a socially unified culture. It affirms the principle that each ethnic group possesses a genre of ideas that has enhanced and enriched the U.S society.

Materials

- ❏ Sample of an art print from an artist that depicts family/ community life (i.e. Grandma Moses, Norman Rockwell, Diego Rivera, Amado Pena, Paul Gauguin, Lisa Cain)
- ❏ butcher paper approx three feet long
- ❏ Colored pencils, crayons, markers, paint, or watercolor
- ❏ masking tape
- ❏ 7 x 9 white paper for each student

Invitation to Learn

Show the class art prints from an artist that depicts family/ community life (e.g., Norman Rockwell, Grandma Moses, Deigo Rivera, Paul Gauguin, Lisa Cain, Amado Pena). Ask the class to predict something about the artist and write it in their journal. Discuss student responses. (Is the artist a man or a woman? Are they from the United States? Are they from Utah? What from the painting makes you think that? What is important to the artist? What is their community like? What is their family like?)

Instructional Procedures

Murals

1. Point out to students that many artists reflect their culture and their traditions in their artwork. They create images they care about and are meaningful to them. We can learn a lot about people and cultures by studying their artwork.

2. Explain to the class that they are going to be creating a classroom cultural museum. Everyone will have the opportunity to create art pieces that depict their individual culture and the art pieces will be on display for everyone to see.

3. The first art form students will have the opportunity to create is a mural. A mural is a painting created on a wall. The scene often tells a story or depicts an event from history. Diego Rivera is an artist from Mexico who enjoyed creating murals. When Diego was little he loved to draw everywhere. He even drew on the walls in his bedroom so his parents decided to hang paper all over his walls so he could draw without ruining anything. Diego's murals can be found all over the world.

4. Give the students a sheet of scratch paper. Ask them to sketch a scene from their life, (e.g., eating breakfast in the morning, playing a soccer game, going to school, or loosing a tooth.) When they have a sketch, give students a large sheet of art paper and tape it to the wall or the chalkboard. Allow them to draw their mural using colored pencils or crayons to add color. When they are finished have them cut out their scene and glue it to a large sheet of butcher paper so everyone in the class has a scene on the butcher paper. Hang the mural.

Weaving

Materials

❏ Pictures or samples of different weaving

❏ Supplies for yarn or paper weaving

1. Explain to students that weaving is a functional art form that can be seen in many cultures. Show examples of different kinds of weaving (i.e., Pacific Island baskets and hats; Native American rugs; South American clothing). Compare and contrast the items. Ask, "why do you think they make these items? What is the function? What materials are used? Why? What colors are used?"

2. Brainstorm things the students see in their own environment (home, school, stores) that are woven. Make a list. Talk about where the items possibly came from. What is the function of the item? Does it remind them of a specific culture?

3. Have students choose something they can weave that will be functional for their own culture, (i.e., potholder, doll rug/blanket, paper placemat, paper basket, scarf)

4. Display their weaving in the classroom.

Mosaics

Materials

❏ 6 x 6 piece of cardstock per student

❏ Assorted rolls of colored masking tape

❏ Samples or pictures of mosaics

1. Mosaic is an art form that can be found in many cultures. Diego Rivera also created several mosaic murals. Mosaics are created using small pieces of colored glass or stone. All the colored pieces create a larger form.

2. Students will sketch an object that is important to them. Tell them to choose a simple design.

3. Students will cut or tear the tape to fit the shape of their drawing. They can stick it on their picture without overlapping any of the other pieces of tape. (If colored masking tape is not available use permanent markers and regular masking tape. Students can place the piece of masking tape on wax paper and color the tape

with the permanent marker. It will need to dry completely before student can use it.

4. Give the finished mosaic a title and hang it in the classroom.

Quilts

1. Share your quilt/blanket and the memory or history that goes with it. Explain to students that quilts can tell a story about a family and their culture by the memory attached to it.

2. Faith Ringgold is an artist who expresses her culture in her artwork. She likes to combine fabric and painting to create her finished pieces. Read Tar Beach. Share the story quilt found on the last page with the class. Ask the class what they might be able to tell about Faith Ringgold after viewing the quilt. What from the quilt makes them think the way they do?

3. Tell students that other authors/artists have also used quilts to tell a story. Patricia Polacco and Tomie dePaola write and draw about a quilt being passed down from generation to generation in The Keeping Quilt and The Quilt Story. Share a page or two from each of the stories.

4. Ask students to share a story or memory they have about a quilt or blanket.

5. Give students a sheet of cardstock, 8 1/2 x 8 1/2. Tell them to draw a favorite memory in the center of their paper. Once they have drawn their memory, use squares of wrapping paper to create a quilt border along the edge of the picture. Students can then "sew" their quilt together by making stitch marks around the squares or using a simple whip stitch or blanket stitch to sew yarn around the outside edge.

Pop Art

1. Andy Warhol and Roy Lichtenstein are two of the most famous Pop Artists of all time. Pop art is a style of art in which everyday objects, such as soda cans and light bulbs are painted or sculpted. Andy Warhol may be best known for his silk-screened paintings of soup cans. Roy Lichtenstein is famous for his use of printer Benday dots to create large-scale paintings that resemble comic strips or advertisements.

2. Show students a color comic strip from the newspaper. Allow them to look at the comic strip with a magnifying glass. Tell students that in order for color to show on a newspaper, the

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Materials

- ❏ Quilt or blanket that has a story or history
- ❏ *Tar Beach*
- ❏ *The Keeping Quilt*
- ❏ *The Quilt Story*
- ❏ Cardstock paper 8 ½ x 8 ½
- ❏ Assorted pieces of wrapping paper or scrapbook paper cut into one inch squares
- ❏ Yarn
- ❏ Hole punch or large blunt needles

Materials

- ❏ Art samples of Roy Lichtenstein
- ❏ Newspaper comics
- ❏ Student hand lens
- ❏ White art paper (1/4 sheet) for each student
- ❏ Markers
- ❏ Paint
- ❏ Paint brushes

color sections are really made up of tiny dots. These are called Benday dots.

3. Roy Lichtenstein used Benday dots when he created his artwork. Some of his most famous paintings include a picture of a baked potato and a Mickey Mouse drawing.

4. Using thick markers allow students to practice making Benday dots. Allow them to experiment by drawing dots close together and far apart. Allow them to look at their dots from a distance. What happens when they combine two colors of dots?

5. Ask students to draw a simple object that they might see everyday (e.g. a telephone, a pencil, an eraser). Draw the outline of the object so that it fills a large portion of a piece of art paper. Use markers to fill in the color using Benday dots. The lighted side of the object should have fewer dots while the shaded side of the object should have many dots close together and possibly more than one color.

6. Once students have completed the dots allow them to fill in the background area with a solid color or paint. Ask students to title their picture and explain why they chose the subject.

Pop Art Continued

1. Andy Warhol liked to take objects and repeat them again and again using a process called silk screening. Some of his subject matter included soup cans, laundry soap, coke bottles, shoes, pictures of famous people, and flowers. Tell students that today they are going to have the chance to do two examples of pop art patterned after Andy Warhol's style.

2. The first example is to create a simple "silk screen" using a 4 x 5 piece of contact paper and 4 x 5 piece of wire mesh. Tell students to draw on the contact paper a simple object that they see in their culture. Once they have drawn their flower they can cut the shape out being very careful not to throw away the outside border. Peel the backing off the border and adhere the border to the wire mesh.

3. Now students have their screen. In small groups call students to paint their screened flowers. Using a small amount of washable paint and a sponge brush, drag the paint over the screen. Students can then lift their screen, clean the paint and create another flower using a different color. The screen process can be used again and again.

Materials

❏ Art samples from Andy Warhol

❏ 4 x 5 piece of wire mesh per student

❏ 4 x 5 piece of contact paper per student

❏ White art paper

❏ Markers

❏ Paint

❏ Sponge brushes

❏ Assorted product labels

4. While students are coming back to paint their screened flowers, allow students to look at common labels such as soup cans or soda bottles. Allow them to try and draw the image on another sheet of paper. They can choose to use the same color scheme as the original or play with color and change the image. (e.g. Instead of the soup can being red and white make it purple and yellow.)

5. Display the finished products around the room.

Assessment Suggestions

- Ask students to complete a gallery walk. Tell them they will need to select three pieces of classroom art and describe the artists based on what they see in the artwork. (e.g. I know the artist likes soccer. They probably enjoy being outdoors because most of their art subjects can be found outside and they like to use a lot of green in their artwork.)

- Ask students to create their own art portfolio. For each piece of art ask them to write on an index card why they chose the subject they did and how it relates to their individual culture.

Curriculum Extensions/Adaptations/ Integration

- Explore different art forms and their origins and let students reflect their own culture through that art form, (mosaics, mud cloths, Chinese brush painting, masks, origami, totems, petroglyphs, etc…).

- Invite a local artisan to talk to the students about their art and how their culture is reflected in their own art.

- Take a digital photo of each student and import it into a computer document. Copy the photo so that there are four of the same photos on a page. Print the page using black and white ink. Allow the students to use watercolor to paint each photo using a different color like Andy Warhol commonly did with his subjects. The final effect has the student photo appearing four different times on the same page in four different colors.

- Students may have different levels of art experience. Point out that each of the artists we studied created their own style. They worked hard to study but eventually their own style emerged. Students do not have to have pictures that look exactly like

their neighbors. Celebrate differences and encourage free expression.

- If a student is struggling, sometimes changing the material they are working with will help them get past a roadblock. Changing the size of a paintbrush or allowing a student to work with a different medium can help them develop confidence.

Family Connections

- Invite parents to come and visit the classroom museum.
- Encourage students to look for examples of art in their homes and community. Allow them to share some of their findings.

Additional Resources

Books

Artists And Their Art, by Michael Medearis; ISBN 0-7398-0867-2

Diego Rivera: An Artist's Life, by Sarah Vazquez; ISBN 0-8172-7287-9

Tar Beach, by Faith Ringgold; ISBN 0-590-46381-0

The Keeping Quilt, by Patricia Polacco; ISBN 0-590-06213-1

The Quilt Story, by Tony Johnston and Tomie dePaola; ISBN 0-590-43890-5

Roy Lichtenstein, by Mike Venezia; ISBN 0-516-25963-6

Andy Warhol: The Life of an Artist, by Carin T. Ford; ISBN 0-7660-1880-6

Artists in their Time: Andy Warhol, by Linda Bolton; ISBN 0-531-16618-X

Web sites

http://www.warhol.org

http://www.artcyclopedia

http://www.diegorivera.com

http://www.worldisround.com/articles/22018/photo27.html

http://www.lichtensteinfoundation.org/

Math III-2

Activities

Coordinates & Shapes

Grids Galore

Standard III:
> Students will describe, identify, and create geometric shapes and describe spatial relationships.

Objective 2:
> Describe spatial relationships.

Intended Learning Outcomes:
> 5. Understand and use basic concepts and skills.

Content Connections:
> Standard III, Objective 4: Maps

Math Standard III

Objective 2

Connections

Background Information

In math, coordinate grid references are read beginning with the horizontal axis, and then the vertical axis (i.e. (E,3)). The letters are along the top or bottom row of the grid, and the numbers go down the far left column. In second grade we focus on the region made in the grid, not the intersecting points.

Research Basis

Kamii, C. (2005). Teaching arithmetic to low performing, low-ses first graders. *Journal of mathematical behavior,* Volume 24.1, pp. 39-50.

Young children need to develop their logico-mathematical foundation of number. Students who are given physical knowledge activities and mathematical games excel in logical reasoning more so than students who receive traditional number exercises.

Van Hiele, P. M. (1999). Developing geometric thinking through activities that begin with play. *Teaching children mathematics*, February 1999, pp. 310-316.

Van Hiele developed three stages of geometric thinking. The first level of thinking is called the visual level where figures are judged only by their appearance. Next, is the descriptive level where children are able to identify figures because of certain properties. Finally, there is the informal deduction level where students use knowledge about one figure to deduce information about another. In order for children to progress through these three stages, instruction should begin with inquiry or play.

Materials
- ❏ Coordinate Grid Introduction Overhead
- ❏ *Playground Mystery Game* Cards
- ❏ Pocket Chart

Invitation to Learn

Talk about different grids that can be seen around the room. For example, the hundred chart, the calendar, the desks and the rows, the ceiling and floor tiles, etc.

Place a coordinate grid on the overhead with pictures in several of the regions. Ask the students to tell you where one of the objects is located. Show the students how to identify the objects on the grid by first using the letters on the horizontal axis, and then the numbers on the vertical axis to make a coordinate pair.

Instructional Procedures

1. Set the *Playground Mystery Game* up in a pocket chart to resemble a 3 x 3 coordinate grid. Make sure the playground game pieces are in the correct regions of the grid and facing outward so that the students can see the pictures. Later on, turn the card backwards so that the pictures cannot be seen.

2. Play the *Playground Mystery Game* with the class. Invite one student to read *Playground Mystery Clue Card #1*. Follow the directions on the card, and identify the indicated coordinates together as a class. Continue with *Mystery Clue Card #2* until you find the ball.

3. Afterwards, invite the students to develop their own mystery grid game. Students will need to write down three to four clues, place their pictures on the grid, and identify the coordinate pairs. For example, a pirate could be looking for his treasure, or a dog could be looking for her bone. Have the students play the games in pairs.

Six in a Row Bingo

Students play in groups of two.

1. The first player rolls the two dice (one letter, one number).

2. The player then identifies the region on the coordinate grid using the letter on the horizontal axis first, and then the number on the vertical axis. A counter is placed in the appropriate region.

3. Player two rolls the dice and places a counter in that region of his/her grid.

4. If a player rolls a coordinate pair that is already covered on his/her grid, it is the other player's turn.

5. The first player to get six in a row horizontally, vertically, or diagonally wins.

6. Record the winning coordinates on the *Six in a Row Bingo* recording grid.

Materials

❏ *Six in a Row Bingo* grid for each student

❏ Letter dice and one number dice for each pair of students

❏ Counters for each student

❏ *Six in a Row Bingo* recording sheet

Pig Pairs

Students play in groups of two.

1. Ask the students if any of them have ever played Battle Ship before. Tell them that this game is similar to Battle Ship.

2. Have the students sit so that they are facing each other.

3. Tell the students to put their file folders up so that they cannot see their opponent's grid.

4. Have the students place their six pigs in different regions on the grid. The object of the game is to collect the opponent's pigs to make *pig pairs*.

5. Player one calls out a coordinate pair (i.e. B,2). Player two answers no, if a pig is not in that region, or yes if a pig is in that region of their grid. If a pig is not in the region called, then it is player two's turn, and player one needs to put a counter on their grid so that they know they have already called out that pair.

6. If a pig is in the identified region, player two must give the pig to player one. Player one then takes the same color of pig off his/her grid to make a pair. The player with the most pig pairs at the end of the game wins.

Coordinate Concentration

Students play in groups of two.

1. Each student mixes up their set of cards and places them face down on their grid.

2. The first player says a reference to a coordinate pair on one grid and turns the card over. He/she then says a coordinate pair on the other grid and turns that card over. If the two cards match, the player takes them, records the winning match on the *Coordinate Concentration Recording Sheet,* and plays again. If the two cards do not match, the cards are replaced, and it is the second player's turn. The player with the most matches wins.

Crazy Cups

Students play in groups of two.

1. Place the cups upside down on each section of the grid.

2. Player one places a button under a cup while player two is turned around and cannot see the grid.

Materials

❏ *Pig Pairs Grid*

❏ One orange, yellow, pink, purple, blue and green pig counter for each student.

❏ File folder

❏ Flat counters for each student (30 each)

Materials

❏ *Coordinate Concentration Grid*

❏ One set of *Coordinate Concentration Cards* for each pair of players

❏ *Coordinate Concentration* recording sheet for each player

Materials

❏ *Crazy Cups* coordinate grid

❏ 16 condiment cups

❏ Button

❏ Compass rose

❏ *Crazy Cups Recording Sheet*

3. Player two tries to guess where the button is using grid references. Player one guides him/her by using north, south, east, or west. The game can also be played using left, right, above, and below.

4. When player two finds the button, both players fill out the *Crazy Cups Recording Sheet* filling in the appropriate coordinates around the button.

5. The players switch roles and play again. The game can also be played using more than one button on the grid.

Assessment Suggestions

• Observe the students while they are participating in any of the activities.

• Use the included assessment sheet for individual activities.

• Have the students develop their own grids and identify coordinate pairs.

• Have the students make a list in their journal of the different ways that people would use coordinate grids (i.e. city planning, mapping, graphing, mosaics, art, architecture).

Curriculum Extensions/Adaptations/ Integration

• Play any of the games with a simpler or more complex grid.

• Play *Chess* or *Checkers* on a coordinate grid system and have students identify the pairs as they make a move.

• Draw a map of the classroom on a grid and identify where the teacher's desk is, the drinking fountain is, etc., using coordinate pairs.

Additional Resources

Books

Math Magic Shape and Pattern, by Wendy and David Clemson; ISBN 1-58728-271-2

Mega-Fun Map Skills, by Catherine M. Tamblyn; ISBN 0-590-18799-6

Computer Program

Neighborhood Map Machine 2.0

Websites

http://www.nctm.org Look in Illuminations for coordinate grids.

Coordinate Grid Introduction Overhead
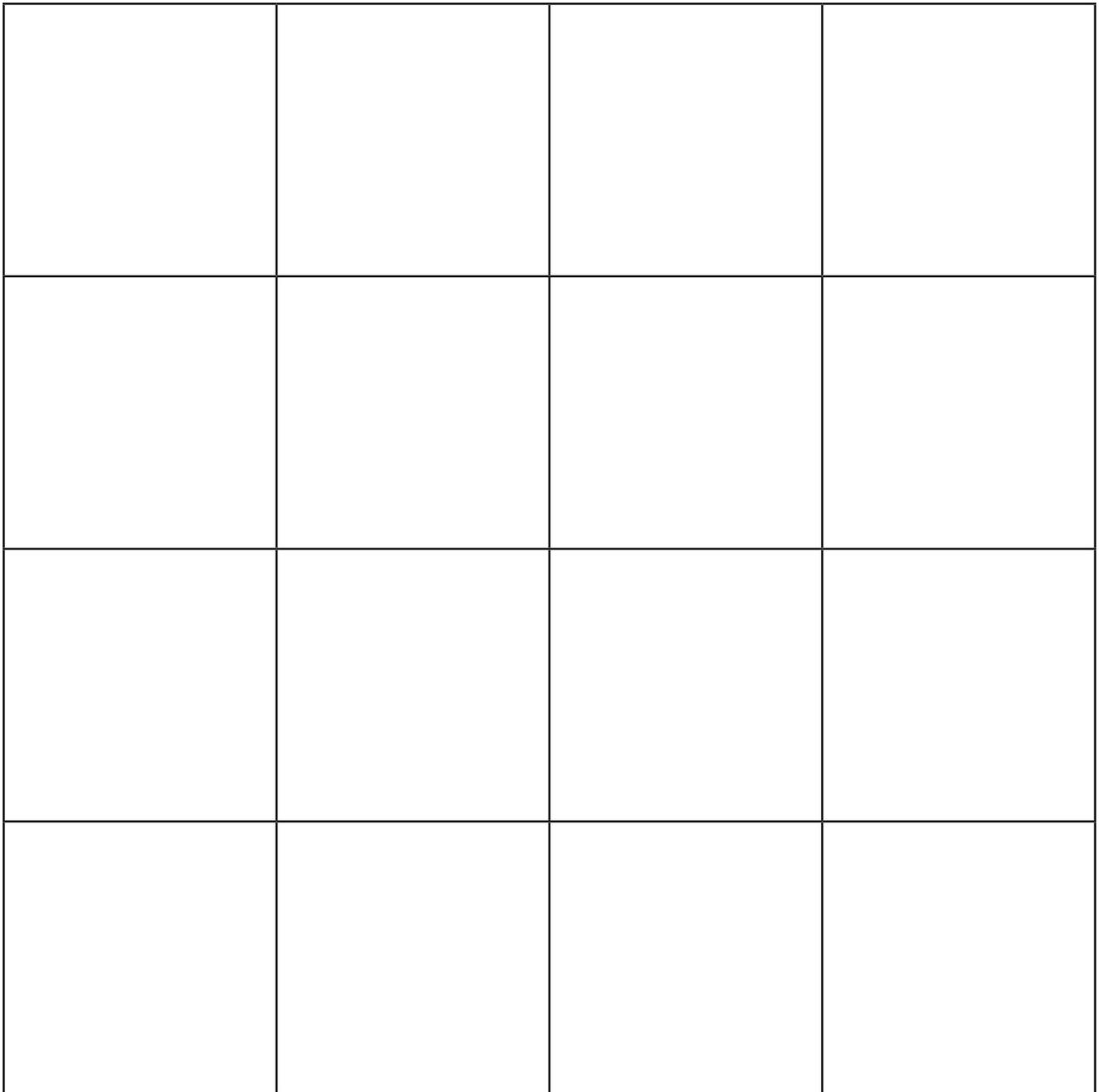
Playground Mystery Game Coordinates

A	1
B	2
C	3

Playground Mystery Game Squares
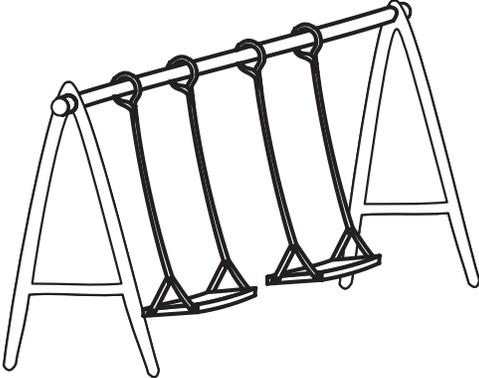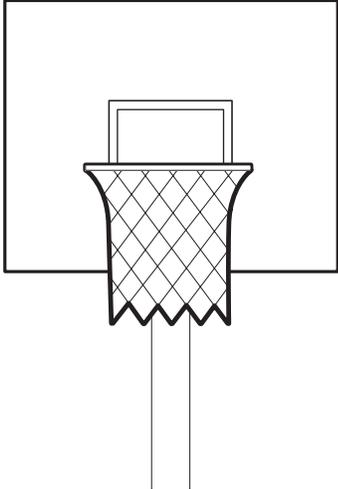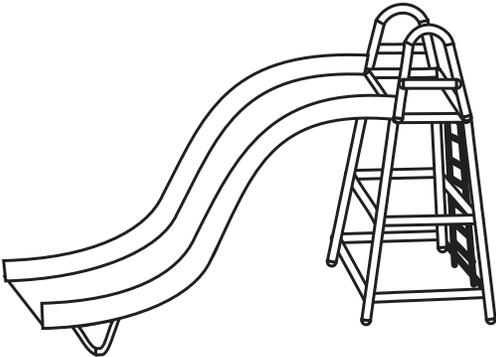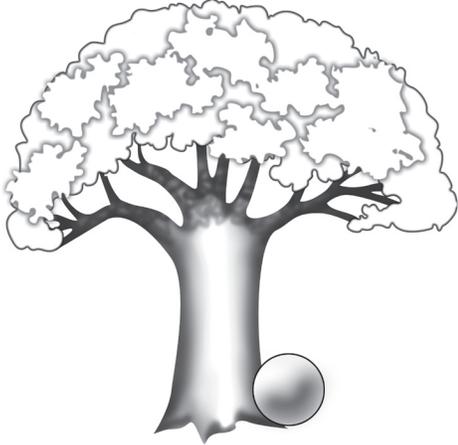
Playground Mystery Game Cards cont.

Put the game together
in the pocket chart as shown.
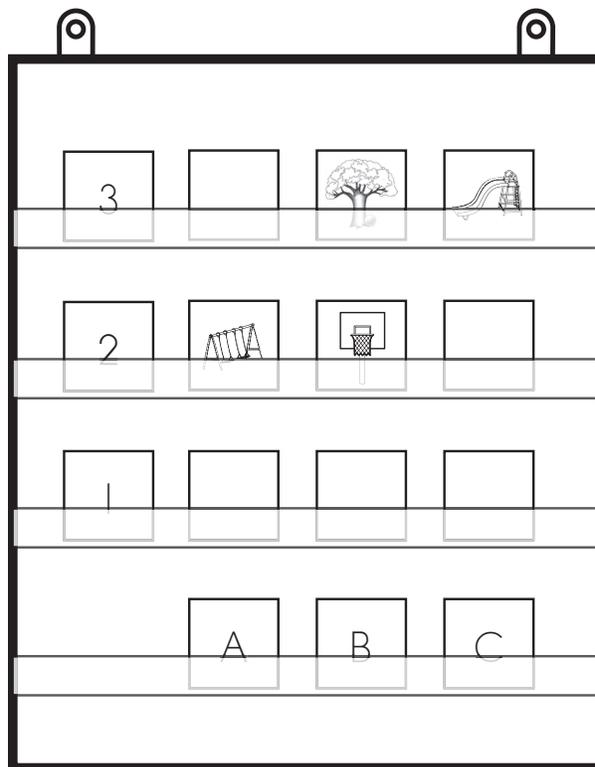
Playground Mystery Game Clue Cards

Clue #1

I lost my ball on the playground. Please help me find it. Try looking by the swings (A,2).

Clue #2

I remember playing by the slide. Why don't you try looking there (C,3)?

Clue #3

At one time I was by the basketball hoop. Maybe that's the spot (B,2).

Clue #4

Right before the bell rang I did sit by the shady tree (B,3).

Ending Message

Thank you for finding my ball! I was in such a hurry to get lined up on time that I must have left my ball by the tree!

Six in a Row Bingo & Pig Pairs Grid

	A	B	C	D	E	F
6						
5						
4						
3						
2						
1						

Coordinate Concentration & Crazy Cups Grid

Math Standard III-2–Activities

	A	B	C	D
4				
3				
2				
1				

Coordinate Concentration Cards
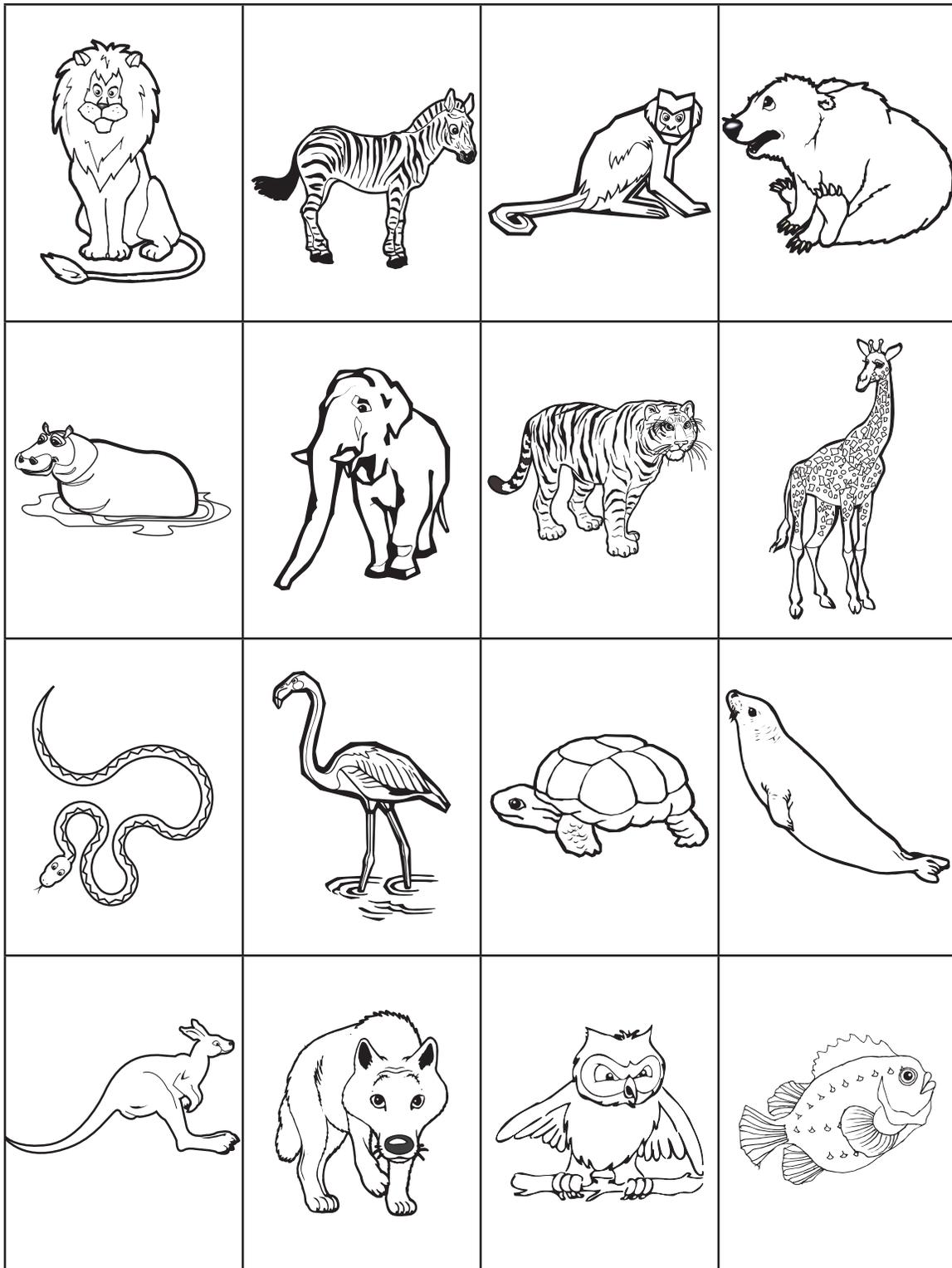
Six in a Row Bingo Recording Sheet

6
5
4
3
2
1

A B C D E F

Crazy Cups Recording Sheet

____ , ____	____ , ____	____ , ____
____ , ____	Button	____ , ____
____ , ____	____ , ____	____ , ____

Coordinate Concentration Recording Sheet

Match 1: ____ , ____ and ____ , ____

Match 2: ____ , ____ and ____ , ____

Match 3: ____ , ____ and ____ , ____

Match 4: ____ , ____ and ____ , ____

Match 5: ____ , ____ and ____ , ____

Match 6: ____ , ____ and ____ , ____

Match 7: ____ , ____ and ____ , ____

Match 8: ____ , ____ and ____ , ____

Crazy Cups Compasses

N
W   E
S

N
W   E
S

N
W   E
S

N
W   E
S

Ship Shape

Math Standard III

Objective 2

Standard III:
Students will describe, identify, and create geometric shapes and describe spatial relationships.
Objective 2:
Describe spatial relationships..
Intended Learning Outcomes:
5. Understand and use basic concepts and skills.
Content Connections:
Content II, Standard 2 (art, relationships)

Connections

Background Information

Students need to understand that shapes have certain properties that define them. For example, a triangle is any three-sided shape. Parallelograms have opposite sides that are parallel (squares and rectangles are both parallelograms). A square has four right angl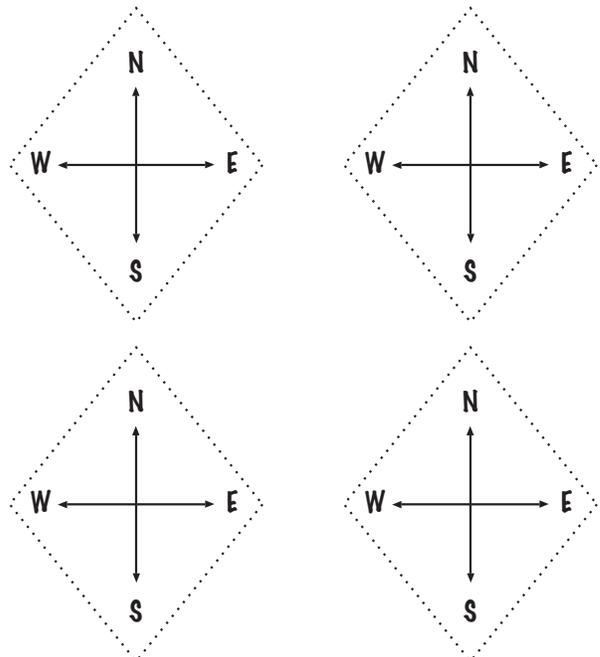es with four congruent sides. A rectangle has four right angles where only opposite sides are congruent. Shapes stay the same even when they are rotated, flipped, or slid.

Research Basis

Van Hiele, P. M. (1999). Developing geometric thinking through activities that begin with play. *Teaching children mathematics,* February 1999, p. 310-316.

Van Hiele developed three stages of geometric thinking. The first level of thinking is called the visual level where figures are judged only by their appearance. Next, is the descriptive level where children are able to identify figures because of certain properties. Finally, there is the informal deduction level where students use knowledge about one figure to deduce information about another. In order for children to progress through these three stages, instruction should begin with inquiry or play.

Jacobsen, C. Lehrer, R. (2000). Teacher appropriation and student learning of geometry through design. *Journal of research in mathematics education,* Volume 31.1, pp 71-88.

Lehrer and Jacobsen report that sustained classroom conversation about transformational geometry increases student achievement and understanding. In addition, teacher knowledge of geometry contributes significantly to the types of questions asked and the ability to engage students in deeper thinking.

Materials

❏ *Circles, Triangles, and Squares*

❏ Shapes of fabric or scrapbook paper

❏ Large venn diagram

❏ A piece of art by Piet Mondrian with two dimensional shapes

Invitation to Learn

Show the book *Circles, Triangles, and Squares* by Tana Hoban to the class. Ask the students what shapes they see on each of the pages.

Instructional Procedures

1. Show the students different pieces of fabric with different shapes, lines and other geometric patterns. Ask the students what they see in the fabric. Using a Venn diagram, compare and contrast the pieces of fabric based on the shapes found in the fabric.

2. Show different compositions by Piet Mondrian and ask the students to identify the different shapes that they see.

Shape Art

1. Divide the class into groups of two.

2. Assign each group a shape (triangles, circles, squares, rectangles, parallelograms).

3. Their job is to make a picture on construction paper using only their given shape. Encourage the students to use many different sizes of their shape in different positions.

4. Discuss and display the art work.

Materials
- ❏ Rulers
- ❏ *Shape Tracers*
- ❏ Construction paper
- ❏ glue

Silly Shape Book

1. Invite a student to come to the front of the class. Ask the class, "If I pick up Jennifer and flip her over, is she still Jennifer? If Jennifer bends to the side, is she still Jennifer. If I pick up a book and turn it upside down, is it still a book? If I turn a book to the side, is it still a book? Of course it is. Shapes are the same way. If I flip a triangle upside down, it is still a triangle. If I flip a triangle to the side, it is still a triangle."

    Continue to rotate each shape until the students begin to understand that a shape remains the same even when it is turned or flipped.

2. Introduce the *Silly Shape Book* to the students that they will be making.

3. Using a brad, have the students attach the picture of themselves to the first page of the book. Have the students fill in their name on the appropriate line. Next, have the students attach a

Materials
- ❏ *Silly Shape Book*
- ❏ Six brads per student
- ❏ Student pictures
- ❏ A triangle, circle, square, rectangle, and parallelogram for each student from the *Shape Tracers*.

different shape to each additional page with a brad, and write in the shape name. Allow the students to manipulate their books to become more familiar with the concept that shapes remain the same when rotated.

4. Have the students fill out the remaining pages of their book during a shape hunt either indoors or outdoors. Have the students draw the shapes that they see.

Slipping and Sliding Shapes

1. Give the students time to explore using the geoboard. Encourage them to make many different shapes with the rubber bands. Remind them of the general definitions of shapes.

2. Make a triangle on the geoboard and ask the students what shape it is. Turn the geoboard around and ask what shape it is then. Continue to make shapes, flip them, and ask the students if the shape changes, or if it stays the same.

3. Have the students make their own shapes, and record them on the geopaper.

Copy Cat Shapes

1. Review the terms rows and columns with the students.

2. Have the students sit so that they are facing each other. Tell them to place a file folder between them.

3. Player one makes a shape on their Geoboard. Using the terms rows and columns, they guide player two to make an identical shape to theirs. The two players compare shapes and then switch roles.

Assessment Suggestions

Observe the students while they are participating in any of the activities.

Collect the geopaper and record the results.

Give a quiz asking students to color all of the triangles one color, all of the squares a different color, etc.

Curriculum Extensions/Adaptations/ Integration

Go on a shape walk around the neighborhood. Have the students take their journals and draw what they see. When you get back

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Materials

❏ Geoboards
❏ Rubber bands
❏ *Geo Dot Paper*

Materials

❏ Geoboards
❏ Rubber bands
❏ File folders

---

organize the different shapes that they found on a chart. Discuss which shapes were found the most, and which shapes were found the least.

Have the students work together to make shapes on the floor. Discuss the properties of shapes and how to make them. For example, ask the following: "if we use the tallest child and the shortest child in the class to make a square, will it work? Remember that a square must have four sides that are all the same."

Family Connections

Ask the students to continue the shape walk at home and in areas around the community.

Additional Resources

Books

Circles, Triangles, and Squares by Tana Hoban; ISBN 0-02-744-830-4

Arrow to the Sun by Gerald McDermott; ISBN 0-670-13369-8

Grandfather Tang's Story by Ann Tompert; ISBN 0-517-57487-X

Math Magic Shape and Pattern by Wendy and David Clemson; ISBN 1-58728-271-2

Round is a Mooncake by Roseanne Thong; ISBN 0-8118-2676-7

The Silly Story of Goldie Locks and the Three Squares by Grace Maccarone; ISBN 059054344X

Circle Shape Tracers
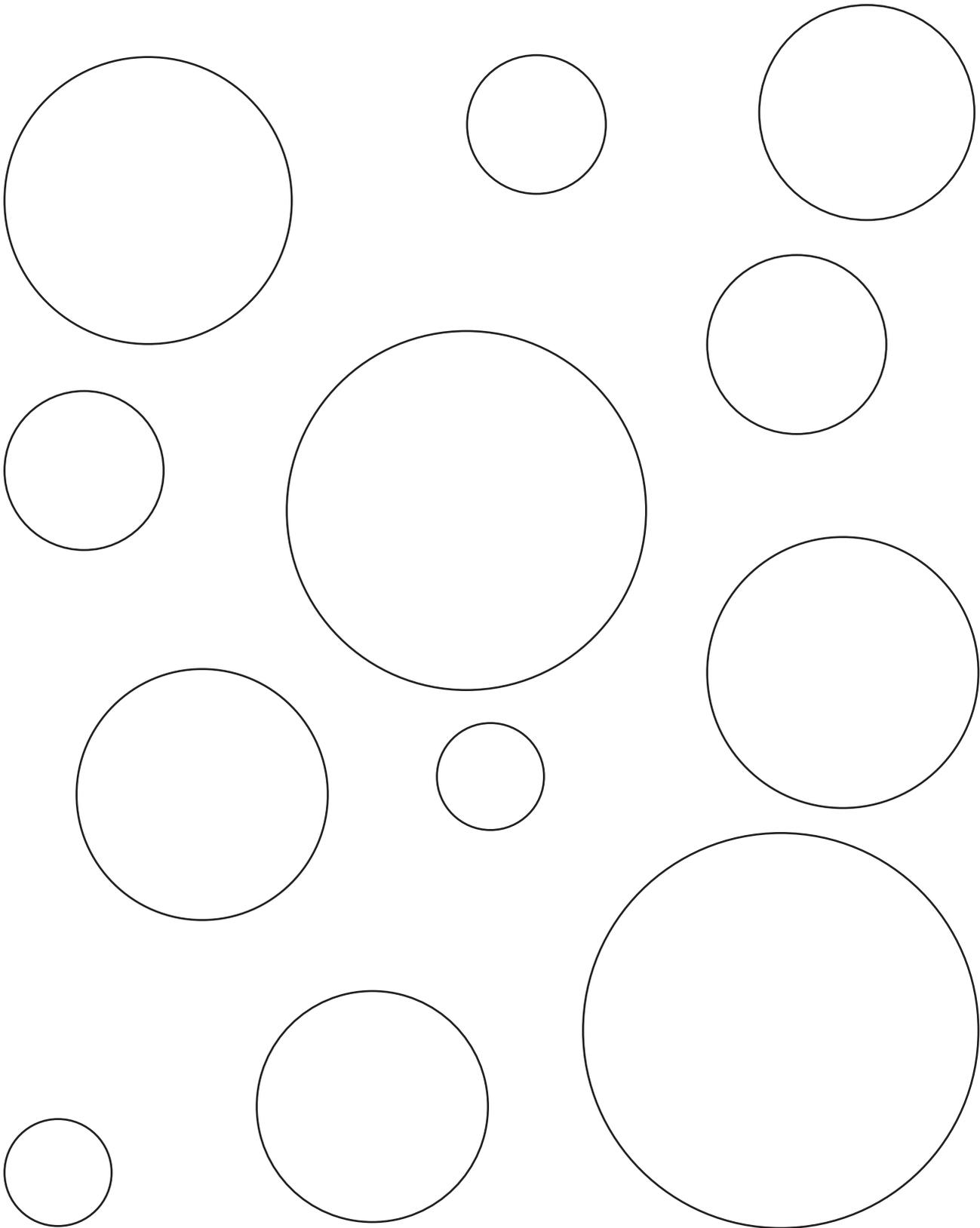
Rectangle Shape Tracers
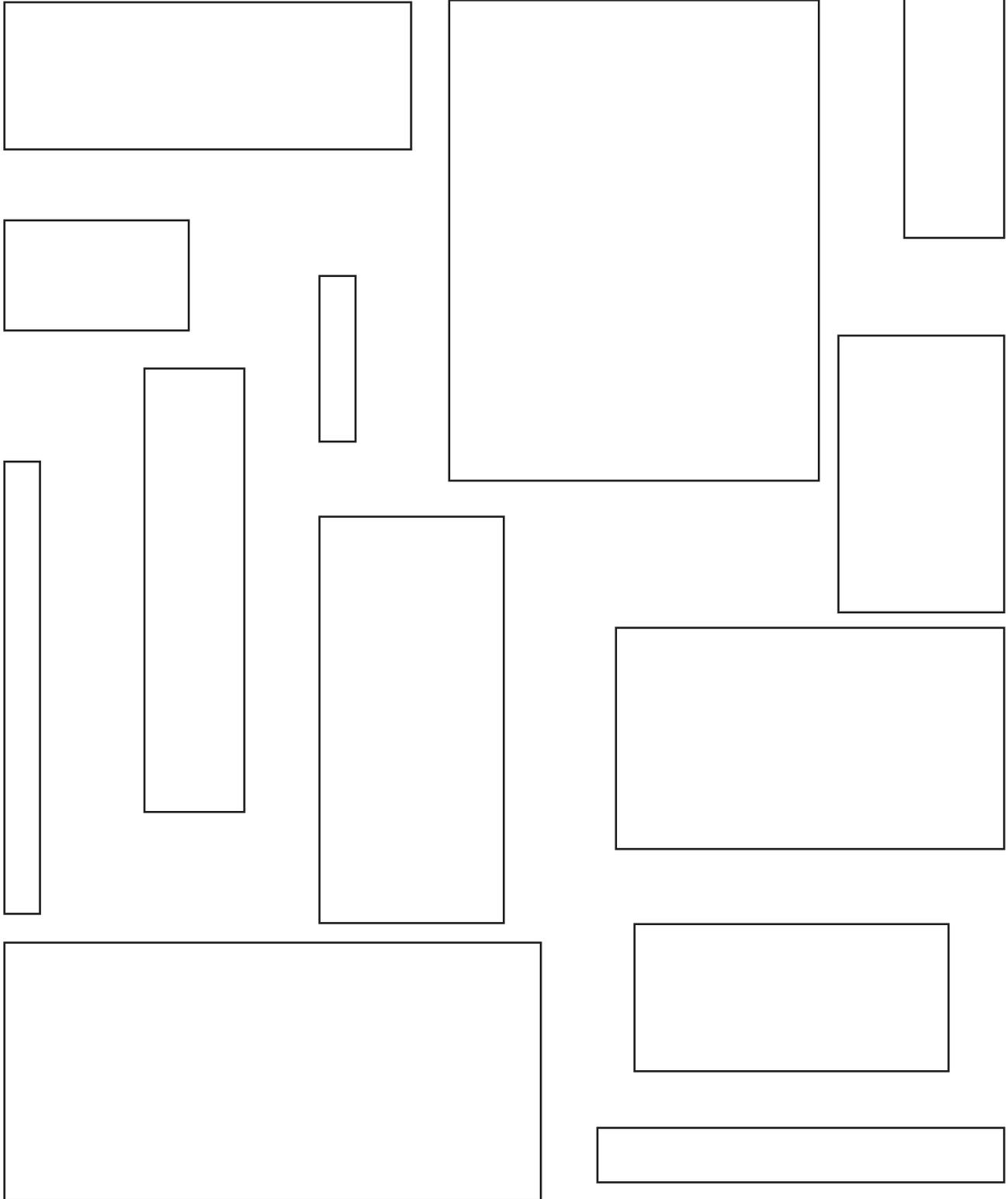
Square Shape Tracers
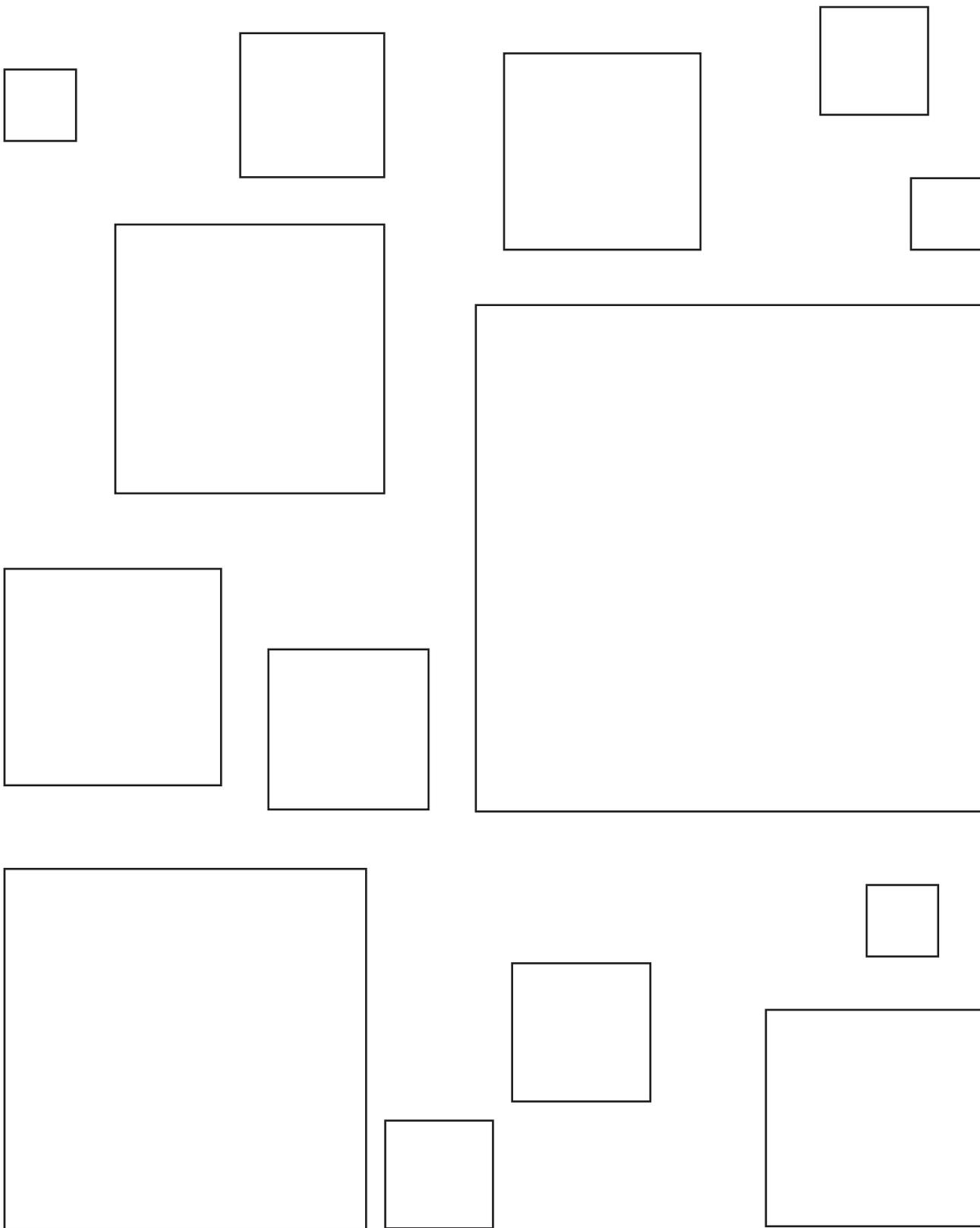
Parallelogram Shape Tracers
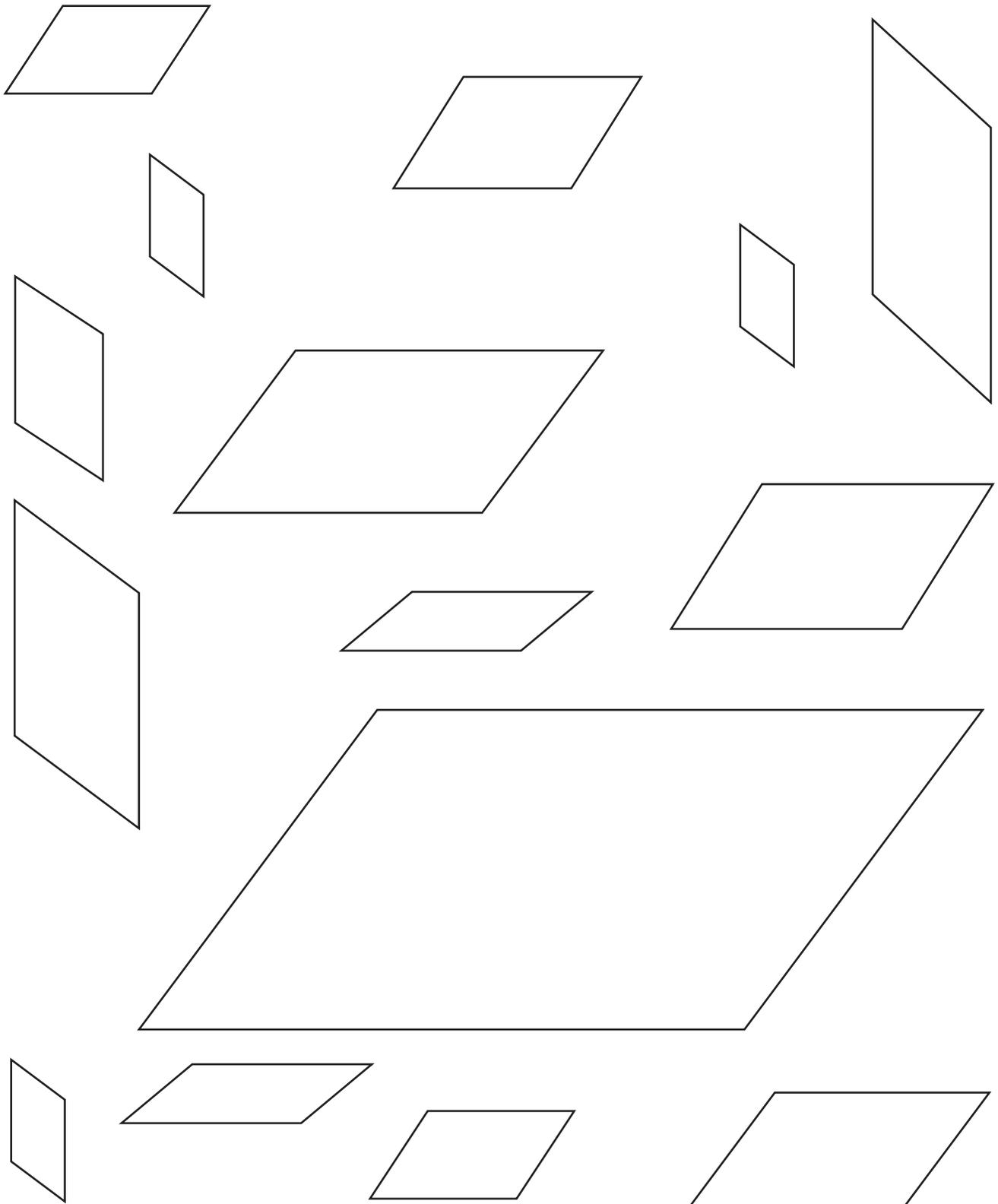
If you turn upside down, are you still _____?

If you turn to the side, are you still _____?

Yes!

Silly Shape Book

by

_____

If you turn a _____ to the side, is it still
a _____ ?

If you turn a _____ upside down, is it
still a _____ ?

Yes!

If you turn a _____ to the side, is it still
a _____ ?

If you turn a _____ upside down, is it
still a _____ ?

Yes!
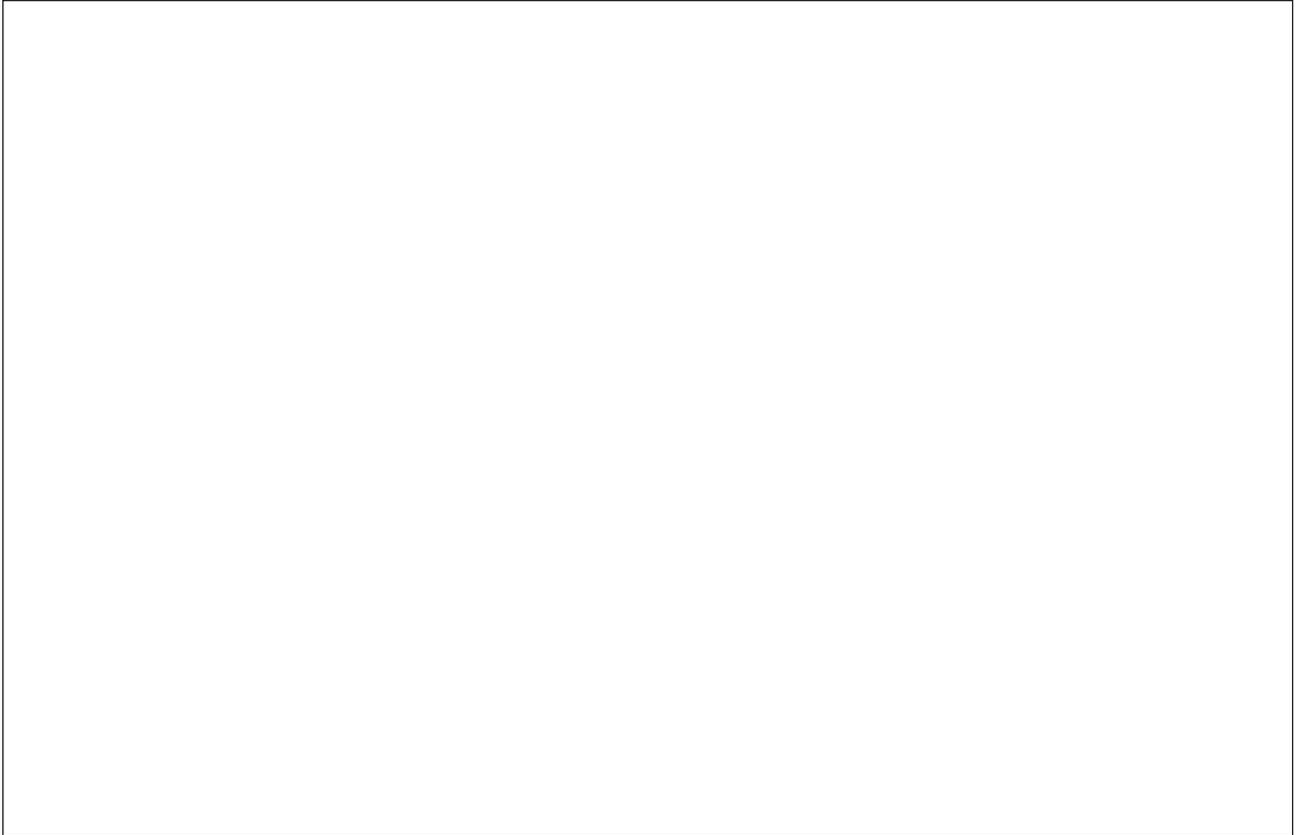
Geo Dot Paper
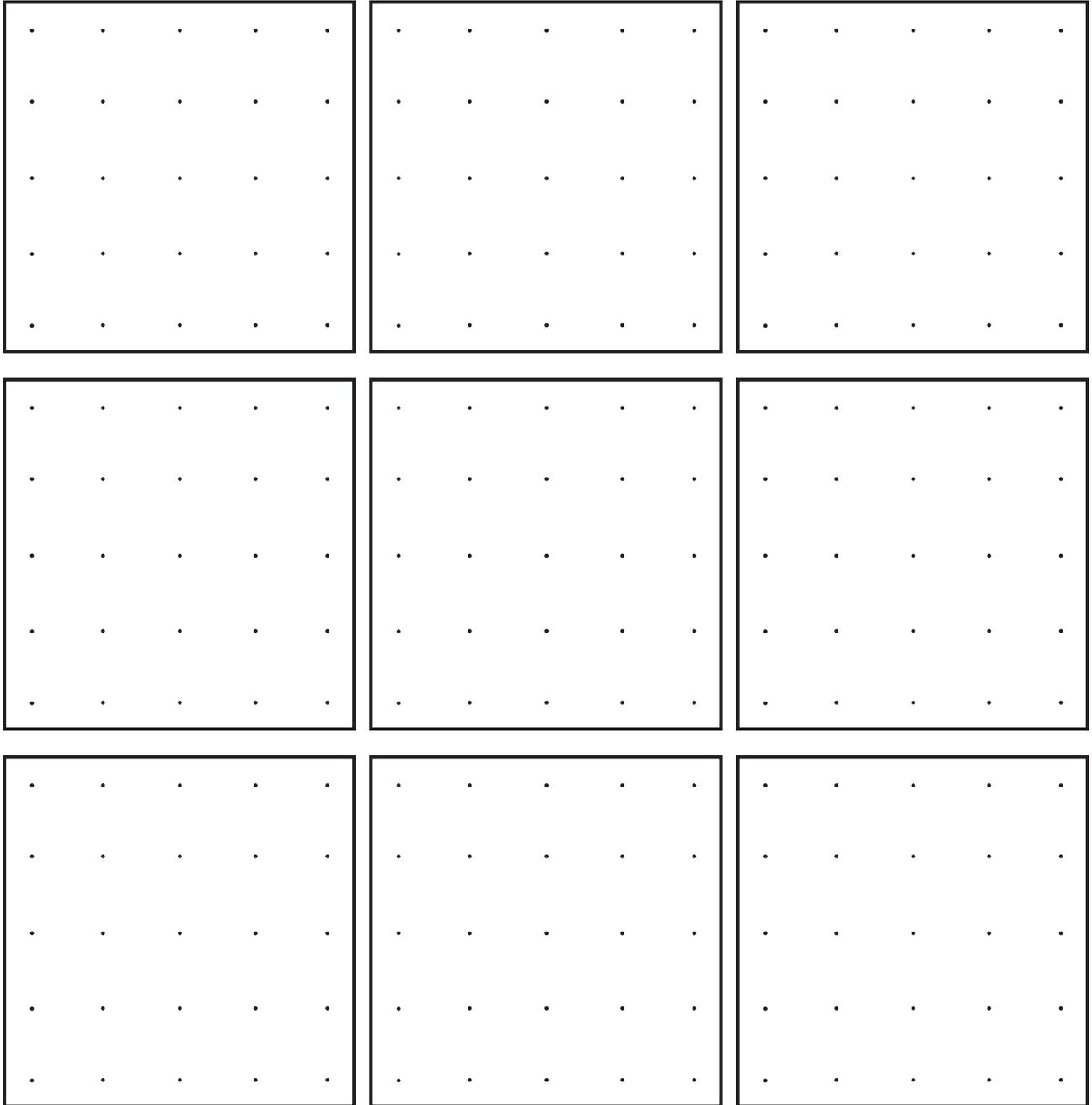
Content I-2

Activities

Movement

Living Life Cycles

Standard I:
　　Students will develop a sense of self.

Objective 2:
　　Develop and apply skills in fine and gross motor movement.

Intended Learning Outcomes:
　　4. Develop physical skills and personal hygiene.
　　6. Communicate clearly in oral, artistic, written, and nonverbal form.

Content Connections:
　　Content III-1 Life Cycle

Background Information

Connections

　　Students need to understand the *metamorphosis* or life cycle of a butterfly. During the first stage, the female lays tiny *eggs* on a leaf (host plant), then around five days later, the egg hatches into a tiny <u>larva</u>. This larva is called a *caterpillar*. During this second stage, its primary purpose is to grow and eat leaves. Its first meal is eating its own egg shell. The caterpillar eventually attaches itself to a twig and forms a hard outer shell called a *pupa* or *chrysalis.* This third stage is the resting or transformation stage for the pupa, where a marvelous transformation from caterpillar to <u>adult</u> takes place. During this fourth and final state, the pupa skin splits, the limp, damp butterfly or moth crawls out with compound eyes, a <u>proboscis</u> for feeding, and six legs. The wings expand, and blood begins pumping into them. A little warming from the sun, and it is now ready to fly off to feed and lay its eggs.

　　If you're focusing on the monarch butterflies, students should understand a little about the milkweed plant. Monarchs need milkweed to survive. The butterfly lays its eggs on milkweed plants. The growing larvae (caterpillars) eat milkweed leaves. These leaves contain toxins–poisonous chemicals. These toxins do not hurt the caterpillar, but they do make the caterpillar poisonous to most predators. Because it eats milkweed leaves as a caterpillar, the monarch butterfly is also poisonous. The vibrant colors of the monarch, make it difficult for the butterfly to camouflage itself so the survival of the monarch butterfly depends on this self defense system provided by the milkweed.

Materials

❏　Pattern for flower cutouts

❏　*The Life Cycle of a Butterfly*

❏　*Butterflies and Moths*

❏　Music of Vivaldi's Spring or Chopin's March No. 1 in Eb (Major Op. 18)

❏　Chrysalis covers – (dancing scarves, towels, plastic table cloths, fabric etc.)

❏　Party blow-outs

❏　Milk Duds

Research Basis

Dwyer, T., Salles, J.F., Blizzard, L., Lazarus, R., Dean, K. (2001). Relation of academic performance of physical activity and fitness in children. *Pediatric exercise science,* Volume 13.3, p.225

This article studied the relationship of academic performance to physical activity and fitness in children and concluded that physical activity does enhance academic performance.

The results also showed that physical activity increased the secretion of tryptophan across the blood-brain barrier, having a calming effect in children enabling them to sit and concentrate on academic pursuits. Physical activity also increased the blood flow to the cortex of the brain. There is also a positive relationship between physical activity and self-esteem in children.

Lister, D.O. (2005). Effects of traditional versus tactual and kinesthetic learning-style responsive instructional strategies on bermudian learning-support sixth grade students' social studies achievement and attitude test scores. *Research for educational reform,* Volume 10.2 pp. 24-40, 17p; (AN17490687)

This article investigated learning style characteristics and the effects of traditional instruction versus learning-style responsive instruction on student's achievement and attitude-test scores. Students performed significantly higher when emphasis on manipulation of resources and active engagement was emphasized rather than to focus on traditional instruction using lectures, discussions, and worksheets.

Invitation to Learn

Tell the students:

I'm going to give you some direction to follow. Pay attention to see if you need to move fast or slow, work way up high or down low, and notice if you use a lot of space or just a small spot. Sometimes I'll want to see big movement and sometimes I'll hardly notice you're moving at all. For this first group of instructions, stay in one place and remember you can only use body movement and facial expressions, but no talking or sounds.

Arch like a cat, stretch like a rubber band, pull like you're in a tug-o-war, topple like a house of cards, flutter like a fly caught in a spider's web, tip-toe while the baby is sleeping, duck out of the way of that low tree branch, freeze you body into a statue, sink to the bottom of the ocean, shake like a wet dog, expand like a balloon being blown up, burst that balloon open, melt to the ground, rise to the sky, sway back and forth in the wind, dangle on the edge of a cliff, turn slowly on one foot, spin quickly on the other, now stop.

You are amazing! Now try these movements. This time you can use the space in the classroom/gym. Remember I'm only watching for body movement and facial expression. No talking or sounds.

Walk at a nice slow pace, scamper like a squirrel gathering nuts, search on the ground for your missing coin, gallop like a horse in the meadow, climb to the top of the tree, slither like snake, skate like you're on ice, soar like a bird, hop like you're playing hopscotch, march like you're in a parade, run like you're being chased, trudge through the knee-high mud, sneak like you're snatching an extra cookie, waddle like a duck, charge like a bull, leap like a frog, wander like you're lost, roll down the hill, jump like a kangaroo, crawl like a baby, now stop.

Instructional Procedures

1. Tell the students we need to create a colorful flower garden in our classroom or gym for some special visitors who will be visiting today. Pass out a variety of colored paper with patterns of a flower. Have each student write one thing they know about the life cycle of a butterfly. Have them cut out their flower, and share their written idea with a classmate. When they are finished sharing, students will tape or pin their flower to the wall. (This area of the room will become the flower garden the butterflies will visit as they drink using their proboscis.)

2. Read the book, *The Life Cycle of a Butterfly*, or chapter two of *Butterflies and Moths*.

3. Discuss and review the life cycle process with your students.

4. Tell the students that they are going to have a chance to act out the life cycle of a butterfly. Remember that caterpillars and butterflies don't talk. Everything you show me needs to be done with body movements and facial expressions

5. Lay out a chrysalis cover along with a party blow-out (to be used as the butterfly's proboscis) for each student (or whatever props you've chosen to use).

6. Turn on some music such as Vivaldi's Spring or Chopin's March No. 1 in E flat (Major Op. 18). Then narrate the life cycle as follows:

Narration:

Find a quiet part of the room to curl up on the ground as a tiny egg on a leaf that was just laid by a female butterfly. How small can you get? How quiet can you be?

Your egg begins to move. Something exciting is happening. You begin to hatch from your egg—coming out as a very small caterpillar. You move in slow motion and the first thing you do is to begin eating. Start by eating your old egg covering. You love to chew leaves and you eat all the time. Some of you are monarch caterpillars who started life on the milkweed plant and you're eating the milkweed leaves. I'll pass out a Milk Dud for you to eat so you can keep growing. This milk weed will make you poisonous to your predators. Oh look! You've eaten so much and have grown so big you begin to shed your outer skin because your old one doesn't fit anymore. This is called molting. You will probably molt four or five times before you become full grown. Keep eating, keep growing. That is your most important job as a caterpillar. Can you crawl to find a new leaf to eat? You are growing so big you are nearly full grown—getting ready to make a big change. Can you molt one more time out of your skin?

Now that you're a full-grown caterpillar, find an imaginary stick, a leaf, or another object to hold on to where it will be safe. Use a silk thread that you squirt from your mouth to attach yourself to your new home. Now that you're firmly hanging on, your outer skin pops open and begins to shed. Wrap yourself up in your chrysalis cover. This new skin looks very different from your old skin. It is soft at first but then it quickly hardens. Soon your new skin is so hard that it cannot move. You become very stiff and still. It is now called a pupa or a chrysalis. As you hang there you look like a twig, a bud, or a dead leaf. This disguise hides you from anything that might want to come and eat you.

Inside your pupa you are making some amazing changes. You are turning into a butterfly. Stay inside your chrysalis but remember your wings with colorful scales begin to grow. You develop an adult body, legs and eyes, and another feature called your proboscis. This becomes the drinking tube you will eat with when you emerge from your chrysalis. Finally the change is complete. You are almost ready to come out as a beautiful butterfly.

Get ready! Your outside pupa shell begins to split and you crawl out. Your body is soft and shapeless and your wings are crumpled. You're starting out very small, so hold on tight with your legs and start pumping blood into your wings. Your wings grow quickly, like balloons filling with air. You soon reach full size. After all that work you need to rest for awhile until your body completely hardens and dries with a little help from the sun. Now you're ready! Flutter your wings then fly away. Off to be a butterfly.

If you get hungry during your flight, you may need to fly to our flower garden and use your proboscis, or drinking tube to sip some nectar. Remember now that you're a butterfly you can't chew or bite anymore. If you get tired, stop and rest awhile. But remember to keep your wings closed, that way you'll stay better camouflaged from your enemies.

You fly so gracefully. That tall grass seems as thick as a forest and flowers are as tall as trees. You love to fly through the meadow or flutter through a damp rainforest flashing your bright, colorful wings. Unroll your tongue, sip a drink of nectar. Soon you'll be flying back home. You have eggs to lay.

Assessment Suggestions

- The children participating in this activity will use movement to portray each stage of the butterfly's life cycle. By performing each part, the teacher will easily be able to observe each student's gross motor activity as well as observe their understanding of the life cycle of the butterfly.

- Students could be given the opportunity to narrate in their own words the four life cycle stages as their classmates act it out.

- Students could act out various life cycles and let their classmates guess what they were portraying.

- Following this activity the students will then have to draw their own picture and label each stage of the life cycle of the butterfly.

- As a pre-assessment you may want to display out of sequence pictures of the four stages of the life cycle of a butterfly and see if students can sequence them appropriately.

Curriculum Extensions/Adaptations/ Integration

- Give students another animal or thing that has a life cycle (rocks, water, frogs, mosquitoes, spiders, bees, trees, sunflowers, etc.) and have them write a narrative the class could act out.

- Use a butterfly mask for students who may be physically unable to participate in whole movement activities.

- Use as a math extension for measurement. How fast does a caterpillar go? Lay out two parallel measuring sticks, then using five or six different caterpillars, have the students measure

how far a caterpillar moves in 45 seconds. Make a chart or a graph.

Family Connections

- Go on a walk with your family during the spring and look for a caterpillar to adopt. Have your family help you make a good home for your caterpillar in a jar with plenty of leaves to eat, lots of air holes, and a secure spot for you caterpillar to attach itself during the metamorphosis process.

- Act out the life cycle of a butterfly for members of your family. Can they guess what you are?

- Keep a daily log or journal of your caterpillar's amazing transformation.

- Share one of our butterfly poems with someone in your family.

- Share your performance with a teacher, another class, or parents!

Additional Resources

Books

Movement-based Learning, by Rhonda L. Clements & Sharon L. Schneider; ISBN 0-88314-916-8

The Life Cycle of a Butterfly, by Bobbie Kalman; ISBN

Butterflies and Moths, by Kris Hirschmann; ISBN 0-439-67651-7

Caterpillarology, by Michael Elsohn Ross; ISBN 1-57505-055-2

Discovering Butterflies, by Douglas Florian; ISBN 0-684-18439-7

Insect Metamorphosis, by Ron and Nancy Goor; ISBN 0-689-31445-0

Creepy, Crawly Caterpillars, by Margery Facklam; ISBN 0-316-27391-0

Where Butterflies Grow, by Joanne Ryder; ISBN 0-525-67284-2

Amazing Butterflies and Moths, by John Still; ISBN 0-679-81515-5

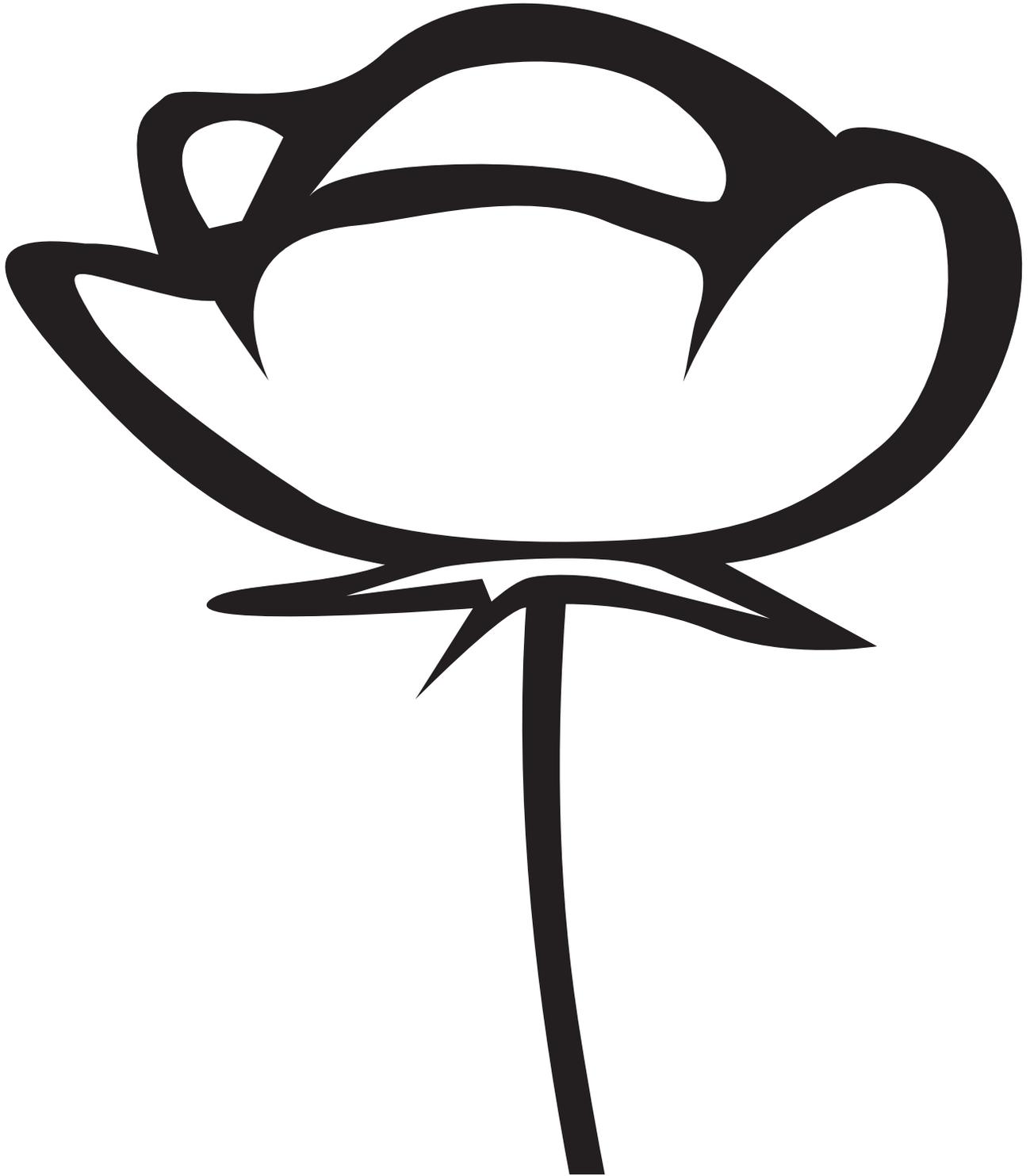*Waiting for Wings,* by Lois Ehlert; ISBN 0-15-202608-8

Web sites

http://www.tooter4kids.com

http://www.dnr.state.wi.us.org

http://www.thebutterflyfarm.com

Butterfly Life Cycle

Pedometer Play

Standard 1:

Students will develop a sense of self.

Objective 2:

Develop and apply skills in fine and gross motor movement.

Intended Learning Outcomes:

4. Develop physical skills and personal hygiene.

Content Connections:

Math Standard I –Whole Numbers

Content III Objective 2 – Weather affects people and animals

Connections

Background Information

The teacher needs to understand how to set the stride length for each pedometer (included in the pedometer instructions.) There are different functions or modes of a pedometer. Some measure steps, calories burned, or miles/kilometers walked. For these activities, we will only use the step counter.

A pedometer is a tool used to count or measure your steps while moving. For the most accurate readings, the pedometer should be clipped to your belt, or waist band. Place the pedometer as close as you can to the crease line of your pants. The pedometer needs to be level with the ground. Students who are wearing an outfit without a belt or waistband could clip the pedometer to a fanny pack or an easy to use belt. Battery of a pedometer lasts about one year.

Materials

❏ Three different colored pedometers.

❏ *Aliens at Recess*

❏ Chart or board space to record steps from each pedometer.

❏ Sentence strips

❏ Graph of *How Many Steps* for each student

❏ *How Many Steps* Overhead

Research Basis

Dwyer, T., Salles, J.F., Blizzard, L., Lazarus, R., Dean, K. (2001).   Relation of Academic Performance of Physical Activity and Fitness in Children. *Pediatric Exercise Science*, Volume 13, Issue 3, p225

This article studied the relationship of academic performance to physical activity and fitness in children and concluded that physical activity does enhance academic performance.

The results also showed that physical activity increased the secretion of tryptophan across the blood-brain barrier, having a calming effect in children enabling them to sit and concentrate on academic pursuits. Physical activity also increased the blood flow to the cortex of the brain. There is a positive relationship between physical activity and self-esteem in children.

Lister, D.O. (2005). Effects of traditional versus tactual and kinesthetic learning-style responsive instructional strategies on bermudian learning-support sixth grade students'

social studies achievement and attitude test scores. *Research for educational reform*, Vol. 10.2. pp. 24-40, 17p; (AN17490687)

This article investigated learning style characteristics and the effects of traditional instruction versus learning-style responsive instruction on student's achievement and attitude-test scores. Students performed significantly higher when emphasis on manipulation of resources and active engagement was emphasized rather than focusing on traditional instruction using lectures, discussions and worksheets.

Invitation to Learn

Ask the students if they know what an Alien is. Let them comment. Then tell them you have a story to share called *Aliens at Recess*. Read the story then ask, "What did the aliens want?" They just wanted to play tag. What are some other things you can do at recess? Begin generating a list of "Things to Do at Recess." (e.g. jump rope, basketball, tag, tetherball, Four-Square, soccer, monkey bars, catch, hopscotch.)

Instructional Procedures

1. Show the students a pedometer and explain its purpose.

2. Take a look at your list of "Things to Do at Recess" and discuss the main movement in each activity (e.g. jumping, running, walking, throwing, skipping, jogging, galloping).

3. Record each movement that the class generates on a sentence strip.

4. As a whole class, predict and rank each movement for which activity would have the most active (highest-pedometer reading) to the least active (lowest-pedometer reading).

5. Have students record the movements on their *How Many Steps* Graph and predict how many steps each movement will have after a 30 second timing.

6. Divide the class into three groups and give a pedometer to one child from each group.

7. Assign a different movement to each group to perform as you time all the students for 30 seconds.

8. After each timing, check the pedometers and record the actual number of steps for that activity.

9. Repeat the timings until all of your movements are recorded with a step count.

10. Check your predictions with your actual results.

11. Select three students to take the pedometer to recess and keep track of how many steps they take during one recess period.

12. As they return from recess, have them record the number from their pedometer on the chart/board.

13. These three numbers will be used in a variety of ways to teach or reinforce math skills.

Place Value

- Use the numbers to work with place value. How many tens? How many ones? What number is in the 100s place?

- What is the value of a given digit? (e.g., 3 in 316 means 300, or in the number 267 the 6 stands for 60.)

- Write each number in expanded form (e.g., 178 is 1 hundred, 7 tens, 8 ones or 100+70+8).

- Write the number as a word.

- Build this number using base ten models with cubes, rods, and flats.

- Practice reading the larger numbers.

Whole Number Relationships

- What number would we have if Jordan took 100 more steps? What would our new number be if Carlos took 10 fewer steps? Build the number that shows three more steps than Shelly took.

- Take two of our numbers and write a number sentence using "greater than," "less than," or "equal to."

- Sequence these three numbers in order from least to greatest or from greatest to least.

- Read the number that is third on our chart. Who can read the first number listed? Find the number that is second on our chart.

- Which other number shown is closest to Jessica's number?

Addition and Subtraction

- Add two numbers together. Now add the last number.

- Make an addition story problem with today's numbers.

- Come up with a story problem using subtraction.

- How many more steps did Ben take than Alyssa?

- How many fewer steps did Mark take than Kimberly?

- Keep a running total for an entire week of recesses.

- If I were to create a subtraction problem, which number up here would I not be able to use to start my problem? Why?

- If I start with the largest number, what two subtraction equations can I create?

Mathematical Symbols

- Using our numbers, write an equation using the "≠" sign.

- Demonstrate how changing the order of the addends does not change the sum.

- Write an equation from the numbers, then write it again substituting a symbol (e.g., □, ◊, Δ) to represent one of the values in the equation. What is the value for the symbol?

Measurement

- If every step were worth 1¢, what is the value of today's number?

- Austin entered a race where he got paid 5¢ for each step he took. How much money did he earn if he walked 17 steps in 10 seconds?

- If Karen took 134 steps during a 15 minute recess, predict how many steps she might take during a half hour recess.

- Draw the shape of different play areas on your playground. (e.g. basketball court, 4-square area, soccer field, jungle gym area) Record the number of steps for each side. Figure out the perimeter of the shape.

- The school playground is shaped like a square. If David walked around the perimeter of the playground and took 21 steps on one side, what is the perimeter, in steps, around the entire playground?

- In an area shaped like an equilateral triangle, Leslie took a total of 30 steps to walk around the perimeter. How many steps did she take on each side of the triangle?

Data

- Graph the number of steps from recess today.

- Survey the class to see what their favorite recess activity is

- Keep track of individual pedometer readings for a week then compare the girl's pedometer readings to the boy's. Make a bar graph showing the comparison.
- Keep track of the pedometer readings for each different colored pedometer for the week and graph the results.

Predictions

- Before you go to recess with the pedometer, predict what your total number of steps will be after recess.
- Before you go to recess with the pedometer, predict whether you'll have the high, medium, or low number after coming in from recess.

Assessment Suggestions

- Keep track of each student's pedometer steps and see if there is an increase in physical activity at recess.
- Have the students journal what type of activities they are involved in at recess.
- Sequence sample activities in order from least active to most active.

Curriculum Extensions/Adaptations/ Integration

- Conduct a survey of favorite recess activities and graph the results.
- Mark recess activity and weather. Does the weather affect how active or inactive students are? What types of patterns emerge? Have students fill out worksheet How Weather Affects My Activity.
- Students with limited mobility could receive and extra 100 steps.
- Students with limited mobility could walk with a partner and double their steps from recess.

Family Connections

- Plan a "No Television" night at your house. Do some active things with your family.

- Pick a place your family usually drives to (church, school, store) and decide to walk there instead.

Additional Resources

Books

The Recess Queen, by Alexis O'neill; ISBN 0439206375

King of the Playground, by Phyllis Reynolds Naylor; ISBN 0689718020

Movement-Based Learning, by Rhonda L. Clements & Sharon L. Schneider; ISBN 0-88314-916-8

Articles

Aliens at Recess, by Teresa Bateman; *Cricket Magazine;* May 93. Vol. 20 Issue 9 p. 32.

Web sites

http://www.walk4life.com

http://www.new-lifestyles.com

Organizations

America Alliance for Health, Physical Education, Recreation and Dance, P.O. |Box 385, Oxon Hill, MD 20750-0385, 1-800-321-0789,   http://www.aahperd.org

National Association for Sport and Physical Education, 1900 Association Drive, Reston, VA 20191-1599, 1-703-476-3410, http://www.naspe@aahperd.org

Name _____

How Weather Affects My Activity

Date _____ Season _____ How many steps? _____ My activity _____ _____ 	Date _____ Season _____ How many steps? _____ My activity _____ _____
Date _____ Season _____ How many steps? _____ My activity _____ _____ 	Date _____ Season _____ How many steps? _____ My activity _____ _____

Name _____

How Weather Affects My Activity

Date _____ Season _____ How many steps? _____ My activity _____ _____ 	Date _____ Season _____ How many steps? _____ My activity _____ _____
Date _____ Season _____ How many steps? _____ My activity _____ _____ 	Date _____ Season _____ How many steps? _____ My activity _____ _____

Name _____

Activity Ranking How Many Steps
Rank each activity from most active to least active

	Prediction	Actual Steps
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Pedometer Play

Student Picture	Thousands	Hundreds	Tens	Ones

Student Picture	Thousands	Hundreds	Tens	Ones

Student Picture	Thousands	Hundreds	Tens	Ones

Appendix

My World

Asia

Europe

Indian
Ocean

South
America

North America, Antarctica,
Africa, Australia, Pacific Ocean,
and Atlantic Ocean

North America

9

8

7

6

5

4

3

2

1

_____largest continent

Map Key

Desert

Mountains

Rain Forest

Capital City

It looks like _____

A	B	C	D	E	F	G

Discovery Box
North America

It is the _____largest continent.

It lies between the _____ Ocean

and the _____Ocean.

There are _____, _____

___, and _____ in North America.

In the _____ you will find icebergs
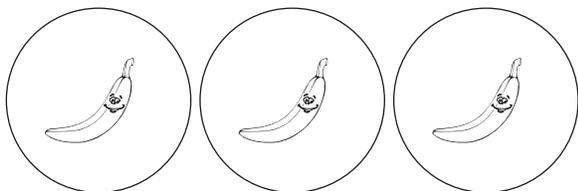
and in the _____you will find tropical

islands.

The _____ is in North America. I live

here!

People in _____break Piñatas.

People in _____are very cold.

One Capital city is Washington D.C.

- Write the ordinal number, 3rd, under the title on the North American map.

- Color the oceans blue and label them.

- Draw sand where there are deserts and add the desert symbol to the map key

- Add mountains to the map of North America and add the mountain symbol to the key.

- Add bananas where there are rain forests and add a banana to the key.

- Add a star near Washington D.C. and add a star to the key. Add the symbol to the key

- Draw a picture of you in the U.S.

- Add a piñata to Mexico.

- Add mittens to Alaska.

Student Continent Culture Map

Europe

Asia

Australia

North America

Africa

South America

Hello Around the World Recording Sheet

Greeting	Origin	Name

Seega
a game from Egypt

Materials: Game Board and 12 stones per player
Directions:

1. Players take turns laying their stones down two at a time starting at x and o.

2. When the board is full take turns moving your piece side to side or up and down (not diagonal).

3. You can capture your opponents rocks when it is sandwiched between two of your pieces after you move your piece. Sandwiches resulting from set up (step 1) don't count.

The game is over when a player only has one piece left.

		X		
0				0
		X		

This game reminds me of _____.

Name_____ Date_____

GAME PLAN RECORDING SHEET

Write the number of pieces of equipment you have for your game, and how many friends want to play on the top of your paper. Please draw a picture showing how you divided your teams with your friends. Write the number of how many people will be using one piece of the equipment for your game on the bottom of your paper.

I have _____ pieces of equipment. I have _____ friends that want to play. This is how I separated it.

I made _____ teams with _____ friends on each team.

Name_____ Date_____

FOOD PLAN RECORDING SHEET

Write the number of items in your basket and the amount of friends you are sharing with on the top of your paper. Please draw a picture showing how you divided your items among your friends. Write the number of items each friend got on the bottom line of your paper.

I have _____ number of _____ and _____ friends that want to eat my food. This is how I separated it.

Each friend got _____ amount of _____

"Stamp"ede Fractions

Stamp 2		
Stamp 3		
Stamp 4		

Six in a Row Bingo Recording Sheet

	A	B	C	D	E	F
6						
5						
4						
3						
2						
1						

Crazy Cups Recording Sheet

___ , ___	___ , ___	___ , ___
___ , ___	Button	___ , ___
___ , ___	___ , ___	___ , ___

Coordinate Concentration Recording Sheet

Match 1: ____ , ____ and ____ , ____

Match 2: ____ , ____ and ____ , ____

Match 3: ____ , ____ and ____ , ____

Match 4: ____ , ____ and ____ , ____
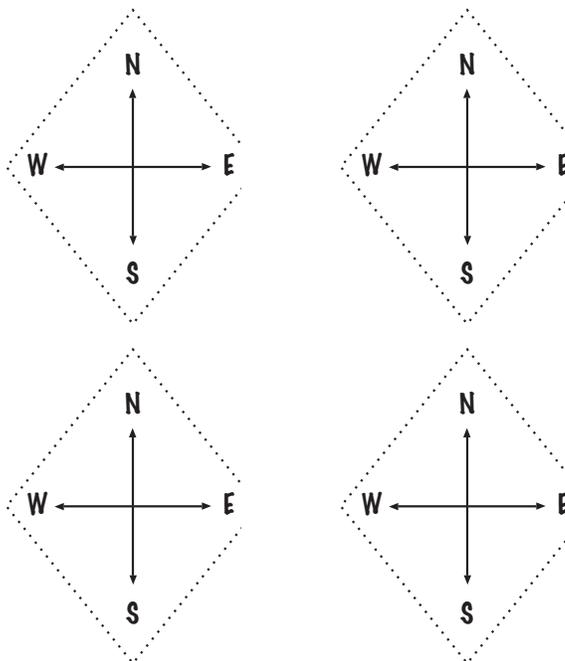
Match 5: ____ , ____ and ____ , ____

Match 6: ____ , ____ and ____ , ____

Match 7: ____ , ____ and ____ , ____

Match 8: ____ , ____ and ____ , ____

Crazy Cups Compasses

If you turn upside down, are you still _____?

If you turn to the side, are you still _____?

Yes!

Silly Shape Book

by

_____

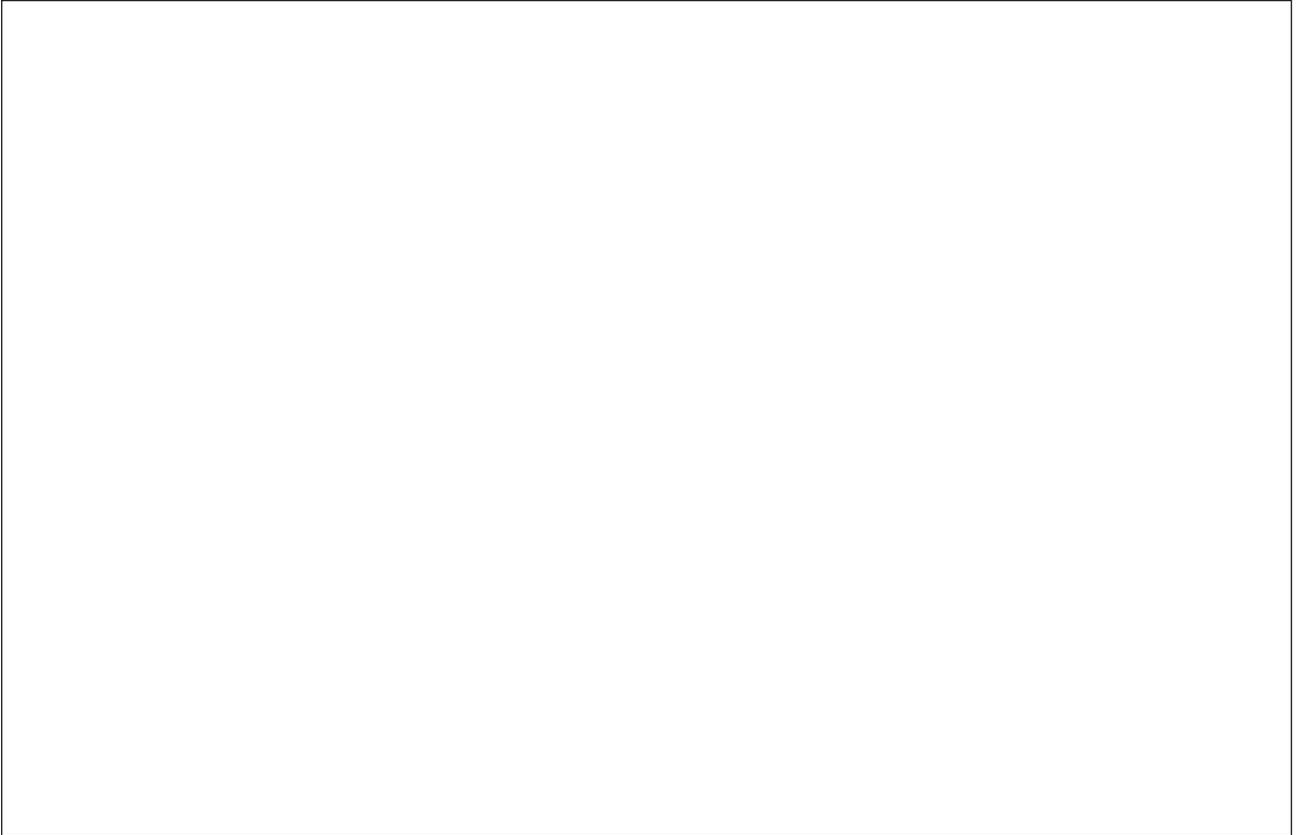If you turn a _____ to the side, is it still

a _____?

If you turn a _____ upside down, is it

still a _____?

Yes!

If you turn a _____ to the side, is it still

a _____?

If you turn a _____ upside down, is it

still a _____?

Yes!

If you turn a _____ to the side, is it still

a _____?

If you turn a _____ upside down, is it

still a _____?

Yes!

If you turn a _____ to the side, is it still

a _____?

If you turn a _____ upside down, is it
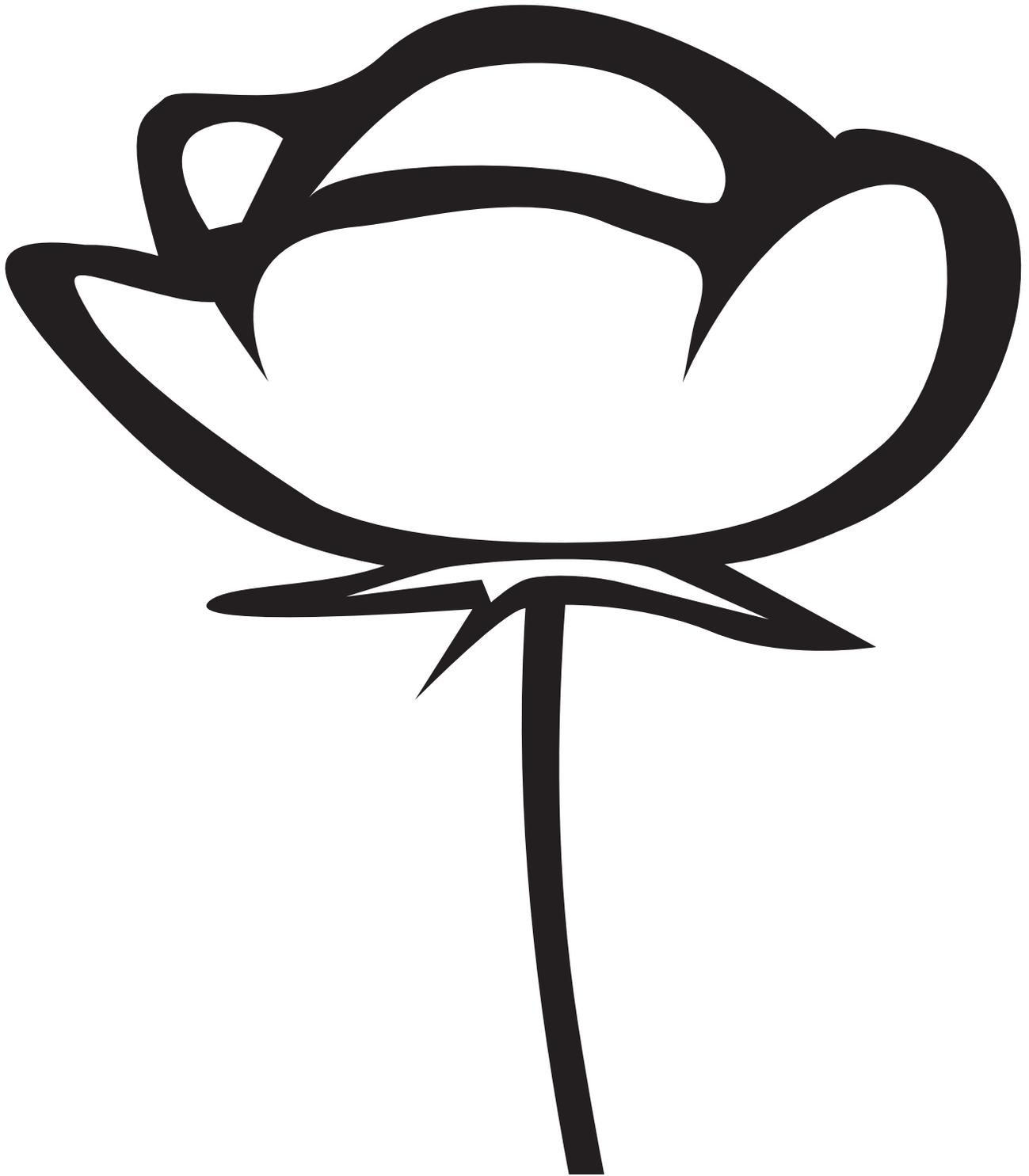
still a _____?

Yes!

Butterfly Life Cycle

Name _____

Activity Ranking How Many Steps
Rank each activity from most active to least active

	Prediction	Actual Steps
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		