

# NUMBERS AND NUMBER SENSE

**Grade Level or Special Area:** First Grade

**Written by:** Amy Tamez, Liberty Common School, Fort Collins, CO

**Length of Unit:** Yearlong math warm-up lessons (seven lessons; 5-10 minutes each)

## I. ABSTRACT

Children will engage in daily practice with identifying numbers, understanding place value, counting, using tallies, naming ordinal positions, learning math terms, comparing numbers, using fractions, and using simple graphs. This unit is intended for use in conjunction with the teacher's standard math program, as a way of reinforcing the students' number awareness and understanding of basic math concepts.

## II. OVERVIEW

### A. Concept Objectives

1. Students will develop an awareness of how to use numbers to count, measure, and label.
2. Students will develop an awareness of number patterns and the relationships among counting, grouping, and place value to demonstrate an understanding of the whole number system.
3. Students will understand and apply basic and/or advanced concepts of numbers and relate these to other mathematical concepts.

### B. Content from the *Core Knowledge Sequence*

1. First Grade Mathematics: Numbers and Number Sense (p. 35)
  - a. Recognize and write numbers 0 – 100.
  - b. Count from 0 – 100 by ones; twos; fives; tens.
  - c. Count by tens from a given single-digit number.
  - d. Count forward and backwards.
  - e. Use tallies.
  - f. Identify ordinal position, 1<sup>st</sup> to 10<sup>th</sup>.
  - g. Identify dozen; half-dozen; pair.
  - h. Recognize place value: ones, tens, hundreds.
  - i. Identify more and less; counting how many more or less.
  - j. Given a number, identify one more and one less; ten more and ten less.
  - k. Compare quantities using the signs  $<$ ,  $>$ , and  $=$ .
  - l. Recognize fractions as part of a whole:  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{4}$
  - m. Create and interpret simple pictorial graphs and bar graphs.

### C. Skill Objectives

1. Using objects and pictures, represent whole numbers from 0 to 100 in a variety of ways. (Colorado Standards and Grade Level Expectations [CSGLE] 1.1.1.A)
2. Count from 0 to 100 by 2's. (adapted from CSGLE 1.1.3.A)
3. Count from 1 to 100 by 1's, 5's and 10's. (CSGLE 1.1.3.B)
4. Starting with any whole number less than 100, count forward to 100. (CSGLE 1.1.3.C)
5. Display and explain data from a graph or tallies. (adapted CSGLE 1.3.1.B)
6. Use ordinal positions for first through tenth. (adapted from CSGLE 1.1.3.D)
7. Order according to place value (for example, given 9 ones and 2 tens, the student can write the number 29; given the number 29 the student can show 2 tens and 9 ones). (CSGLE 1.1.2.D)
8. Demonstrate the meanings of equal, less than, and greater than with whole numbers. (adapted from CSGLE 1.1.1.B)

9. Apply equalities using the “=” symbol. (CSGLE 1.1.1.C)
10. Using concrete materials, demonstrate the meanings of halves, thirds, and fourths of wholes. (adapted from CSGLE 1.1.1.D)
11. Using a graph, interpret data for “more” and “fewer” or “most,” “same,” and “fewest.” (adapted from CSGLE 1.3.2.A)
12. Use data to make a graph. (adapted from CSGLE 1.3.3.A)
13. Count by tens from a given single-digit number. (*Core Knowledge Sequence: Grade 1: Mathematics: Numbers and Number Sense*)
14. Count forward and backwards. (*Core Knowledge Sequence: Grade 1: Mathematics: Numbers and Number Sense*)
15. Identify dozen; half-dozen; pair. (*Core Knowledge Sequence: Grade 1: Mathematics: Numbers and Number Sense*)
16. Recognize place value: ones, tens, hundreds. (*Core Knowledge Sequence: Grade 1: Mathematics: Numbers and Number Sense*)
17. Given a number, identify one more and one less; ten more and ten less. (*Core Knowledge Sequence: Grade 1: Mathematics: Numbers and Number Sense*)

### III. BACKGROUND KNOWLEDGE

- A. For Teachers
  1. Core Knowledge Foundation, *Core Knowledge Sequence*
  2. Hirsch, Jr. E.D., *Core Knowledge Teacher Handbook Grade One*
  3. Hirsch, Jr. E.D., *What Your First Grader Needs to Know*
- B. For Students
  1. Mathematics: Numbers and Number Sense (*Core Knowledge Sequence, Kindergarten, p. 17*)

### IV. RESOURCES

- A. No specific books are needed for this unit. However, the following books are great resources for worksheets and additional activities that can be used to reinforce the math skills covered in Numbers and Number Sense.
  1. Carson-Dellosa Publishing. *Mega-Math: Grades Pre-K to 1*
  2. Evan-Moor Educational Publishers. *Understanding Numbers 1-100: Grade 1-2*
  3. Grow Publications. *ADD: Arithmetic Developed Daily: Grade 1*

### V. LESSONS

#### Lesson One: Numbers and Place Value 0 – 100 (five minutes)

- A. *Daily Objectives*
  1. Concept Objective(s)
    - a. Students will develop an awareness of how to use numbers to count, measure, and label.
    - b. Students will develop an awareness of number patterns and the relationships among counting, grouping, and place value to demonstrate an understanding of the whole number system.
  2. Lesson Content
    - a. Recognize and write numbers 0 – 100.
    - b. Recognize place value: ones, tens, hundreds.
    - c. Given a number, identify one more and one less; ten more and ten less.
  3. Skill Objective(s)
    - a. Using objects and pictures, represent whole numbers from 0 – 100 in a variety of ways.

- b. Order according to place value (for example, given 9 ones and 2 tens, the student can write the number 29; given the number 29 the student can show 2 tens and 9 ones).
- c. Recognize place value: ones, tens, hundreds.
- d. Given a number, identify one more and one less; ten more and ten less.

B. *Materials*

- 1. Place value chart set (these can be ordered from school supply catalogs, and they will come with everything you will need) or, you can make your own on a poster board and gather the supplies listed below (see Appendix A for an example)
- 2. Three cans, baskets, or large pockets
- 3. 200 straws or craft sticks
- 4. 20 rubber bands
- 5. Number cards – two of each for numbers 0, 2, 3, 4, 5, 6, 7, 8, 9 and three cards for number 1
- 6. Tape
- 7. One copy for each student: Numbers and Place Value Progress Sheet (Appendix B, page 1) – to be used when you are ready to check for progress
- 8. One copy for the teacher: Numbers and Place Value Progress Sheet Teacher Instructions (Appendix B, page 2)

C. *Key Vocabulary*

- 1. To *count* is to determine how many there are of something.
- 2. *More* is a larger amount.
- 3. *Less* is a smaller amount.

D. *Procedures/Activities*

- 1. **Note to teacher:** This lesson is not intended to **teach** the concept of place value. It is one way of practicing daily what the students should be learning in math lessons through direct instruction from the teacher and hands-on activities.
- 2. **Note to teacher:** Before the first day of school, create or purchase a place value chart with columns that show ones, tens and hundreds. In these columns, there should be large pockets or cans that can hold straws or craft sticks, and space for attaching one numeral.
- 3. Discuss with the students that counting large amounts can be much easier when things are in groups and that as a class you will be practicing grouping and counting by tens by keeping track of the days of school.
- 4. Direct the students' attention to the place value chart. Discuss the chart with the students. Tell them that a rule of the chart is that there can only be one number in each column, and that they will be grouping by tens as they go.
- 5. Each day, have a child place a straw or stick in the ones can and attach a number to the ones column of the chart using tape or other adhesive, showing how many days of school there have been so far. (See Appendix A for an example of what a hundreds chart looks like.)
- 6. When there are ten sticks in the ones can, bundle them with a rubber band and move the set of ten to the tens can. Discuss with the students why the sticks needed to be moved. Lead them to the observations that now that the sticks are bundled and have been moved over to the tens can, we now have 1 set of ten (this should be shown by having the number 1 attached to the tens column) and zero ones (shown by having a 0 attached to the ones column).
- 7. Repeat this process daily as the year goes on. When there are ten sets of ten, the sticks should be bundled and moved to the 100's can. This is really exciting for the students! You might choose to celebrate the 100<sup>th</sup> day of school. Continue counting the days of school until the school year is over.

8. **Questioning:** Different types of questions should be used each day to facilitate discussions about counting and place value as the year progresses. Some examples are:
    - a. *How many tens do we have on our chart today?*
    - b. *How many ones?*
    - c. *How many days of school have we had so far?*
    - d. *Who remembers how many sticks should be in one bundle?*
    - e. *Why did we move the bundle of sticks over to the tens can?*
  9. **Modifications:** Students who are advanced can answer questions like:
    - a. *How many more days do we need to have to get to 20 days of school?*
    - b. *How many to get to 100?*

Students who are struggling with the place value concepts can take the bundles out of the cans and practice counting them, even by taking apart bundles with an adult and being shown the process of counting and making groups of ten.
  10. To cover the concepts of one more, one less, and ten more, ten less, use the numbers on the place value chart and show them what happens when you take away one, add one, take away a set of ten, and add a set of ten. For example, if the chart shows 46 put an extra bundle of tens in the tens can. Say to the students, "How many do we have now?" Remove the bundles of tens, count them by tens as a class, and then add on the ones. Point out to the students that ten more than 46 is 56. Repeat this process daily, making sure to vary between one more, one less, ten more, and ten less.
  11. When the students are comfortable with the process used in Step 9, try having them tell you what the answers would be *without* demonstrating with sticks.
- E. *Assessment/Evaluation*
1. This lesson is designed to be an ongoing math warm-up that reinforces concepts being taught in a standard math program. Assessments included in the students' school math program should be done regularly. However, teachers should monitor student participation in daily discussions to check for understanding.
  2. Numbers and Place Value Progress Sheet (Appendix B, pages 1 and 2)

**Lesson Two: Daily Oral Counting (five minutes)**

A. *Daily Objectives*

1. Concept Objective(s)
  - a. Students will develop an awareness of how to use numbers to count, measure, and label.
  - b. Students will develop an awareness of number patterns and the relationships among counting, grouping, and place value to demonstrate an understanding of the whole number system.
  - c. Students will understand and apply basic and/or advanced concepts of numbers and relate these to other mathematical concepts.
2. Lesson Content
  - a. Count from 0 – 100 by ones; twos; fives; tens.
  - b. Count by tens from a given single-digit number.
  - c. Count forward and backwards.
3. Skill Objective(s)
  - a. Count from 0 to 100 by 2's.
  - b. Count from 1 to 100 by 1's, 5's and 10's.
  - c. Starting with any whole number less than 100, count forward to 100.
  - d. Count by tens from a given single-digit number.
  - e. Count forward and backwards.

- B. *Materials*
1. One can or small flower pot, labeled “Daily Counting”
  2. 15-20 large craft sticks
  3. Counting pattern labels for craft sticks (Appendix C)
  4. One copy of the Oral Counting Checklist for each student (Appendix D) – to be used when you are ready to check for progress
- C. *Key Vocabulary*  
None
- D. *Procedures/Activities*
1. **Note to teacher:** This lesson is not intended to **teach** the concepts of the different ways of counting. It is one way of practicing daily what the students should be learning in math lessons through direct instruction from the teacher and hands-on activities.
  2. **Note to teacher:** Before incorporating the Daily Counting in to your math routine, copy Appendix C onto cardstock and cut out the counting stick labels. Glue them on to large craft sticks. Decide which counting patterns are appropriate for your students based on what they have learned so far during math instruction. Blank stick labels are included in Appendix C, which can be used to make additional counting sticks with other patterns. Put only the sticks that will be appropriate for your students at this time in the can or pot. Sticks with more complex counting patterns can be added as the year goes on.
  3. Show the Daily Counting can to the students and tell them that you will use it to practice counting aloud every day. Review with them the ways that you have learned to count so far. Take the sticks out of the can one at a time and read the instructions to them. As a class, they should follow the instructions on the stick and count aloud.
  4. Every day during math warm-up time, have one student take a stick (without looking) out of the can. The student should read the instructions on the stick aloud to the class. The teacher can help with the reading if necessary.
  5. The class should count aloud according to the counting pattern on the stick.
  6. **Questioning:** A variety of questions can be asked after the counting activity. Some examples are:
    - a. *If we kept counting, what number would come next?*
    - b. *Do you think we would get to 100 faster counting by fives or by tens?*
    - c. *Should we try it?*
    - d. *Why was it faster counting by tens?*
  7. **Modifications:** Students who are advanced can be asked to count further with the same counting pattern, or even count backwards by twos, fives or tens. Students who need extra practice with the counting patterns should get additional support using objects to group and then count them. They can also use number lines, and highlight the numbers that they will be counting.
- E. *Assessment/Evaluation*
1. This lesson is designed to be an ongoing math warm-up that reinforces concepts being taught in a standard math program. Assessments included in the students’ school math program should be done regularly. However, teachers should monitor student participation in daily discussions to check for understanding.
  2. Oral Counting Checklist (Appendix D). This assessment should be used with the students one at a time, whenever the teacher feels that it is an appropriate time to check for progress (quarterly, for example). The teacher should ask the child to count aloud (by twos, fives, etc.) and record how far the child was able to get.

This should be used to determine if there are any students who need additional practice with this concept.

### **Lesson Three: Using Tallies and Signs $<$ , $>$ , and $=$ (five minutes)**

#### **A. Daily Objectives**

1. Concept Objective(s)
  - a. Students will develop an awareness of number patterns and the relationships among counting, grouping, and place value to demonstrate an understanding of the whole number system.
  - b. Students will understand and apply basic and/or advanced concepts of numbers and relate these to other mathematical concepts.
2. Lesson Content
  - a. Use tallies.
  - b. Compare quantities using the signs  $<$ ,  $>$ , and  $=$ .
3. Skill Objective(s)
  - a. Display and explain data from a graph or tallies.
  - b. Demonstrate the meaning of equal, less than, and greater than with whole numbers.
  - c. Apply equalities using the “=” symbol.

#### **B. Materials**

1. Our Daily Tally Chart (laminated) – one chart to be used as a whole class (Appendix E)
2. One overhead pen that can be wiped off with water
3. Tallies and Signs Progress Sheet – one copy for each student (Appendix F) – to be used when you are ready to check for progress

#### **C. Key Vocabulary**

1. *Tallies* are marks used to keep track of items as they are counted.
2. *Greater than* means to have a higher value, or more.
3. *Less than* means to have a lower value, or not as many.
4. *Equal* means the same amount.

#### **D. Procedures/Activities**

1. **Note to teacher:** This lesson is not intended to **teach** the concepts of tallying and using the signs  $<$ ,  $>$ , and  $=$ . It is one way of practicing daily what the students should be learning in math lessons through direct instruction from the teacher and hands-on activities. This lesson should not be used until the students have become familiar with tallying and the signs  $<$ ,  $>$ , and  $=$ .
2. **Note to teacher:** Before beginning this daily math warm-up, enlarge the Daily Tally Chart (Appendix E) and laminate it. Hang it on the wall where you will be doing your daily math warm-ups.
3. Each day before math warm-up begins, pick a topic to be used for counting and tallying. Your topic can be anything, as long as it will give you **two** things to count and tally. Some examples are:
  - a. *How many boys and how many girls are in class today?*
  - b. *How many students wore short sleeves and how many wore long sleeves?*
  - c. *Who has a pet and who doesn't?*
  - d. *How many students are six years old and how many are seven?*
  - e. *Who was driven to school and who rode a bike or walked?*
  - f. *Who will have hot lunch today and who will have cold lunch?*
  - g. *Who is wearing a watch today and who is not?*
4. Using your selected topic, fill in the first sentence that reads, “Today we will count \_\_\_ and \_\_\_.” Also, fill in the two sentences that read, “How many \_\_\_?”

5. Explain to the students that a good way to count things is to make a mark for each object, and that this is called tallying. Tell them that you are going to practice tallying as a class.
6. Talk to the students about what you will be tallying for the day. Have the students stand up if they are part of the first group. For example, if you will be tallying how many boys and girls are at school that day, have all the boys stand up. As you make a tally on the chart for each boy, say his name and have him sit. Repeat the process to count the girls. As the students become comfortable with the process of tallying, you can have student volunteers come to the front of the group and do the tallying.
7. After the tallies have been made, tell the students that tallies can be counted in groups of five, like our Days of School sticks are grouped by tens. Count the tallies aloud as a class, and write the corresponding number on the tally chart. As in Step 6, this writing step can be turned over to a student volunteer when it seems appropriate, based on student understanding.
8. Refer to the results on the Tally Chart and ask the students which group has more. Record the answer on the chart.
9. Fill in the last line on the chart (or a student can, when ready) using numbers and signs. For example, if there were 14 boys and 11 girls in class that day you would write  $14 > 11$ .
10. **Questioning:** Questions during this math warm-up activity are a great way to check for understanding and progress. Vary the questions between questions that require factual answers (*How many boys do we have here today?*) and questions that require higher level thinking skills (*Do you think we will always have the same answer for this question? What would make our answer change?*). Other examples of questions to use are:
  - a. *How many tallies should be in a group?*
  - b. *How do we count groups of tallies?*
  - c. *What sign would we use in the answer at the bottom of the chart if we had the same number in each group:  $<$ ,  $>$ , or  $=$ ?*
11. **Modifications:** Students who are advanced can be asked to do the writing on the chart. Students who are struggling with the concept of tallies will need additional practice using objects and making their own tallies (either with a teacher or during independent work time). Students who are having trouble with using the signs  $<$ ,  $>$ , and  $=$  may need objects to count, and additional practice using the symbols on worksheets (available in teacher resource books – see Resource section in this unit).

E. *Assessment/Evaluation*

1. This lesson is designed to be an ongoing math warm-up that reinforces concepts being taught in a standard math program. Assessments included in the students' school math program should be done regularly. However, teachers should monitor student participation in daily discussions to check for understanding.
2. Tallies and Signs Progress Sheet (Appendix F)

**Lesson Four: Ordinal Positions (10-15 minutes)**

A. *Daily Objectives*

1. Concept Objective(s)
  - a. Students will understand and apply basic and/or advanced concepts of numbers and relate these to other mathematical concepts.
2. Lesson Content
  - a. Identify ordinal position, 1<sup>st</sup> to 10<sup>th</sup>.

3. Skill Objective(s)
  - a. Use ordinal positions for first through tenth.
- B. *Materials*
  1. One set of ten animal cards, colored and laminated (Appendix G, pages 1-5)
  2. One set of ordinal number cards, laminated (Appendix H)
  3. Tape or other adhesive, or magnets if you have a magnetic chalkboard
  4. One copy of Ordinal Numbers Progress Sheet (Appendix I) for each student (to be used when you are ready to check for progress)
- C. *Key Vocabulary*  
None
- D. *Procedures/Activities*
  1. **Note to teacher:** This lesson is not intended to teach the concepts of ordinal positions and ordinal numbers. It is one way of practicing daily what the students should be learning in math lessons through direct instruction from the teacher and hands-on activities. This lesson should not be used until the students have become familiar with the concept of first, second, third, etc.
  2. **Note to teacher:** Before doing this lesson, prepare the animal cards (Appendix G, pages 1-5) by copying them on cardstock, coloring, cutting out, and laminating them. Also, cut out and laminate the ordinal number cards (Appendix H).
  3. Choose ten students and give one of the ordinal number cards to each of them. Call out “first” and have the student who is holding the “1<sup>st</sup>” card to go to the front of the class. Say “second” and have the student with the “2<sup>nd</sup>” card stand next to the first student. Continue the process for the complete set of cards. When the students are standing in order, take the cards from them one at a time (in order) and tape them to the chalkboard, above the student.
  4. **Questioning:** Ask the students at their seats questions like:
    - a. *Who is fourth in line?*
    - b. *Who is ninth in line?*
    - c. *Where is John in line (first, second, etc.)?*
  5. Have the students who were at the board go back to their seats. Choosing different students this time, pass out the animal cards one at a time. When you give an animal card to a student, tell the student where the animal should be in line. For example, “The bear is sixth in line.” Have the student take the bear and go stand under the sign on the board that shows “6<sup>th</sup>.” Repeat this process until students at the front of the room are holding all ten animal cards. Repeat the questioning process used in Step Four.
  6. **Modifications:** As the students’ skills increase, this warm-up activity can be modified to provide extra challenge. One example: Pass out the ordinal number cards to ten students, have them all go to the board at the same time, and have them put themselves in order. Then take away their number cards and have the students who are at their desks answer the questions about who is in which spot without having the cards to look at. Another idea is to line up students (or animal picture cards) at the board, without ordinal number cards, and ask more specific questions like:
    - a. *Who is second from the left?*
    - b. *Who is second from the right?*
- E. *Assessment/Evaluation*
  1. This lesson is designed to be an ongoing math warm-up that reinforces math concepts being taught in a standard math program. Assessments included in the students’ school math program should be done regularly. However, teachers

should monitor student participation in daily discussions to check for understanding.

2. Ordinal Numbers Progress Sheet (Appendix I). The first part of this assessment should be done aloud. It is designed so that it can be reused throughout the year. For each row of pictures, give instructions for what the children should do. For example: *Color the seventh book. Circle the third flower. Cross out the tenth flag.* Later in the year, you can be more specific. (*Color the fifth book from the right.*)

**Lesson Five: Dozen, Half-Dozen, Pair (five minutes)**

A. *Daily Objectives*

1. Concept Objective(s)
  - a. Students will understand and apply basic and/or advanced concepts of numbers and relate these to other mathematical concepts.
2. Lesson Content
  - a. Identify dozen; half-dozen; pair.
3. Skill Objective(s)
  - a. Identify dozen; half-dozen; pair.

B. *Materials*

1. One copy of Appendix J for each student, copied on cardstock and slipped inside a smooth page protector
2. One dry erase marker for each student
3. One tissue or small paper towel for each student, to be used as an eraser

C. *Key Vocabulary*

1. A *dozen* is a set of twelve items.
2. A *half-dozen* is a set of six items.
3. A *pair* is a set of two items.

D. *Procedures/Activities*

1. **Note to teacher:** This lesson is not intended to teach the words dozen, half-dozen, and pair. It is one way of practicing daily what the students should be learning in math lessons through direct instruction from the teacher and hands-on activities. This lesson should not be used until the students have become familiar with the words dozen, half-dozen, and pair, and their values.
2. **Note to teacher:** Before doing this math warm-up, prepare one Dozen Board for each child by making copies of Appendix J on cardstock and slipping them inside smooth page protectors.
3. Have the students seated at their desks. Pass out one Dozen Board, one dry erase marker, and one tissue or paper towel to each student.
4. Tell the students to listen to the instructions that you will be giving, and show their answers by using the marker to color in the correct amount of objects on their board.
5. Give instructions like: *Draw a dozen eggs. Draw six eggs and circle the word that shows the correct amount of eggs – dozen, half-dozen, or pair. Circle the number that shows the amount you would have if you had a pair of something.*
6. After each question, the students should hold up their boards facing the teacher, so the teacher can check the answers.
7. After the answers have been checked, the students can erase their boards and wait for the next instructions.
8. **Modifications:** Students who are having a hard time remembering *dozen* and *half-dozen* can use a real egg carton and plastic eggs, rather than drawing on the boards. Remembering the word *pair* can be reinforced by making a list of things

that come in pairs (shoes, socks, etc.). Advanced students can answer questions like:

- a. *How many eggs would I have if I had two-dozen?*
- b. *How many socks are in ten pairs?*

E. *Assessment/Evaluation*

1. This lesson is designed to be an ongoing math warm-up that reinforces math concepts being taught in a standard math program. Assessments included in the students' school math program should be done regularly. However, teachers should monitor the students' daily responses on the dozen boards to check for understanding.
2. Since the procedures in this lesson allow for all students to answer individually, the lesson itself is a good method of ongoing assessment. If desired, the teacher can copy Appendix J on regular paper and have the students show their answers with pencils or crayons, so that it can be collected, graded and/or saved in the students' files.

**Lesson Six: Fractions (5-10 minutes)**

A. *Daily Objectives*

1. Concept Objective(s)
  - a. Students will understand and apply basic and/or advanced concepts of numbers and relate these to other mathematical concepts.
2. Lesson Content
  - a. Recognize fractions as part of a whole:  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{4}$
3. Skill Objective(s)
  - a. Using concrete materials, demonstrate the meaning of halves, thirds, and fourths of wholes.

B. *Materials*

1. One Fraction Board (Appendix K) for each child, copied on to cardstock and slipped inside a page protector
2. One dry erase marker for each student
3. One tissue or small paper towel for each student, to be used as an eraser

C. *Key Vocabulary*

1. A *fraction* is a number that stands for part of a whole.
2. A *half* is one of two equal parts.
3. A *third* is one of three equal parts.
4. A *fourth* is one of four equal parts.

D. *Procedures/Activities*

1. **Note to teacher:** This lesson is not intended to teach the concepts of fractions and halves, thirds, and fourths. It is one way of practicing daily what the students should be learning in math lessons through direct instruction from the teacher and hands-on activities. This lesson should not be used until the students have been taught the concepts of halves, thirds, and fourths.
2. **Note to teacher:** Before doing this math warm-up activity, prepare one Fraction Board (Appendix K) for each student by copying the boards on to  $8\frac{1}{2} \times 11$  cardstock and slipping each one inside a smooth page protector. These can be copied on a different colored cardstock than the boards from Lesson Five, and used inside the same page protector as the Lesson Five boards, facing out the other way.
3. Have the students seated at their desks. Pass out one fraction board, one dry erase marker, and one tissue or paper towel to each student.

4. Tell the students that they will need to listen to your directions and show their answers by coloring in the correct area on their fraction boards, using their dry erase markers.
  5. Give instructions like: *Find the circle that is divided into thirds, and shade in one third of it.*
  6. After all of the students have completed the task, have them hold up their fraction boards facing you, so that you can check their answers. After you have checked answers, the students can erase their boards with the tissue or paper towel.
  7. Vary your questions to include circles, rectangles, halves, thirds, and fourths.
  8. **Modifications:** Students who are struggling with the concepts of fractions will benefit from having cutout pieces that they can manipulate. Give the student two copies of the fraction board. One board should be left as is, and one can be colored and cut apart by the student. All the pieces within each shape should be colored the same color (for example, the circle divided into thirds should have three red thirds, etc.). The pieces can be cut out and kept in a small plastic bag, and the student can use them for extra practice with fractions by placing the cutout pieces on to the correct shapes on the fraction board. Advanced students can be asked to show two thirds of a shape, three fourths, etc. Advanced students can also practice fractions by being shown how to find one third of a set of objects, one fourth, etc.
- E. *Assessment/Evaluation*
1. This lesson is designed to be an ongoing math warm-up that reinforces math concepts being taught in a standard math program. Assessments included in the students' school math program should be done regularly. However, teachers should monitor the students' daily responses on the fraction boards to check for understanding.
  2. Since the procedures in this lesson allow for all students to answer individually, the lesson itself is a good method of ongoing assessment. If desired, the teacher can copy Appendix K on regular paper and have the students shade in certain fractions with crayons, so that it can be collected, graded and/or saved in the students' files.

### **Lesson Seven: Graphs (five minutes)**

- A. *Daily Objectives*
1. Concept Objective(s)
    - a. Students will develop an awareness of how to use numbers to count, measure, and label.
    - b. Students will understand and apply basic and/or advanced concepts of numbers and relate these to other mathematical concepts.
  2. Lesson Content
    - a. Identify more and less; counting how many more or less.
    - b. Create and interpret simple pictorial graphs and bar graphs.
  3. Skill Objective(s)
    - a. Display and explain data from a graph or tallies.
    - b. Using a graph, interpret data for "more" and "fewer" or "most," "same," and "fewest."
    - c. Use data to make a graph.
- B. *Materials*
1. Weather chart set (these can be ordered from school supply catalogs and will come with everything you need) or, you can make one using a poster board; see Appendix L, page 1, for one example of what it can look like

2. Weather Chart Tags (Appendix L, page 2)
  3. Tape or other adhesive, for attaching the weather tags
- C. *Key Vocabulary*
1. A *graph* is a chart that shows how many there are of given items.
  2. *More* means a larger amount.
  3. *Most* means the largest amount, of three or more items being compared.
  4. *Fewer* means a smaller amount, or less.
  5. *Fewest* means the smallest amount, of three or more items being compared.
  6. *Less* means a smaller amount, or fewer.
  7. *Least* means the smallest amount, of three or more items being compared.
- D. *Procedures/Activities*
1. **Note to teacher:** This lesson is not intended to teach the concept of graphing. It is one way of practicing daily what the students should be learning in math lessons through direct instruction from the teacher and hands-on activities. Before doing this lesson, students should have been introduced to graphs and how to figure out “how many more” and “how many less.”
  2. **Note to teacher:** The weather chart and tags should be made and laminated before beginning the daily routine of graphing the weather.
  3. Every day, have a student pick a weather tag that best fits the weather for the day. The student should attach the tag to the chart using tape or other adhesive, in the column that matches the weather tag he or she has chosen. Make sure the students know that on the weather graph, they should always attach the first tag at the bottom and work up as they go. They should only put on one tag for each day, and the chart should be cleared off at the end of every month.
  4. **Questioning:** The questioning part of this daily math warm-up is very important, since it will help the students become more familiar with the words more, most, fewer, fewest, less, and least. Allow enough time to ask at least three or four questions each day. Examples of questions that can be asked are:
    - a. *How many cloudy days have we had?*
    - b. *How many sunny days have we had?*
    - c. *How many more sunny days than rainy days have we had?*
    - d. *Which column on our chart has the fewest tags?*
    - e. *How many fewer snowy days than sunny days are there?*
  5. **Modifications:** Students who are having trouble with questions like, *How many more sunny days than rainy days have we had*, can go up and touch the tags on the chart. With one hand at the bottom of the sunny days column and one hand at the bottom of the rainy days column, the student can work his/her way up the chart, touching one tag in each column at the same time. When the student runs out of tags in one column (for example, if there were six sunny day tags and four rainy day tags, the student will run out of rainy day tags after four, and still have two left in the sunny day column), you can point out that there are still two tags left in the sunny day column, so the answer to the question would be that there have been two more sunny days than rainy days.
- E. *Assessment/Evaluation*
1. This lesson is intended to be an ongoing math warm-up that reinforces concepts being taught in a standard math program. Assessments included in the students’ school math program should be done regularly. However, teachers should monitor student participation in daily discussions to check for understanding.

## VI. CULMINATING ACTIVITY

None

## **VII. HANDOUTS/WORKSHEETS**

- A. Appendix A: Sample Place Value Chart (Lesson One)
- B. Appendix B: Number and Place Value Progress Sheet (Lesson One)
- C. Appendix C: Counting Stick Labels (Lesson Two)
- D. Appendix D: Oral Counting Checklist (Lesson Two)
- E. Appendix E: Our Daily Tally Chart (Lesson Three)
- F. Appendix F: Tallies and Signs Progress Sheet and Answer Key (Lesson Three)
- G. Appendix G: Picture Cards (Lesson Four)
- H. Appendix H: Ordinal Number Cards (Lesson Four)
- I. Appendix I: Ordinal Numbers Progress Sheet (Lesson Four)
- J. Appendix J: Dozen Board (Lesson Five)
- K. Appendix K: Fraction Board (Lesson Six)
- L. Appendix L: Weather Chart and Tags (Lesson Seven)

## **VIII. BIBLIOGRAPHY**

- A. Core Knowledge Foundation. *Core Knowledge Day-by-Day Planner Workbook Grade 1*. Charlottesville, VA: Core Knowledge Foundation, 2005.
- B. Core Knowledge Foundation. *Core Knowledge Sequence*. Charlottesville, VA: Core Knowledge Foundation, 1999. 1-890517-20-8.
- C. Hirsch, E.D. *Core Knowledge Teacher Handbook Grade One*. Charlottesville, VA: Core Knowledge Foundation, 2004. 1-890517-70-4.
- D. Hirsch, E.D. *What Your First Grader Needs to Know*. New York: Doubleday, 1997. 0-385-48119-5.

**Appendix A**

(This is a sample of what a Place Value Chart looks like. It can be made on a poster board and laminated for re-use.)

<b>Hundreds</b>	<b>Tens</b>	<b>Ones</b>
<p data-bbox="241 492 693 524">(Use this space to attach a number)</p> <p data-bbox="203 932 732 1032">This is where you would attach a large pocket or can to eventually hold a bundle of 100 sticks.</p>	<p data-bbox="823 492 1274 524">(Use this space to attach a number)</p> <p data-bbox="774 932 1323 1000">This is where you would attach a large pocket or can to hold bundles of ten sticks.</p>	<p data-bbox="1404 492 1856 524">(Use this space to attach a number)</p> <p data-bbox="1356 932 1904 1000">This is where you would attach a pocket or can large enough to hold nine sticks.</p>

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Numbers and Place Value Progress Sheet

Listen to the directions, and write the correct answer on the line.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5.

Hundreds	Tens	Ones

6. \_\_\_\_\_

7. \_\_\_\_\_

**Numbers and Place Value Progress Sheet – Teacher Instructions**

This assessment is designed to check periodically for student understanding of numbers and place value. The level of difficulty can be easily modified as the year progresses, by changing the numbers used.

Read aloud to the students, “Listen to the directions, and write the correct answer.”

“Number 1: Write the number \_\_\_\_\_.” *(Choose the numbers that you will use based on how far you have gone with your daily counting, and how far along you are in your math program.)*

“Number 2: How many tens are in the number \_\_\_\_\_?” *(For a more basic assessment, towards the beginning of the year, this number can be the same number as used in number one, so that they can see it written and easily find the tens. For later in the year, it can be a completely different number, which will make it more challenging as they have to visualize the number.)*

“Number 3: How many ones are in the number \_\_\_\_\_?” *(Again, there is flexibility as noted above.)*

“Number 4: If I have \_\_\_\_\_ tens and \_\_\_\_\_ ones, what number do I have?” *(Later in the year this can be phrased, “If I have \_\_\_\_\_ **ones** and \_\_\_\_\_ **tens**, what number do I have?”)*

“Number 5: Write the number \_\_\_\_\_ on the place value chart.”

“Number 6: What is (one more, one less) than the number on your place value chart?”

“Number 7: What is (ten more, ten less) than the number on your place value chart?”

Appendix C

Counting Stick Labels

Count by ones to 20.

Count forward to 10,  
then backwards to 0.

Count by ones to 50.

Count forward to 20,  
then backwards to 0.

Count by ones to 100.

Count by tens to 100.

Count by twos to 10.

Pick a number between 20  
and 30, and count on to 100.

Count by twos to 20.

Pick a number between one  
and ten, and count on by tens.

Count by twos to 60.

Pick a number between \_\_\_\_  
and \_\_\_\_, and count on to 100.

Count by twos to 100.

Count by \_\_\_\_ to \_\_\_\_.

Count by fives to 50.

Count by \_\_\_\_ to \_\_\_\_.

Count by fives to 100.

**Appendix D**  
**Oral Counting Checklist**

Student Name: \_\_\_\_\_

	1st Quarter	2nd Quarter	3 <sup>rd</sup> Quarter	4 <sup>th</sup> Quarter
Counts by 1's (record how far)	To:	To:	To:	To:
Counts by 2's (record how far)	To:	To:	To:	To:
Counts by 5's (record how far)	To:	To:	To:	To:
Counts by 10's (record how far)	To:	To:	To:	To:
Counts backwards from 20	Yes / No	Yes / No	Yes / No	Yes / No
Counts on by tens from a given single-digit number	Yes / No	Yes / No	Yes / No	Yes / No

**Oral Counting Checklist**

Student Name: \_\_\_\_\_

	1st Quarter	2nd Quarter	3 <sup>rd</sup> Quarter	4 <sup>th</sup> Quarter
Counts by 1's (record how far)	To:	To:	To:	To:
Counts by 2's (record how far)	To:	To:	To:	To:
Counts by 5's (record how far)	To:	To:	To:	To:
Counts by 10's (record how far)	To:	To:	To:	To:
Counts backwards from 20	Yes / No	Yes / No	Yes / No	Yes / No
Counts on by tens from a given single-digit number	Yes / No	Yes / No	Yes / No	Yes / No

**Appendix E**

(This can be enlarged to 11x17, mounted to construction paper, and **laminated** for re-use.)

**Our Daily Tally**

Today we will count \_\_\_\_\_ and \_\_\_\_\_.

How many \_\_\_\_\_?

Tallies	Number

How many \_\_\_\_\_?

Tallies	Number

Which group has more? \_\_\_\_\_

Write the answer using the numbers from the tally boxes and the signs <, >, or =.

\_\_\_\_\_

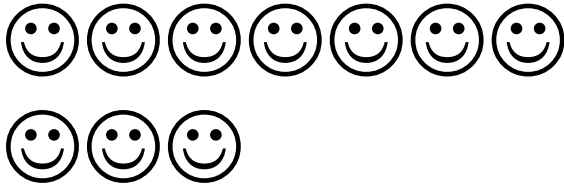
## Tallies and Signs Progress Sheet

Make tallies in groups of five to show how many stars there are:



Tallies

Make tallies in groups of five to show how many faces there are:



Tallies

How many stars are there? \_\_\_\_\_

How many faces are there? \_\_\_\_\_

Which group has more? Circle your answer.



Write your answer using  $<$ ,  $>$ , or  $=$ . \_\_\_\_\_

Fill in the blanks using  $<$ ,  $>$ , or  $=$ .

4 \_\_\_\_\_ 7

12 \_\_\_\_\_ 10

3 \_\_\_\_\_ 11

6 \_\_\_\_\_ 6

15 \_\_\_\_\_ 18

9 \_\_\_\_\_ 5

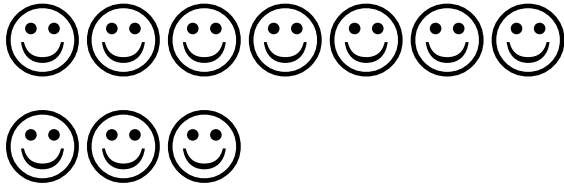
## Tallies and Signs Progress Sheet Answer Key

Make tallies in groups of five to show how many stars there are:



Tallies
(There should be 15 tally marks here.)

Make tallies in groups of five to show how many faces there are:



Tallies
(There should be 10 tally marks here.)

How many stars are there? \_\_\_\_\_ 15 \_\_\_\_\_

How many faces are there? \_\_\_\_\_ 10 \_\_\_\_\_

Which group has more? Circle your answer.



Write your answer using <, >, or =. \_\_\_\_\_ 15 > 10 \_\_\_\_\_ (or 10 < 15)

Fill in the blanks using <, >, or =.

4 < 7

12 > 10

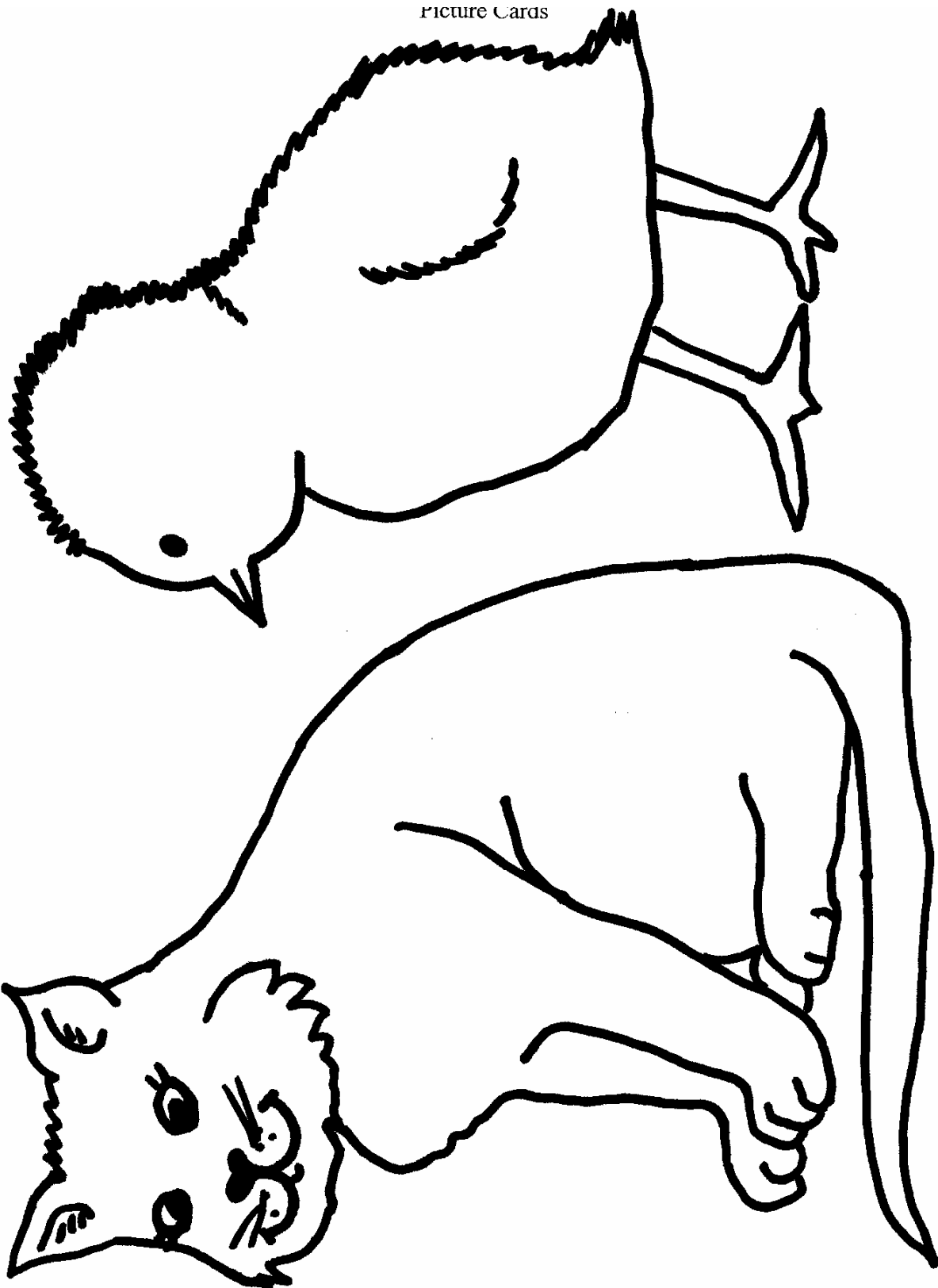
3 < 11

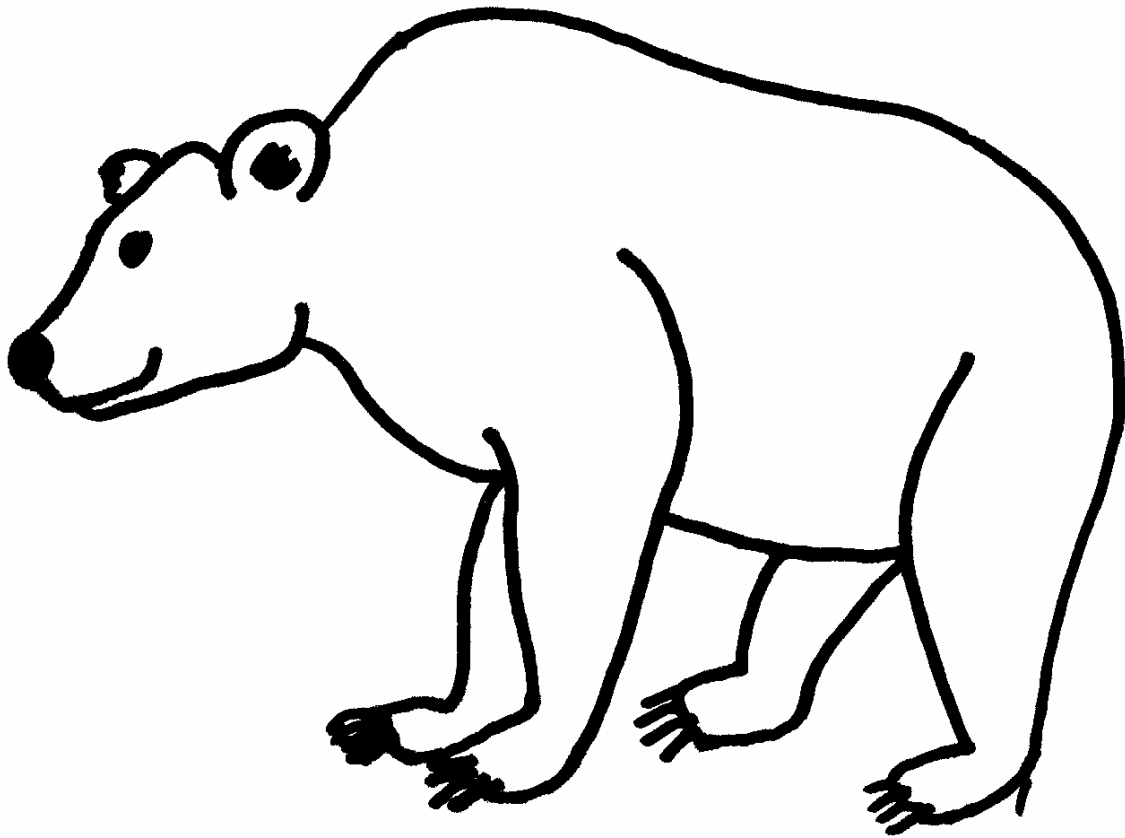
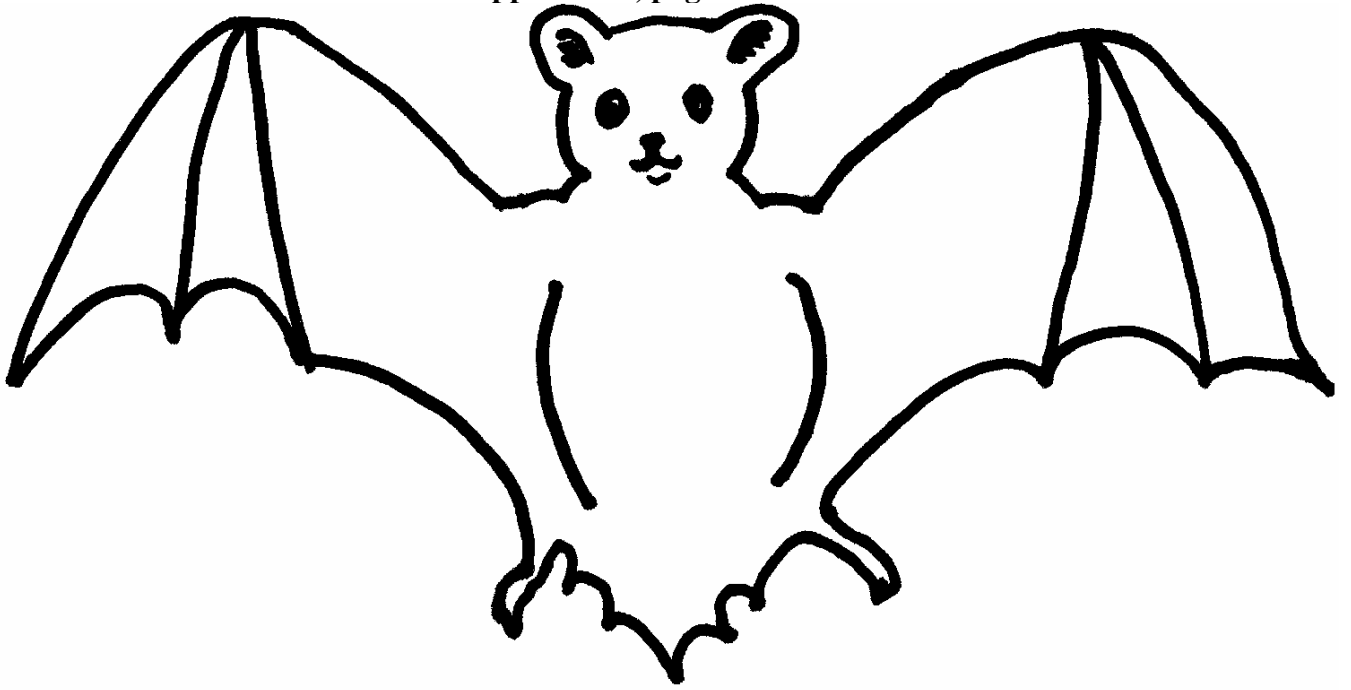
6 = 6

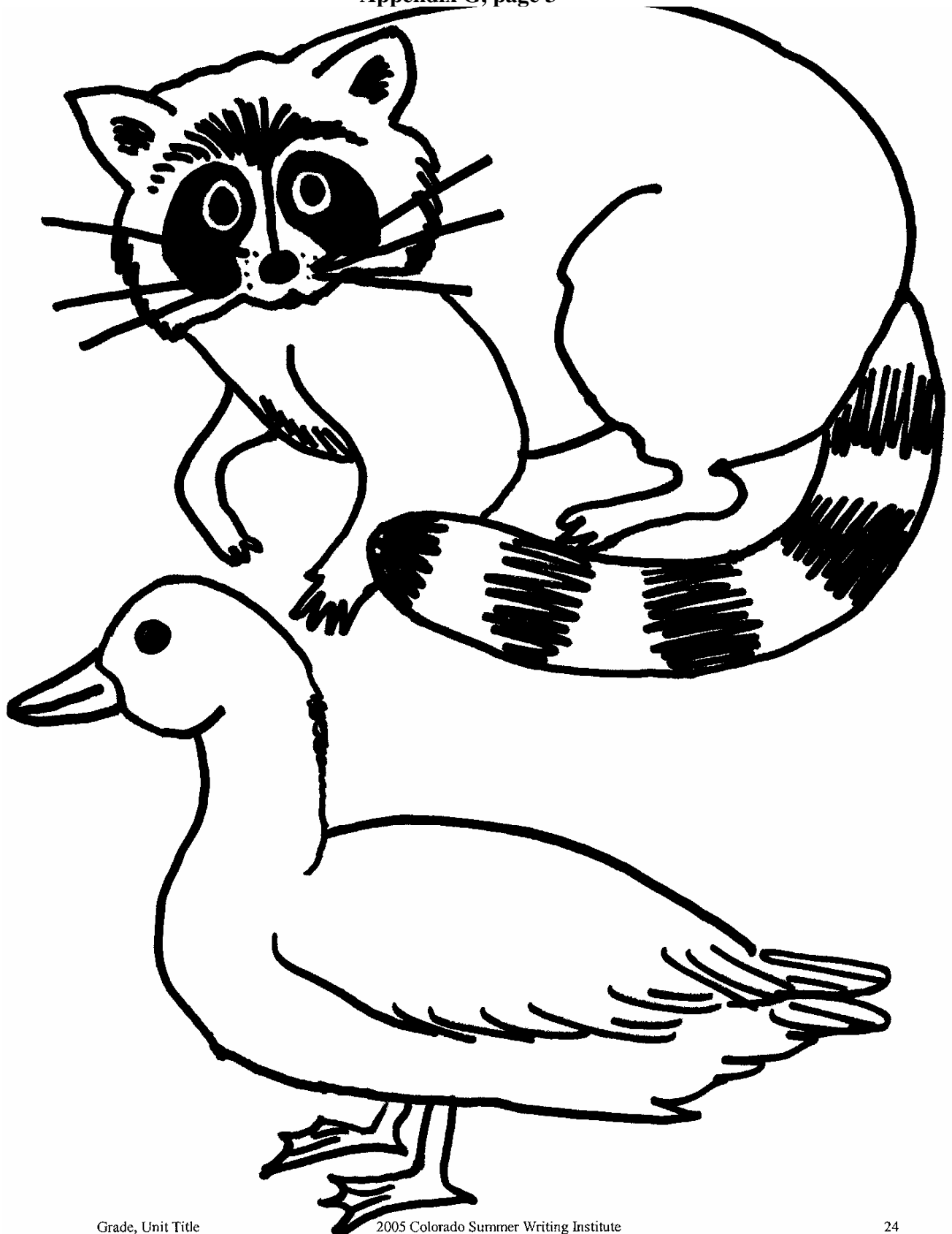
15 < 18

9 > 5

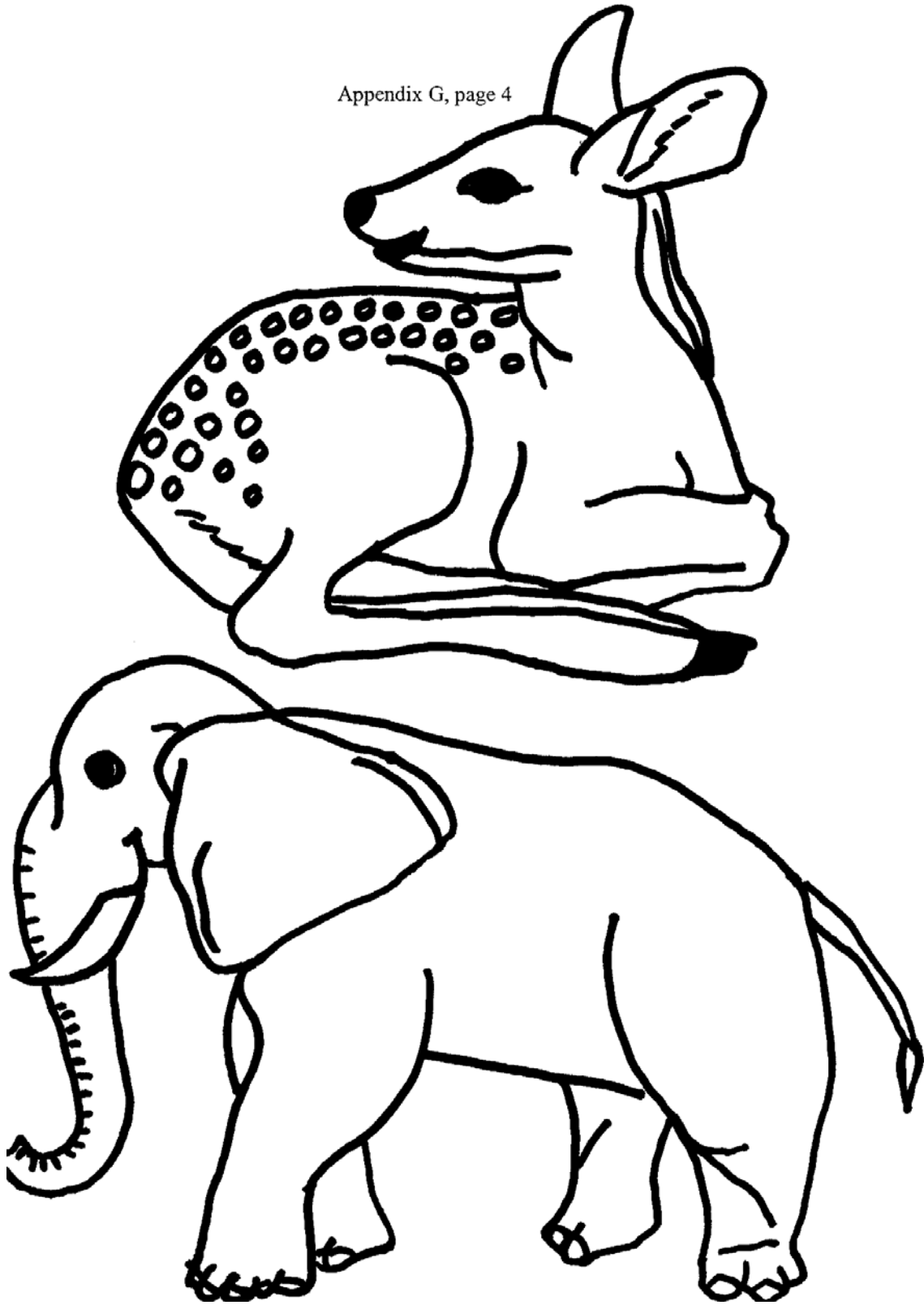
Appendix G, page 1  
**Picture Cards**  
Picture Cards

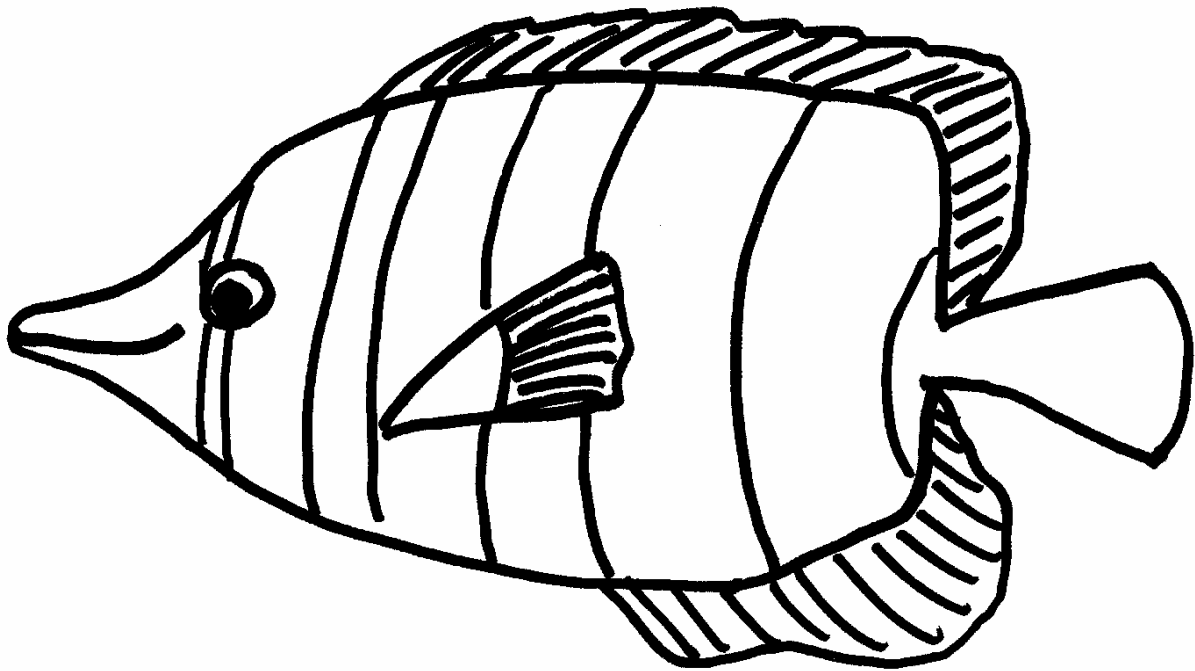
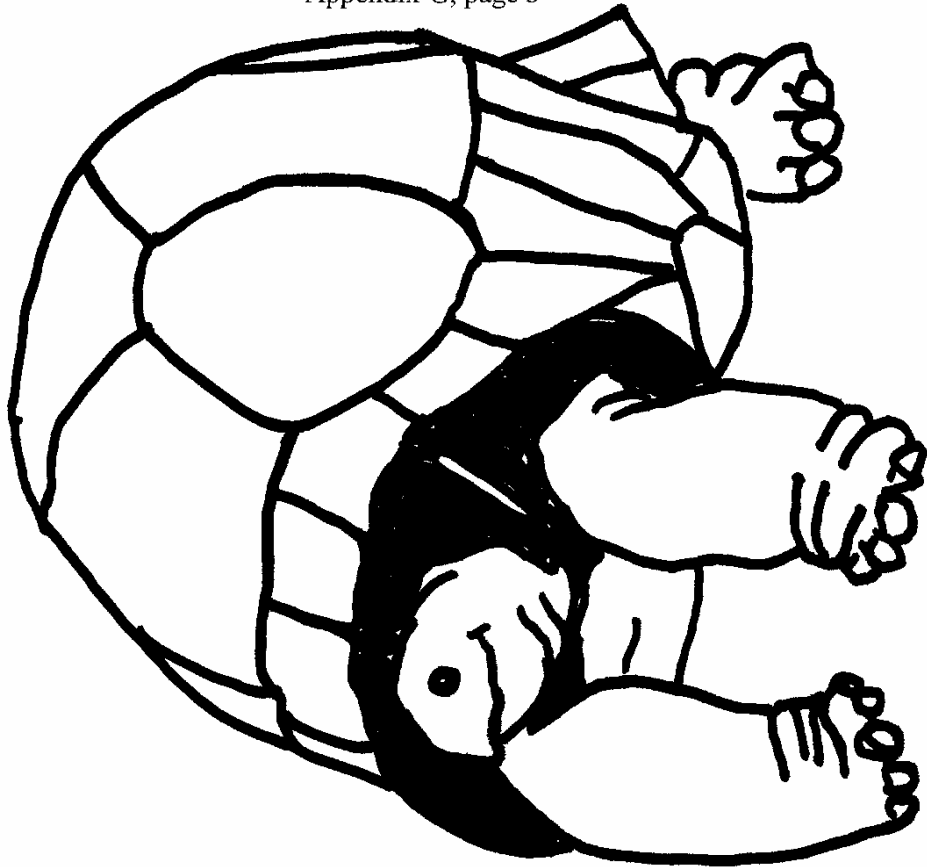






Appendix G, page 4





**Appendix H**  
**Ordinal Number Cards**

(These can be enlarged and copied on to cardstock and cut out.)

1<sup>st</sup>

2<sup>nd</sup>

3<sup>rd</sup>

4<sup>th</sup>

5<sup>th</sup>

6<sup>th</sup>

7<sup>th</sup>

8<sup>th</sup>

9<sup>th</sup>

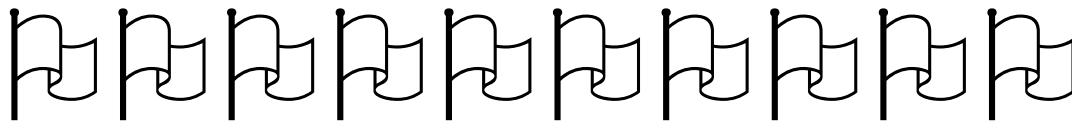
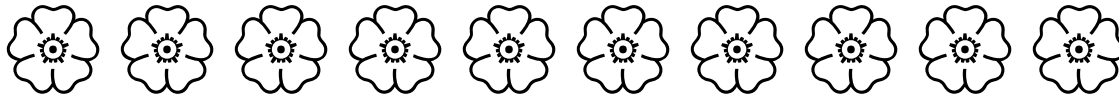
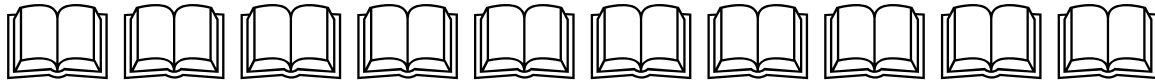
10<sup>th</sup>

Appendix I  
**Ordinal Numbers Progress Sheet**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Listen and follow the directions that your teacher gives you.



Fill in the blanks under the bells using the numbers in the box.

9 <sup>th</sup>	5 <sup>th</sup>	10 <sup>th</sup>	3 <sup>rd</sup>
-----------------	-----------------	------------------	-----------------



1<sup>st</sup>    2<sup>nd</sup>    \_\_\_\_\_    4<sup>th</sup>    \_\_\_\_\_    6<sup>th</sup>    7<sup>th</sup>    8<sup>th</sup>    \_\_\_\_\_    \_\_\_\_\_

**Appendix J**  
**Dozen Board**  
(copy on cardstock)


Dozen

Pair

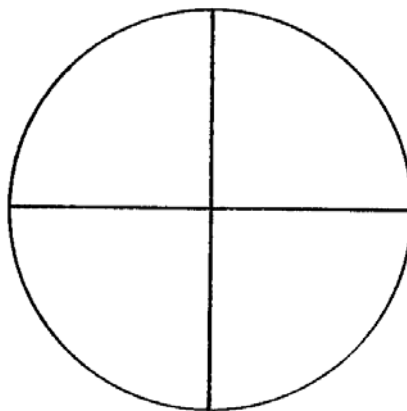
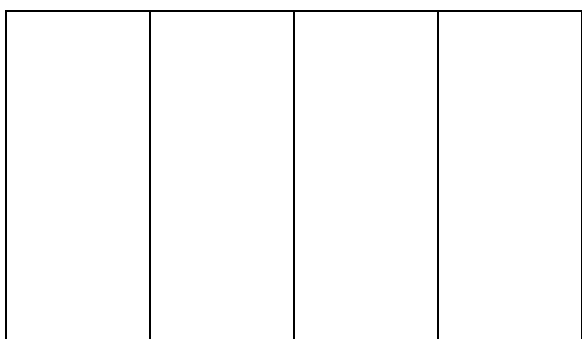
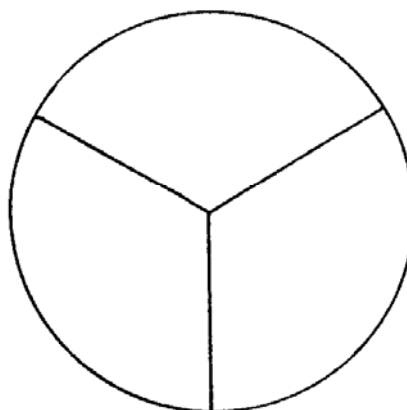
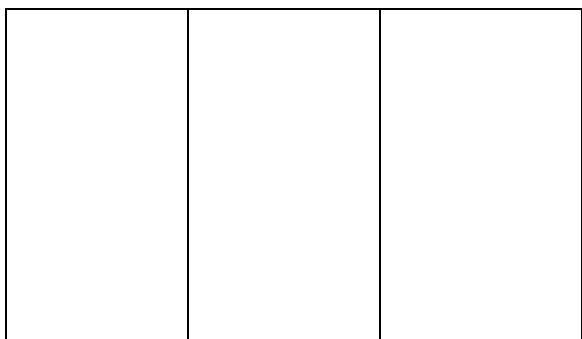
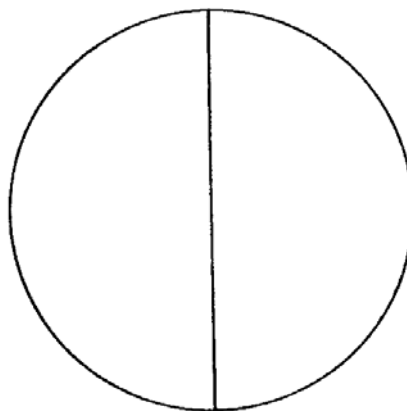
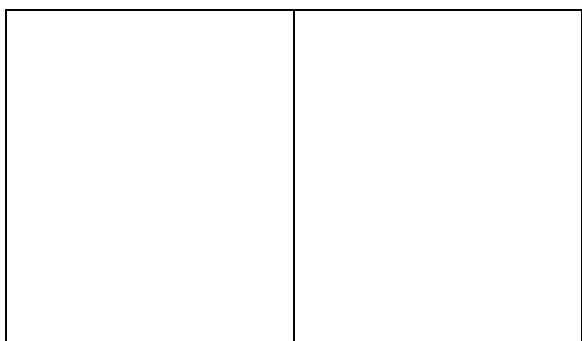
Half-dozen

12

6

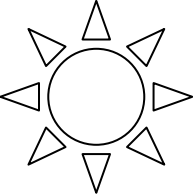



2

**Appendix K**  
**Fraction Board**  
(copy on cardstock)



**Appendix L, page 1**

This is a sample weather chart. It can be enlarged and copied or drawn onto poster board.

 Sunny	 Cloudy	 Rainy	 Snowy

Appendix L, page 2  
**Weather Chart Tags**

(enlarge if desired, copy on cardstock, laminate, cut out)

