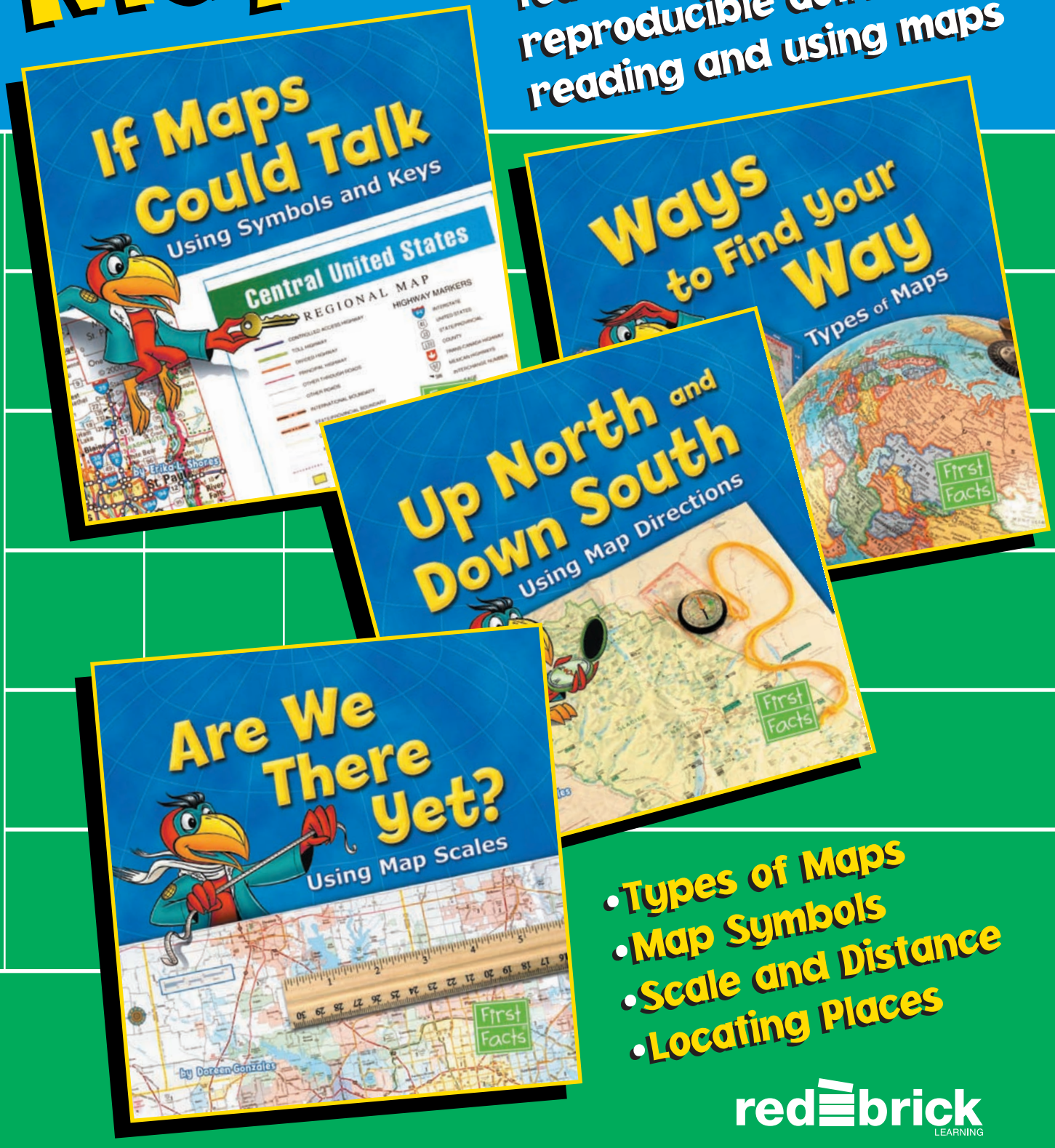
Map Mania

Teaching suggestions and reproducible activities for reading and using maps



- Types of Maps
- Map Symbols
- Scale and Distance
- Locating Places

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Teaching suggestions and reproducible activities for reading and using maps

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About the Map Mania Books

"If Maps Could Talk" they would teach you "Ways to Find Your Way," from "Up North and Down South." So. . . the next time you ask, "Are We There Yet?" grab a map!

The Map Mania series teaches students how to read a wide variety of maps. Full color photography, differentiated instruction, graphic organizers, and activity sheets support lessons about direction, symbols and keys, types of maps, and using map scales.

The Map Mania Teacher's Guide assists teachers in using different types of maps. Each lesson's instructional flow initially taps into students' background knowledge about each map type, and then focuses on enhancing students' map reading skills.

Students are then introduced to maps from the Map Mania books. Students learn to use maps as a data source, to compare shared characteristics between different types of maps, and to apply geographic tools when reading maps. Students also use the Map Mania maps as a model for their own maps.

Differentiated instruction is provided to students of varying learning styles, backgrounds, and abilities. Reproducible activity sheets and rubrics are provided for easy classroom preparation, teacher and self-assessment.

Each lesson is aligned to various aspects of the ten national strands of social studies set forth by the National Council for the Social Studies.

Lesson 1
Compass Rose and Cardinal Directions teaches students about direction and reading a compass rose.

Lesson 2
Shapes and Icons, Colors and Patterns teaches students about map keys and symbols.

Lesson 3
Borders, Boundaries, Rivers, and Roads teaches students about lines on a map.

Lesson 4
Bar Scales and Ratios teaches students about using map tools.

Lesson 5
Political Maps teaches students about finding distances and reading political maps.

Lesson 6
Different Maps for Different Purposes teaches students about physical and topographical maps.

The Ten National Strands of Social Studies

The National Council for the Social Studies created a list of ten thematic strands that form the basis for both the social studies standards and social studies instruction in the early, middle, and high school classroom. In this series, we will focus our instruction on grades 2 through 5.

1. Culture:
Students begin to explore and ask questions about the nature of culture and specific aspects of culture, such as language and beliefs, and the influence of those aspects on human behavior.

2. Time, Continuity, and Change:
Students expand their understanding of the past and of historical concepts and inquiry. They begin to understand and appreciate differences in historical perspectives, recognizing that interpretations are influenced by individual experiences, societal values, and cultural traditions.

3. People, Places, and Environments:
Students relate their personal experiences to happenings in other environmental contexts.

4. Individual Development and Identity:
Students refocus their study of personal identity as the individual begins to explain self in relation to others in the society and culture.

5. Individuals, Groups, and Institutions:
Students examine the ways in which institutions change over time, promote social conformity, and influence culture.

6. Power, Authority, and Governance:
Students study how these rights and responsibilities are applied in more complex contexts with an emphasis on new applications.

7. Production, Distribution, and Consumption:
Students expand their knowledge of economic concepts and principles, and use economic reasoning processes in addressing issues related to the four fundamental economic questions.

8. Science, Technology, and Society:
Students begin to explore the complex relationships among technology, human values, and behavior.

9. Global Connections:
Students initiate analysis of the interactions among states and nations and their cultural complexities as they respond to global events and changes.

10. Civic Ideals and Practices:
Students expand their ability to analyze and evaluate the relationships between ideals and practice. They are able to see themselves taking civic roles in their communities.

Adapted from the NCSS National Strands of the Social Studies.

Lesson 1

Compass Rose and Cardinal Directions

Background

A compass rose is the figure on a map that displays direction. The cardinal, or principal, directions are north, south, east, and west. More exacting directions, such as the intermediate directions northeast, southeast, northwest, and southwest, need not be dealt with in this lesson. A compass rose showing all these directions has thirty-two points—the rose used here will have four. True north is where the North Pole is located, while magnetic north is where a compass will point. Except for very local maps, building maps, and star charts, most maps have a compass rose.

Instructional Focus

Introducing your students to directions and the symbols for finding directions on a map is a great way to introduce maps and geography skills to students. Although students will certainly have heard the words *north, east, south,* and *west* before, they may not yet understand the process of orientation. You will want to teach them about this while helping them understand the symbolism on the page. Some people seem to have an inner compass, while others will get lost easily. In other words, some students will take to orienteering more easily than others, but even with the advent of the GPS, all students should learn the basics. Using the compass rose also lends itself to discussing abbreviations, such as those for the cardinal directions *N*, *S*, *E*, and *W.*

Working with Map Mania

from ***Up North and Down South***, p. 8-9, "When Isn't a Rose a Flower?"

Use a Data Source as a Tool Read the text and point out the circled compass rose at the top of page 9. Explain the difference between using general direction words, such as *left,* and cardinal direction words, such as *west,* when giving directions. Point out that turning left is only the same as turning west if you are headed in a northerly direction. Prove this point by creating two sets of directions to get to a certain point in the room from any starting point. One set should use terms *left, right, straight ahead,* and *straight back.* The other should use *west, east, north,* and *south.* Have students use the directions starting from different points in the room and compare the results. Review the map on page 9 with students. Have students work in small groups or pairs to write directions to get to places in the town, such as from the hospital to the pond. Have students complete the Using a Compass Rose activity sheet on page 7.

from ***Ways to Find Your Way***, p. 6-7, "Top Secret Map Information"

Compare Characteristics Read the text and have students look at the information on the compass rose on page 7. Ask, *How is this compass rose like, or different from, the one in* Up North and Down South? *(The compass roses are in different places on the map, they use different colors.)* You might wish to have students discuss where the compass is located on the map, how many points or directions it shows, and what colors are used on it. Have the students take a survey of what they found and compile the information as a class.

from ***Up North and Down South***, p. 10, "Point Me North: Compass Basics"

Apply Geographic Tools Read the text and have students point out the similarities between the compass on page 10 and the compass rose on page 6. Focus students' attention on aligning the red part of the needle with *N* on the compass for the compass to be accurate. Label north in your classroom using its abbreviation *N*. Discuss the abbreviations used for the other cardinal directions. (*S, W,* and *E*) Hand out compasses to pairs of students. Have student pairs work together to identify south, east, and west. Ask students to form larger groups and work together to create signs for each direction using its abbreviation. As a challenge, have students identify north's opposite, east's opposite, south's opposite, and west's opposite. Have students complete The Compass Rose activity sheet on page 8.

from ***If Maps Could Talk***, p. 10-11, "Symbols on the Road"

Compare Characteristics Read the text and have students look at both the map of New Mexico and the space map. Have students brainstorm a list of reasons why the space map would not have a compass rose. *(There aren't any directions in space; there isn't any gravity in space.)* Then have pairs work together to find similarities between the maps. Alternatively, have students write three questions about where places are in relation to each other in New Mexico. Students can then ask a partner their questions.

Differentiated Instruction

Here are some additional approaches to use with students of varying abilities.

Increase Student Motivation

Visual/Spatial Learners Have students create a compass rose outside on the playground or on appropriate paved surface. Have a volunteer read the instructions on page 11 of *Up North and Down South* to get started. Use a dowel, stone, paint, or chalk to indicate north. Have volunteers identify the other cardinal directions. Ask, *What are some ways we can make the other cardinal directions look different from N? (smaller stones, different colors).* Discuss landmarks in your town that are in each direction. Have students face each direction as you discuss each landmark.

Build Prior Knowledge

ELL Students Have English language learners (ELLs) draw a map showing the way to get from school to home. If the school is too far from their homes, have students choose another, closer landmark. Prompt students to tell you how to get from school to home using the cardinal directions *N*, *S*, *E*, and *W*. Students may benefit from the following sentence starters:

- First I walk _____.
- Then I walk _____.

Use Specialized Vocabulary

Curriculum Crossover Here are some ideas for lessons about compass roses and cardinal directions in different subject areas:

- **Language Arts/ Writing:** abbreviations, writing clear directions
- **Science:** magnets
- **Physical Education:** orienteering

Name _____

Using a Compass Rose

Prove that you are a real geographer by using these direction words correctly.

North	South	East	West

Use the map on pages 6-7 of *Up North and Down South* to answer these questions.

1. In what direction is Blue Jay Ave. from the school?

_____

2. In what direction is Crow Pond from Wings St.?

_____

3. In what direction should a bird fly to get from the orange birdhouse to the purple one?

_____

4. In what direction is Flight St. from Worms 'R Us?

_____

5. In what direction is the blue birdhouse from the green one?

_____

6. In what direction should a bird fly to get from Wing St. to the bus stop?

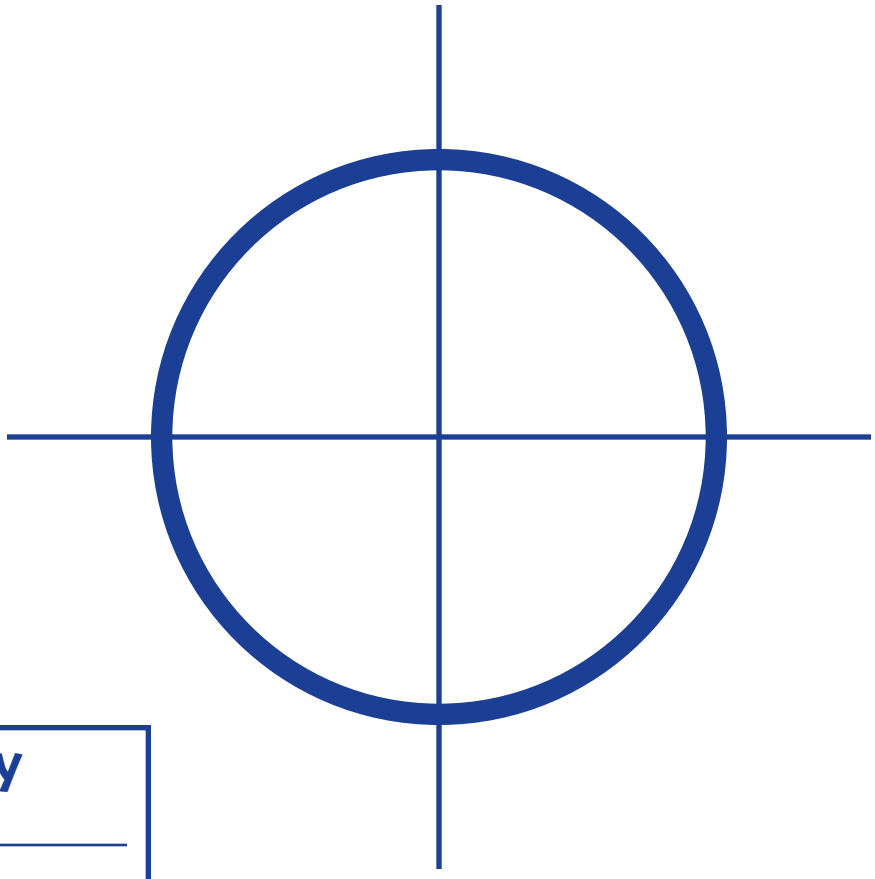
_____

Name _____

The Compass Rose

Does the picture below look like a flower or a geographic symbol? Maybe it can be both!

Fill in the cardinal directions on the compass rose below using the abbreviations *N, S, E,* and *W*. Complete the key to tell what each abbreviation means.



KEY

N _____

_____ _____

_____ _____

_____ _____

Lesson 2

Shapes and Icons, Colors and Patterns

Background

Maps use shapes, icons, colors, and patterns to tell us different things. A map key, or legend, explains what each shape, icon, color, or pattern means. You'll often find a map key in the corner of a map. Common shapes used on maps include dots for cities, stars for capital cities, rectangles for buildings, wavy lines for rivers, and so on. Other maps use icons, or tiny pictures, of different foods to show restaurants, stores, and animals. Most maps use colors to tell us things. Some colors are used for how hot or cold a place is, like a weather map. Other maps use colors to show what the land is like, like a physical map. A special kind of physical map uses contours, or wavy patterns, to show how high the land is.

Instructional Focus

Introducing your students to the key and various shapes, icons, colors, and patterns is an important step to understanding and successfully reading a map. Teach students that the map key will help them "unlock" the meaning of each map. Reading shapes, icons, colors, and patterns also lends itself to students whose strengths are visual/graphical rather than language based.

Working with Map Mania

from ***If Maps Could Talk***, p. 4-5, "Wings or Maps: Finding Your Way"

Apply Geographic Tools Read the text and have students look at both the map and the map key. Ask volunteers to point out different features of park, such as play areas or the path of the floating river. Ask, *Why are there different shapes and colors for each kind of symbol? Why didn't the mapmaker use photographs of the things in the park?* Have students work alone or in pairs to compare the map to the photograph of the park. As a challenge, ask students to determine where these maps should be posted throughout the park.

from ***If Maps Could Talk***, p. 8-9, 15, 16-17, "Circles and Squares: Shape Symbols"

Compare Characteristics Read the text and have students look at the map key on page 8. Assist students in identifying places from their symbols on the map key. *(campsite, town, place of interest)* Next have students look at the maps on pages 15 and 16-17. Draw a chart on the board with three columns, one for each map. Ask, *What shapes are the same in these maps? (squares) What shapes are different? (triangles, circles)* Add a few of the students' responses to the chart. Then have students work in small groups to complete the charts. Later, you can compare each group's charts as a class.

from ***Up North and Down South***, p. 18-19, "New Birds' Town Zoo"

Uses a Data Source as a Tool Read the text and point out the different ways for students to find information on the map. *(key, icons, words, colors)* Ask, *Why didn't the mapmaker include the animals on the key? (animal shapes are easy to recognize)* Challenge students to work in pairs to design their own zoo. Have students complete the Make Your Own Map activity sheet on page 12.

from ***Ways to Find Your Way***, p. 12-13, "The Tour Guide: Road Maps"

Compare Characteristics Read the text and have students look at the information on the map key. Ask volunteers to identify the various features on the map using the symbols in the map key. Then compare the symbols used on this map to the map on page 7. Ask, *How are the symbols and shapes alike? How are they different?* Point out that certain symbols, such as the blue rivers and the turnpike signs, are used in most road maps. For additional practice in identifying icons and symbols, have students complete the Icons and Symbols activity sheet on page 11.

Differentiated Instruction

Here are some additional approaches to use with students of varying abilities.

Build Prior Knowledge

ELL Students Have English language learners create their own map key with icons. Then have these students pair up with a native speaker who will say and write the English word for each icon. Ask the ELL student to say and write the word in his/her first language. You may wish to display a copy of the map and the bilingual key in the classroom so everyone can learn the key words in another language!

Increase Student Motivation

Students with Visual Impairments

Students with visual impairments may have trouble discerning different colors, sizes, or shapes on a map. You may wish to pair these students with students who are not impaired. Or you may wish to use the enlarge feature on your overhead or copier to help these students.

Use Specialized Vocabulary

Curriculum Crossover Here are some ideas for lessons about shapes, icons, colors, and patterns in different subject areas:

- **Language Arts/ Writing:** compare and contrast
- **Math:** create a pictograph
- **Social Studies:** Earth's physical features
- **Art:** perspective

Name _____

Icons and Symbols

Use the key in the corner of each map to "unlock" the code!

Answer the questions about the map and photograph found on page 11 of *Ways to Find Your Way.*

1. How many churches are there on Island Pond?

_____

2. What does the library icon have on it that helps you understand what it means?

_____

3. What does the icon of a shopping cart stand for?

_____

4. Why do the houses look different in the photograph, but the same on the map?

_____

Answer the questions about the map found on page 15 of *Are We There Yet?*

5. What does the map show?

_____

6. What is to the left of the tower bridge?

_____

7. What is the symbol for a group of trees?

_____

8. What does a double purple line stand for?

_____

9. What is the Tower of London surrounded by?

_____

Name

Make Your Own Map

Show what you know by designing your own zoo map below!

In the square below, draw a map of your zoo. Be sure to include five kinds of animals, an entrance, walkway, snack stands, and restrooms. Be sure the map has a title and a map key with shapes, icons, colors, and patterns.

KEY

Lesson 3

Borders, Boundaries, Rivers, and Roads

Background

Maps use different colored lines to stand for borders, boundaries, rivers, and roads. Many of these symbols, such as a blue line for a river, may seem obvious; and many students will be able to intuit this information. It does, however, bear stating to all students. Other lines show types of roads: the thicker the line, the bigger the road. Lines can also stand for boundaries that can't be seen. The boundaries may be related to land use, such as a national park, or to political areas, such as a state or a country.

Instructional Focus

Understanding the uses for lines on a map is a key part of map fluency. Lines are essential parts of a map. Students will naturally learn about types of maps and other map symbolism as they use lines on a map.

Working with Map Mania

from ***Ways to Find Your Way***, p. 12-13, "The Tour Guide: Road Maps"

Use a Data Source as a Tool Read the text and have students look at the information on the map key. Ask volunteers to identify the various features on the map using the symbols. Ask, *How are interstate highways marked compared with state highways? (different colors and shapes) What other lines do you see? (river, state border)* Have students compare this map with the one on page 7, and discuss what they find.

from ***If Maps Could Talk***, p. 10, "Symbols on the Road"

Apply Geographic Tools Read the text and have students look at both the map and the map key. Ask volunteers to find and name some cities and roads in New Mexico. Prompt students to distinguish between interstates and highways, the capital and other cities. Draw an outline of your state with major highways sketched in and major cities pinpointed. Have students work in pairs to create a map key to show boundaries, highways, and cities. Remind students to include labels on their map keys.

from ***Are We There Yet?*** p. 4-5, 12-13

Compare Characteristics Have students look at the map and map key on pages 4 and 5. Next, have students look at the map and map key on page 13. Ask students to name the various types of lines they see *(state border, river).* Have students compare the lines on the two maps to determine which are the same and which are different. Ask, *Does the state border line look the same on both maps?* Draw a Venn diagram on the board. Label one *U.S. Highways Map* and the other *Colorado Map*. Label the overlapping part *Both*. In the part labeled *Both* list what is similar about the lines on both maps. In the other sections, write their unique features. If students are very familiar with Venn diagrams, you may wish to have them fill out their own diagram working in pairs. For additional practice in identifying lines, have students complete the Lines activity sheet on page 15.

from ***If Maps Could Talk***, cover

Use a Data Source as a Tool Direct students to look at the cover of the book. Point out the map key to students. Have students identify the lines and any symbols that they already know. *(interstate highway, state highway)* Discuss unfamiliar lines and symbols on the cover. If possible, have examples of other road maps that use some of these lines. Brainstorm with the class a list of the types of people who would find this information valuable. *(travelers, truck drivers)* For additional practice in creating maps with lines and symbols, have students complete the Make Your Own Map activity sheet on page 16.

Differentiated Instruction

Here are some additional approaches to use with students of varying abilities.

Increase Student Motivation

Gifted Students Challenge gifted students to find other maps that use different types of lines for a feature they've already seen, such as a state border. Have students keep track of each new type of line and feature they find. Students could then create a visual presentation on a map or a chart showing the types of lines they have found.

Build Prior Knowledge

Visual/Spatial Learners Visual learners may need an illustration of different types of borders or roads. You could compare your school driveway to the local road, drawing the different types of lines to represent them. Or you could compare the widths of crayons and pencils. Challenge students to draw comparisons to show that they comprehend the difference between a highway and a road, or a state border and a country border.

Increase Student Comprehension

ELL Students Depending upon their English proficiency level and the amount of time they have lived in the United States, many English language learners will benefit from you explaining the academic terminology *border*, *boundary*, *interstate*, *state*, and *highway*.

Use Specialized Vocabulary

Curriculum Crossover Here are some ideas for lessons about borders, boundaries, rivers, and roads in different subject areas:

- **Language Arts/Writing:** sequence
- **Math:** measuring widths and lengths, finding distances
- **Social Studies:** properties of water
- **Art:** patterns

Name _____

Lines

Answer the questions about the map found on pages 10-11 of *If Maps Could Talk.* Read the lines to discover the different types of borders, boundaries, rivers, and roads on the map.

1. What type of road is marked with the number 40?

_____

2. What is the Rio Grande?

_____

3. How would you describe the symbol for a highway?

_____

4. Draw a line that stands for a state border in the space below.

Answer the questions about the map found on pages 6-7 of *Are We There Yet?*

5. What does the map show?

_____

6. What other special lines are shown on the map?

_____

7. How can you tell state highways from state borders on the map?

_____

_____

8. What is another difference between state highways and state borders?

_____

_____

Name

Make Your Own Map

Lines don't have to be confining—they can help you create a whole new world!

Using the line symbols you have learned, create a map below for your state or a new state of your own creation. Be sure to include interstates, highways, state borders, major rivers, the capital, a map key, and labels.

KEY

Lesson 4

Bar Scales and Ratios

Background

To measure distances on a map, we often use either bar scales or ratios. A bar scale tells what the distance on a map equals in real-world measurements. For example, one inch on a map might equal fifty miles in the real world. When looking at a map key with a ratio, it will also compare measurements on the map to the real world. One example of a ratio would be *1 inch: 1 mile*, meaning 1 inch on the map equals 1 mile in the real world. Using scales or ratios is the only way we can understand how close or far we truly are in relation to other places on the map.

Instructional Focus

Determining distances from bar scales and ratios will help students' comprehension of maps. Focus students' attention on the different ways to measure scale, such as using a ruler, a piece of string, etc. Remind students to look for the scale first to understand how big of an area they are seeing.

Students will naturally learn about types of maps and other map symbolism as they decode bar scales and ratios. Reading bar scales and ratios also lends itself to mathematical and logical learners.

Working with Map Mania

from ***Are We There Yet?*** p. 12-13

Apply Geographic Tools Study the map and have volunteers predict the distance from Colorado Springs to Rocky Mountain National Park. Read the text and have students look at the map, the map key, and the bar scale. Then have students check their answers. *(3 inches = 75 mi or more than 100 km)* Have pairs of students find distances between other places on the map, such as between Fort Collins and Grand Junction, Colorado. Bring the class back together to discuss whether each group came to the same conclusions. Ask, *What would happen to the map if the mapmaker chose to make 100 miles equal to one inch? Why? (The distances in the real world would be much bigger.)*

from ***If Maps Could Talk***, p. 8-9, 10-11

Compare Characteristics Have students look at the scales on the map on page 8. Remind students that a mile is longer than a kilometer. Have students discuss reasons for including both miles and kilometers in the key. (*some people use kilometers to measure distance, not miles*) Ask students to find distances between towns and places of interests or lakes on the map. Then have students look at the scales for the map on pages 10-11. Point out the gray and white bars showing the 20 and 40 miles/kilometers. Have pairs or groups of students compare and contrast the scales on each map. Groups could use Venn diagrams or T-charts to help organize their information.

from ***Ways to Find Your Way***, p. 4-5, 6-7

Compare Characteristics Read the text about scale on page 7. Have students look at the information on the map key. Ask volunteers to find cities or borders that are 500 miles from each other. Ask, *Can you walk that far in a day?* Next have students look at the map on pages 4-5. Ask, *Can you walk 60 feet in a day?* Have students look at the information on this map key. Be sure to explain any unfamiliar vocabulary, and ask questions to check comprehension. Have students work in pairs or small groups to complete a T-chart comparing and contrasting the two maps, their uses, and their scales. Then have groups present their charts. For more practice on using bar scales, have students complete the Bar Scales activity sheet on page 19.

from ***Are We There Yet?*** p.14-15, "Go Ratio!"

Use a Data Source as a Tool Read the text on pages 14 and 15, and have students look at the map, the picture, and the map key. Ask students to describe the type of area mapped. *(the Tower of London, a small place)* Explain to students that this is a small area—one you could walk around in a day. You may wish to review what you have taught about ratios in math class to help students assign meaning and vocabulary to this lesson. Point out the ratio of this map is 1:1,650. Have students work in pairs to create a scale or bar scale to illustrate this ratio. Have pairs join with other groups that used the scale to illustrate the ratio. For more practice on using ratios, have students complete the Measure Your Map activity sheet on page 20.

Differentiated Instruction

Here are some additional approaches to use with students of varying abilities.

Build Prior Knowledge

Logical/Mathematical Learners Students who are strong in math will most likely find these lessons easier. Try to pair these students with a classmate who is not as strong in math. This should help both students build vocabulary and confidence as they work together. Challenge logical/mathematical learners to write about using bar scales or ratios in their own words, further building logical connections and vocabulary.

Increase Student Comprehension

ELL Students It may help English language learners to initially work with numbers in their first language. Then help students transition to English by pointing to the number, having the student say its name in their first language, and you providing the name in English. Teachers might use these first-language names for numbers throughout the lesson to help the student keep up, or as a kind of a benchmark to where you are in the lesson. Often numbers are among the first words taught in a new language, so this may help the student with vocabulary as well as with the lesson itself.

Use Specialized Vocabulary

Curriculum Crossover Here are some ideas for lessons on bar scales and ratios in different subject areas:

- **Physical Education:** timed walking and running
- **Art:** proportions, scale models
- **Social Studies:** Colorado, the Tower of London, national parks
- **Math:** ratios, proportions and rates

Name _____

Bar Scales

How far would you go to understand a map? Let's see! Answer the questions below about the bar scales on pages 10-11 of *Are We There Yet?*

1. Where can you find the bar scales for the map?

_____

2. How do the two scales (miles and kilometers) compare?

_____

3. About how long is Bird Brain Beach?

_____

4. About how wide is Bird Brain Beach at its narrowest part?

_____

5. How far is it from the Buffet to the Daycare?

_____

6. How far is it from Flight Street to the beach?

_____

Answer the questions below using the scale on page 16 of *Are We There Yet?*

7. How far is it from the base of the birdhouse to the swingset?

_____

8. How far is it from the sandbox to the swingset?

_____

9. How does this map compare to the map on page 11?

_____

Name

Measure Your Map

You aren't going to draw a life-size map, so use a ratio to show what the distances on your map would be like if they were in the real world.

Draw a map of your favorite place. Choose from one of the ideas below or think of one of your own. Remember to add a map key including the ratio scale.

your neighborhood your classroom the school playground your room

KEY

Lesson 5

Political Maps

Background

Maps showing large areas of the world are generally either political or physical maps. Political maps show boundaries between countries and states as well as their major cities. Often a political map will also show a place's most important physical features, such as lakes. These maps use their own symbols, such as stars for capital cities and different widths of lines for types of borders between states or countries. Most political maps will have a map key with a scale to show how distances on the map equal the real world. Scales usually give both miles and kilometers. Sometimes an atlas will contain mileage charts or distance maps that show how far it is to drive from city to city.

Instructional Focus

Learning to determine distances from scales is one of the most practical map-reading skills. This lesson builds on the previous lesson, which focused on bar scales and ratios. Have students use rulers and nonstandard placemarkers to help them measure areas on the maps. Help your class find the best methods and formulas to calculate distances for each scale and map. Finding distances on a map also lends itself to partner, small group, and even large group work.

Working with Map Mania

from ***Ways to Find Your Way***, p. 6-7, "Top Secret Map Information"

Apply Geographic Tools Have volunteers predict the distance from Richmond, VA, to Casper, WY. *(estimate 1,500 miles)* Write their predictions on the board. Read the text and have students look at both the map and the scale. Using a ruler, show students how to find the distance between the two cities. Have pairs or groups of students find distances between other places on the map. Bring the class back together to discuss whether each group came to the same conclusions. Ask, *What would happen if the mapmaker chose to make 500 miles equal one inch? Why? (distances between cities would be smaller)* Teach students to determine driving time by dividing distance by 60 (for minutes) to get the number of hours it takes to travel to a location.

from ***Are We There Yet?*** p. 5-11

Compare Characteristics Read the text about scale on pages 5, 6, and 10-11. Have small groups of students use a ruler to measure the scale for one map and then discuss their findings. Ask, *What things from the classroom could you use to measure distances on the maps? (string, pencils)* Then challenge groups to swap maps and find the distances on each map using the other objects. Have groups compare their findings and check for accuracy. For additional practice in finding distances, have students complete the Finding Distances on a Political Map activity sheet on page 23.

from ***If Maps Could Talk,*** p. 10-11, 15

Compare Characteristics Have students look at the bar scales on the map on page 11. Remind students that a mile is longer than a kilometer. Have students discuss reasons for including both miles and kilometers in the map key. Ask students to find distances between cities or highways on the map. Then have students look at the scales on the map on page 15. Have pairs or groups of students compare and contrast the scales and their uses on the two maps. Groups could use Venn diagrams or T-charts to help organize their information. For additional practice in finding distances, have students complete the Finding Distances on Your Own Map activity sheet on page 24.

Differentiated Instruction

Here are some additional approaches to use with students of varying abilities.

Increase Student Motivation

Visual/Spatial Learners Visual or spatial learners may be able to make good estimates of distances just by "eyeballing" the stretch of space between two locations. Praise these students for their predictions, but don't let them stop working at this point. Be sure these students complete the calculations to check their work, as they need to know how to do the math.

Build Prior Knowledge

Verbal/Linguistic Learners It may help verbal or linguistic learners to talk and/or write about the process of finding distances for them to get a firm grasp on the concept. Allow these students to pair up to teach it to each other in a step-by-step manner. You may even wish to partner a verbal learner with a student who has strong writing skills so that both students can benefit from organizing their thoughts about the process of finding distances and discussing them.

Increase Student Comprehension

ELL Students Many English language learners will benefit from you explaining the terminology used in measurement, such as the instruments we use to measure things: *ruler*, and the academic vocabulary used in when talking about distance: *inch*, *mile*, *centimeter*, and *kilometer*. Also see *Academic Vocabulary Builders: Math Glossary I*.

Use Specialized Vocabulary

Curriculum Crossover Here are some ideas for lessons on finding distances in different subject areas:

- **Language Arts/Writing:** making predictions
- **Art:** proportions
- **Social Studies:** Tennessee, atlases
- **Math:** ratios, proportions and rates; metrics

Name _____

Finding Distances on a Political Map

How far would you go to understand a map? Let's see! Answer the questions about the scale on pages 12-13 of *Ways to Find Your Way*. Show your calculations.

1. Where can you find the scale for the map?

_____

2. What unit or units of measure does this scale use?

_____

3. How far is it from Douglas Lake to Tellico Lake?

_____

4. How far is it from Jackson to Nashville?

_____

5. How far is it from Knoxville to Douglas Lake?

_____

6. How far is it from Nashville to Chattanooga?

_____

7. How far is in from Douglas Lake to Tellico Lake in kilometers?

_____

8. How far is it from Knoxville to Douglas Lake in kilometers?

_____

9. Which do you think is easier to find distances with: miles or kilometers?

_____

_____

_____

Name

Finding Distances on Your Own Map

Some scales use non-standard measures. Draw a map of your own using a non-standard measure, such as a pen-cap or pencil. Remember to label your map and complete the map key.

Draw a map of your state or school using a scale that includes a non-standard unit of measure.

KEY

Lesson 6

Different Maps for Different Purposes

Background

Physical and topographical maps show what the land is like. Distribution maps show where people live, crops are grown, or mineral resources are found. Physical maps use colors to show the type of the land: deserts, forests, and plains. Topographical maps are a type of physical map. They use lines to show the contour of the land: high, low, flat, hilly, and mountainous areas. Distribution maps use colors to show how many or how few things live in each area. They show how people or other things are scattered across an area. Population density maps are a kind of distribution map. They show how many people live in a certain place.

Instructional Focus

Introducing your students to physical, topographic, and distribution maps is a great way to introduce geography and sociology skills to students. Although students will have certainly seen maps use colors to mean different things; they may not yet understand how different colors indicate that many people live in cities or that certain places are flat while others are mountainous. Students will naturally learn about types of maps and map symbols as they use physical and distribution maps.

Working with Map Mania

from ***Ways to Find Your Way***, p. 14-15, "Bumpy, Lumpy Physical Maps"

Compare Characteristics Have students read the text and study the physical map. Explain that physical maps use colors to tell us what places are like. Point out that the green color shows the land is flat, while the brown color shows hills or mountains. Have pairs of students compare and contrast how color is used on the physical map on page 14 verses the map of the girl's face on page 15. Ask, *What is the same on each map? What is different? (both maps use green for flat areas; one map is on a face; physical maps use brown for high areas, but the face map uses red)* Bring the class back together and discuss their findings.

from ***Ways to Find Your Way***, p. 16-17, "Topo-rific Maps"

Apply Geographic Tools Have students predict what the brown curvy lines mean on the topographical map on page 16. *(sand, walking paths)* Read the text on page 17 and point out the brown curvy lines on the map. Tell students that these lines are called contour lines. *Contour* means "the shape or form of something." On a topographic map, contour lines show the shape of the land. Point out the connection between the contour lines on the topographic map and the photograph of Devils Tower. *(both show something that is very high)* Have students color code the land to complete the Topographical Map activity sheet on page 27.

from ***Ways to Find Your Way***, p. 18-19, "Counting on a Map: Distribution Maps"

Use a Data Source as a Tool Read the text and study the population density map on page 19. Explain that population density map shows how many things live in a place. Focus students' attention on the map key and the correlation between the dark colors where lots of people live, and the light colors where few people live. Ask students to form groups. Hand out five markers to each group. Have students look around the classroom to see where each person is sitting. Then students will complete the Where the People Are activity sheet on page 28. Have student groups work together to color code their map based on where people are in the classroom.

from ***Ways to Find Your Way***, p. 14, 20, "Amazing but True!"

Compare Characteristics Read the text and have students look at both the map of Mars on page 20 and the physical map on page 14. Have students work in pairs to brainstorm a list of reasons why both maps use green and a reddish-brown color. Ask, *What do these colors tell us about how high or low each place is? (the green parts are probably flat and the reddish-brown parts are probably high)*

Differentiated Instruction

Here are some additional approaches to use with students of varying abilities.

Increase Student Motivation

Visual/Spatial Learners Have visual/spatial students study a 3D globe of Earth to make the connection between land height and color. Ask, *What do the brown parts feel like compared with the green parts? (the brown parts are raised and bumpy; the green parts are smooth and low)*. Ask students to discuss any differences in their findings.

Build Prior Knowledge

Geographic Tools Have small groups of students use their understanding of physical and distribution maps to create 3D versions of the classroom map or the topographical map from previous activities. Challenge other groups to identify each type of map created.

Use Specialized Vocabulary

Curriculum Crossover Here are some ideas for lessons on physical and topographic maps in different subject areas:

- **Math:** estimate each type of land on a map and express it as a fraction or a percentage
- **Social Studies:** migration
- **Language Arts/Writing:** describe the land in your neighborhood
- **Science:** solar system
- **Art:** sculpture/ceramics

Name

Topographical Map

Use the map key to color code the topographical map to show which places are high, low, and flat.

• Mt. Majesty

Pleasant Plains

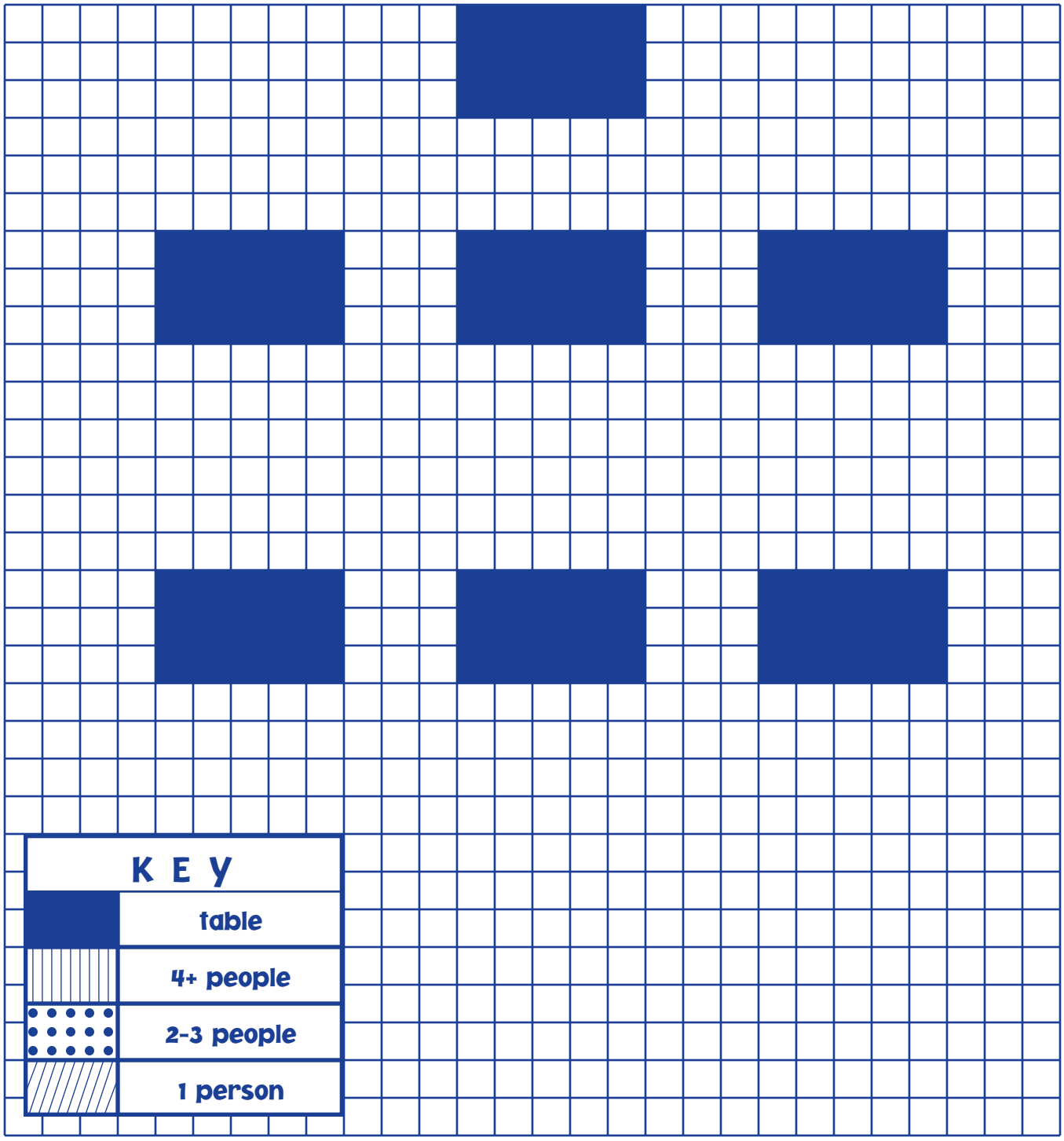
Rafting River

KEY	
	mountains
	valley or plains
	rivers

Name

Where People Are

Create your own distribution map. Show where each person is sitting in the classroom below. Use the key to help you create your map.



Rubrics and Assessment Activities

Rubrics

As students complete their individual projects after each lesson, use the rubric below to help you assess each one. Refer to the different elements of each type of map described in the "Background" section of each lesson.

Mapmaking is an advanced skill; and this is just an introduction. Some of the places students may have attempted to map may have proven beyond the classes' capabilities. Do not penalize children for their attempts. Look instead, at what each student has learned and can demonstrate about what he or she has learned. The assessment pages and the rubrics below should help you with this process.

Make copies of the rubric below to use when assessing your students' projects.

Maps Rubric

Type of Map _____

Map contains all essential elements given in the directions and is the correct type of map.	Map contains most of the elements given in the directions and is the correct type of map.	Map has few to none of the essential elements given in the directions or is not the correct type of map.	Student has made no effort to create a map of any kind.
3 points	2 points	1 point	0 points
Name			Points

Self-Assessment Map Rubric

You may wish to have students assess their own projects before submission. Give students a copy of the rubric above. Model how to assess a group project using the rubric. Have students hand in their rubrics along with their projects. You may find that many students are harder on themselves than you are on them. Completing a self-assessment can help students show self-esteem, self-confidence, as well as an awareness of his or her extent of knowledge. Student assessments can be handy when conferencing with students or parents.

Make copies of the rubric below and distribute to students for use during their self assessment.

Self-Assessment Rubric

Type of Map _____

My map has the most important parts of the map named in the directions and is the right kind of map.	My map has some of the important parts of the map named in the directions and is the right kind of map.	My map has one of the important parts of the map named in the directions or it is the right kind of map.	I did not make a map.
3 points	2 points	1 point	0 points
Name			Points

Conferencing

Conference with students as you evaluate their work. In fact, conferencing at any point in the creative process could be especially helpful to student who may be struggling with a particular activity. Have students bring their maps and perhaps even their previous page from the same lesson to your conference. Help each student choose a place to map, if appropriate. If your students are comfortable working in groups, you may have them conference with each other before publishing their final work. They could proofread each other's work and discuss how to improve their maps by using labels, keys, symbols, color-coding, or other graphics in the final product.

Class Project

Publish an atlas of the class's best maps to send home with each child. Students might use group conferences to discuss or even vote on favorite maps to include—everyone includes only one map in the book. Alternatively, you may wish to set up a class Web site to publish their maps.

Answer Key

Lesson 1

Using a Compass Rose: 1. East, 2. North, 3. South, 4. North, 5. West, 6. North.

The Compass Rose: Students should complete the compass rose using N, E, S, and W; then they should complete the map key using N North, E East, S South, W West.

Lesson 2

Icons and Symbols: 1. There are two churches., 2. The library icon has books., 3. The shopping cart icon stands for a store., 4. On the map the same symbol stands for each of the houses. In a photograph, each house is shown., 5. This map shows the Tower of London and the roads, trees, and river around it., 6. The river and the map key., 7. A tree symbol stands for a group of trees., 8. A double purple line stands for a road., 9. The Tower of London is surrounded by grass, trees, and buildings.

Make Your Own Map: Students' maps will vary, but the map should be of a zoo and should include five kinds of animals, an entrance, walkway, snack stands, restrooms, a title, and a map key with shapes, icons, colors, and patterns.

Lesson 3

Lines: 1. Interstate 40, 2. The Rio Grande is a river., 3. A highway is a red line with a white shield., 4. Students should draw a dotted line for the state border., 5. This map shows the U.S. interstate highways., 6. State borders are shown on this map., 7. State highways are red and state borders are green., 8. Answers will vary.

Make Your Own Map: Students' maps will vary, but they should include interstates, highways, state borders, major rivers, the capital, a map key, and labels.

Lesson 4

Bar Scales: 1. The bar scale is at the bottom of the map., 2. There are many kilometers in each mile., 3. Bird Brain Beach is 4.5 miles long., 4. Bird Brain Beach is almost half a mile wide at its narrowest part., 5. It is two miles between the buffet and the daycare., 6. It is two miles from Flight Street to the beach., 7. The swingset is 225 inches from the base of the birdhouse., 8. It is 100 inches from the sandbox to the swingset., 9. Answers will vary, but students should notice that one map uses a scale and the other map uses a ratio.

Measure Your Map: Students' maps will vary, but the may should be of the student's favorite place and include a ratio.

Lesson 5

Finding Distances on a Political Map: 1. The scale is in the bottom-right corner of the map., 2. The units are 1 inch = 40 miles/60 kilometers., 3. It is 30 miles from Douglas Lake to Tellico Lake., 4. It is 120 miles from Jackson to Nashville., 5. It is 20 miles from Douglas Lake to Knoxville., 6. It is 140 miles from Nashville to Chattanooga., 7. It is 48 kilometers from Douglas Lake to Tellico Lake., 8. It is 32 kilometers from Douglas Lake to Knoxville., 9. Answers will vary.

Finding Distances on Your Own Map: Students' maps will vary, but they should include a scale that uses a non-standard unit of measure.

Lesson 6

Topographical Map: Students' maps will vary, but they should apply the correct pattern to each type of area on the map.

Where People Are: Students' maps will vary, but they should show where certain size groups of students are located.