

Curriculum Guide



Fourth Grade

Fourth Grade ♦ Lesson One



**FOURTH GRADE
LESSON NO. 1**

WHAT IS A NEIGHBORHOOD?

LENGTH OF LESSON: 30 - 60 Minutes

EDUCATIONAL OBJECTIVES:

- A. Develop an awareness of what elements comprise the neighborhood
- English/Language Arts
- Ideas in action
 - Inquiry and research
 - Meaning and communication
- Social Studies
- Geographic perspective
 - Inquiry
- B. Understand how different elements of a neighborhood relate to each other
- English/Language Arts
- Ideas in action
 - Inquiry and research
 - Meaning and communication
- Social Studies
- Geographic perspective
 - Inquiry
- C. Understand how elements differ and which elements are common to all neighborhoods
- English/Language Arts
- Ideas in action
 - Inquiry and research
 - Meaning and communication
- Social Studies
- Geographic perspective
 - Inquiry



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- D. Learn map-reading skills while working directly with a map or aerial photograph
- Social Studies
 - Geographic perspective
 - Visual Arts
 - Arts in context

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual relationships are determined by light, shadow, edges and contrast.

Balance is the creation of visual harmony through the use of color and the manipulation of form.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Nature is a model for architectural forms and shapes.

Mass creates form, which occupies spaces and brings into being a spacial articulation.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Social structure, culture and the built environment have a direct influence on one another.

Design is experienced through human sensory perception.



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The creative process is basic to design.

Aesthetics is the artistic component of architecture.

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MATERIALS

1. Large Aerial Photograph: A drawing or city street map of your city. These usually can be obtained from the planning department of the city or the county. If your location is a large city, the photograph or map should be limited to your community, district or suburb of the city.
2. Community Neighborhood Map: A drawing of the neighborhood around the school for display, which may be created by tracing the neighborhood area from the aerial photograph and then enlarging it, or enlarging the neighborhood portion of the city street map (Be sure to include outlines of streets, land, significant buildings or landmarks for reference).
Note: The aerial photograph, drawing or map of your city is essential since it will be used in other lesson plans for Grade Four.
3. Copies of neighborhood drawing (one for each student).
4. Crayons, colored pencils or magic markers.

VOCABULARY (See glossary for definitions)

- | | | |
|----------------------|----------------|-----------------|
| 1. Aerial photograph | 3. Ethnic | 5. Neighborhood |
| 2. Boundary | 4. Focal Point | 6. Social |



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ACTIVITY

- A. The teacher displays the "Large Aerial Photograph" of the city to the class and outlines various districts and neighborhoods, explaining where each is located. The teacher also explains why each neighborhood is unique. For example, are there major streets at the perimeter that define the neighborhood? Is there a park, shopping area, school or some other feature that makes it unique?
- B. Next, the teacher displays the "Community Neighborhood Map," a drawing of the neighborhood area around the school, and discusses with the class the elements that make up the neighborhood. What are the neighborhood boundaries? Is the school, or some other area, the focal point or center of the neighborhood? Are there ethnic or social characteristics that are common to people of the neighborhood? What types of buildings are found in the neighborhood? What types of houses are found in the neighborhood? Is the entire neighborhood within walking distance from the school? What are similar characteristics of surrounding neighborhoods? Do the students feel an identity with their neighborhood that makes them feel they are a part of it?
- C. Provide each student with a copy of the "Community Neighborhood Map." Ask the students to find their home (or other familiar building or landmark) on the drawing and to color it. Then ask the students to color the school, shopping areas, religious institutions, parks, etc., and to label each one. Ask the students where they like to walk in the neighborhood. Where do they bike, run and play? Have the students draw symbols to indicate where they bike, run and play. Examples of symbols: "swing" to play, "bicycle" to bike, "soccer ball" to run, etc.

TEACHER'S EVALUATION

- A. The teacher should engage all of the students in the discussion and use it to determine their fundamental understanding of what a neighborhood is. The students' drawings should clearly show the elements of their neighborhood.



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**FOURTH GRADE
LESSON NO. 2**

GUIDED NEIGHBORHOOD WALK

LENGTH OF LESSON: 60 Minutes

EDUCATIONAL OBJECTIVES:

- A. Observe, record and discuss the neighborhood around the school, as the students look at it, hear the sounds, sense the smells and touch the different materials firsthand
- English/Language Arts
 - Meaning and communication
 - Ideas in action
 - Social Studies
 - Geographic perspective
- B. Develop an awareness of the types of buildings, parks, etc., that make up the neighborhood and how each type of building has different physical characteristics
- Science
 - Use scientific knowledge from the physical sciences in real-world contexts
 - Visual Arts
 - Analyzing in context

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MATERIALS

1. A new copy of the drawing of the neighborhood around the school (from Lesson No. 1) for each student
2. A list of landmarks to be recorded during the walk (teacher to compile based on examples in Activity A below)
3. A copy of "My Neighborhood Walk Recording Chart" for each student to record observations on the walk (included)
4. A copy of "Community Improvement Chart" for each student (included)
5. Pencils and erasers
6. A clipboard for each student, if available



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VOCABULARY (See glossary for definitions)

1. Edges
2. Neighborhood

ACTIVITY

- A. Use the drawing of the neighborhood around the school from Lesson No. 1 in preparation for the neighborhood walk. The teacher compiles a list of the major landmarks, such as buildings and parks, to be seen on the walk. This list is included with each student's copy of the drawing for the student's reference during the walk. The teacher discusses the list with the students before the walk. The students mark these important features on their copy of the map.

MAJOR LANDMARKS

Family Dwelling	Religious Institution	Bank
School	Hospital	Post Office
Fire Department	Drugstore	Theaters
Grocery Store	Department Store	Toy Store
Gas Station	Restaurants	Music Store
Library	Bakery	Clubs (VFW, YMCA) Etc.

- B. The students indicate their walking route on the map as they take their walk. In addition to the teacher's list of landmarks, the students will list ten interesting features observed on the walk by marking their locations on their drawings and recording the items on their "My Neighborhood Walk Recording Chart" under Question No. 8.
- C. The students make a list of three things they find on their walk that need to be improved and identify these items on the "Community Improvement Chart."



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- D. The teacher leads the students on their planned neighborhood walk, pointing out various aspects of the environment. Through discussion of the items listed below, the teacher guides the students through their observations, leading them to determine which elements are in good shape and which items need improvement. Students record their answers to the following questions on "My Neighborhood Walk Recording Chart":
1. What is found immediately around the school?
 - a. Is there a playground or a park?
 - b. Can it be used when school is not in session?
 - c. Is the school the center of the neighborhood?
 2. How are the buildings positioned on their sites?
 - a. Is there a front yard, or do the buildings come right to the sidewalk?
 - b. If there is a front yard, is there a lawn, a garden, flowers, trees, fences or pathways?
 - c. How far apart are the buildings?
 - d. Are there windows on the buildings' sides?
 - e. Are the buildings close to one another or far apart?
 - f. Is there enough space to allow natural light into the buildings? (Review Third Grade - Lesson Four.)
 3. What types of buildings are found in the area?
 - a. Is there a variety of building types?
 - b. Are there residential buildings (houses, apartments, etc.)?
 - c. Is there a community center?
 - d. Are there stores or factories?
 4. Do the buildings all look similar, or are they different styles?
 - a. For example, within a single building type, such as residential, are the buildings of similar or of varying styles (recognize styles by their common characteristics, such as columns, sloped roofs, flat roofs, shutters, decorative or ornate woodwork or metal work)?
 5. Are the buildings old or new?
 - a. Are the old-style buildings old in years, or are they new buildings built in a historical style?
 6. What materials are some of the buildings made of?
 - a. Is there a diversity of materials, such as brick, stone, glass, wood siding, metal, etc.?
 - b. What about roof materials, such as metal, slate, wood or asphalt shingles?



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7. What colors are the buildings?
 - a. Are they similar colors or different colors?
 - b. Do different buildings have similar colors? Do similar buildings have different colors?
 8. Apart from the buildings, what other things did you see (such as parks, water towers, playgrounds, light poles, etc.)?
 - a. Ask students to mark these items on their drawings as part of Activity B.
- E. As the walk concludes, or in the classroom after the walk, ask the students what they think makes the area covered on the walk a neighborhood. Is it major streets that form its edges? Is it the types of buildings? Is it the people? Have the students identify what things can be improved in the neighborhood, as well as what things they can do to improve their neighborhood and community. The students record their answers on the second part of the "Community Improvement Chart."

TEACHER'S EVALUATION

- A. Check the students' maps. Compare their list of items on their "Neighborhood Walk Recording Chart" to the indications on their maps.



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MY NEIGHBORHOOD WALK RECORDING CHART

Questions about important things I saw on my walk . . .

1. What is found immediately around the school?
2. How are the buildings positioned on their sites?
3. What types of buildings are there in the neighborhood?
4. Do the buildings all look similar, or are they different styles?
5. Are the buildings old or new?
6. What materials are some of the buildings made of?
7. What colors are the buildings?
8. Apart from the buildings, list other things you see, such as parks, water towers, playgrounds, light poles, etc.



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COMMUNITY IMPROVEMENT CHART

Things I believe can be improved in my neighborhood . . .

1. _____

2. _____

3. _____

Things I can do to improve my neighborhood and community . . .

1. _____

2. _____

3. _____



Fourth Grade ♦ Lesson Three



**FOURTH GRADE
LESSON NO. 3**

BUILDING TYPES

LENGTH OF LESSON:

30 - 60 Minutes

EDUCATIONAL OBJECTIVES:

- A. Understand the buildings that make up a neighborhood and how they relate functionally to one another
- Social Studies
- Geographic perspective
 - Civic perspective
- B. Develop a recognition of the part vehicular and pedestrian traffic patterns and transportation modes play in the neighborhood
- English/Language Arts
- Meaning and communication
 - Ideas in action
- Social Studies
- Geographic perspective
- Science
- Use scientific knowledge from the physical sciences in real-world contexts
- Visual Arts
- Analyzing in context
- C. Improve students' writing skills in their ability to write clear, descriptive sentences
- English/Language Arts
- Meaning and communication
 - Skills and processes
 - Genre and craft of language
 - Ideas in action



Fourth Grade ♦ Lesson Three



ARCHITECTURAL PRINCIPLES:

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MATERIALS

1. The large aerial photograph or street map of the city from Lesson No. 1 for display
2. The neighborhood drawing from Lesson No. 1 for display
3. A "Downtown Neighborhood Street Layout" (included)
 - a. This street layout will form the base map for the enlarged "Ideal Downtown Neighborhood."
 - b. The liaison architect in your area can assist you in enlarging the "Downtown Neighborhood Street Layout." See Activity items C-3, a and b. The layout will be used by individual students or by small groups working together to create an "Ideal Downtown Neighborhood." In the enlargement, a city block should be approximately 4 inches wide x 8 inches long with a street width of 2 inches.
4. Letter to parents with a checklist (report card) for use in conjunction with visiting a building (included)



Fourth Grade ♦ Lesson Three



VOCABULARY (See glossary for definitions)

1. Dwelling
2. Function
3. Location
4. Proximity

ACTIVITY

- A. Write the following list on the whiteboard (or chalkboard). Display the neighborhood drawing from Lesson No. 1. Help the students identify different types of buildings that make up their existing neighborhood. Some of the building types should include:
1. Places that families live (house, apartment, etc.)
 2. School
 3. Fire Department
 4. Police Department
 5. Grocery store
 6. Gas station
 7. Library
 8. Religious institution
 9. Hospital or clinic
 10. Supermarket
 11. Drugstore
 12. Large department store
 13. Ice cream store
 14. Sit-down restaurants
 15. Bakery
 16. Bank
 17. Post Office
 18. Theaters
 19. Carry-out restaurants
 20. Toy store
 21. Music store
 22. Clubs (Rotary, Boys, Girls, V.F.W., etc)
- B. Ask the students if there is anything on the above list of building types that cannot be found in their existing neighborhood.



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- C. Construct an "Ideal Downtown Neighborhood."
1. Ask the students what buildings are necessary for the downtown neighborhood (As students indicate necessary buildings, mark them on a new list).
 2. Discuss the function of each building, and which buildings need to be near one another and those that don't. What are the advantages of proximity? Which buildings should not be near one another due to noise and traffic (e.g., homes next to an airport)?
 3. Ask students where the buildings they listed should be located in relation to one another. Should some buildings be on a "main street"? Can some buildings be on side streets?
 - a. Have students make cutouts of the buildings and label them with the building name. Size the cutouts so six buildings will fit on a neighborhood block. They could be different colors to indicate different building functions.
 - b. Have the students (individually or in small groups) arrange the building cutouts on the "Downtown Neighborhood Street Layout" map.
 - c. Discuss with students how they might rearrange their "Ideal Downtown Neighborhood" to make it more friendly for community members (consider needs of handicapped and senior citizens).
 - d. Discuss with students what is missing in their "Ideal Downtown Neighborhood."
 4. Have the students eliminate buildings they believe are unnecessary.
- D. Send a letter home with students requesting parents to accompany their child to one of the establishments identified in Activity "A" above. The checklist provided in the letter can be used as a report card for the parent/student team to complete while visiting the building.

TEACHER'S EVALUATION

- A. Evaluate homework: The report card should be turned in on time with all questions answered in full sentences that make sense.



Fourth Grade ♦ Lesson Three



Date:

Dear Parents/Guardians:

Your child is currently studying building types and their placement and use. This homework is a part of our series of studies in architecture. Would you please take your child on a trip to a local establishment? It could be a place they have been to many times or somewhere new. This visit is intended to make them more aware of the role the building has in their neighborhood. Please help your child answer the questions below. To enhance the development of their language arts skills, please have them answer using full sentences. The homework will be used in your child's next class on architecture. Please send this report back to school with your child for the follow-up lesson plan on _____.

The building I analyzed is _____

1. Is this building a necessary one for the community?

2. What buildings are nearby?

3. Is it necessary for the nearby buildings to be in close proximity?

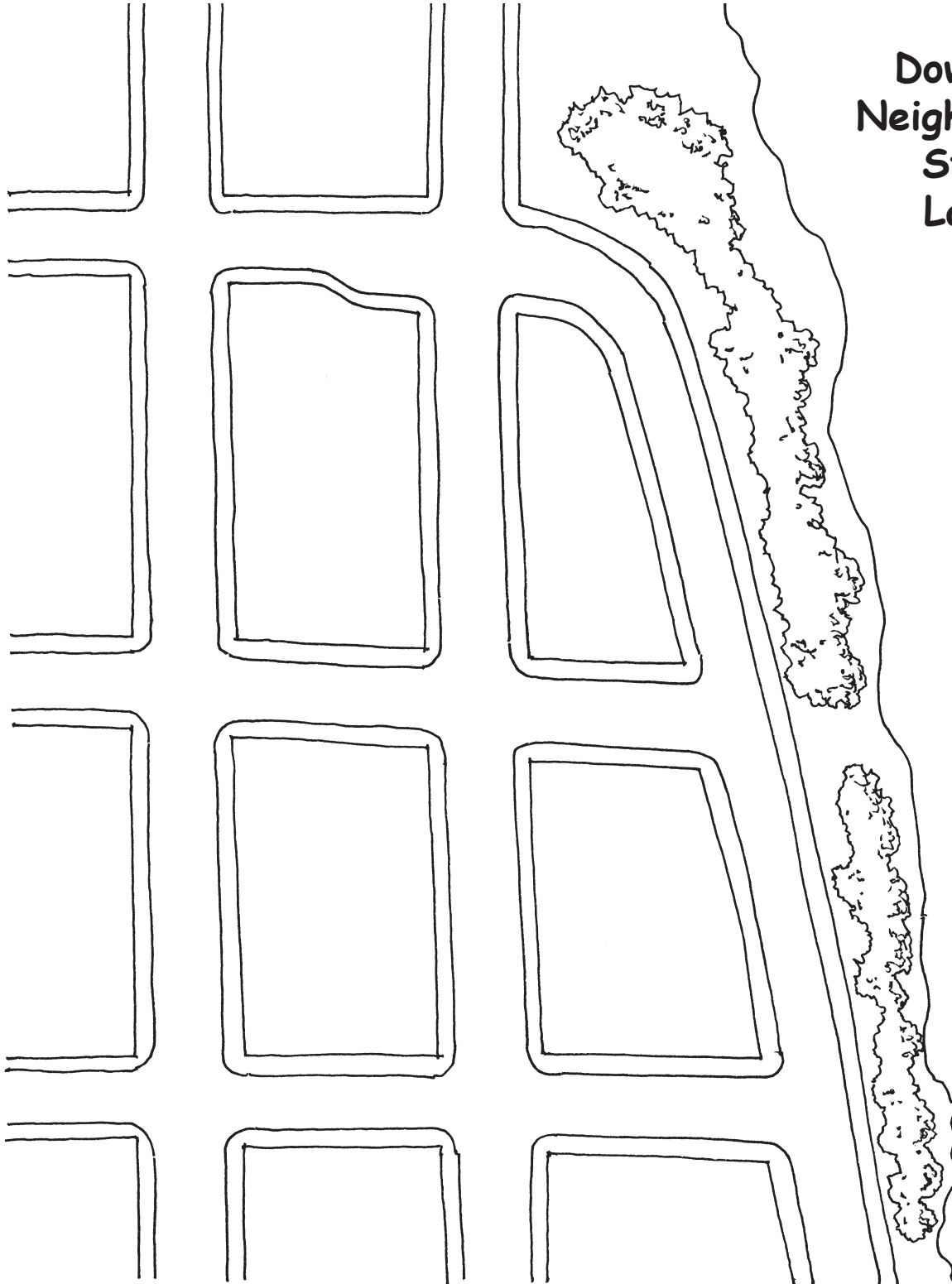
4. If you had made the decision about where to locate this building, would you have placed it in another area?



Fourth Grade ♦ Lesson Three



Downtown
Neighborhood
Street
Layout



Fourth Grade ♦ Lesson Four



**FOURTH GRADE
LESSON NO. 4**

BUILDING TYPES AND AESTHETICS

LENGTH OF LESSON: 30 - 60 Minutes

EDUCATIONAL OBJECTIVES:

A. Understand how the appearance of a building reflects its function

Visual Arts

- Analyzing in context
- Arts in context
- Connecting to other arts, other disciplines and life

B. Develop the ability to make aesthetic judgements about the physical appearance of buildings and to discuss them

Visual Arts

- Analyzing in context
- Arts in context
- Connecting to other arts, other disciplines and life

English/Language Arts

- Ideas in action
- Meaning and communication

ARCHITECTURAL PRINCIPLES

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Fourth Grade ♦ Lesson Four



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MATERIALS

1. Photographs of various building types (included)

VOCABULARY (See glossary for definitions)

1. Aesthetics
2. Facade



Fourth Grade ♦ Lesson Four



ACTIVITY

- A. Discuss with students their homework assignment from Lesson No. 3. Review the functional aspects of the building visited.
- B. Select a variety of buildings from the list of neighborhood buildings in Lesson No. 3, Activity "A." Discuss the size (scale) of the building vs. its function. Use photos of local buildings when they are available. To further enhance this lesson, the teacher can take additional photographs of buildings located in the neighborhood.
- C. Display the included photographs of the different building types in combination with any photographs acquired in "B" above. Select a group of buildings and discuss the aesthetics relative to size and shape, and any distinguishing characteristics. See if the students can recognize the building's function just from its façade or shape (e.g., religious institutions, banks, gas stations, post office, municipal buildings). Compare the facades with one another. Ask the students if one particular façade would be practical for a different function (e.g., Would a grocery storefront work well for a hospital?).
- D. When examining the building and its function, explore whether the function of the building has any special requirements (parking, traffic routes, green areas, benches, drive-through, windows for display, outside areas, waiting areas or lobbies).
- E. Have the students list the main features of the building to help them recognize the building type (e.g., Does the church have a steeple; religious symbol, stained glass, arched or pointed windows? Does the gas station have gas pumps under a canopy, large garage doors, large gas station sign?).
- F. Conclude the activity by having the students create their own façade drawing. Using the photographs provided as a reference, have students choose a building type and draw their own version of the building. Have the students explain how the features of their building represent the building type. Have the aesthetics of the building improved in the students' version?



Fourth Grade ♦ Lesson Four



TEACHER'S EVALUATION

- A. Evaluate the students' understanding of the factors that affect the appearance of a building and their ability to differentiate between building types.



Fourth Grade ♦ Lesson Four



Fire Station



Fourth Grade ♦ Lesson Four



Police Station



Fourth Grade ♦ Lesson Four



Store



Fourth Grade ♦ Lesson Four



Library



Fourth Grade ♦ Lesson Four



School



Fourth Grade ♦ Lesson Four



House



Fourth Grade ♦ Lesson Five



**FOURTH GRADE
LESSON NO. 5**

NEIGHBORHOOD LANDMARKS

LENGTH OF LESSON: 30 - 60 Minutes

EDUCATIONAL OBJECTIVES:

- A. Develop an awareness and understanding of the function of neighborhood landmarks
- English/Language Arts
- Meaning and communication
- Social Studies
- Geographic perspective
 - Civic perspective
- B. Learn that landmarks can be planned or accidental, and what the consequences are of each type
- English/Language Arts
- Meaning and communication
- Social Studies
- Geographic perspective
 - Civic perspective
- C. Develop the ability to produce a drawing expressing student understanding of landmarks
- Visual Arts
- Performing
 - Creating
 - Arts in context
 - Analyzing in context
 - Connecting to other arts, other disciplines and life



Fourth Grade ♦ Lesson Five



ARCHITECTURAL PRINCIPLES:

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MATERIALS

1. Crayons or markers
2. Pencils
3. Sketch paper
4. Examples of neighborhood landmarks (included)

VOCABULARY (See glossary for definitions)

1. Districts
2. Landmark
3. Montage
4. Neighborhood
5. Nodes
6. Paths
7. Spatial



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ACTIVITY

- A. Begin with the question, "What is a neighborhood landmark?" In architectural language, a landmark is a building or prominent object that a community relates to in a given area. For example, when children relate to the location of their home relative to the location of their school, the school is a landmark. List examples of prominent city landmarks, such as the school, a statue, the water tower, the police station, etc. The teacher can use photos, drawings or a list on the blackboard for examples of landmarks. Discuss with the students the importance of landmarks. Landmarks "anchor" a neighborhood. Have students prepare a list indicating landmarks in their community. Discuss spatial prominence of these landmarks in terms of their size and visibility.
- B. Select a specific landmark and discuss the importance of the location of the landmark with respect to pathways, nodes, etc. A node is like a landmark, except it is an area used as a center of activity. An example of a node in a school could be the main office or entry lobby. Discuss the history, symbolism or meaning of the landmark.
- C. Discuss with students examples of the landmarks found within their neighborhoods. Discuss other landmarks the students are aware of beyond their neighborhoods. Through travel experiences, reading, television or movies, students may be aware of famous landmarks, such as the Eiffel Tower in Paris. Prepare a list of famous landmarks for comparison. How do landmarks make us feel? Safe and secure? Proud? Why?
 1. Safe and secure (e.g., neighborhood park shelter)
 2. Proud (e.g., Statue of Liberty)
- D. Discuss landmarks that may be "negative," such as burned-out or abandoned buildings. How do they make us feel about our neighborhood when we see them?
- E. Have students create a drawing of a landmark within their neighborhood or city area. The teacher may offer examples he or she has acquired. The students will choose one of the landmarks on the prepared list from Activity "A" and draw a picture of it, including surrounding features such as trees, etc.



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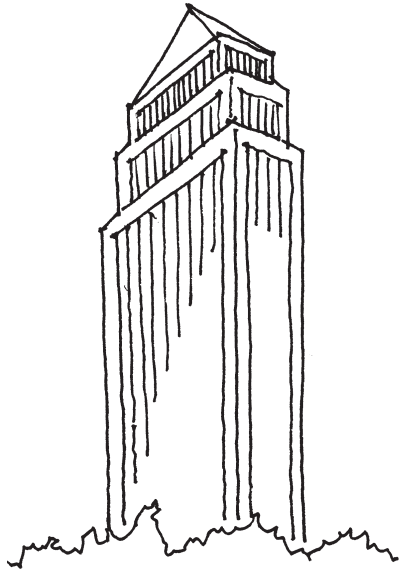
- F. Extracurricular activities may include photographic surveys of neighborhood landmarks. Class may assemble a "landmark" photographic montage superimposed on a community street map. This may aid in the understanding of how landmarks impact design, planning, social and cultural activities.
1. The drawings the students create will need to have an appropriate scale. Each drawing can then be added to an available map and assembled into the montage.

TEACHER'S EVALUATION

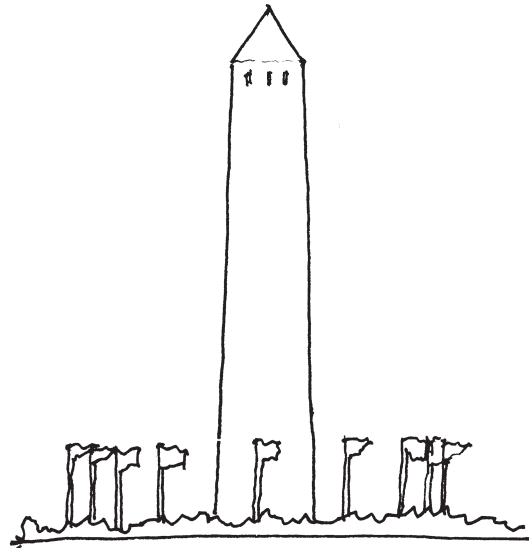
- A. Analyze the students' artwork for:
1. Drawing skills;
 2. Ability to recognize geometric shapes and elements;
 3. Use of artistic skills, including aesthetic use of color and drawing from observational techniques;
 4. Identification and understanding of how neighborhood landmarks affect the immediate environment.



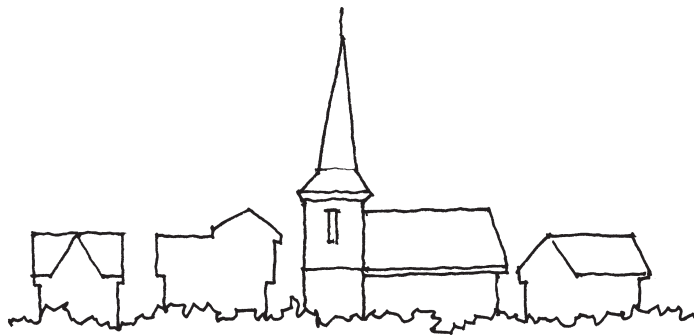
Fourth Grade ♦ Lesson Five



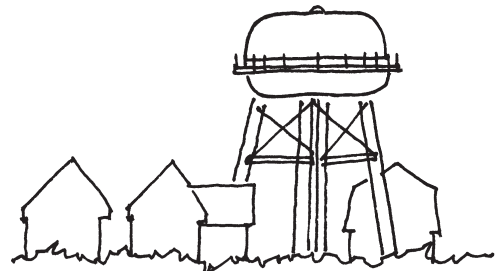
High-Rise Building



Monument



Church Steeple



Water Tower



Fourth Grade ♦ Lesson Six



**FOURTH GRADE
LESSON NO. 6**

NEIGHBORHOOD ACTIVITIES

LENGTH OF LESSON: 30 - 60 Minutes

EDUCATIONAL OBJECTIVES:

- A. Identify neighborhood activities and their spatial requirements
- English/Language Arts
 - Meaning and communication
 - Social Studies
 - Geographic perspective
 - Mathematics
 - Geometry and measurement
 - Science
 - Use scientific knowledge from physical sciences in real-world context
 - Visual Arts
 - Arts in context
 - Analyzing in context
- B. Understand how neighborhood activities typically relate to one another in terms of proximity and function
- Social Studies
 - Geographic perspective
 - Civic perspective
 - English/Language Arts
 - Meaning and communication

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Fourth Grade ♦ Lesson Six



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MATERIALS

1. Crayons or markers
2. Pencils
3. Sketching paper and/or construction paper in various colors
4. Large aerial photograph, city street map or drawing of your city (from Lesson No. 1)
5. "Sample Icon Sheet" (included)

VOCABULARY (See glossary for definitions)

1. Activity
2. Districts
3. Neighborhood
4. Nodes
5. Spatial



Fourth Grade ♦ Lesson Six



ACTIVITY

- A. Many activities may occur in a community. List the various activities that take place within a typical city and the areas available for these neighborhood activities. Examples include:
1. Playing sports
 2. Attending sporting events
 3. Bike riding
 4. Shopping
 5. Playing on playground equipment
 6. Holding private celebrations or parties
 7. Holiday activities (for example, Easter egg hunt, Christmas tree lighting, etc.)
 8. Attending art shows
- B. Discuss how and why spatial requirements vary for the different types of activities above. For example:
1. Some activities, such as football or baseball, require a playing field.
 2. Some activities, like roller-skating or skate-boarding, require a special surface.
 3. Some activities, such as ice-skating, require an enclosure.
 4. Some activities, like spectator sports, require large parking areas.
- C. Using the activity list in "A" above as a guide, develop an activity list specific to your community. Also discuss and note the spatial requirements specific to each activity. The list should include activities (nodes) at the neighborhood level up through the community level. Consider the needs of both the participants and the spectators of the activity, and discuss how much room is required to accommodate them. Mark the activity locations on the large aerial photograph, map or drawing of your city from Lesson No. 1.
- D. Add to the list an icon, or symbol, that relates to each activity area. For example: a simple drawing of a bicycle can symbolize an area that is safe for bike riding; a swing can symbolize a playground area. See examples of neighborhood icons on the "Sample Icon Sheet." Have the students use these examples and/or develop their own examples.



Fourth Grade ♦ Lesson Six



- E. Have students prepare an activity drawing for their own neighborhood, using icons. Together, locate the icons on the aerial photograph, street map or drawing to illustrate the variety of neighborhood activities within the students' community.

TEACHER'S EVALUATION

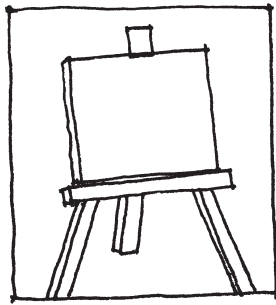
- A. Analyze the students' artwork for:
1. Drawing skills;
 2. Ability to recognize geometric shapes and elements;
 3. Use of artistic skills: aesthetic use of color and drawing from observational techniques;
 4. Identification of neighborhood activities.



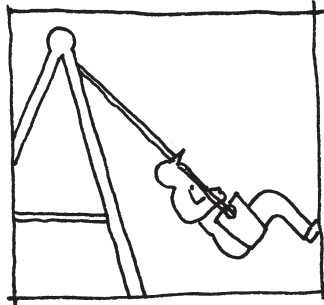
Fourth Grade ♦ Lesson Six



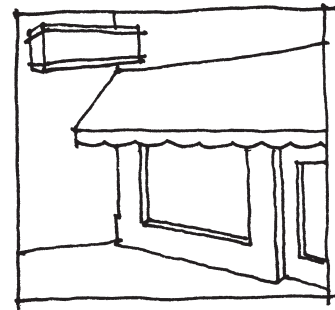
Sample Icon Sheet



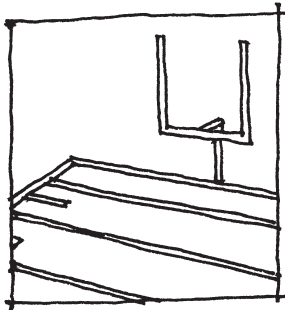
Art Show



Playground



Stores



Athletic
Field



Fourth Grade ♦ Lesson Seven



**FOURTH GRADE
LESSON NO. 7**

**ECOLOGY AND THE BUILT
ENVIRONMENT**

LENGTH OF LESSON:

30 - 60 Minutes

EDUCATIONAL OBJECTIVES:

A. Understand and be able to discuss the relationships between the man-made built environment and the natural environment

English/Language Arts

- Meaning and communication
- Ideas in action

Social Studies

- Geographic perspective

Science

- Use scientific knowledge from the physical sciences in real-world context
- Use scientific knowledge from the earth and space sciences in real-world context
- Reflect on the nature, adequacy and connections across scientific knowledge

B. Understand and be able to discuss how good design of the built environment can preserve the natural environment

English/Language Arts

- Meaning and communication
- Ideas in action

Social Studies

- Geographic perspective

Science

- Use scientific knowledge from the physical sciences in real-world context
- Use scientific knowledge from the earth and space sciences in real-world context
- Reflect on the nature, adequacy and connections across scientific knowledge



Fourth Grade ♦ Lesson Seven



ARCHITECTURAL PRINCIPLES:

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Social structure, culture and the built environment have a direct influence on one another.

Climate and the natural environment influence design decisions.

MATERIALS

1. Aerial photographs of a community showing different levels of development over time (included). Optional: Look at Google earth for the neighborhood or area of the school. Copy and share with the students.
2. Sample sketches of good ecological, environmentally friendly designs and sketch of project that negatively impacts the environment (included)
3. Drawing paper
4. Pencils, erasers and rulers

VOCABULARY (See glossary for definitions)

1. Ecology
2. Environment
3. Interrelate
4. Sustainable
5. Green Roofs



Fourth Grade ♦ Lesson Seven



ACTIVITY

- A. Show the students the two aerial photographs provided ("Undeveloped Farm Land" and "Developed Residential Subdivision"). Point out the changes in the built environment and the natural environment over time. As the built environment has grown, the natural environment has diminished because the amount of available land is unchanged. Some items to discuss relative to developing a site:
1. Building types, i.e. homes, apartments, businesses, factories, etc.
 2. Open natural environmental areas versus man-made built environment areas
 3. Other man-made structures (other than buildings) that affect the natural environment (e.g., roads, railroad tracks, bridges, tunnels, dams, power lines and other utilities, fences, signs/billboards).
- B. Develop a list of environmental programs that have an impact on the community and the environment. Discuss how these programs benefit the community and/or the environment.
1. Recycling
 2. Refuse collection
 3. Tree planting programs
 4. Adopt-a-roadway programs
 5. Public Transit
- C. Develop a list of good ecological man-made designs that have a positive impact on the natural environment. Examples of good ecological designs:
1. Housing layout that is harmonious with the landscape: Roads are curved or winding, following natural contours; houses are sited to take advantage of the views and/or topography of the site; wetlands have been respected and preserved to be enjoyed by the residents; development is sensitive to retaining as many of the existing trees and rock outcroppings as possible (see Attached Sketch: "Good Ecological Design - Residential #1).
 2. Roofs (including Green roofs) with overhangs that extend out far enough to shade the windows and keep sunlight out in the summer when the sun is high in the sky, yet still allow sunlight into the windows during the cold winter months when the sun is low in the sky. This design reduces the amount of heating required in winter and cooling required in summer and therefore reduces energy waste (see "Good Ecological Design - Residential #2").
 3. Buildings that collect energy from the sun for heating (e.g., solar panels).
 4. Buildings that generate electricity by using windmills or water wheels.
 5. Houses and stores placed close enough together so people can walk there.



Fourth Grade ♦ Lesson Seven



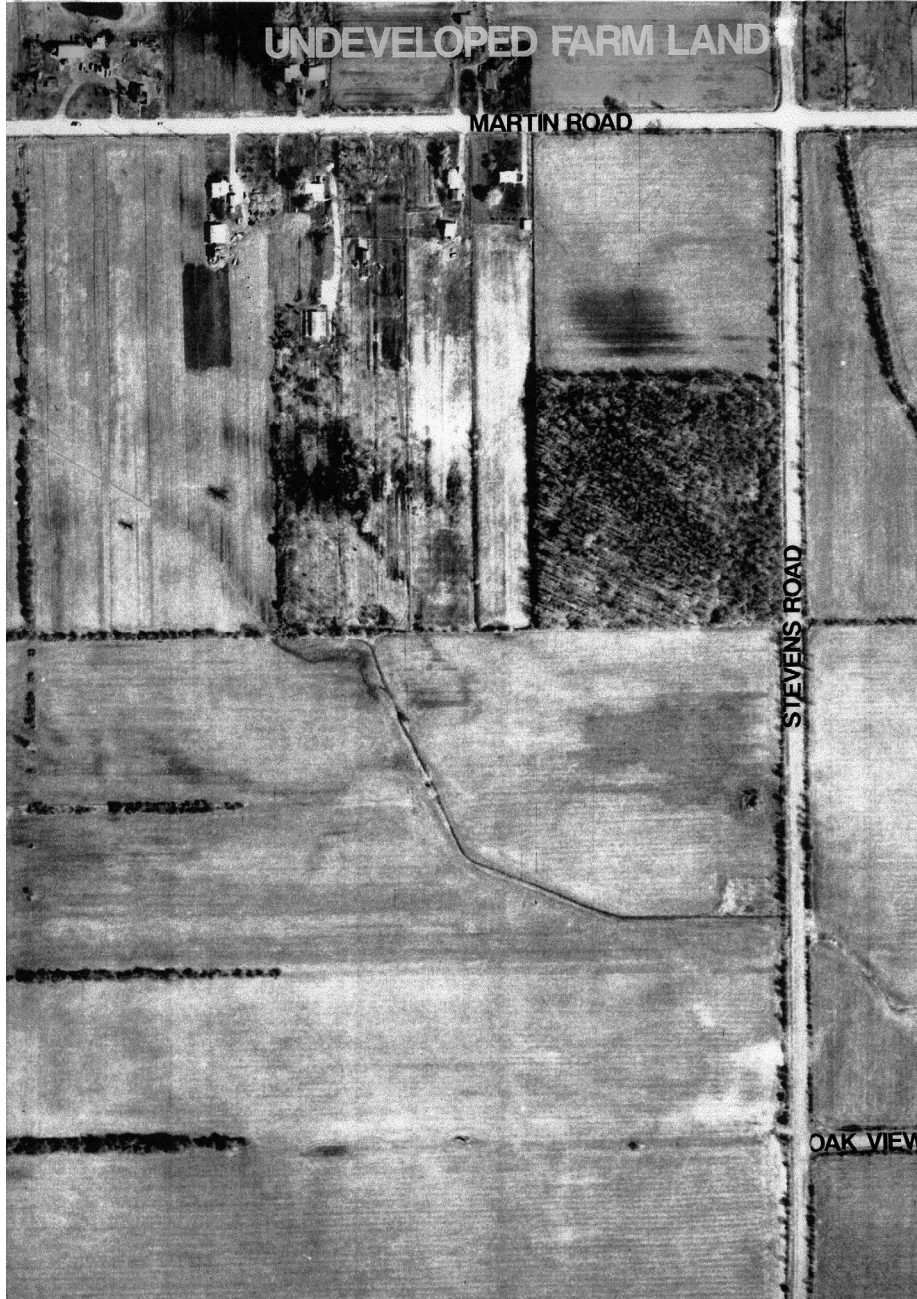
- D. Continue with a list of designs that have a negative impact on the environment. Examples of designs with negative impact:
1. Factories (or homes) that use fossil fuels as their main source of power for manufacturing or heating. These designs pollute the air and use up precious natural resources (see Attached Sketch: "Bad Ecological Design #1").
 2. Homes that use extra electricity because the design has too few windows for day lighting.
 3. Homes that use extra fuel for heating because the windows, walls and roof are not adequately insulated.
- E. Review how the built and natural environments interrelate. In particular, discuss how natural resources are used to build the built environment. For example, we might cut down trees to provide building materials but through good forest management, the forest is replenished. We might remove a stand of trees to build a subdivision but use those trees to produce building materials. We might build a dam across a river so the water flows at a greater rate (pressure); in turn, the flow drives a turbine engine that produces electricity (similar to the flowing river turning an old-fashioned waterwheel).
- F. Have each student select a man-made item that impacts or interrelates with the environment. It can be either a negative or a positive impact item. Some examples are:
1. Buildings with chimneys for burning fossil fuel
 2. Dam
 3. House with solar panels
 4. Refuse or recycle truck
 5. Sailboat
 6. Waterwheel
 7. Windmill
- Have students draw their selected item and explain how the item interacts with the environment.

TEACHER'S EVALUATION

- A. Analyze the students' understanding of the importance of the built environment's role within the natural environment, with feedback-type questions pertaining to building designs, site designs and the surrounding natural environment.



Fourth Grade ♦ Lesson Seven



Undeveloped Farm Land



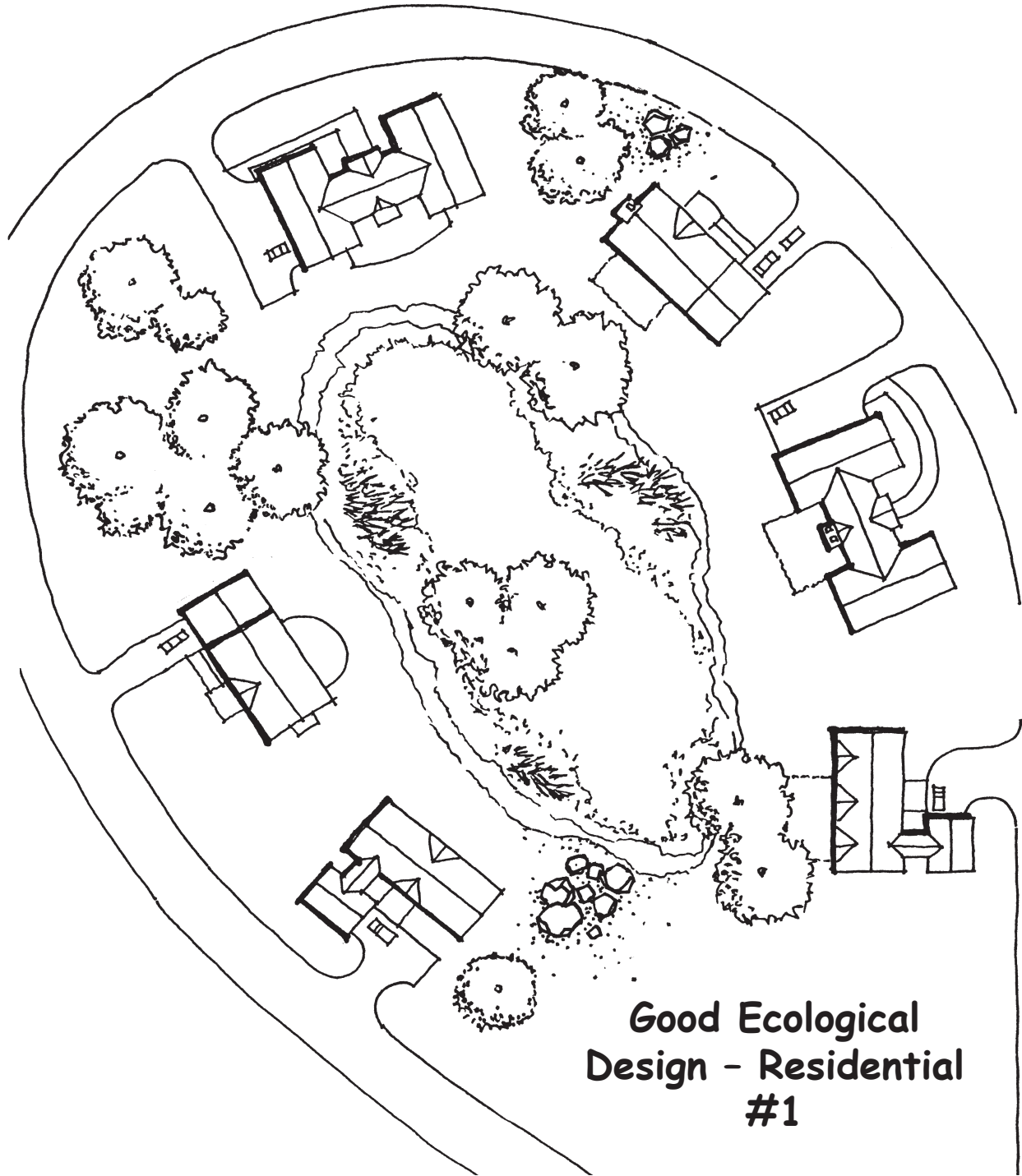
Fourth Grade ♦ Lesson Seven



Developed Residential Subdivision



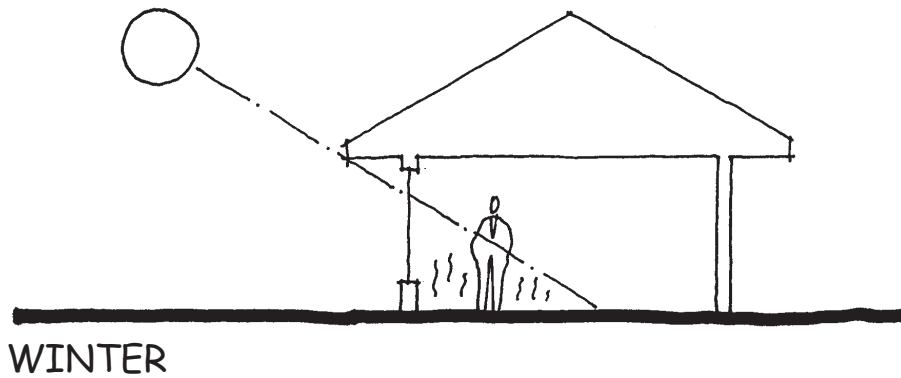
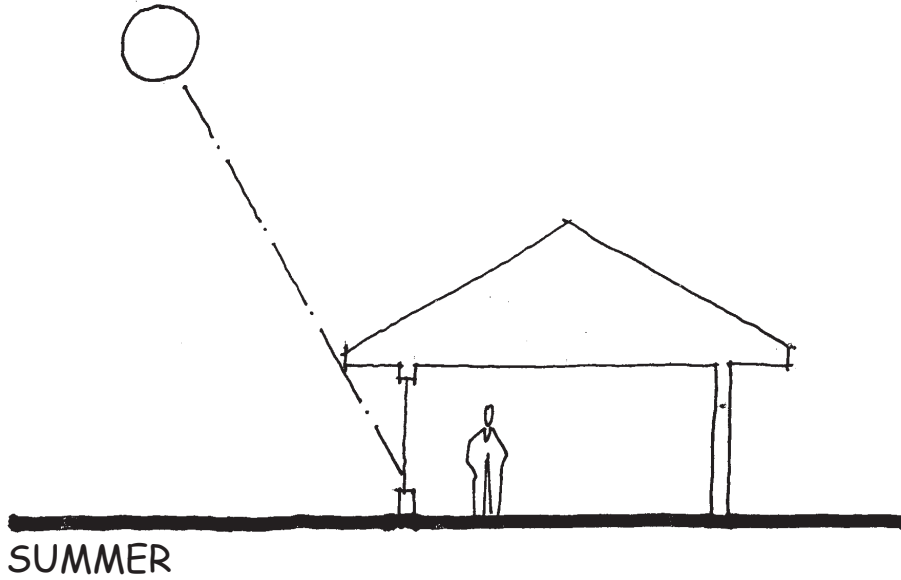
Fourth Grade ♦ Lesson Seven



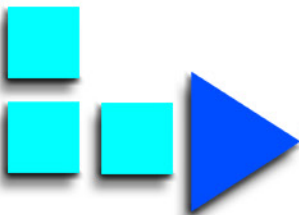
Good Ecological
Design - Residential
#1



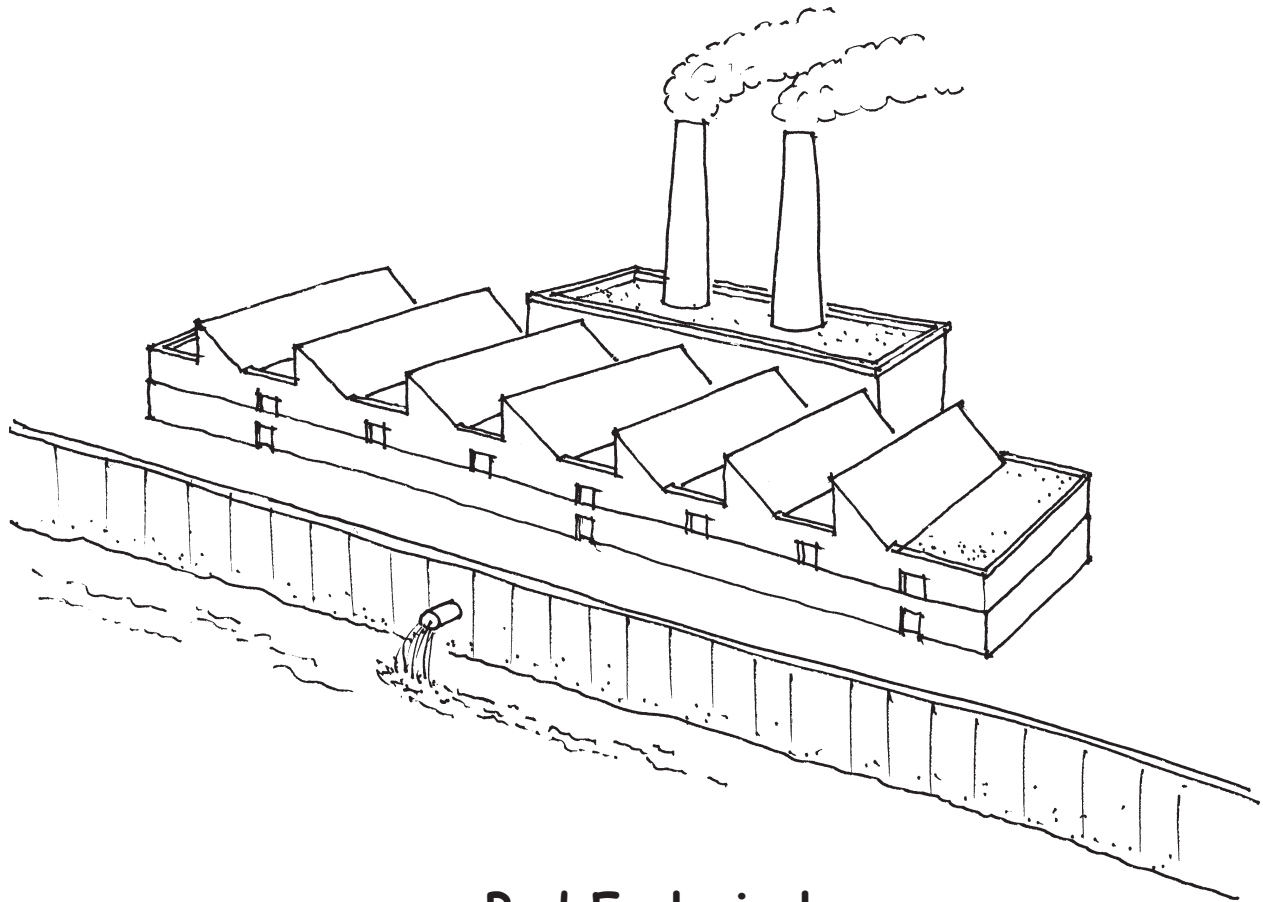
Fourth Grade ♦ Lesson Seven



Good Ecological Design - Residential #2



Fourth Grade ♦ Lesson Seven



**Bad Ecological
Design #1**



Fourth Grade ♦ Lesson Eight



**FOURTH GRADE
LESSON NO. 8**

**DESIGN A COMMUNITY
NEIGHBORHOOD - PART 1**

LENGTH OF LESSON:

60 Minutes

EDUCATIONAL OBJECTIVES:

- A. Develop awareness of geographic orientation and map-reading skills
Social Studies
 - Geographic perspective

- B. Develop knowledge of characteristics that make a community
English/Language Arts
 - Ideas in actionSocial Studies
 - Geographic perspective
 - Civic perspective

- C. Be able to describe observations and express an understanding of the components of the neighborhood
English/Language Arts
 - Meaning and communication
 - Ideas in actionSocial Studies
 - Geographic perspectiveScience
 - Construct new scientific and personal knowledge
 - Use scientific knowledge from the physical sciences in real-world contextVisual Arts
 - Arts in context



Fourth Grade ♦ Lesson Eight



ARCHITECTURAL PRINCIPLES:

Order is the arrangement and organization of elements to help solve visual and functional problems.

Form follows function is a design approach where the form of the building is determined by the function of its spaces and its parts.

Symbolism is an important means of visual communication for architects.

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Climate and the natural environment influence design decisions.

Architecture satisfies emotional and spiritual needs in addition to physical needs.

Past, current and future technologies influence design decisions.

MATERIALS

1. Site map of "Undeveloped Farm Land" from aerial photograph in Lesson No. 7 (included); enlarge or project the map for display (each group will need an enlarged version, to a 30-inch x 40-inch format, for preparation of its respective "Preliminary Planning Diagram")
2. "Example of a Preliminary Planning Diagram" for the "Community Neighborhood Map" (included)
3. A projector or large paper to create and display the "Component List" (see Activity "C") and the "Community Neighborhood Map" (from Lesson No. 1)

VOCABULARY (See glossary for definitions)

1. Landmark
2. Map
3. Neighborhood



Fourth Grade ♦ Lesson Eight



ACTIVITY

- A. Explain to students that as a class they will design their own "Ideal Community Neighborhood" and that it will be located on the "Undeveloped Farm Land" identified in Lesson No. 7.
1. Review neighborhood elements, such as building types, landmarks and neighborhood activities identified in the previous lessons.
 2. In discussion with students, recall the characteristics of these elements and their relationships to one another.
- B. Display "Site Map of Undeveloped Farm Land" (included).
1. Examine the geography: Is there a lake? A river? A mountain? From where will clean water come? Where will birds live?
 2. Using the "Community Neighborhood Map" example from Lesson No. 1, discuss the location of existing components of the students' own neighborhood and how the elements work together.
- C. The following list of components is a starting point for discussion. The teacher should use it to guide the students in the creation of a "Component List" for their "Ideal Community Neighborhood." The list of components the students create should be displayed throughout Lessons No. 8, 9 & 10. The students should be encouraged to be creative in designing a neighborhood that is usable by all members of their community.
1. Socializing centers: parks, senior citizens center, community house, playground, etc.
 2. Education: schools, continuing education, etc.
 3. Nature: hiking trails, dog park, nature center, etc.
 4. Homes: houses and apartments
 5. Sports: football field, soccer field, basketball court, tennis courts, roller-blading/skateboarding area, etc.
 6. Community services: police and fire departments, library, grocery store, dry cleaners, gas station, hardware store, etc.
- Decide where these components might best be located. Take into consideration such things as who uses, or needs to be near, certain services or buildings, and ask students to consider all the members of the community in making their suggestions. For example, what could their parents and grandparents make use of in an ideal community neighborhood?



Fourth Grade ♦ Lesson Eight



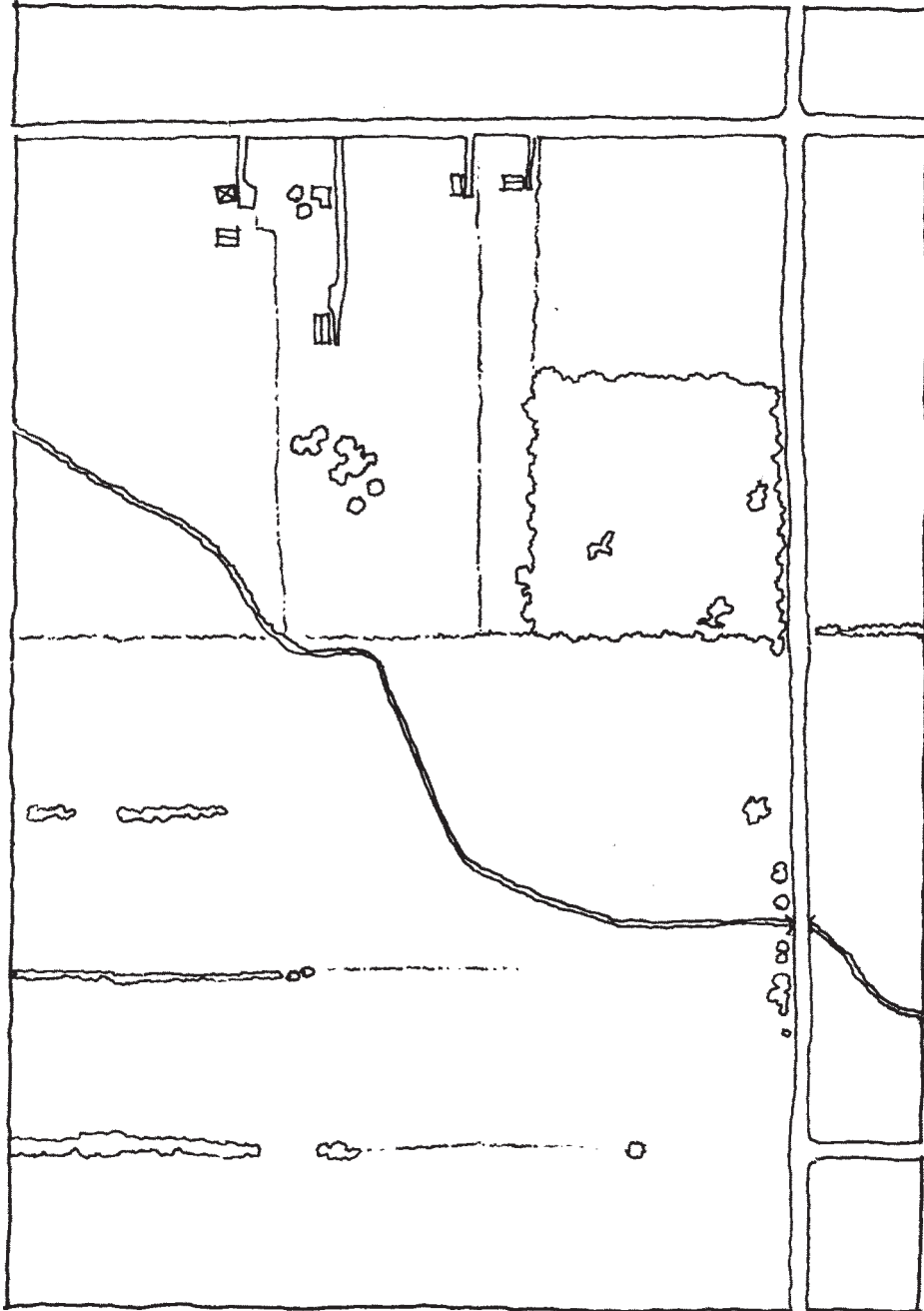
- D. Next, divide the class into small groups, ideally six students each. Have each group use the "Component List" to prepare a "Preliminary Planning Diagram" of their "Ideal Community Neighborhood." These "Preliminary Planning Diagrams" should be drawn approximately 30 inches x 40 inches and displayed next to the list of items in the "Ideal Community Neighborhood." The list and diagrams are the groundwork for Lessons No. 9 & 10. Each group's project is a "Preliminary Planning Diagram" version of the final "Community Neighborhood Map" that will be constructed in Lesson No. 9. Use the attached "Preliminary Planning Diagram" as an example for this exercise. The "Preliminary Planning Diagram" should show relationship zones, not detail.

TEACHER'S EVALUATION

- A. Students can be evaluated on the degree of their participation in the discussions and on the quantity and quality of their observations.



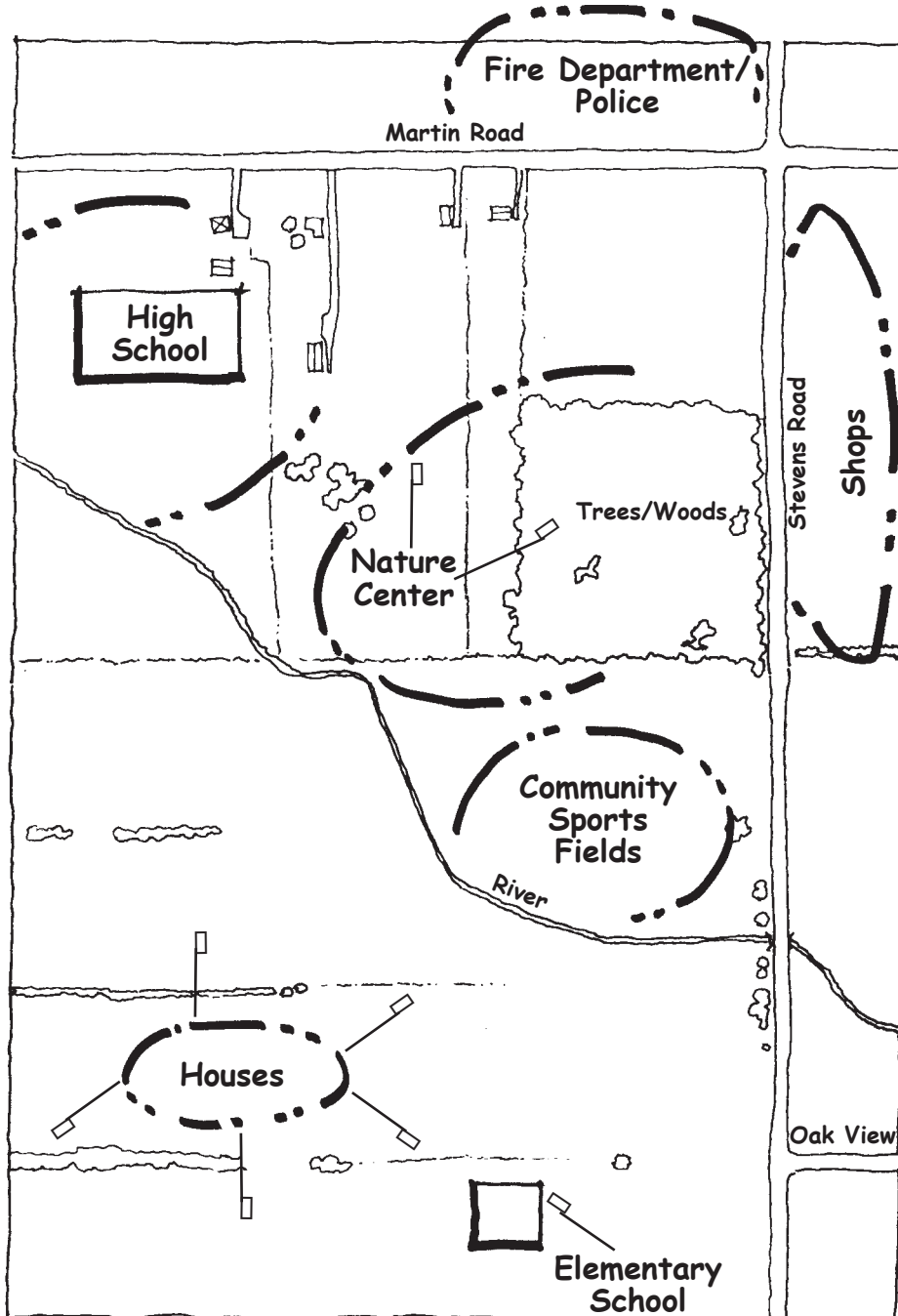
Fourth Grade ♦ Lesson Eight



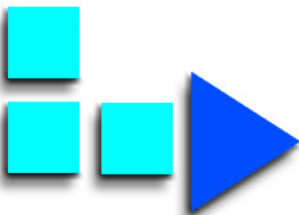
Site Map of
Undeveloped Farm Land



Fourth Grade ♦ Lesson Eight



Example of a Preliminary Planning Diagram



Fourth Grade ♦ Lesson Nine



**FOURTH GRADE
LESSON NO. 9**

**DESIGN A COMMUNITY
NEIGHBORHOOD - PART 2**

LENGTH OF LESSON:

60 Minutes

EDUCATIONAL OBJECTIVES:

- A. Develop knowledge base of neighborhood functions and be able to apply it
- Social Studies
 - Geographic perspective
 - Civic perspective
 - Science
 - Use scientific knowledge from the physical sciences in real-world context
- B. Be able to organize knowledge and use it to analyze problems and create solutions
- English/Language Arts
 - Meaning and communication
 - Skills and process
 - Voice
 - Language
 - Ideas in action
 - Inquiry and research
 - Critical standards
 - Mathematics
 - Data analysis and statistics
 - Science
 - Construct new scientific and personal knowledge
 - Use scientific knowledge from the physical sciences in real-world context
- C. Enhance drawing skills and be able to draw to scale
- Mathematics
 - Geometry and measurement
 - Visual Arts
 - Performing
 - Creating
 - Arts in context



Fourth Grade ♦ Lesson Nine



ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Nature is the model for architectural forms and shapes.

Symbolism is an important means of visual communication for architecture.

Sustainable design of the built environment protects the natural environment.

Design is experienced through human sensory perception.

MATERIALS

1. The class "Component List" and each group's "Preliminary Planning Diagram" created in Lesson No. 8
2. Lined writing paper for each committee to write down ideas and decisions
3. Pencils and erasers
4. A new copy of "Site Map of Undeveloped Farm Land" (enlarged to 30 inches x 40 inches) for each group to begin planning their "Ideal Community Neighborhood" in detail
5. A drawing illustrating an "Example of a Portion of a Community Neighborhood Map/Model" (included)
6. 30-inch x 40-inch rigid foam core board (found at artist supply shops), one for each group, to be used for the "Ideal Community Neighborhood" model
7. White strips of paper to lay out streets
8. Glue
9. Scissors
10. Colored pencils

VOCABULARY (See glossary for definitions)

See Lesson No. 8



Fourth Grade ♦ Lesson Nine



ACTIVITY

- A. Referencing the "Component List" and each group's "Preliminary Planning Diagram" created in Lesson No. 8, the students will continue to design their "Ideal Community Neighborhood."
- B. Have each student in the group to which they belong choose a different component from the list of six items below:
1. Social
 2. Education
 3. Nature
 4. Homes
 5. Sports
 6. Community Services
- C. The students within each group will develop the details of their selected component to be added to their group's map. For example:
1. The social representative decides if there will be a community house and what features it will include. Will there be an outdoor area for functions that occur in nice weather?
 2. The education representative decides what is needed at each school: The elementary school needs a playground; the middle and high schools need access to the sports area; the high school requires student parking, etc.
 3. The sports representative decides if there will be an enclosed arena and how the playing fields will be arranged, and if there will be one playing field that can be used for various sports.
 4. The nature representative decides if there will be hiking and bike trails, a building to house nature studies, a petting zoo, etc.
 5. The homes representative decides the street names, designs a welcome sign, makes sure people living in the houses or apartments have access to all areas, makes sure the streets have access to the park, sports center, etc.
 6. The community services representative will provide good access for these component elements, considering such factors as central location, transportation, public parking, service and deliveries, garage for vehicles, etc.
- The component representatives from each group may confer with their counterparts in the other groups to collaborate on ideas.



Fourth Grade ♦ Lesson Nine



- D. Students are now ready to create their final project. Have them continue in their groups of six students each. The students paste their new copy of the enlarged "Site Map of Undeveloped Farm Land" onto the 30-inch x 40-inch foam core board. They will create new street layouts to accommodate their planning decisions from Activity "C" above and either draw the streets onto the map or cut out and glue paper strips to indicate them. They should be sure to leave room between the streets for the homes and other buildings that will be assembled and added to the project.

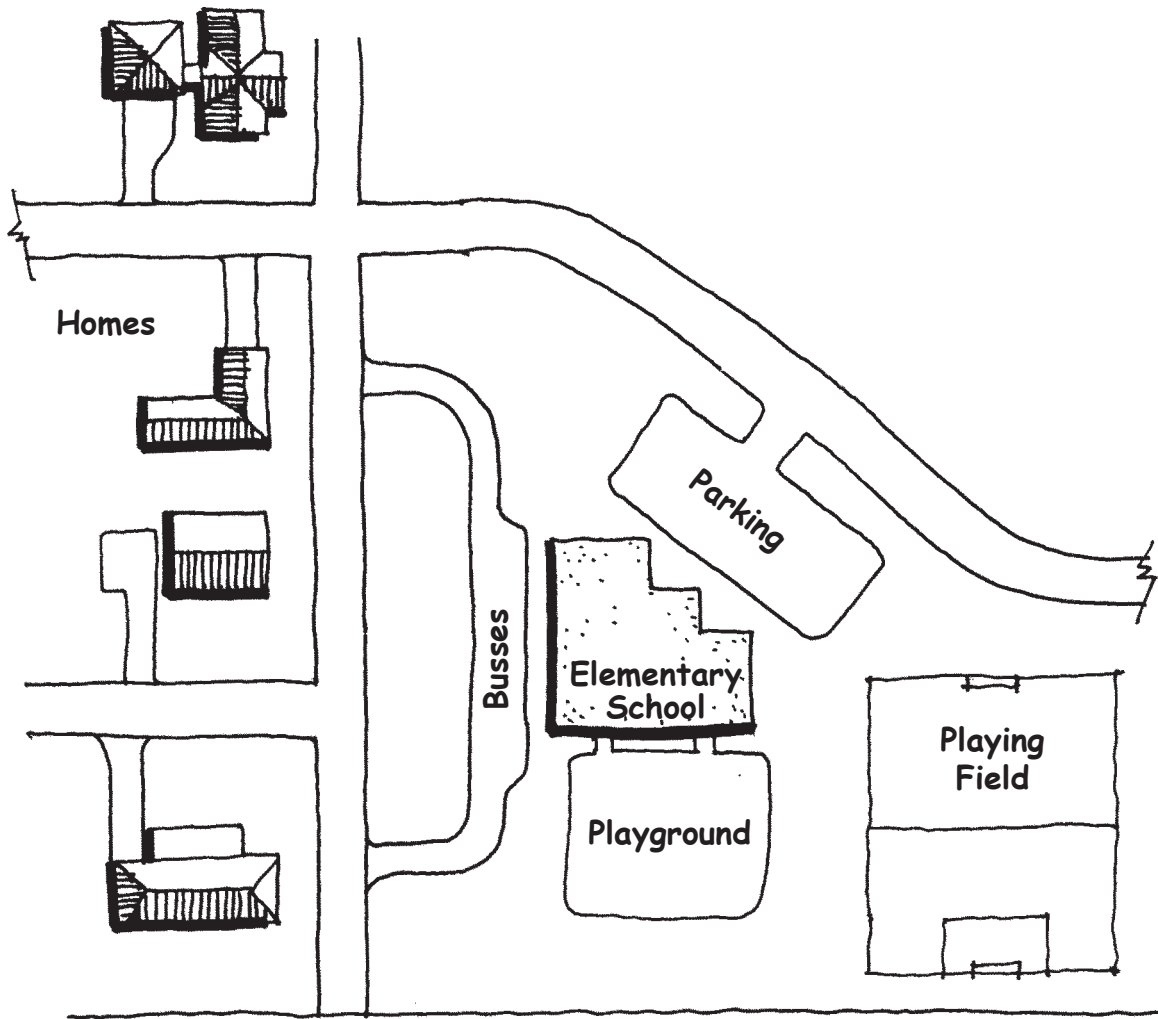
Note: See Lesson No. 10 for suggested sizes of the various building types.

TEACHER'S EVALUATION

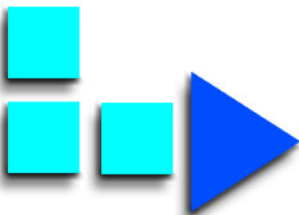
- A. Evaluate the students on the degree of their participation in the discussions and on the quality of their drawing and building layout.



Fourth Grade ♦ Lesson Nine



Example of a Portion of
a Community Neighborhood Map/Model



Fourth Grade ♦ Lesson Ten



FOURTH GRADE
LESSON NO. 10

DESIGN A COMMUNITY
NEIGHBORHOOD - PART 3

LENGTH OF LESSON:

60 Minutes

EDUCATIONAL OBJECTIVES:

- A. Develop knowledge base of neighborhood functions and be able to apply it
- Social Studies
 - Geographic perspective
 - Civic perspective
 - Science
 - Use scientific knowledge from the physical sciences in real-world context
- B. Be able to organize knowledge and use it to analyze problems and create solutions
- English/Language Arts
 - Meaning and communication
 - Skills and process
 - Voice
 - Language
 - Ideas in action
 - Inquiry and research
 - Critical standards
 - Mathematics
 - Data analysis and statistics
 - Science
 - Construct new scientific and personal knowledge
 - Use scientific knowledge from the physical sciences in real-world context
- C. Enhance drawing skills and be able to draw to scale
- Mathematics
 - Geometry and measurement
 - Visual Arts
 - Performing
 - Creating
 - Arts in context



Fourth Grade ♦ Lesson Ten



- D. Enhance map reading skills
 - Social Studies
 - Geographic perspective
 - Mathematics
 - Geometry and measurement

- E. Enhance understanding of three-dimensional space
 - Social Studies
 - Geographic perspective
 - Mathematics
 - Geometry and measurement
 - Visual Arts
 - Arts in context

ARCHITECTURAL PRINCIPLES:

Design is accomplished by composing the physical characteristics of size, shape, texture, proportion, scale, mass and color.

Order is the arrangement and organization of elements to help solve visual and functional problems.

Visual relationships are determined by light, shadow, edges and contrast.

Nature is the model for architectural forms and shapes.

Mass creates form, which occupies space and creates a spatial articulation.

Symbolism is an important means of visual communication for architecture.

Visual thinking is a key to awareness of the built environment.

Sustainable design of the built environment protects the natural environment.

Social structure, culture and the built environment have a direct influence on one another.



Fourth Grade ♦ Lesson Ten



The creative process is basic to design.

Aesthetics is the artistic component of architecture.

Climate and the natural environment influence design decisions.

Past, current and future technologies influence design decisions.

MATERIALS

1. 30-inch x 40-inch foam core board, with design and new street layouts as constructed in Lesson No. 9 (This is the base for the "Ideal Community Neighborhood" 3-D model.)
2. "Component List" from Lessons No. 8 & 9
3. Each group's "Preliminary Planning Diagram" from Lessons No. 8 & 9
4. Paper in various colors
5. Scissors
6. Masking tape
7. Glue
8. Copies of building cutout patterns (included)
9. Various discretionary materials for model enhancements, such as trees (made from matchsticks and green sponge), cars and other objects (made from modeling clay) and people (made from straight pins threaded with colored beads)

VOCABULARY (See glossary for definitions)

See Lesson No. 8

ACTIVITY

Note: As students continue the process of creating their "Ideal Community Neighborhood," pay attention to the distinction between "neighborhood" and "city." In Grade Five, students will be involved in lessons that investigate the city as a whole.



Fourth Grade ♦ Lesson Ten



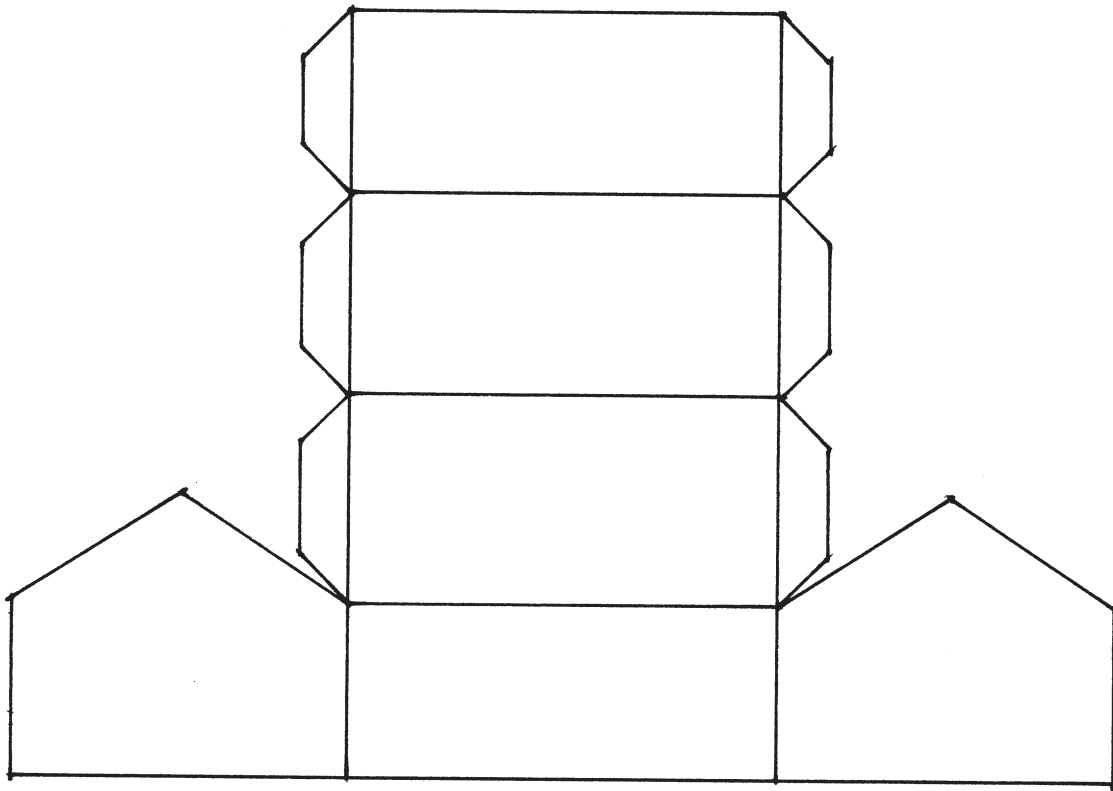
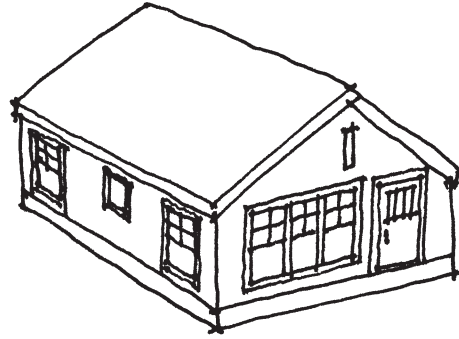
- A. As a class, begin with a review of all the components of the neighborhood developed in Lessons No. 8 & 9.
1. Discuss the location of neighborhood components and their relationships and determine if there are any changes needed before the final neighborhood is assembled. Take into consideration such concerns as who uses or needs to be near certain services/buildings (playgrounds near school), referencing the "Component List" from Lesson No. 8.
- B. Students then break out into their groups of six from Lesson No. 9. Students color and cut out building(s) appropriate to their chosen component.
1. Use the examples of patterns provided for building models. The students may choose to supplement these with their own variations of buildings. The included patterns are at a scale to suit the foam core model base.
- Note: The focus in this lesson should be on the neighborhood planning exercise and not on the design of the buildings. The 3-D buildings are included to enhance the full understanding of the relationships between components.
- C. Add the buildings to the 30-inch x 40-inch foam core model base with the grid of streets.
1. The students position their buildings but do not affix them at this point.
 2. The students cut out paper shapes to represent parking areas, driveways, service driveways for delivery trucks, playgrounds/playing fields and sidewalks/paths, as applicable to the various component building types.
- D. The students draw other enhancements to their neighborhoods, such as additional trees, road names, traffic lights, signs, etc. Be sure to include a large "Welcome to Our Neighborhood" sign.
1. The students can adjust their buildings at this time.
 2. Affix all buildings and enhancements.
- E. When the students have completed their "Ideal Community Neighborhood" 3-D model, have them explain what they did and how they arrived at their decisions. The class may choose to invite parents for a special evening where all of the final 3-D models are displayed. They may choose to present their individual parts of the project to their parents and/or the entire group.

TEACHER'S EVALUATION

- A. Orchestrate a group critique of the final project, asking questions such as the following: What elements work well together? What would you change to improve this design if you were to do it again? While doing this project, what did you notice about your neighborhood that you didn't notice before?



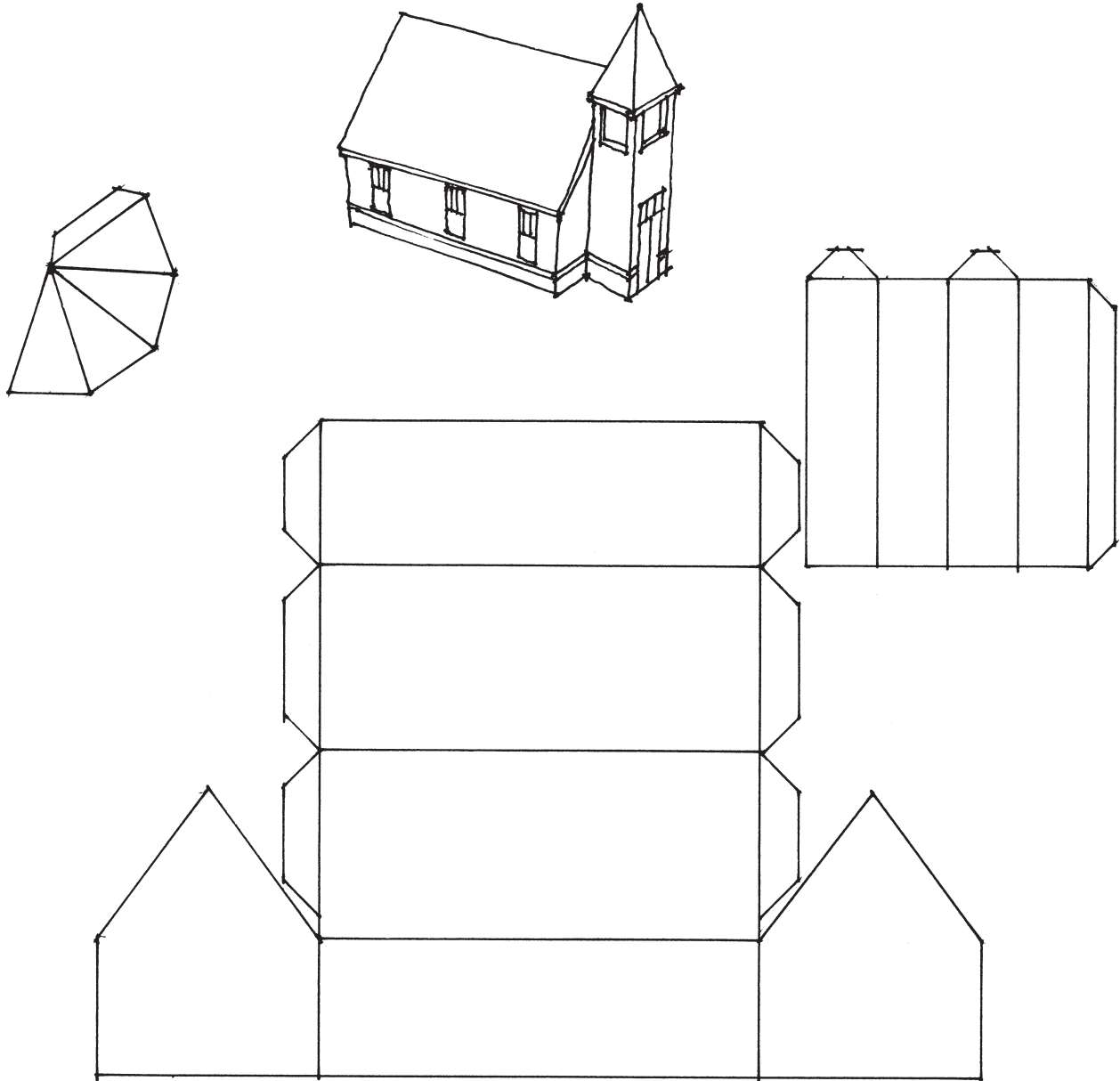
Fourth Grade ♦ Lesson Ten



Building Cutout Pattern #1 - A House



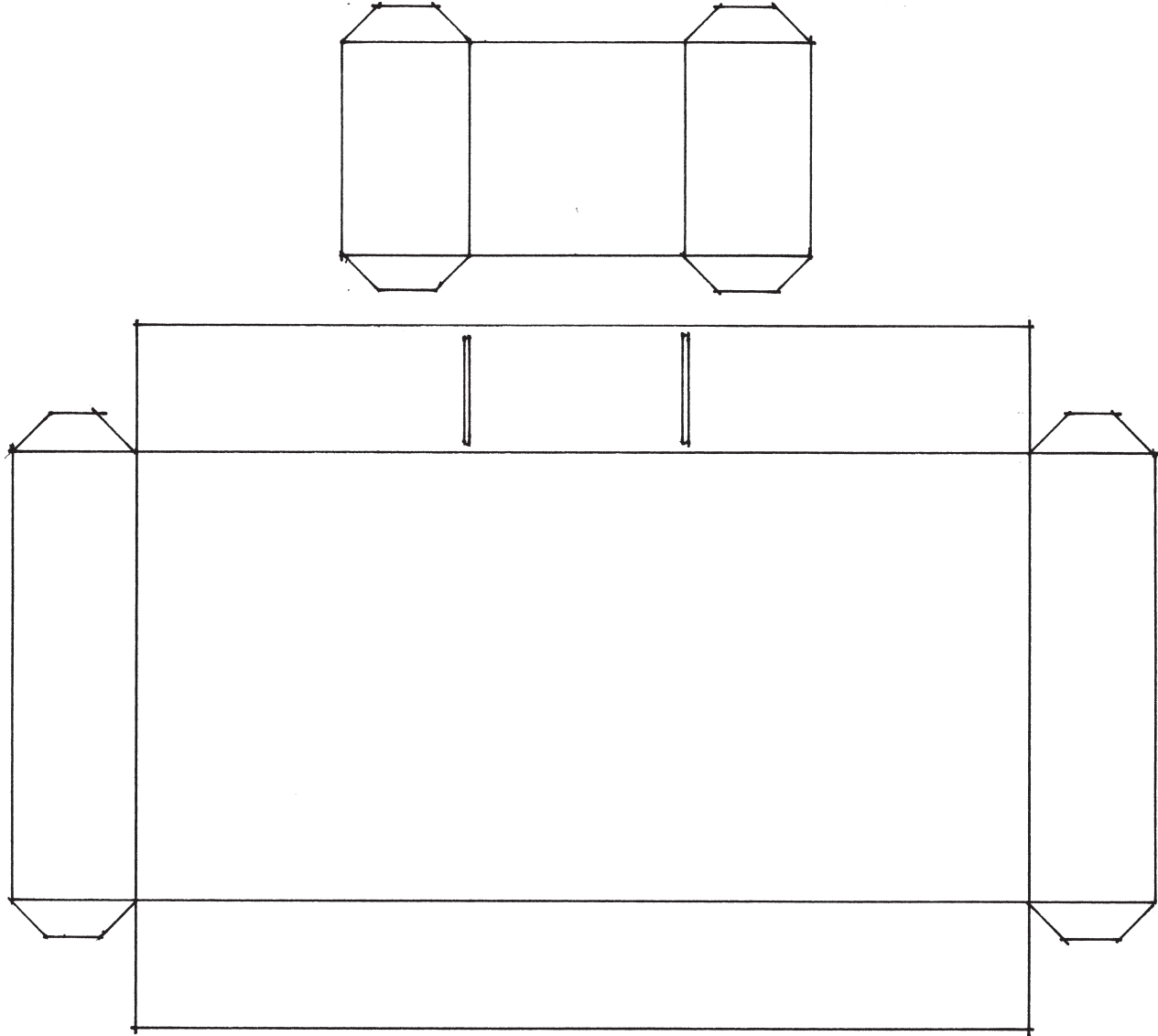
Fourth Grade ♦ Lesson Ten



Building Cutout Pattern #2 - A Church



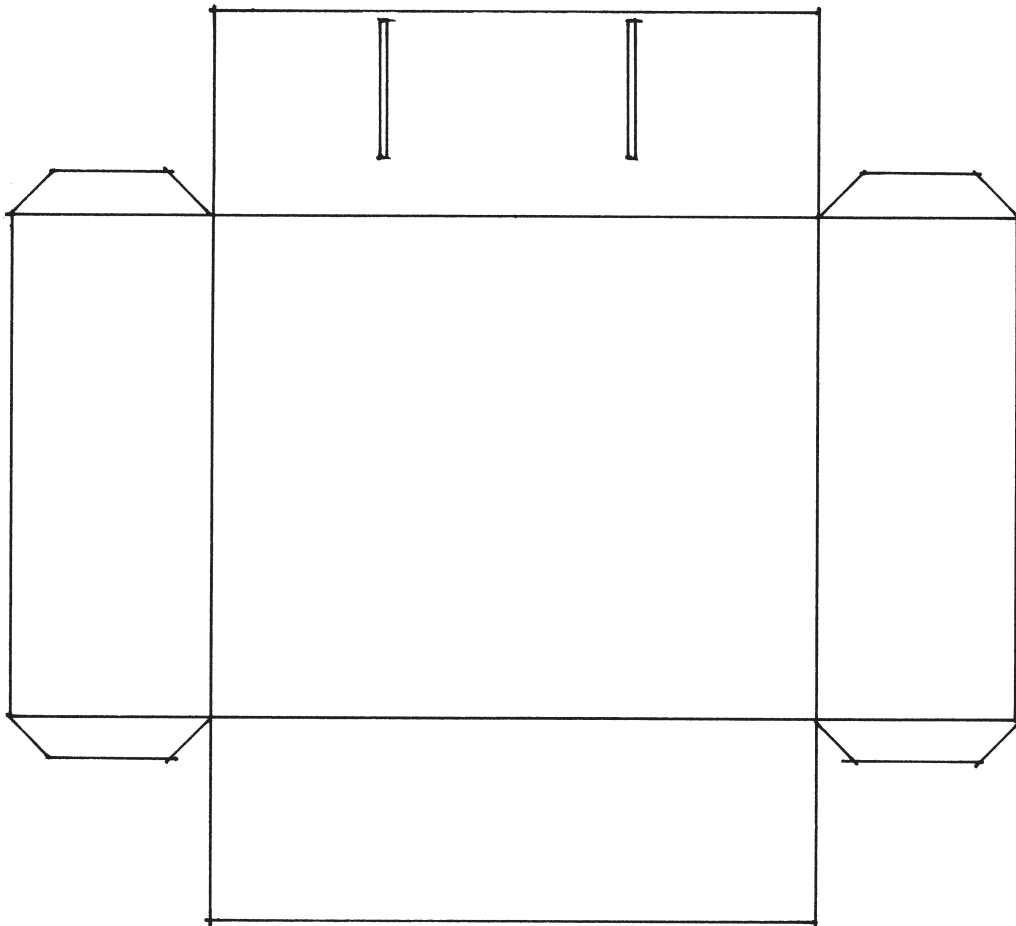
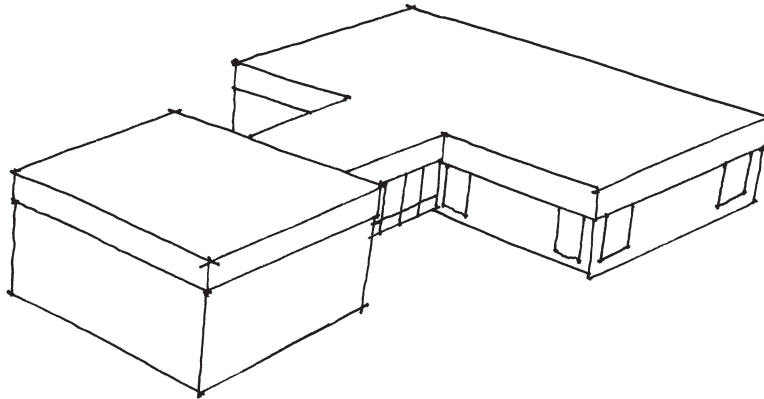
Fourth Grade ♦ Lesson Ten



Building Cutout Pattern #3 - An Elementary School
or Portion of a High School



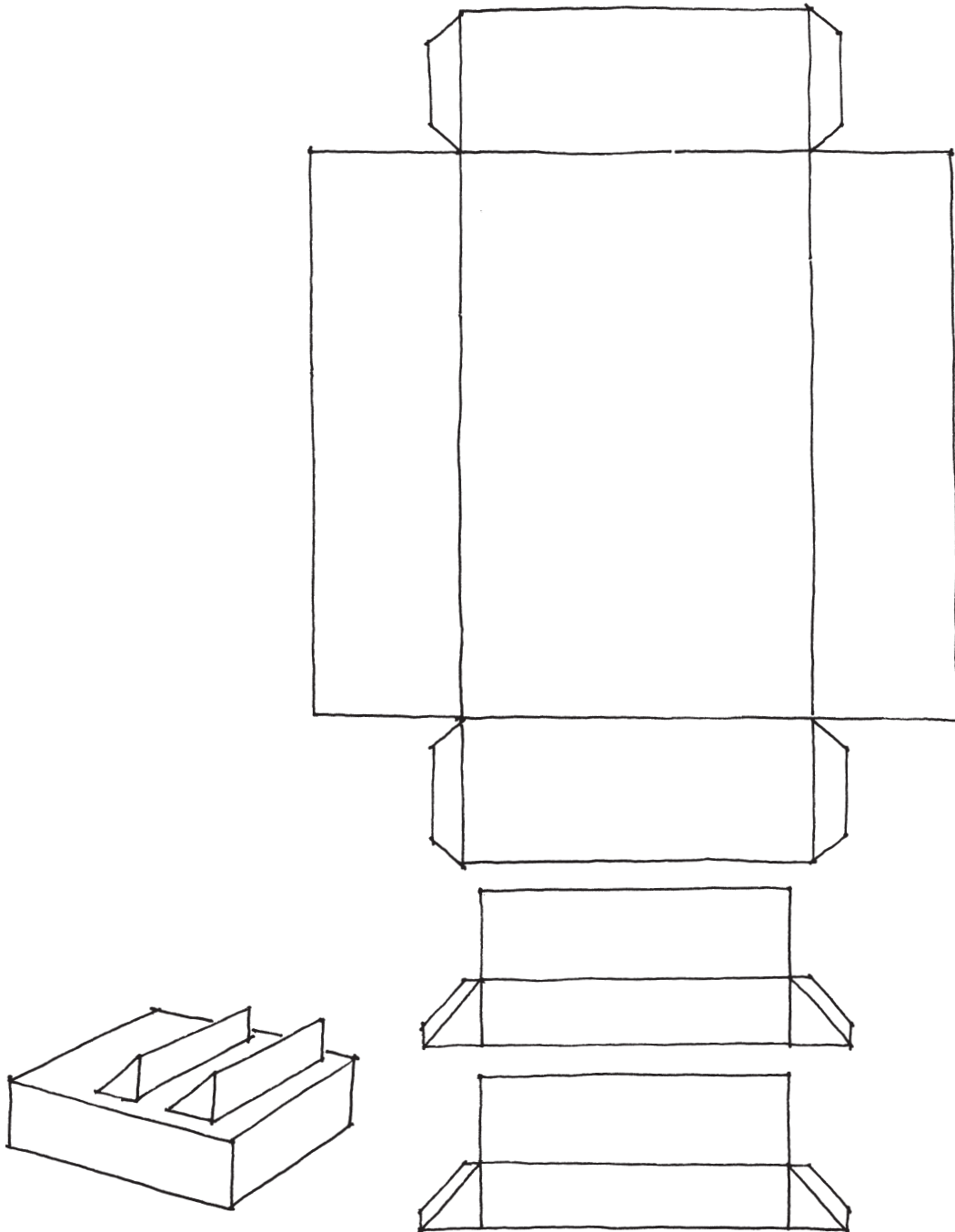
Fourth Grade ♦ Lesson Ten



Building Cutout Pattern #4 - A Gym, to be Added to an Elementary School to Make a High School



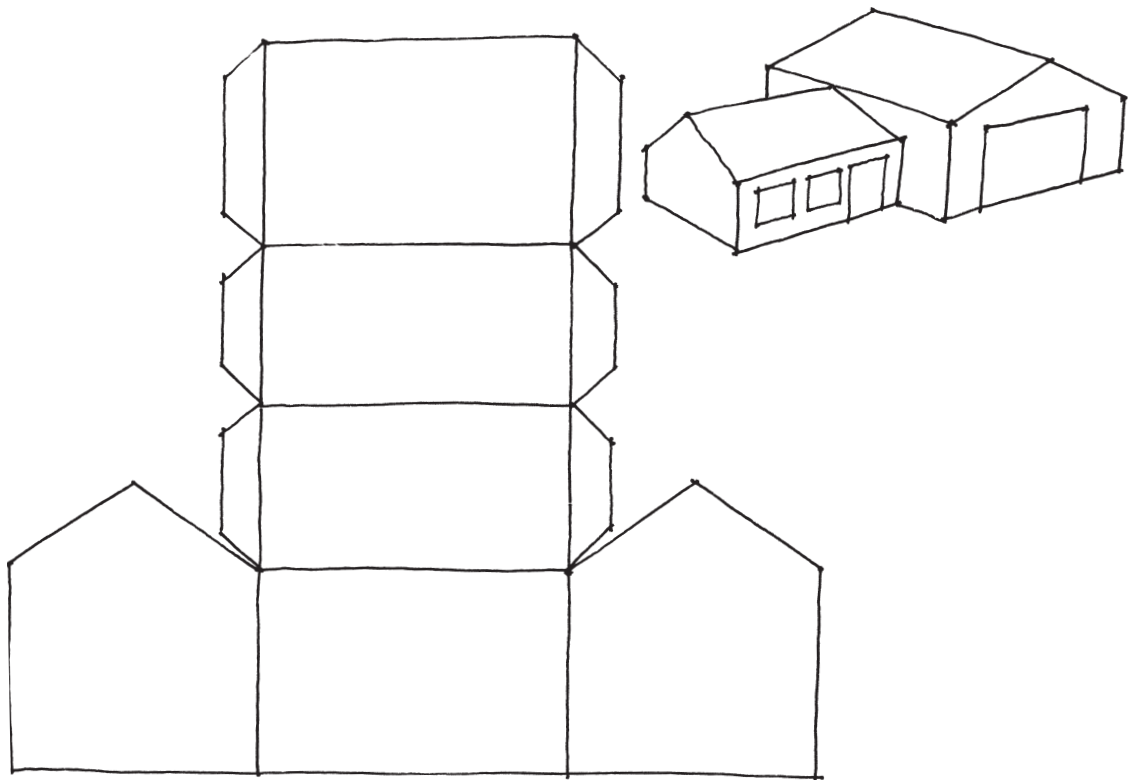
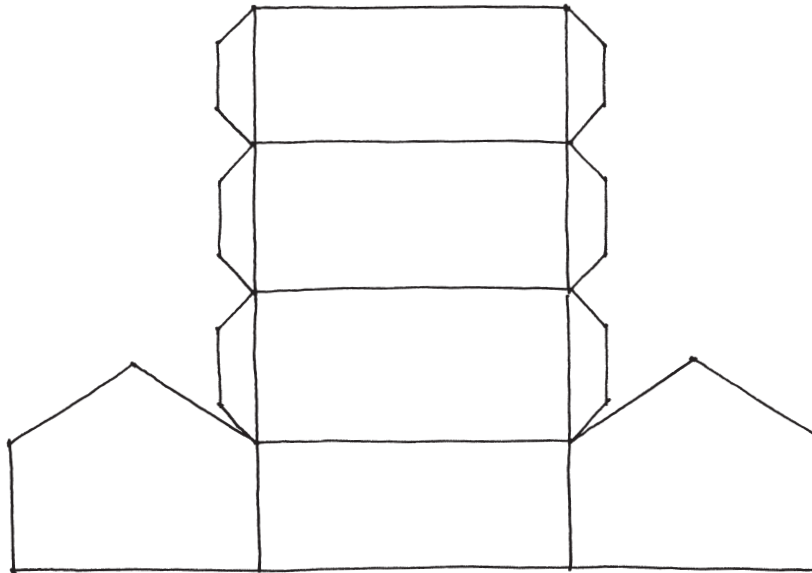
Fourth Grade ♦ Lesson Ten



Building Cutout Pattern #5 -
Commercial Buildings/Shops



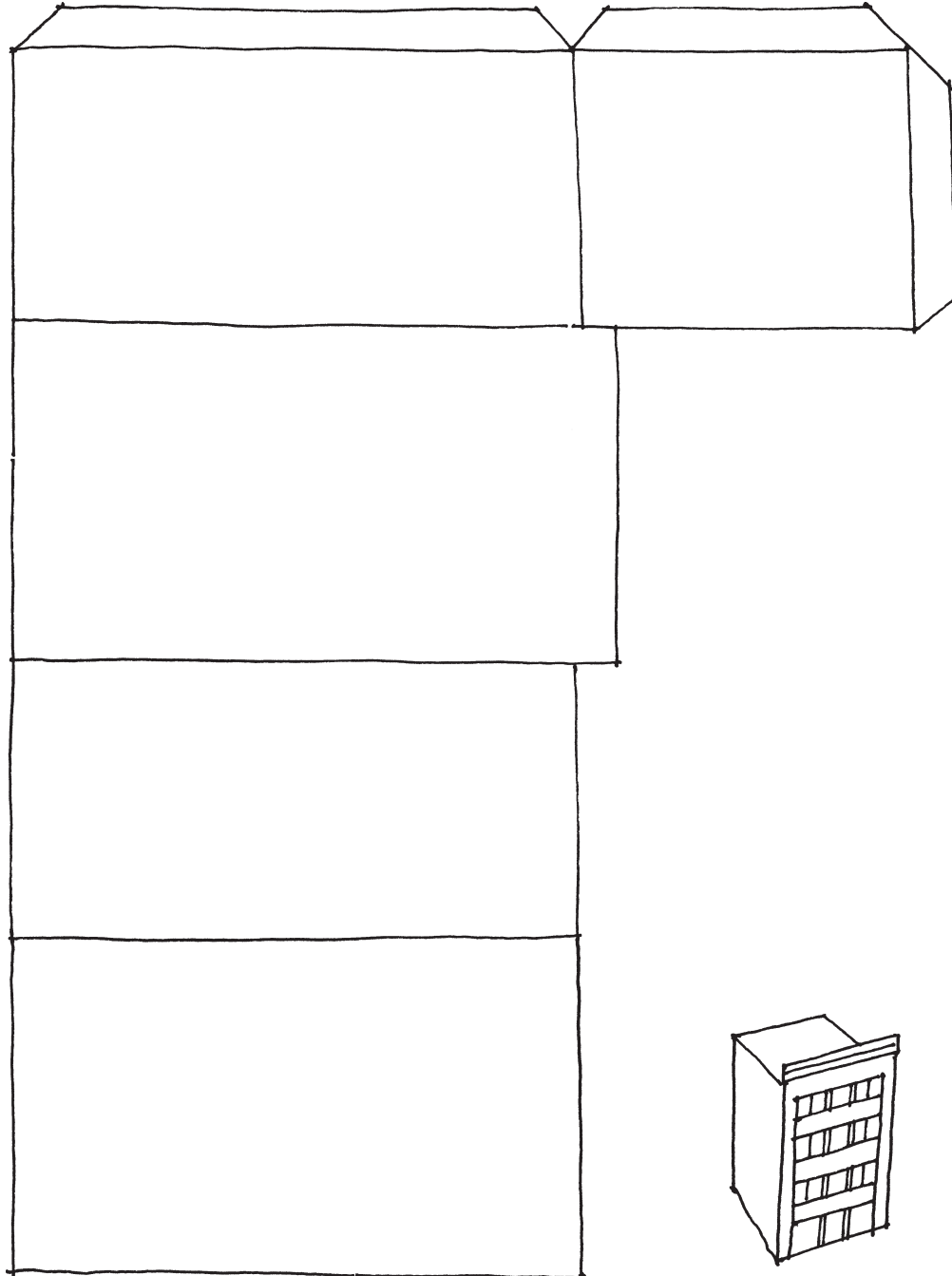
Fourth Grade ♦ Lesson Ten



Building Cutout Pattern #6 - A Library,
Police Station or Community Building



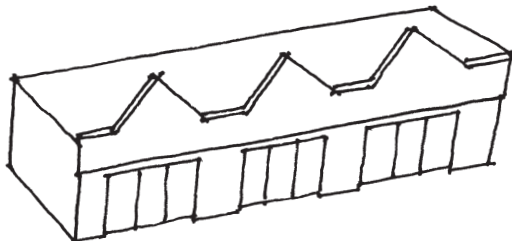
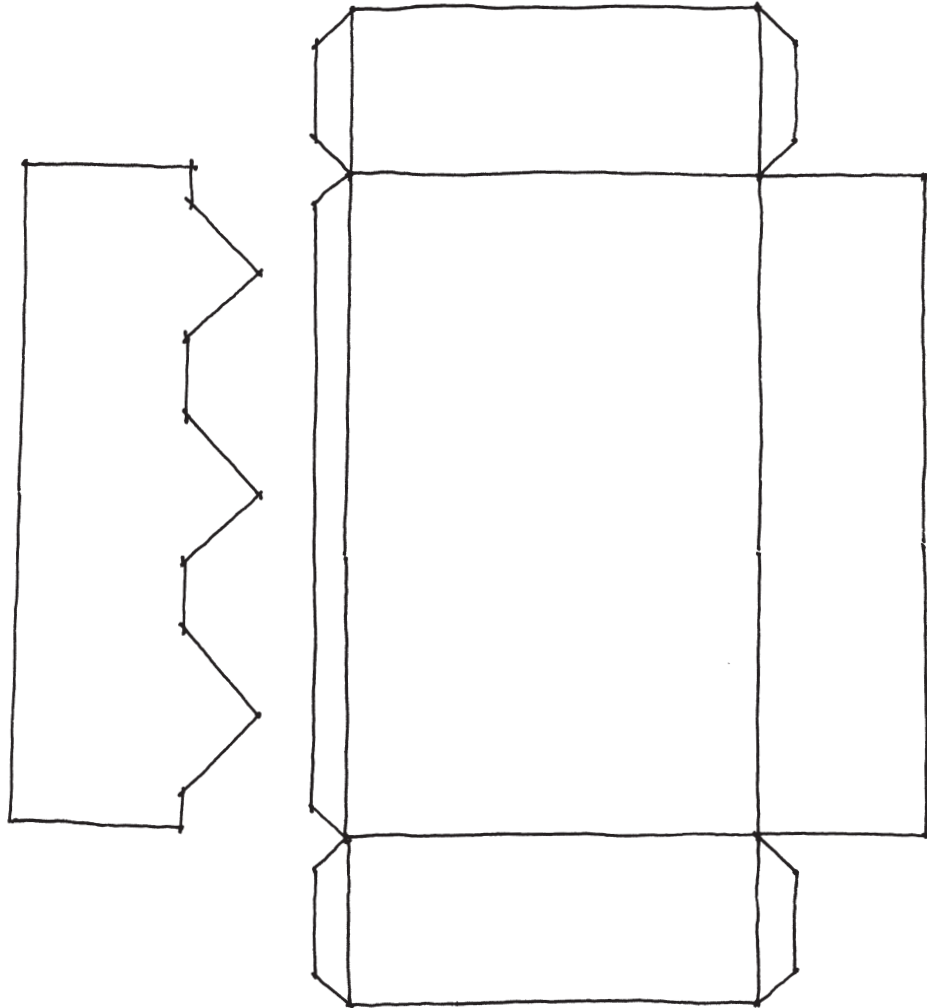
Fourth Grade ♦ Lesson Ten



Building Cutout Pattern #7 - Office Building



Fourth Grade ♦ Lesson Ten



Building Cutout Pattern #8 - Shopping Center

