

*building*  
**HOMES**  
*of our*  
**OWN**®

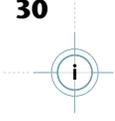


*Teacher's*  
**Guide**



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# Foreword



Welcome to the *Building Homes of Our Own* Teacher's Guide. This manual was developed to help you effectively apply this CD-ROM program to your unique teaching environment.

Because this program is a simulation of a real home building process, it references real products and procedures. Please note that the building materials and building techniques presented in the CD-ROM are representative only, and certainly do not include all possible choices and techniques available today. No building material or building technique has been willfully presented as the only viable option, nor should inclusion or omission of any building material or building technique in the program be interpreted as an endorsement or non-endorsement.

The National Association of Home Builders and *Building Homes of Our Own* would like to acknowledge and thank the following educators who assisted in developing this Teacher's Guide:

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# Introduction



## A New Kind of Teaching Tool

Welcome to *Building Homes of Our Own*.

This is a teaching tool that can provide a distinct, customized experience for every classroom.

The interactive CD-ROM format is one that will be as familiar to students as it is new to some educators. Students will easily navigate the game-like, simulation environment. They will be immediately comfortable exploring the various buttons and icons that guide the process.

Even self-proclaimed “non-techie” educators will soon discover that *Building Homes of Our Own* is a user friendly tool that can open up new teaching avenues and learning opportunities.

The “play” is open-ended; students control the outcome by the choices and decisions they make. They can succeed or they can fail. The program is rich with clues and cues that challenge students to look, listen, read, and make connections. Students discover that careful exploration and good detective work are rewarded.

At the same time, each step of the process calls classroom knowledge into play. Math, Science, English, Economics and Civics take on new relevance with every task the “new builders” complete.

This Guide explains in detail how you can most effectively use *Building Homes of Our Own* to achieve specific objectives and provide your students with new ways to learn and build skills.

## The Home Building Process as Learning Focus

Home building is an excellent subject focus for an education program for several reasons.

- 1 It is a familiar activity that students in every community have seen at some time.
- 2 From start to finish, the home building process incorporates virtually every core subject and thinking skill. To successfully build and sell a home you must understand and use Math, Science, English Language Arts, Civics, Economics, Technology, problem solving, decision-making, time and money management skills and teamwork.
- 3 Building is a real-life process that clearly demonstrates the relevance of classroom activities and skills to the real world.

As you are well aware, schools and educators are under increasing pressure to perform on a number of levels. Your students must achieve measurable proficiency in core subjects, according to established national and state content standards. At the same time, parents, legislators and the business community are calling for more real-world relevance in today's classrooms. Students should understand why they need to study Math or Science and how they will use this knowledge outside the school. And finally, it is expected that students will be equipped by their schools with critical thinking and reasoning abilities, most notably sound decision-making and problem-solving skills.

With these objectives in mind, *Building Homes of Our Own* was developed to provide a hands-on classroom experience that is relevant – to your teaching objectives and to real-world demands.

The program's interactive game-style format challenges students to use core subject knowledge and thinking skills as they take on the

task of building a home – from selecting a site, to selecting a suitable buyer. If they fail to plan or go over budget, they will go bankrupt, or they may build a home that no one wants to buy. Students control the outcome and learn from their own choices and decisions.

## **About the Program Format**

The *Building Homes of Our Own* CD-ROM presents a macro view of the home building/selling process in an interactive simulation game format.

The program incorporates the fundamental concepts and elements that make interactive games excellent educational vehicles. There are obstacles, challenges, mastery of skills, and ultimately, a reward.

- Students can explore options for solving a variety of problems in an open-ended fashion.
- The outcome is entirely in their hands; five players can begin with the same construction loan, choose the same lot to build on and still achieve five different outcomes.
- Students can go through the process many times. Each play can present different scenarios, offering students many opportunities to improve their skills and their scores.
- An interactive, control panel-style navigation bar (the Workspace Bar) provides research, calculating and planning tools including computer-assisted budget management forms, 3D experts and community members, a library and a lab. Students can access all of these throughout the process.
- Audio cues, sound effects, short QuickTime video clips and music further heighten interest and encourage involvement.

- Students encounter obstacles, face challenges and discover economies (accomplishing a task faster and better) as they follow their progress throughout the experience.
- The objective is to receive a high enough score (70% or higher) to be able to move on to the next level of play, with a larger budget and new building scenarios. Scores are based on real-world criteria including the design of the house and its fair market value, as well as the handling of environmental and community concerns. A scoring framework in this guide explains the formula more fully. A top-ten score earns a student a place on the Honor Roll.

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# Getting Started



## The Program at a Glance

The object of *Building Homes of Our Own* is to use all the tools and resources provided to build a well-planned, well-designed home; identify and address any environmental or community issues along the way; and sell the home to the best qualified buyer, for a profit.

Meeting those objectives enables the student to move to another level. There are three phases in the process of building a home, and three levels of building experiences.

Each time a student builds a home, they go through the three phases of the program and complete a variety of tasks in each phase:

**The Site** – Choose a location; select a lot; research and address any problems; select and place a house footprint on the lot; choose outdoor features such as a pool or patio; apply for a permit; grade and clean up your site in preparation for building.

**The House** – Create a floorplan; build the exterior and finish the interior by choosing kitchen and bath styles, staircases and fireplaces; build previously selected additional features such as a garage, a pool, a patio; landscape the house.

**The Sale** – Take a photo of your house; write an ad for the house; run the ad; select buyer from the interested prospects; check credit histories; receive an offer and sell the home.

Students start with an urban/suburban lot and work their way up to higher budgets and greater challenges by garnering a score of at least 70% each time they build a home. See: [Scoring Framework under Assessment and Scoring](#).

As you will see when you go through the tutorial, the program can be “played through” from start to finish, as an individual or team project. You can also focus on just one of the phases (Site, House or Sale) to enhance and reinforce a specific unit you are teaching. You can go to a particular point in the process by using a saved game. How to save a game is explained in this guide.

## The Classroom Connection

### The Site

<b><i>Subject</i></b>	<b><i>Program Task</i></b>
<b><i>Geography</i></b>	Select a location and a lot; learn about the pluses and minuses of a lot's location.
<b><i>English Language Arts</i></b>	Find, read, listen to and interpret information to make smart decisions.
<b><i>Civics/Government</i></b>	Satisfy codes and zoning regulations to obtain a permit, interact with community members and government offices.
<b><i>Economics/Family and Consumer Science</i></b>	Select house design and outdoor features that satisfy buyer needs, learn about "smart growth" and the special needs of seniors.
<b><i>Math</i></b>	Learn how bank loans, interest payments work; place the selected house footprint in optimum spot on the lot.
<b><i>Science</i></b>	Clear trees; grade the lot for building, learn about brownfields, flora, fauna.

## The House

<b><i>Subject</i></b>	<b><i>Program Task</i></b>
<b><i>Math/Art &amp; Design</i></b>	Create a floorplan, compute square footage; and calculate costs based on square footage.
<b><i>Family and Consumer Science/Social Science</i></b>	Design and plan a home that meets buyer needs.
<b><i>Math/Science</i></b>	Construct the house; learn about different building materials, landscaping options.
<b><i>Math/Economics</i></b>	Make choices that balance builder preferences, buyer needs.
<b><i>Economics</i></b>	Learn project management through careful budget planning.

## The Sale

<b>Subject</b>	<b>Program Task</b>
<b>English Language Arts</b>	Create and “run” ad to attract buyers; read and analyze buyer credit histories to find best prospects.
<b>Math</b>	Find the most qualified buyers by calculating credit worthiness, job stability and other factors. Learn about profit goals and setting a realistic sale price.
<b>Economics/Family and Consumer Science</b>	Find out how builder decisions have impacted the value of the home.

## Interactive Elements and Icons

Here is a guide to the visual elements and icons students will use to accomplish tasks and make decisions.

### Navigating with The WorkSpace Bar

This is the master control panel students will use to move through the process and execute the stages of building. It will appear across the bottom of the screen as soon as they select a lot to explore.



1. Resource Panel houses the Library, Community Meeting, Planning, Experts and the Menu, which includes Help.
2. Pop-up menu lists tasks and choices by category.
3. Instructions and information will appear in this area.
4. Action button finalizes a decision such as Purchase, Select, Complete or Plan.
5. The game phase is shown here.
6. Time Line shows tasks completed and tasks remaining.
7. Budget figure shows how much of the original budget is left.

8. Options drawer contains all items and their costs.
9. Budget Watch contains an itemized list of money spent.
10. Tips icon gives user description of the main buttons and icons on the Bar.
11. Minimize button collapses Workspace Bar.

## Navigating The Site Phase

### The People You'll Meet

*As in real-life building situations, students will encounter a variety of people who offer advice and voice concerns.*

#### *Neighbors and Locals*

As soon as students choose a lot, a well-meaning neighbor or local will appear on screen with a greeting, a hint or a warning. These will be different on each of the lots. Neighbors may also appear to protest when a student builder has not addressed a problem with the site.



**How to use them:** Hints, warnings and advice should be a signal to look into the problem. Students can do research in the Library and Planning office; attend a Community meeting and consult with Experts.

## Community Meetings



The Community icon (a group) is located in the Resource Panel at the left-hand side of the WorkSpace Bar (the navigation bar along the bottom of the screen). Roll cursor over a community member to hear comments.

**How to use them:** Community meetings may give the student more information about what the lot challenge may be. Armed with that information, students should look into the Planning Office and check with the Experts.

## Experts

The Experts icon (shirt with tie) is located in the Resource Panel at the left-hand side of the WorkSpace Bar (the navigation bar along the bottom of the screen). Click each of six different experts who can help with environmental, design and engineering problems. Each



lot has a problem that one or two particular experts can help solve. Students must discover which of the experts can help them, and then determine if they want to spend money to buy a detailed report and execute a plan.

**How to use them:** When a student discovers problems on the lot and a permit is denied, they can find the right expert to help by listening to what each has to say. The one or ones that can help them will offer reports and solutions, for a price.

For example, Lot 112 in the Urban location is a brownfield. Students will discover they need to hire either the Environmental Consultant or the Soil Scientist and execute a cleanup plan.

### Planning



A key objective in the Site phase of the program is to obtain a permit to build so home construction can proceed. There will be different conditions that must be satisfied for each lot before a permit is granted. In the Planning Office (building

icon in lower left corner of the Workspace Bar) students will find a wealth of information about their lot through Codes & Zoning and Environment & Health and will apply for a permit. The permit will be “denied” until they discover and fix and problems.

**How to use it:** Students will discover that they need to know a great deal about the land they are building on.

### Research

The Research area is comprised of the Library and Lab, which provide the curious student with information on a wide range of topics. The icon (a book with glasses) is in the upper left corner of the Workspace Bar.



## The Pop-up Menu

### *Footprints*

Once students have purchased a lot, they will select a house footprint (size and shape of their house), choose a type of foundation, and select outdoor features such as a swimming pool or patio. Once students have completed the Footprint section, they must be granted a permit before they can proceed to Site Prep.

### *Site Prep*

Tree removal and grading are the steps under this menu area. Students must remove and pay for all the trees cut down within the boundaries of their house and outdoor footprints. They can remove additional trees as well. (But cut down too many and neighbors may protest.) Grading and clean-up prepares the site for house construction.

## Navigating The House Phase

### The Pop-up Menu

#### *Floor plan*

Students plan the type, number and size of rooms in their home, and place windows and doors. During this stage, a compass at the top of the screen will indicate North. On-screen information will indicate where windows have been placed. This is important on some lots because students will receive more points if they learn about the benefits of smart room placement. They will also position staircases (if they have a two-story home) and fireplaces if they wish.

### ***Building materials***

Students select and purchase the kind of exterior finishing and roof materials they want. They also choose materials for and purchase windows and exterior doors.

### ***Interior***

Selection of flooring, kitchen and bathroom styles, staircase and fireplace styles as well as interior amenities. Amenities include a central music system, sound-proofing and high-speed internet. The sound-proofing option is a subtle, yet important option because points are awarded to the student on Lot 113 who selects sound-proofing from this list.

### ***Outdoor***

Students purchase outdoor features selected in the Site phase at the Footprint stage such as a pool or patio. Landscaping offers students the option to place trees, plants, fences, even asphalt for a driveway. Not only does this enhance the look of the property, it can also add value (as in the case of a lot where erosion or parking is an issue.)

## Navigating The Sale Phase

### The Pop-up Menu

#### *Ad*

Students write and place an ad for their house, including setting a sale price. A picture of the house they have built will appear in the ad along with their glowing copy.

#### *Buyers*

Interested buyers will appear. Students can review credit information and select a buyer. They may want to use the built-in calculator to determine if a buyer will qualify for a loan before they make a choice.

## Help and Tips

### Tutorial

You will find the tutorial immediately after opening the program, on the screen that says, “You are a new builder.” At that point, you have the choice to begin the program or choose the tutorial.

Going through this 20-minute slide-show-style tutorial first will help you become familiar with every step of the program. In the real program, of course, play is more open ended. It is up to students to work their way through the home building process, calling upon knowledge and skills they have acquired in school.

Depending on your students’ ability and skill levels, you may want to encourage them to review the tutorial before using the program.

## **Help**

Experiencing technical difficulties? Check out Help under the Menu icon on the WorkSpace Bar.

## **Tips**

The tips icon (a question mark) on the right side of the WorkSpace Bar will provide a quick reminder of the main buttons located on the Bar. Click on the tips icon to activate it. Then when you roll over a button, a brief description will appear.

## **Saving Games**

The save game function is under the Menu icon in the lower left corner of the WorkSpace Bar, under the Resources panel. Click on the Menu icon and you will open a pop-up window on the desktop that includes the option to Save. The program will be saved under the log-in name you used at the beginning. Students can and should be saving at regular intervals as they go through the building process. The save function works like the save function in Word. When you return after exiting, you will return to the last point at which you saved. (Note: the game is automatically saved at initial sign-in, but you must manually save after that.)

Students may discover there is a way to be a “smart saver” that will enable them to do certain tasks over and change the outcome. For example, a student team has gotten to the Floor Plan stage. They save just before they begin the floor planning task. When they are finished, they realize they are not happy with the floor plan. If they exit without saving, they can open up the program at the beginning of the floor plan activity and do it over. Landscaping is another area where students may want to be smart savers so they can experiment.

## **Saving Games to Create Custom Experiences**

Saved games can provide you with customized teaching tools. If you want to present a civics lesson that deals with local codes and regulations, you would save right before you apply for a permit so students can investigate Codes and Zoning.

Take a look at these and decide if you want to create additional saved games. When you are signing in for a game you want to save for a specific purpose, remember to give it a distinct name that readily reminds you what it is. For example, Civicsgov. might be the name of a program that is saved at the point of applying for a permit.

## How to Print Screens

If you have paint software on your computer (such as MS Paint), you can copy any of the screens from *Building Homes of Our Own*, and then print them.

Open your paint software from “Programs” on the Windows “Start” menu before beginning the game for easiest printing. Minimize the screen so it is available later.

Select and hold down the “Alt” and the “Print Screen” keys on your keyboard to make a copy of the screen.

Then hit the Windows button and the Tab button. That will bring up your navigation bar and give you access to your paint software.

When your paint software is open, select the “Paste” option. This will usually appear under “Edit.”

If you get an message saying, “The image in the clipboard is larger than the bitmap. Would you like the bitmap enlarged?” Select “Yes.”

You should now have a color copy of the game screen, which you can save and print

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# Teaching Strategies



## Adapting for Grade/Skill Level

This program has been designed for middle- and high-school level students. It also can be used as an introduction to the home building process in post-secondary learning environments. The program is effective as a teacher-led lesson or a self-directed project for teams or individuals; it can be applied across a range of ages and skill levels.

Younger students will have little trouble navigating the program because the majority of elementary age children are very comfortable with interactive environments. However, some 6th graders may find the written material challenging. Each building scenario in the program has its own story line. There is a lot of information to absorb and analyze so decisions can be made. Pre-teaching sessions that introduce concepts and unfamiliar vocabulary will help prepare younger students to use the CD-ROM.

You will have a better idea of how you can best use the program in your classroom after you have gone through the Tutorial and reviewed some sections of this Teacher's Guide.

You may want to put students in teams that include students who have stronger communication skills. Using the team approach, you can assign students to specific tasks so that all students can participate and strengthen their skills.

## Career Focus

You can use *Building Homes of Our Own* in career awareness units or classes, using the program to introduce and explore the wide variety of careers and professions connected with the home building process. Each phase of the program presents or suggests the careers involved. Additionally, the Library section has a description of a broad range of careers related to home building. The depth and breadth of the jobs and opportunities will surprise students. Here is a sampling:

**Site:** Architect, surveyor, archeologist, soil scientist, environmental consultant, structural engineer, urban planner, civil engineer, local government officials.

**House:** Developer, builder, general contractor, carpenter, plumber, glazier, roofer, home appliance repair, furniture makers, interior designer, landscape architect.

**Sale:** Banker, mortgage broker, lawyer, real estate professional, credit specialist.

Refer to the [\*Home Building Industry Careers\*](#) sheet in the Teacher Backgrounders section. This information was compiled by the Home Builders Institute from Department of Labor data that identifies more than 100 occupations associated with residential construction. You may want to copy and distribute this sheet for career discussions.

Bring in “mystery guests” whose building industry-related careers tie into your subject – Math, Science, English, Civics, Economics, etc. Have students ask questions that will lead them to find out what the career is and how the person uses Math or Science or English skills and knowledge on a daily basis. Ask the guest to bring in some real-world problems or challenges for students to solve.

## Cooperative Group Learning

Home building is very much a cooperative venture. Each person in the process contributes expertise and experience. They may not all be working directly together, but they all depend upon the other people involved to perform professionally and effectively.

Hold a discussion/brainstorm session to talk about the different kinds of skills and knowledge that would be needed to build a home. Have students go through the Tutorial either individually or in their teams as a warm-up exercise.

Put students into groups and assign roles or tasks to individual team members. One student may be asked to watch the budget and advise on the types of materials and features they can afford to add. Another student might be in charge of researching why they were turned down for a permit. The group can then brainstorm a solution. Another student may be recording the steps the group is going through to accomplish its tasks. Explain that you expect the group to help each member do their job effectively.

Another way to organize the groups is by learning style. Include a kinesthetic learner, an auditory learner, and a visual learner in each group, for example. *Building Homes of Our Own* combines visual, written and auditory information and cues. Students will gather and interpret information according to their particular style of learning. A group made up of different types of learners can share their insights to achieve a common goal.

Make sure to help your students prepare to work in groups. This may be an unfamiliar method of working for your class. What often happens in a group setting – with adults as well as students – is that one or two of the strongest members take over and lead the process. You want to maximize the participation of each member while still encouraging a cooperative effort. Team building strategies have been included in the Pre-Teaching section to help you prepare students to work together effectively.

## **Decision Making/Problem-Solving Project**

Rather than focus on a specific subject, use the program as a decision-making exercise. Students or student teams will explore the stages of decision-making and learn the consequences of choices and trade-offs. As they go through the process, students should monitor their actions and reactions to the challenges and choices they faced. This exercise can be conducted using the entire program or a single phase, such as the Site.

Before the exercise, talk about decision-making and the necessary ingredients for a good decision. Ask students what kind of decisions they might expect to face when they select a lot, design a floor plan or look for a buyer?

In the first level of the program, students can choose from several lots in Urban and Suburban locations. You may want to assign different lots to groups to provide a wide range of experiences.

If you are going to use the House phase of the program, create a family profile for the entire class to use. This family is their client. They must make decisions about a layout, style and home design that will best meet that family's needs. At the end of the exercise, ask teams to report on the decisions they made and how they arrived at those decisions. Would they make those same decisions again? Why or why not?

## **Goal or Question-Focused Scenario**

Give students a set scenario to follow as they go through the program in small teams. A specific objective might be to build a home that is energy efficient, or one that is designed for a family with two small children and a grandmother.

Pose questions that students must answer through their experience with the program.

- What is involved in obtaining a building permit? What is the purpose of requiring it?
- Compare/contrast your initial concept for your home with the home you actually built. What factors altered your early thinking?

## Interdisciplinary Instruction

The home building process naturally integrates disciplines and skills.

Each of the three phases of *Building Homes of Our Own* provides the opportunity to demonstrate the interconnection of classroom subjects as they are applied to real-world problem solving. Here are some suggestions:

**The Site:** Students choose a lot and discover there are environmental and Smart Growth issues to be addressed before they can obtain a permit or satisfy community concerns. Science class explores the societal ramifications of environmental concerns and conditions (endangered species; water run-off, erosion, sandy soil), their impact on the community and on the builder's ability to obtain permits and satisfy local codes.

**The House:** Students design a floor plan and construct a home. Math class analyzes and compares different floor plans (types, sizes and configuration of rooms) as they relate to the needs of different family profiles (no children; two children; older couple, etc.)

**The Sale:** Students write and run an ad to attract buyers, then select qualified buyers and make the sale. English class studies buyer credit history reports supplied in the program, writes an analysis of different buyers' reports and draws conclusions about the impact of such reports on the home buying/selling transaction.

## Team Teaching

In the middle school environment, use *Building Homes of Our Own* as a team teaching vehicle to reinforce basic skills and subject knowledge in a way that sparks interest and participation. Develop challenges or scenarios for one of the phases of the program: Site, House or Sale. The lessons can extend outside the classroom with observation, interviews and hands-on experiences.

You may want to design a unit for each of the phases, and schedule them to run back-to-back over a period of several weeks. This way students experience the entire home building process through the focus of core subjects.

**Site:** (Science and Social Studies Civics, Economics, Geography). Students investigate and address the issues and problems that exist on a particular lot. They may encounter natural or man-made challenges. In their efforts to secure a site they can build on, students will deal with scientific findings, community concerns and regulatory restrictions.

**House:** (Art and Math or Art and Family and Consumer Science.) Students design and construct a home that will meet the needs of a particular family. Two or three different family types can be assigned to student teams so they can discuss and compare different solutions.

**Sale:** (English and Math or Family and Consumer Science.) Students market the home they built and determine how to identify qualified buyers.

## Thematic Instruction

Use *Building Homes of Our Own* – the home building process – as the organizing theme for an integrated unit.

**Math:** the role of accurate measurement, the importance of budgeting and/or learning how to compute interest and calculate time payments.

**Science:** the geographic, geological and ecological factors that affect home building.

**Social Studies:** living in a community; satisfying neighbors' concerns and local codes and regulations.

**English Language Arts:** the role of written and verbal communications in all phases of the process: understanding codes and expert reports; hearing and heeding community concerns; writing ads to attract buyers.

## Time Frames for Use

*Building Homes of Our Own* was developed to provide an experience that could be contained in a single period, developed into a themed week, or crafted into a several-week unit.

Because it can deliver different experiences each time students go through the process, the program can be reused throughout the semester to reinforce learning and revisit key concepts and principles.

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# Pre-Teaching



Before students or student teams begin their building project, it may be helpful to do some pre-teaching.

Most likely all your students know something about home building and construction. They have seen construction in their neighborhoods; someone they know has built, bought or sold a home, or they have relatives in building, real estate or financing.

Because *Building Homes of Our Own* is a simulation of the entire home building process, students will encounter procedures (surveying a site) and terminology (footprint) that are unfamiliar.

While home building and selling are real-world activities students have observed or experienced in their own neighborhoods, they probably don't think of the connection to their classroom subjects and skills.

You have some excellent opportunities for pre-teaching that can greatly enhance your students' experience with the CD-ROM. Here are a few suggested approaches.

## **Building Concepts**

### **The Home Building Process**

What do your students already know about home building? What have they seen or experienced? How many steps can they identify? Helping them see the bigger picture and gain a general understanding of the steps and tasks involved will enhance their experience with the program and give them an appreciation of the complexity involved in the familiar, everyday activity of home building.

The Home Building Institute, the workforce development arm of National Association of Home Builders, identifies 26 distinct steps in the home building process. Students will encounter each of those steps as they go through the program. Chances are students will

be less familiar with the necessary steps that precede the actual construction of the house. Using the resources suggested below, you can put together a live “tutorial” to provide a good overview of the whole process. If your school has a building trades teacher (perhaps you are the building trades teacher), he or she should have industry contacts who can show students home sites in various stages of development.

### **Resources**

***In This Guide:*** Print and distribute the [\*Steps in the Home Building Process\*](#) *handout* located under Teacher Backgrounders, or use it for talking points. You can assign student teams to research and find local examples of various steps. Ask them to bring in photos, literature or written descriptions of the steps to share with the class.

***In Your Community:*** Professionals who represent different disciplines within home building can help students “see” how the steps fit together. Invite speakers who can talk about one or more of the steps. A developer or local builder should be able to talk about planning, obtaining permits, preparing the site and the construction process. You may want to set up a panel including a banker, builder, local government official responsible for codes and zoning, a contractor, and a real estate professional who can explain their roles and walk students through the process. This approach also gives students a look at some of the careers associated with home building.

Home building stores and centers also can be good sources of information and literature.

***Note:*** You can also conduct a panel discussion after students have started working with the CD-ROM program. At that point, students will be able to ask questions about tasks they are attempting to complete.

## **Financing/Loans/Budgeting**

Learning how to plan expenditures and work with a budget to achieve objectives is a key learning of *Building Homes of Our Own*. At the beginning of the program, students will qualify for a home construction loan. Along the way, they will make decisions on how and when to spend their money. At the end, students will look for qualified buyers and try to sell at a profit.

It's a fact that many adults do not fully understand mortgage procedures or how to determine the impact of interest loans. This program provides an opportunity to begin familiarizing students with the kinds of basic financial knowledge they will use in the course of their adult lives.

Start by talking about some of the things students would expect to spend money on when they build a home. They may not realize that construction of the home is just a part of the expenditure involved in building a home. There is the cost of lot purchase and clean-up, the fee for a building permit, and the cost of fixing any problems they encounter before they can build.

Discuss financing and loans. Do students understand the concepts of interest and time payments? It may be helpful to bring in a local banker/financial professional who can talk very simply about these principles. Ask them to help students answer the following: How do you obtain money to buy or build a home? What are loans/home financing? What is interest? How are loans structured and why? What is a mortgage? (Where did that term come from?) Why is it so confusing?

## **Resources**

***In This Guide:*** Vocabulary for The Sale

***In Your Community:*** Banking/mortgage professionals; sample loan applications, mortgage contracts, bank brochures and information explaining mortgage lending procedures and rates, etc.

Help students understand the terminology by putting it in context using actual documents and professionals who can walk students through the process.

Ask students to demonstrate understanding with a short peer quiz game. Have student teams create questions about mortgage terms and practices for other teams to answer.

## **Location, Location, Location**

The program begins with the selection of a site and concludes with the sale of the home. As in real life, the location is a key factor in the success or failure of the final building project. A wise builder identifies and makes decisions about important geographic, demographic, psychographic, environmental and legislative factors.

Create a lead-in to a combined Science/Social Studies project or unit built around The Site phase of the program. Begin by exploring the factors and issues that come into play in the early stages of home building. Work with other teachers to develop discussion questions or issues that can be used across several different classes to create an umbrella theme. What is the connection between civics, environmental science, economics and geography? And, what do they all have to do with building a home?

Review the Site portion of the Tutorial and you will discover that a builder faces a number of issues when deciding to purchase a lot. There may be endangered species living there. The community may

have objections to certain types of building activities. Local codes and zoning regulations can impact building plans. A range of issues and concerns converge to create challenges that require knowledge, problem-solving and decision-making.

### **Resources**

**In The Program:** The Resource Panel on the Workspace Bar includes animated community meetings that reveal local issues, scientific and technological advice provided by six animated experts, a lab where students can view demonstrations of natural phenomena and stress tests, and a planning office where students find out about codes, zoning and permits. *See expanded information about research tools in Basic Skills/Processes.*

**In This Guide:** Vocabulary of Site selection-related terms.

A Lot Challenge Chart explaining the hidden problems on each lot to help you direct students explorations.

**In Your Community:** Local professionals can present real-world examples of the importance of knowing your location. Experts might include a soil scientist, environmental consultant, meteorologist, codes and zoning officials, and community leaders.

## **Vocabulary**

Familiarize students with the “languages” of home building/home buying. Interestingly, each area has its own kind of industry speak: banking/home financing; construction; local government (codes and zoning), real estate (home ads are often a puzzling combination of abbreviation and “code” phrases: “2br, 2ba fixer upper.”)

Assign student teams to create “A Guide to the Language of \_\_\_\_\_.” They can select a particular area or work on one you assign them: site selection, codes and zoning, home construction, home financing, etc.

The “guides” can be presented visually with diagrams, pictures or student photos mounted on boards. The words to be defined can be displayed as call outs or captions that are arranged around the visuals. When completed, you will have an illustrated library on the language of home building.

### **Resources**

**In The Program:** An alpha-order Glossary is available in the Library under the Research button on the program WorkSpace Bar.

**In This Guide:** A printable vocabulary organized by game phase: Site, House, Sale.

Steps in the Home Building Process handout presents the phases and areas of home building that will have distinct vocabularies.

**In Your Community:** Invite a “native speaker” to bring in a list of words he/she uses on the job and explain the language used in a particular aspect of the industry. Use a banker, builder, landscaper or real estate person as the expert who can “talk the talk” and help bring meaning to the vocabulary of home building. What does survey the lot mean? What is framing? What is a mortgage?

## Basic Skills/Processes

### Just The Facts: The Joy Of Research

Beginning with lot selection, students will encounter situations in *Building Homes of Our Own* that require some research and information gathering to facilitate informed decisions. Final scores are based in part on how well students researched and addressed challenges and issues at each stage of the process.

Students may not be familiar with research procedures and may have little experience using data and information to draw conclusions and make decisions. If you present it as detective work, it becomes a more interesting challenge than if you tell them they have to do research.

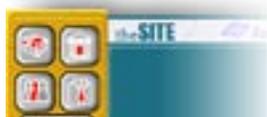
*Building Homes of Our Own* contains a number of research tools and resources that students will also encounter in the real world. Learning to use the tools and techniques effectively and confidently not only provides them with a better learning experience now, it prepares them to be more effective life-long learners, and certainly, more savvy consumers and citizens.

Find out how much your students already know about the kinds of resources they can use to find information, seek advice, or track spending to keep to a budget. These resources might include a library, the internet, other people who have particular expertise or experience, official sources such as government offices, code books and regulations, and financial and planning resources such as budget sheets and cost information.

Explain that as they go through the process of building a home, students are going to get clues, hints and partial information about situations and conditions that require some action on their part. As they determine what to do, they can choose to seek information and advice. Part of their challenge will be knowing when they have sufficient facts and information to make a good decision.

You can explain the following resources to students or let them explore on their own as they use the program. The degree of help you decide to give them will depend on their skill levels and your teaching objectives. As part of the pre-teaching, however, you can let them know that the program will offer a variety of informational tools and resources. Then talk about the value of different sources, using the questions provided on the next page.

## Resources & Tools on the WorkSpace Bar



**1. The Resource Panel** on the WorkSpace Bar (lower left on the bar) Includes four areas that provide information, facts and solutions.



**Community** – Animated community meetings let students hear the local issues and help them determine what might need to be done on their property.



**Experts** – Scientific and technological help is provided by six animated experts: Architect/Landplanner, Archeologist, Civil Engineer, Environmental Consultant, Soil Scientist and Structural Engineer. Experts introduce themselves and explain what they do. Students can have an expert do a preliminary consultation for free, but if an expert finds a problem with a lot that he or she can address, that expert will offer an in-depth analysis for a price. That analysis relates directly to the problems related to the lot.



**Research** – Here students will find a Library which contains an alphabetical glossary of key terms. There is also a Lab where students can view 3D animated demonstrations of physical phenomena such as mud slides and earthquakes, and testing such as the blower door test.



**Planning** – Codes & Zoning and a Permit office are located here.

Discussion Questions:

What is the value of facts? What is the value of an opinion?

What kinds of information/help could you get from community members?

What could an expert offer? Is there a difference between expertise and experience?

What kind of help can a library offer? Are facts about a subject always enough to help you make a decision?

How do regulations and laws help you make decisions?

What kind of source will help you make the best decision? Or can a combination of resources be most effective?

Can you think of an experience you had where several sources of information helped you or a family member make a better decision?

## **II. Budget Watch drawer** (lower right)



Students can access this expense sheet at any time. It will show an updated total of what they have spent up to that point and what they have purchased.

To the left of the Budget Watch is a budget balance figure which shows how much is left of the original budget.

## **III. Options drawer** (above the Budget Watch)

Contains listings of all the items that can be purchased and the cost of each item. This can be a valuable planning tool to help students estimate expenses ahead of time and make some decisions about what they want to spend their money on. Printable copies of these costs are under Teacher Backgrounders.

## **IV. Time Line** (calendar-like icon above the budget figure)

Lists key tasks in each phase of the process: the Site, the House, the Sale. Students can check their progress and see what they need to accomplish next.

### **Discussion Questions:**

What kinds of tools can you create to help you keep track of spending?

What do you need to know to stay within a budget or avoid spending more than you have? What would be the value of determining all the things you want to buy before you make purchases? What kinds of tools can you use to budget time and/or money?

## Team Building

Prepare your students to use the program in a cooperative learning setting by laying the groundwork with some team-building activities.

*Building Homes of Our Own* is an excellent vehicle for group problem solving and decision-making. In real life, the home building process depends upon a number of people cooperating and working together successfully at all stages.

Get your students ready to work as productive teams with some team building, “ice-breaker” activities that will help students bond and relate to each other before they start working together.

Divide the class into teams that are made up of students who don’t always hang around with each other. Build teams that have students with different skills and learning styles (verbal, analytical, visual). Explain that as a group, they are expected to maximize the contribution of each individual. These warm-up activities will help them to get to know each other so they can work together more effectively and successfully.

Tell students you want them to share some personal favorites – a season of the year, a color, TV show, a sport (either to play or to watch), etc. – that will give team members some insight into each other. Ask them to set up the format for conducting the activity. Suggest a roundtable “team interview,” a chart or written report, or a round robin discussion.

As they begin working as a team on *Building Homes of Our Own*, remind students that they need to build consensus and still let each member contribute. Explain that groups go through stages, and it is normal to have conflict and competition. Help them work through these dynamics. Share the following objectives and ask teams to keep track of how well they are meeting them as they work through the program:

*Consensus building*

*Shared commitment*

*Collective responsibility*

*Interdependence*

*Peer valuing*

*Open sharing of information*

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# Teaching Opportunities by Game Phase



*Building Homes of Our Own* follows the home building process from start to finish in three phases: The Site, The House, The Sale.

Within each of these phases, there are opportunities to develop a lesson or a unit around a particular aspect of the building process, and relate that topic directly to local issues or real-life experiences.

## The Site

### Lesson Extension Opportunity 1: Local Issues, Real Solutions

<b><i>Relates to</i></b>	The program activity of discovering and addressing lot challenges
<b><i>Skills</i></b>	Research and investigation, decision-making, problem solving
<b><i>Core Subjects</i></b>	Civics/government, Science (Environment, Earth Science), English Language Arts (reading comprehension; interpreting information to formulate a decision)
<b><i>Teaching Resource</i></b>	Lot Challenges Guide in the Teacher Backgrounders section

***In the Program*** – There are 11 lots in the game: 3 Urban, 3 Suburban, 3 Rivers & Lakes and 2 Coastline. As students will discover when they select a lot, each one has some challenge or problem that must be addressed. As in real life, none of the problems are immediately or directly revealed. Students will encounter several ways to find out about a problem. The first is to explore their lot. Then they will need to dig deeper by using the resources in the Resource Panel. There

they can find out what the community is thinking, use the library, consult with experts and search documents and information in the planning office. Ideally, you want students to explore their lots, do research and find out how to address the problems on their own. If they do need assistance, you can use the Lot Challenges sheets section to provide prompts. Review the information on the specific lots students have chosen so you can formulate questions or hints that will guide their efforts. When they have completed this program task and received a permit, use the Lot Challenges information to talk about what they encountered in terms of complexity of issues, people involved, and regulations that need to be satisfied.

Relate the lot challenges students encounter to issues and concerns facing your community, state or region. Select a lot or lots with issues that mirror problems in your area. After students go through the process of discovering and addressing the issues on a particular lot, ask them to research a similar local issue. They might use the internet, news stories, local experts and/or official records and data. Have students bring in their findings and be ready to compare real-life local solutions with what they encountered in the program.

## Lesson Extension Opportunity 2: Science To The Rescue

<b><i>Relates to</i></b>	The Lab and the Experts sections of the Resource panel
<b><i>Skills</i></b>	Research and investigation, decision-making, problem solving
<b><i>Core Subjects</i></b>	Science (Environment, Earth Science), Technology, English Language Arts (reading comprehension; interpreting, analyzing and organizing information to present)
<b><i>Lesson Extension</i></b>	Use the information provided in the Lab and the Experts sections to formulate a team project that links Science and Technology in a problem/solution scenario

***In the Program*** – The Experts and the Lab will be useful to students when they are looking for solutions to the challenges they find on their lots.

***The Experts*** – Six scientists/engineers will “talk” to students about their particular areas of expertise. Specifically students will learn how an archeologist, a soil scientist or a civil engineer might help the builder/new home owner address a variety of problems and issues related to their land.

***The Lab*** – Here students can view and read about forces of nature and man-made stress tests that replicate natural forces.

Real-life solutions start with real-life problems and challenges. Scientists study and research phenomena and natural occurrences. Engineers and other professionals devise solutions and mitigation techniques. (Define this term for students who may not be familiar

with it.) For example, hurricanes are a fact of life for people in certain areas of the country. Missile tests (shown in the Lab) have been developed to determine how well particular building materials withstand the impact of objects hurled at a home with the same force that would occur in a hurricane.

Assign students or student teams to develop a problem/solution presentation that begins with one of the phenomena or tests found in the Lab, or one of the experts in the Experts section. The presentation should cover past, present and future aspects of a real-world situation, documenting the extent of the problem and some famous examples (Hurricane Andrew for example), citing breakthroughs in prevention, mitigation, public education, and discussing the kinds of experts involved. The presentation should provide new, interesting information and perspectives for the viewer/listener. How did the testing mechanism, mitigation technique or prevention tool come about? Sometimes, good solutions are accidental or a side benefit of another effort. How did Science, Engineering, Technology, and other disciplines work together or contribute? What are some future directions in this area?

The finished student product should be in a format that is interesting and interactive for the audience (more than a written report). It might be an audio tape combining interviews and narration, a video, a web site, a diorama, a live skit, or a mural combining illustration, photography, graphs and charts. Take advantage of skills students are learning in art/design, communications, computer, drama or marketing classes and encourage each of the teams to develop creative presentations that can be shown at assemblies, school fairs or even community events.

### Lesson Extension Opportunity 3: Get Smart and Go Green.

<b>Relates to</b>	The Lab and the Experts sections of the Resource panel
<b>Skills</b>	Research and investigation, decision-making, problem-solving
<b>Core Subjects</b>	Science (Environment, Earth Science), Technology, English Language Arts (reading comprehension; interpreting, analyzing and organizing information to present)
<b>Lesson Extension</b>	Use the information provided in the Lab and the Experts sections to formulate a team project that links Science and Technology in a problem/solution scenario

**In the Program** – Students learn about environment and community-friendly building strategies as they begin exploring their lot in The Site phase of the program. Neighbors and experts will advise students about potential problems and solutions as students begin to understand the complexities of building homes that meet the needs of the home buyer, the community and the society.

**Lesson Extension** – NAHB and its Research Center call Green Building “one of the most significant developments in home building in the past three decades.” This resource-conscious approach goes hand in hand with Smart Growth which incorporates land use planning, material selection and environmental protection with the objective of creating livable communities.

Talk to a local builder or HBA chapter to identify communities in your area that are employing Smart Growth and Green Building principles. Arrange a class visit and tour so students can learn first

hand how various organizations and professions come together to create innovative housing solutions.

Assign a research project that allows student teams to choose an aspect of Smart Growth to study and report on. The NAHB booklet “Building Green, Building Better” is a good beginning resource.

***Suggestions for project focus:***

- How does Smart Growth promote community diversity and build strong neighborhoods?
- Research and report on Green Building as a means of brownfield redevelopment and/or smart reuse of urban infill.
- It takes a team. Students interview professionals, experts and organizations who must work together to create a successful green community. They may be surprised to find out the range of expertise it takes and the range of career opportunities green building and smart growth opens up to future graduates — builder/developer, architect, engineer, planner, and environmental scientist, among others.
- Anatomy of a green development. Students produce a case study of a recent or in-the-works development in your area that exemplifies a Smart Growth/Green Building initiative.

## The House

### Lesson Extension Opportunity: Planning to Plan

<b>Relates to</b>	Creating the Floor plan
<b>Skills</b>	Planning, problem solving
<b>Core Subject</b>	Math, Family and Consumer Science, Art/ Design, Social Studies (demographics and psychographics)
<b>Teaching Resources:</b>	There’s More To Decor, a sample lesson that focuses on the role of math in home design and decorating; House Footprint pages under Student Worksheets.

**In The Program** – Once students have obtained a permit to build and have prepared their site (tree removal and grading), they will design a floor plan for their house footprint.

This aspect of the home building process takes thoughtful planning and careful execution. The floorplan should be realistic and workable. On-screen prompts will let the students know if they are missing some vital elements – outside doors, a bathroom or a kitchen. They should also realize hallways, interior doors and windows are important components. They will be able to choose a wide variety of rooms including a game room, family room, various types of bathrooms, an exercise room. And, they will be able to determine the size and positioning of those rooms. If they get too carried away, however, they may end up designing and building a home that no buyer will want.

There are other less obvious factors that will make a better floor plan and a more valuable home. More windows on the south side of the home, for example, will increase its energy efficiency and its value.

Have students practice the floor planning process, before they complete this phase of the program. Put together an interdisciplinary teaching team with math, design and social studies teachers guiding students through the different aspects of sound home design. Start by building a reference gallery of interior photos. You can bring in home magazines and have students select pictures to post on a planning board. Or, you can give students disposable cameras (or one camera per team) to take pictures of interior features of their own homes to use as reference.

The tiles students use to create floor plans in the program represent 4 ft. x 4 ft. squares. For your practice planning, you can use Post-It squares in different colors to represent those 4-ft squares. This will allow students to undo and redo rooms easily. Provide large sheets of drawing paper or butcher paper. Have students draw out house footprints (using pencil first) to represent the overall shape of their house. They can use the footprints on the sample page for reference.

Before they begin putting in actual rooms, encourage students to begin with a family profile. Who will be living in the house? What kind of floor plan would suit their lifestyles? Suggest that they measure the overall dimensions of the footprint they have drawn and think about the rooms they want to include. Students can use the reference gallery of interior photos to plan rooms. If they want to design a plan with three bedrooms, two baths, an eat-in kitchen and family/living room combination, they should calculate the percentage of the footprint they can devote to each of the rooms. (If they start in one corner of the footprint and begin creating rooms without a plan, they may run out of space before the plan is completed or end up with a giant kitchen and a tiny bedroom.) Remind them not to forget outside doors, windows, interior doors and hallways.

When they are finished, ask teams to present and explain their plans to the class. Conduct a post-exercise discussion about the process. What was their experience? How did they use math skills? Why was it important to know about the family that would live in the house? What was the most challenging part of the process? What method of planning and measuring did they find most successful?

As a follow-up exercise, ask students to draw the rooms on one floor of their house. Instruct them to exchange the drawings with other students. Students now become space planners with the task of redesigning the floorplans they have been given, according to parameters you set. For example, the new plan should fit a young couple who likes to entertain, or a family of four with a grandmother, or three college women sharing a house.

## The Sale

### Lesson Extension Opportunity: Figure It Out

<b><i>Relates to</i></b>	Attracting and finding buyers for the home
<b><i>Skills</i></b>	Analyzing information, decision-making, problem solving
<b><i>Core Subjects</i></b>	Math, Family and Consumer Science, English Language Arts (reading comprehension; interpreting information to formulate a decision)
<b><i>Teaching Resources</i></b>	Buyer Be There lesson under Sample Lessons

***In The Program*** – Students will write and place an ad for their completed house and hope their price attracts qualified buyers. They will soon discover this process can be more complicated than they might think. A price that is set too high for the size and style of home may attract no buyers or will generate low offers. Students may have to lower their price and run another ad. Students also may discover that some buyers who seem to be qualified may not have adequate income to afford the house, or may have too much debt to secure a loan. Students also will discover how decisions they made to ignore problems on their lot or design the house a certain way are affecting their ability to sell and make a profit.

Discuss the concepts of net and gross with students. As they work to build their home and sell at a profit, they should be looking at what they are spending. The important figure is not just the house sale price, but the amount they will actually get after they deduct building costs. The net profit is that amount they actually realize after all expenses. If the sale price is \$300,000, and they have spent \$285,000 to build the home, they are making \$15,000 or 5%. If they sell the home for \$275,000 and have spent \$225,000 to build it, their profit will be \$50,000 or nearly 19%.

There is a building industry rule of thirds that says a builder buys a lot for X dollars, spends that same amount to build the house, and adds in that amount on top of the total spending, to arrive at a sale price. If a lot is \$1 million and the house costs \$1 million to construct (\$2 million total), the builder would sell for \$3 million and make 33%, or one-third. This rule or formula does not hold true in all markets at all times, of course. Many builders look at a profit in the range of 10%-20% as more realistic.

Use actual home ads from local newspapers and real estate flyers or booklets to calculate profit levels. Assemble a portfolio of homes of different price ranges. They can be new constructions or existing homes for sale. Beginning with the prices sellers are asking, have students calculate maximum expenses to achieve a 20% profit and a 30% profit. Research lot or land costs for the areas where these homes are. New constructions may be in areas where land is less expensive. After calculating the amount a builder may have paid for a lot, have students determine the amount that could be spent on home construction and features such as a garage or a pool. Note that there will have been other costs such as preparation of the land, permits, etc. Ask students to brainstorm and draw conclusions about the factors they would want to consider up front as a builder/developer or rehabber in different building situations, with a focus on making a certain level of profit:

1. A new development that is farther out from the city or town
2. Rehab of a large single-family home in the heart of town
3. New construction in an already established neighborhood (a tear down)

Some things to think about: Who are the most likely buyers; what do they want? How does the lot cost enter into the overall planning? What costs and compromises (possible zoning or code restrictions) affect the building plan?

If possible, visit some actual construction/rehab sites and set up an interview with the builder/developer about the financial planning process that precedes a building decision.

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# Lesson Starters by Subject



## **Civics/Government**

### **How the Subject Fits**

Building/buying a home means you are part of a community—urban, suburban or rural. And that community has codes, regulations and, most likely, some strong opinions about what is acceptable conduct by their fellow residents.

In the program, if students decide to cut down too many trees on a particular lot, neighbors will protest. Students discover they cannot build without a permit, and they really don't want to build if the community has concerns that have not been addressed.

### **Lesson/Discussion Starters**

- Study local codes and zoning. Why are there particular codes? Why are communities “zoned” a certain way?
- Discuss what would happen if there were not any codes and zoning restrictions. How would that affect particular lots in the program? How could that affect your community? If possible, have students attend a local council meeting where codes or zoning issues are being discussed.
- Who owns what? Have students investigate property rights and property lines in your city or town. Who is responsible for the sidewalks in front of the houses, for example?
- Study community activity and activism in your area. What are the key issues relating to home building, the environment and land issues. Study the origins of these issues/concerns, disputes and resolutions. How have outcomes affected/changed the community? If possible, have students attend a meeting where these issues will be discussed or debated.

For additional lesson ideas, see Teaching Opportunities by Game Phase, Sample Lessons and Civics/Government in Content Standards Alignment.

Many of the lesson ideas can easily involve two or three subject areas. See Teaching Strategies for ideas on ways to integrate the program into different teaching environments.

## **Economics**

### **How the Subject Fits**

From the moment students become new builders and receive a bank loan, they will be making decisions and choices. The concept of economic trade-offs is central to the home building process. Choices they make throughout the process will prompt students to conduct cost-benefit analyses as they weigh alternatives. Students will learn how fair market value is assessed and they will see how their earlier choices impact their ability to sell profitably to a qualified buyer.

### **Lesson/Discussion Starters**

- Discuss the concept of trade-offs. See Economic Content Standards. Standard 1 notes that productive resources are limited. People cannot have all the goods and services they want; they must choose some things and give up others. Ask students to describe examples in their own lives of choices they have made. Have them explain their decision-making process and the outcome of the choice.
- Examine the housing market in your community, and or compare it with the market in a neighboring community. What factors are influencing housing prices and availabilities?

- Ask students to keep a journal as they go through the program to keep track of choices they had to make and to rate their own choices. Were the choices effective for them? How did they impact others?

For additional lesson ideas, see Teaching Opportunities by Game Phase, Sample Lessons and Economics in Content Standards Alignment.

Many of the lesson ideas can easily involve two or three subject areas. See Teaching Strategies for ideas on ways to integrate the program into different teaching environments.

## **English Language Arts**

### **How the Subject Fits**

Written and verbal communications are critical to the process of home building, and to the successful completion of this program.

Home building is a complex process that includes a wide variety of professionals, each of whom has an important role to play in the final outcome. The cast of characters that a successful builder must communicate with may include civil engineers, architects, urban planners, local government officials, community leaders, contractors, carpenters, landscapers, real estate professionals, prospective buyers, lawyers, bankers and mortgage lenders. And each of these professionals will be speaking in their own industry “language.”

The builder also must be able to read, comprehend and correctly interpret mortgage applications, credit reports, plat of surveys, blueprints, city codes and zoning ordinances, expert reports on the condition of their property and materials specifications.

To be successful in this program, students will need to absorb and analyze a lot of information that they will gather through observation, reading and listening (There are a number of Quick-Time videos in which neighbors and experts share concerns and knowledge.)

### **Lesson/Discussion Starters**

- Ask students to keep a journal/diary of their experiences as they use the program. Students may be part of a team and each may have a specific job (keeping track of spending, researching codes and zoning, etc.) In that case, students keep journals from their perspective and share them with each other and the class at the end of the project. Students can record what they learned about building a house, about using the actual program and about working as part of a team.
- Explore the nature of information and how it is communicated. How do we get information? How complete or accurate are different sources? Students may be most familiar with mass media and digital media sources—TV, newspapers, the Internet and e-mail, for example. In the program, they will encounter different kinds of sources and different information forms. As they go through the program, ask them to keep track of the different ways information was communicated to them. Discuss and evaluate those forms as a class activity. Compare and contrast the reliability and usefulness of the following: Hints, clues, opinion, facts, research/experiments, expert advice, laws and regulations.
- Ask students to “correspond” with an out-of-town friend or relative about challenges they face and solutions they arrive at as they go through the building process. They should not actually send the cards, e-mails or letters (the writings will be collected for their portfolios), but they should write with a specific person in mind in order to practice writing in a particular style and tone.

- Using the Community Meetings in the program as a guide, set up your own community forum to discuss and debate a real local issue related to land use, property or real estate.
- Print out some of the expert reports to analyze, as students get to that part of the program (lot investigation in The Site Phase). See How to Print Screens in the Getting Started section. The expert reports are generated when students seek solutions to problems they encounter on a particular lot. There are six experts (from a Soil Scientist to a Civil Engineer) and a total of 11 lots within four different regions. For any one lot at least two of the experts will offer a solution. The others will give generic advice. The reports will contain some technical language and some unfamiliar words, so they are perfect for a vocabulary/writing assignment. Students can analyze and paraphrase the advice, defining unfamiliar terms and phrases. See Resources for suggestions on internal, community and education sources students can use. At the conclusion of the exercise, students should be able to explain the report to the class. To conduct the exercise, assign different lots to different student teams. That will give the teams access to different reports. Help them print out the reports and save the programs so they can return to the home building process after going through the report activity.
- Create guides to the various “languages” spoken by different sectors of the building industry – banking, real estate jargon, construction vocabulary, etc. See Pre-Teaching section for more information.
- Have students create a document-based essay answering the question, Is the highest bidder the most qualified buyer? This exercise would be done in the Sale phase of the game when students set a price for the home they have built and run an ad to attract buyers. They will need to review and analyze buyer information to determine who is their best buyer.

For additional lesson ideas, see Teaching Opportunities by Game Phase, Sample Lessons and English Language Arts in Content Standards Alignment.

Many of the lesson ideas can easily involve two or three subject areas. See Teaching Strategies for ideas on ways to integrate the program into different teaching environments.

## **Family & Consumer Science**

### **How the Subject Fits**

The entire home building process – from selecting a location through the sale of the home – focuses on issues, skills and real-world activities that are core teachings in Consumer Science classes.

### **Lesson/Discussion Starters**

- Set up teams to go through the program as families. Assign them jobs, incomes and particular life styles. Their assignment is to work together to build a home that fits their particular situation and budgetary constraints. At the end of the process, students can explain to the class how their home is compatible with their family profile.
- In the first phase of the program, The Site, students select a location, choose a lot and secure a permit to build on that lot. They soon discover that obtaining a permit means satisfying a number of requirements. Use this task as a springboard for a unit on citizenship – rights and responsibilities. Building permits, codes, zoning and community concerns are areas of “citizenship” that students will encounter as home owners, home builders, or even as small business owners. As part of the unit, have student teams visit your town’s codes and zoning web site or office to find out what codes and regulations apply to their neighborhood, and why.

- Teach scale using actual blueprints. Invite an architect to take students through a home blueprint and explain the symbols. Students can create a symbol key with descriptors for the various symbols.
- Create a hands-on floor plan exercise students can do before or after they create their plans in the program. The floor plans used in the program are divided into squares; each square represents 4 square feet. Print out the sample footprint grids you will find under Student Worksheets. Hand out different footprints to different student teams. The printed plans can be enlarged on the copier to make them easier to work with. Give the teams different parameters for creating a floor plan. For example, ask one team to design a four-room first floor with a kitchen, living room, game room and den (plus a bath and necessary hallways). Set parameters such as, the living room should be 1.5 the size of the den and should have two exposures. Or, the kitchen should be adjacent to the game room and accessible to the living room without going through the game room.

For additional lesson ideas, see Civics/Government and Math in Lesson Starters by Subject, Teaching Opportunities by Game Phase, Sample Lessons and Family & Consumer Science in Content Standards Alignment.

Many of the lesson ideas can easily involve two or three subject areas. See Teaching Strategies for ideas on ways to integrate the program into different teaching environments.

## Math

### How the Subject Fits

Math is everywhere in the home building/home selling process, and therefore, it is an integral part of the program.

**The Site** – The Budget Watch keeps a running account of what students are spending from the moment they select a lot to purchase. Players must manage budgets through the entire process, spending wisely and building what they can afford. Since they control the outcome with their choices and decisions, it is possible to go broke before the house is completed.

**The House** – Angles, area, measurements, formulas and central tendency all have real meaning and practical value in building a home and landscaping the grounds. Precise measurement and careful cost accounting are critical skills.

**The Sale and Critique** – Did students manage budgets well and make a profit? The ability of students to apply Math skills to decision-making will factor into the outcome. Students who achieve objectives and score 70% or higher will “graduate” to larger budgets as they move to the next level.

### Lesson/Discussion Starters

- Bring in a banker/mortgage consultant to explain in plain English how an interest loan works, and the advantages and disadvantages of different kinds of mortgages. Ask the person to “do the math” in steps students can follow and understand. The expert should also be encouraged to engage students in brainstorming and problem-solving using real-life examples.

- Talk about the importance of understanding how interest payments work. Many people don't understand credit card charges, for example, and end up facing significant debt. Again, a banking expert can help students understand the calculations and work with them to read the statement and interpret the fine print of credit card bills and other types of interest loan documents. Bring in a variety of credit offers so students can determine which are the best deals.
- Bring in a builder/contractor/architect who can present real-life "story problems and challenge students to solve them. Ask your "visiting math professor" to set up real exercises for students that require them to measure, convert measurements, figure pricing and determine how much material they would need to accomplish a real task such as carpeting the classroom, or wallpapering the school hallway.
- Have students interview building industry professionals about the problems of calculation errors in the building industry that most frequently result in re-doing work, re-planning a project, or coming to some other resolution. See Resources for suggestions locating building professionals who are willing to participate. During a sharing session, have students report their interview findings with others in a small group. Tell students they should cite the sources of their interviews, explain the problems that were attributed to miscalculations and the solutions (if the problem was able to be resolved).
- Ask students to keep a Math journal during the Site and House phases of the project. This journal should detail students' thought processes and help them to make connections between the processes they used at each stage of construction.

For additional lesson ideas, see Teaching Opportunities by Game Phase, Sample Lessons and Math in Content Standards Alignment.

Many of the lesson ideas can easily involve two or three subject areas. See Teaching Strategies for ideas on ways to integrate the program into different teaching environments.

## Science/Technology

### How the Subjects Fit

Scientific principles and technological application can be evidenced throughout the home building process. A knowledge of the principles of physics, an understanding of the behavior and effects of natural phenomena and an appreciation of the importance of ecological balance are key to sound decision-making in real home building, and in the program.

*Building Homes of Our Own* is an interactive CD-ROM that uses technology to create a simulation of real-world processes. Through the program, students are learning to use technology to gather and analyze information, make decisions and solve problems.

As they advance through the home building process, students also learn how technology changes and impacts our daily lives.

## **Lesson/Discussion Starters**

- What is the role of the “scientist” in shaping everyday, real world endeavors? Use the experts in the program as a starting point for an exploration of careers in science, and real world applications of scientific knowledge.
- What kinds of natural phenomena/climatic or soil conditions affect homes and home building in your area? In the Lab (See Game Elements and Icons), students will find animated demonstrations and detailed explanations of natural occurrences that affect communities and man’s attempts at mitigation.
- Ask students to select one of the lab examples and apply it to recent events in your area or elsewhere in the country by creating a report that outlines the problem and details the solution or remedy. How do people adjust to/plan for a hazardous living environment?
- Have students research a “smart” house (one in which even normally manual functions can be “computerized.”) Contact a local builder or developer to locate a smart house students could tour. Identify and discuss the scientific principles behind the various devices and systems.
- Explore the Science/Technology connection as it relates to home building. Technological applications have solved problems, created new opportunities and also created new problems. Ask students to choose an aspect to investigate, based on what they are learning as they go through the program.

For additional lesson ideas, see Teaching Opportunities by Game Phase, Sample Lessons and the Science and Technology sections in Content Standards Alignment.

Many of the lesson ideas can easily involve two or three subject areas. See Teaching Strategies for ideas on ways to integrate the program into different teaching environments.

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# Sample Lessons



## Sample Lesson #1 — Buyer Be There

<b>Game Phases</b>	Game Opening or Sale
<b>Game Task</b>	Player approved for bank loan; player seeks buyer
<b>The Activity</b>	Students learn the concept of time payments and translate that into a working knowledge of how to calculate payments, set up budgets and begin to manage finances.
<b>Core Subjects</b>	Consumer Math/Algebra, Family and Consumer Science, Economics, English Language Arts
<b>Basic Skills</b>	Critical Thinking, Reasoning, Planning and Organization
<b>Learning Objective</b>	Understand the concept of time payments and use math skills to calculate principal and interest on a loan.

### Materials/Resources

1. Mortgage terms in the program dictionary
2. Vocabulary handout sheet on financing terms
3. A local banker or financial professional
4. Ads for homes, cars or other time purchases that contain interest percentages and down payment information

## Procedure

- Send students to the game Library to find mortgage terms documents for an opening discussion of mortgage loans, principal and interest. Hand out copies of the Vocabulary sheet
- Enlist the assistance of a local banker to help explain and illustrate these concepts in a clear and simple way.

Talk about the three factors described in the loan letter that affect interest payments:

The size of the loan: The larger the loan amount, the more interest will be paid.

The interest rate. (A rate of 8% means a larger payment than a rate of 6%).

The time it takes to pay back the loan. (You will pay more interest for 24 months than for 12 months) Of these factors, time is the one they can control. In the game, players can control costs by keeping the building process on schedule and avoiding delays.

- Ask the class to write the formula for calculating monthly interest on a loan principal, if the interest rate is 8%. Then, have students calculate monthly interest on different loan rates, and total interest on loans of different lengths (36 months, 10 years, 20 years). They can use rates they find in local papers.

- A typical home loan is 30 years. If the game loan is for that period, what is the principal per month? What is the total payment – principal plus interest?

## Lesson Variations

### *What Can You Afford?*

Give student teams a monthly income and fixed expenses: rent, food, clothing allowance, utilities, routine household items.

A local banker/financial planner or consumer finance magazines can assist you in developing realistic figures.

Ask the teams to decide on one major purchase their household wants to make:

- buy a home instead of renting
- buy a car
- buy new major appliances for the kitchen or a large screen TV/entertainment center

Tell teams to determine monthly disposable income after they have taken care of expenses, then identify three different choices of the item they want to purchase.

The choices may be vastly different in price and style. For example, an economy car, an SUV, a convertible. Teams will calculate payments required for each of their choices and report their results to the class. Presentations should include handout sheets of their calculations and conclusions: What can they afford?

### ***Ask the Experts***

Set up a financial “panel” with a loan officer of a local bank, a mortgage broker, a real estate professional and a home developer.

Ask the speakers to set up a home buying scenario using real examples from your area so students can understand the process they would go through to obtain a mortgage loan.

The speakers should encourage students to brainstorm, problem-solve and make calculations as they actively participate in determining the cost of a particular home and how the cost would vary based on terms of a mortgage.

Ask students to compare loan amounts and interest percentages used in the game with those in the local paper, and in other areas of the country.

## Sample Lesson #2 — Who Goes There?

<b>Game Phases</b>	The Site
<b>Game Task</b>	Player is learning about possible endangered species on the lot
<b>The Activity</b>	Students will research and document one local species of wildlife, using their neighborhood as a learning lab. The finished product can take the form of a written/oral report, a photo essay, a museum-style display, a video documentary, a mural or other presentation form. Class projects can be assembled for a school science fair. Students can put their finished projects in their portfolios.
<b>Core Subjects</b>	Science (Biology, Zoology, Earth/Natural Science, Environmental Studies,) English/Journalism
<b>Basic Skills</b>	Research and Investigation, Interviewing and Observation
<b>Learning Objective</b>	Understand and use scientific methods of research and investigation to study life cycles of local wildlife.

### Materials/Resources

1. Information and definitions in the game Library can be a starting point for research.
2. A local zoo, nature conservancy, natural history museum.

3. School library media center (arrange a how-to research session for students.)

## **Procedure**

- Begin with a class dialog on the local “wildlife.” Students probably don’t give much thought to the birds and animals they see everyday. Ask questions such as:
- What kinds of birds, insects or mammals live in your “backyard”?
- Are they endangered? (Talk about what that actually means.)
- What is the relationship between the animal/insect inhabitants and the human neighbors?
- What contributions does this animal/bird/insect make to the life/life style in your community?
- Tell students they are going to research and document an inhabitant of their choice.
- Their methods should include observation, interviews with older residents (grandparents, neighbors), local historical data, library/museum research.
- Decide how students will create their documentation. Talk about creative ways to present their information. You may be able to work with art or photography (video) teachers to create photo essays, videos or “day in the life” murals.

## **Lesson Variation**

Create a class wildlife backyard habitat and have it certified as part of the National Wildlife Federation’s education outreach program. Check out the organization’s web site for details: [www.nwf.org/backyardwildlifehabitat/createhabitat.cfm](http://www.nwf.org/backyardwildlifehabitat/createhabitat.cfm)

## Sample Lesson #3 — There’s More To Decor

<b>Game Phases</b>	The House
<b>Game Task</b>	Player designs floorplan
<b>The Activity</b>	Students will determine the amount of decorating materials (paint, wallpaper, carpeting, tiles) they would need to finish a room or area of a home. They will need to accurately measure the various surfaces of the room, then translate those measurements into quantities of materials. To complete the activity, students can select specific materials they would like to use and calculate costs.
<b>Core Subjects</b>	Math; Consumer Economics; Art
<b>Basic Skills</b>	Problem-solving, Decision-making, Organization
<b>Learning Objective</b>	Understand how math skills are vital to everyday activities. In this lesson, accurate measurements and the ability to set realistic budgets (effective money management) are emphasized.

### Resources

- Access to home decorating ads and home stores.
- Room blueprints or layouts from home magazines or from a building/architecture class in your school.
- Measuring tapes, yardsticks.
- Sample materials: a paint can, roll of wallpaper, squares of tile or carpeting.
- House Footprints under Student Worksheets.

## Planning/Preparation

Determine the scope of the activity you want to conduct.

1. *A one-period exercise in calculating room area and then estimating the amount of materials needed (gallons of paint; boxes of tile; rolls of wallpaper).*
2. *A several-period project that includes a research trip to home center store or hardware store where students compare materials and obtain swatches and samples.*
3. *An activity that involves professionals (decorators, painter) who lead a simulation exercise and explain the role math plays in doing their jobs effectively.*

## Procedure

- Ask students if they have ever been part of a new home, remodeling or observed a remodeling project? Ask why math skills would be so important and how they would be used?
- Invite a professional painter, decorator or remodeling contractor to discuss use of math in their jobs – measuring and cost estimating. Ask them to share stories of what has happened when a room wasn't measured correctly or costs weren't figured accurately.
- Distribute floor plans or blueprints. Assign student teams to plan the décor for their room or rooms, by first calculating the areas to be covered, and then determining the amount of paint, carpeting, tile, wallpaper they would need. For this step, students will need to refer to actual materials specifications. If possible, visit a home center and let students select the materials they would like to use. Have them bring along specification sheets they create so they can take notes and make accurate calculations.

For example, if a team selects a particular tile for a kitchen floor that is 6'x8', they will need to know the size of an individual tile and the number of tiles per box.

### **Lesson Extension: Is the Price Right?**

Conduct an in-class “game show” with student-created math problems on measurement and cost estimating/comparison. Ask students to submit simple “decorating dilemmas.” Assign a “host” who will read the problems and give students or competing teams a set time to come up with the correct answer.

For example, if a box of 6x8 tile is \$18 for 10 tiles, and a box of 12x12 tile is \$25 for 8 tiles, which choice will be the least expensive for a 10'x12' room?

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# **Content Standards Alignment**



## Civics and Government

The following national standards developed for Civics and Government align with *Building Homes of Our Own*.

**Standard 1.** *What are civic life, politics and government? What is civic life? What is politics? What is government? Why are government and politics necessary? What purposes should government serve?*

**The Site** – Students will discover some of the functions of local government when they have purchased a lot and are ready to apply for a permit to build. If they have not satisfied local codes and regulations, their permit will be denied. At that point, students must investigate the cause, identify a remedy and act on it.

**Standard V.**

*What are the roles of the Citizen in American Democracy?*

- A. What is citizenship?*
- B. What are the rights of citizens?*
- C. What are the responsibilities of citizens?*
- D. What dispositions or traits of character are important to the preservation and improvement of American constitutional democracy?*
- E. How can citizens take part in civic life?*

**The Site** – Students will understand that when they build/ own a home they are part of a community; as such they have responsibilities to their neighbors (fellow citizens) and should expect that their neighbors have responsibilities to them.

A member of a community cannot act in a vacuum; his or her actions affect other members of the community and the quality of life overall.

As the user arrives on a lot to look it over, neighbors stop by to comment on the property (giving a greeting or a warning of problems). This alerts the student to the fact that building a home is a community endeavor, and you are accountable for your actions.

As students investigate a lot they want to buy, they can attend a Community Meeting. At the meeting, several attendees will reveal local issues and community concerns.

On some of the lots, an action that students take (such as cutting too many trees) or an inconsiderate house placement can trigger a protest by community members.

[Go to Civics Lesson Starters.](#)

## Economics

There are 12 Standards for Economics education. The following align most closely with *Building Homes of Our Own*.

**Standard I.** *Productive resources are limited. People cannot have all the goods and services they want; as a result they must choose some things and give up others. They will use the knowledge to identify what they gain and what they give up when they make choices.*

**Throughout the Game** – The concept of trade-offs is an underlying theme in this program. From the moment they accept a bank loan at the opening, students are faced with many choices at the site selection phase and as they actually plan, design and build a home; it will soon become clear that they must choose wisely and have to decide what they are willing to give up and determine what the real and eventual costs of their choices will be.

**Standard II.** *Effective decision-making requires comparing the additional costs of alternatives with the additional benefits. Most choices involve doing a little more or a little less of something; few choices are “all or nothing” decisions. They will use the knowledge to make effective decisions as consumers, producers savers, investors and citizens.*

**Throughout the Game** – Sound decision-making is an underlying precept of this program. Students start with a fixed budget (from a bank loan they obtain at the beginning). They start making choices when they select a lot to build on. Each lot will have challenges that they can choose to address or ignore. Their response will have consequences.

**Standard IV.** *People respond predictably to positive and negative incentives. They will use the knowledge to identify incentives that affect people's behavior and explain how incentives affect their own behavior.*

**The Site** – As students select a lot on which to build a home, they will face challenges (environmental, archeological, community/neighbor-related, etc.), and weigh the pros and cons (tied to positive and negative incentives) of taking or not taking certain actions.

**Standard VII.** *Markets exist when buyers and sellers interact. This interaction determines market prices and thereby allocates scarce goods and services. Students will use knowledge to identify markets in which they have participated as a buyer and as a seller and describe how the interaction of all buyers and sellers influenced prices. Also, predict how prices change when there is either a shortage or surplus of the product available.*

**The Sale** – After students have completed their home, they must find a qualified buyer. When they set a sale price, they will be presented with potential buyers and they will be able to study their credit reports and make determinations about which buyers are more qualified. They may have to lower their price, or accept a lower offer to find a buyer the bank approves. They will learn how the building decisions they made affect the final market value of their home and its saleability.

**Standard VIII.** *Prices send signals and send incentives to buyers and sellers. When supply or demand changes, market prices adjust, affecting incentives. Students will use the knowledge to predict how prices change when the number of buyers or sellers in a market changes and explain how the incentives facing individual buyers and sellers are affected.*

**The Sale** – Students will set a price for the house they have built and wait for buyers to appear. If the price is too high for the market, they may get fewer or no prospects. Through this process, students will discover whether they have made wise building decisions that increased the market value and desirability of their house and property.

**Standard X.** *Institutions evolve in market economies to help individuals and groups accomplish their goals. Banks, labor unions, corporations, legal systems and not-for-profit organizations are examples of important institutions. A different kind of institution, clearly defined and enforced property rights, is essential to a market economy. Students will use the knowledge to describe the roles of various economic institutions.*

**The Site** – Students will learn about property rights as they select a lot, encounter and overcome obstacles to obtaining a building permit.

**The Sale** – Students will understand the role of banks and organizations that issue credit reports in helping people achieve home ownership.

**Standard XII.** *Interest rates, adjusted for inflation, rise and fall to balance the amount saved with the amount borrowed, which affects the allocation of scarce resources between present and future uses. Students will use the knowledge to explain situations in which they pay or receive interest, and explain how they would react to changes in interest rates if they were making or receiving interest payments.*

**The Sale** – Students begin the game with a bank loan that has an assigned interest rate. There are several different levels of play (more complex, expensive homes) and several different financial scenarios within each level. Students playing at the same level may receive different loan amounts, and at different levels of play they may encounter lower interest rates on their loans.

This is a starting point for understanding the concept of interest and the impact of varying interest rates.

[Go to Economics Lesson Starters.](#)

## English Language Arts

There are 12 National Standards for English Language Arts, identified by NCTE and IRA . The following standards most directly apply to *Building Homes of Our Own*.

**Standard I.** *Students read a wide range of print and non-print texts to build an understanding of texts, of themselves and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment.*

**Throughout the program** – Students will read, understand and follow written directions in the program in order to successfully complete the program (build a home and sell at a profit).

**Standard III.** *Students apply a wide range of strategies to comprehend, interpret, evaluate and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics)*

**Throughout the program** – Students will use reading and comprehension skills to understand, interpret and synthesize the written, audio and graphics information provided in the CD-ROM to complete the tasks presented.

**Standard IV.** *Students adjust their use of spoken, written and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.*

**Throughout the program** – Students encounter new terms and phrases that are essential to different stages of building and selling a home. They will also need to act on written and verbal communications from a variety of people.

**The Site** – Neighbors appear on the lots with helpful hints; attendees at a Community Meeting share concerns; picketers may show up if students take actions the neighbors feel are threatening (cutting too many trees).

**The Sale** – Buyer profiles will require careful study as students seek qualified buyers for their home.

**Standard V.** *Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.*

**Throughout the program** – Students will encounter a variety of documents that represent different types of official and business communication. They can write brief reports in which they analyze the language and style used in various documents and summarize the content to show comprehension of the information. The documents include the following.

**Introduction** – Bank loan approval letter.

**The Site** – Building Permit; reports on environmental and engineering conditions from Experts (such as a soil scientist or environmental consultant); building codes and zoning regulations.

**The House** – Options Sheet (shows all the items students can choose to purchase as they build their homes) and Budget Watch (keeps a running tally of expenditures ). These documents can be checked at any time during the game.

**The Sale** – Buyer profiles and credit reports on potential buyers. Also, students will use persuasive writing to create an ad to sell their home.

**Standard VII.** *Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate and synthesize data from a variety of sources (e.g.) print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.*

**The Site** – A Resource Panel located on the navigation bar provides a variety of resources for research. Beginning with selection of a lot, students who use the resources provided will be able to make more informed and effective decisions. Resources include Research which houses a Library with definitions and a Lab where you can view experiments and natural phenomena.

Planning area contains codes, zoning and permit information;

Community Meeting lets you hear what the neighborhood thinks, and The Experts section provides advice and reports from such professionals as a Soil Scientist, Environmental Consultant and Civil Engineer.

**Standard VIII.** *Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.*

**Throughout the program** – Students work individually or in small groups to build and sell a home. They will read and follow written and verbal directions, gather facts, use the research resources and make decisions.

**Standard XII.** *Students use spoken, written and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion and the exchange of information).*

**Assessment Tool** – Students/student teams create presentations for outside audiences (other classes/parents/ community groups) to demonstrate and communicate their knowledge of the home building process. The presentation could include photography, video clips, audio interviews (with building professionals), oral presentations or a How-To manual.

[Go to ELA Lesson Starters.](#)

## **Family & Consumer Sciences Education – Grades 9-12**

There are 16 National Content Standards for this curricular area. Following are the ones that most closely align with this program.

### ***Standard I. Career, Community and Family Connections***

**1.1** *Analyze strategies to manage multiple individual, family, career and community roles and responsibilities.*

***Throughout the Program*** – As students move through the phases of home building – the Site, the House, the Sale – they will need to balance financial resources with design and construction preferences and community concerns. Building a home requires attention to detail, sound decision-making and trade-offs to reach a conclusion that satisfies a variety of needs and demands.

**Standard II. Consumer and Family Resources**

**2.2** *Demonstrate management of individual and family resources, including food, clothing, shelter, health care, recreation and transportation*

**2.3** *Analyze the relationship of the environment to family and consumer resources.*

**2.4** *Analyze policies that support consumer rights and responsibilities*

**2.5** *Evaluation the impact of technology on individual and family resources*

**2.6** *Analyze interrelationship between the economic system and consumer resources.*

**2.7** *Demonstrate management of financial resources to meet the goals of individuals and families across the life span.*

**Throughout the Program** – The program begins with an approved bank loan. Students must work with that budget as they purchase a lot and design and build a home. Options sheets (listing all items they could buy) and a Budget Watch (running total of spending) help students track their expenditures. The game is structured to let students make their own decisions, so if they overspend, they can go bust before they even finish their home.

**Standard III. Consumer Services**

**3.3** *Analyze factors in developing a long-term financial management plan*

**3.4** *Analyze resource consumption for conservation and waste management practices*

**Throughout the Program** – Options and Budget Watch features (located on the navigation bar so they can be accessed at any time) enable students to plan out their spending from the beginning, if they choose. Options sheets show students every item that they could purchase and what it would cost so they can compare building materials, outdoor accessories, windows and even kitchen pricing, long before they purchase. They can also keep a close watch on the Budget Watch sheet which lists all purchases and recalculates the total each time a purchase is made. Handout versions of the Options Sheets and a budget worksheet can be found under Teacher Backgrounders and Student Worksheets.

**The Site** – In this first phase of the program students select a site for their home and make decisions about how to address environmental challenges – endangered species, water run-off, etc. Decisions they make as they proceed will ultimately affect the market value of the home and property.

### **Standard XI. Housing Interiors and Furnishing**

- 11.1** Analyze career paths with the housing, interiors and furnishings industry
- 11.2** Evaluate housing decisions in relation to available resources and options
- 11.3** Evaluate the use of housing and interior furnishing and products in meeting specific design needs
- 11.4** Demonstrate computer-aided drafting design, blueprint reading, and space planning skills required for the housing, interiors, and furnishings industry.
- 11.5** Analyze influences on architectural and furniture design and development
- 11.6** Evaluate client's needs, goals, and resources in creating design plans for housing , interiors and furnishings
- 11.7** Demonstrate design ideas through visual presentation
- 11.8** Demonstrate general procedures for business profitability and career success.

**The House** – In this phase of the program, students go through all the steps of home construction. They will develop a floorplan, choose flooring, windows, doors, exterior siding and roofing, bathroom and kitchen fixtures, add extras such as fireplaces and landscape the grounds. Vocabularies of building terms and a handout Career sheet will familiarize students with the many professions associated with home building.

**The Sale** – As students select buyers, they will find out if they have designed and built a house that can be sold at a profit.

**Standard XIII. Interpersonal Relationships**

**13.1** Analyze functions and expectations of various types of relationships

**13.2** Analyze personal needs and characteristics and their impact on interpersonal relationships.

**13.3** Demonstrate communication skills that contribute to positive relationships

**13.4** Evaluate effective conflict prevention and management techniques

**13.5** Demonstrate teamwork and leadership skills in the family, workplace and community

**13.6** Demonstrate standards that guide behavior in interpersonal relationships

**The Site** – As students move ahead with the purchase of a lot, they will discover that they are part of a community that has certain values and expectations of residents. Students must be attuned to local issues and prepared to take actions that will satisfy neighbors' concerns.

[Go to Family and Consumer Science Lesson Starters](#)

## Geography

There are 18 National Content Standards for geography, grouped under five Essential Elements that the geographically informed person knows and understands. The following most closely align with this program.

### ***Essential Element 1: Seeing the world in spatial terms***

***Standard 1.*** *How to use maps, globes and other graphic tools and technologies to acquire, process and report information from a spatial perspective.*

***The Site*** – Students explore locations and lots from different perspectives as they select a site to build on and determine to place their house footprint and what other features can be added to the lot – a pool, garage, gazebo, skateboard park or basketball court.

***The House*** – Students create complete floorplans for a one or two-story home.

**Essential Element 2: Places and regions**

**Standard IV.** *The physical and human characteristics of place.*

**Standard VI.** *That culture and experience influence people's perception of places and regions.*

**The Site** – Several levels of play enable students to translate a home building experience into urban, suburban, rivers and lakes and coastline environments.

They will encounter different physical challenges and cultural viewpoints in each location.

**Essential Element 4: Human systems**

**Standard XII.** *The processes, patterns and functions of human settlement.*

**Standard XII.** *The forces of cooperation and conflict that shape the division of the earth's surface (communities modifying land use.)*

**The Site** – Community concerns and issues surrounding the home building process are highlighted in each of four locations: urban, suburban, rivers and lakes and coastline. The differences in the types of concerns and solutions reflect the different regional values and imperatives.

**Essential Element 5: Environment and Society**

**Standard XIV.** How earth's physical and human systems are connected and interact.

**Standard XV.** The consequences of the interaction between human and physical systems.

**Standard XVI.** Changes in meaning, distribution and importance of resources.

**The Site** – Students can see how their efforts to prepare a lot for building improves the land and maintains environmental integrity (oil clean up; mitigation plan that protects native animal life.)

**The Sale** – Students will discover how well they have interpreted the needs of home buyers in their location and constructed a home that fits geographic, demographic and climatic conditions.

## Math

Math concepts and principles are key to the entire home building/buying and selling process. Consequently, they are key to *Building Homes of Our Own*. The following National Content Standards for Math (grades 6-8 and 9-12) align most closely with various phases of *Building Homes of Our Own*.

- *Number and Operations*
- *Algebra*
- *Geometry*
- *Measurement*
- *Data Analysis & Probability*
- *Communication*
- *Connections*
- *Representation*

### Number and Operations

***Understand numbers, ways of representing numbers, relationships among numbers and number systems.***

***The House*** – As they build their home, students can use ratios and percents to track the amount they are spending on various items (using the Budget Watch feature), and the amount they have left at each stage. The program's Options feature lets students look ahead at the costs of all the possible items they could purchase.

**The Sale** – For students in grades 9-12, the project could be extended into the financial impacts of being a builder. This would allow students in grades 9-12 to enhance their understanding of very large and very small numbers and the various representations of them.

***Understand meanings of operations and how they relate to one another.***

**Throughout the Game** – Students will need use meaningful mathematics in every phase of the home building process from placing a house footprint to creating a floorplan, building and landscaping the house and, of course, determining the most qualified buyers for their home.

***Compute fluently and make reasonable estimates.***

**Throughout the Game** – Students begin with a budget and will need to spend wisely to stay within the budget and accomplish their home building goals. Using the Options planning sheet and a Budget Watch they can track purchase options and spending at each point in the process to estimate what they can afford if they are aiming for a particular profit percentage.

**The Sale** – Students will have a choice of buyers, but if students check credit information and use the calculator provided, they will find out who the qualified candidates are.

## Algebra

### ***Understand patterns, relations and functions.***

**The House** – In an ongoing fashion, but particularly with regard to costs of construction, students may use various variables to investigate rates of change. Representation of the variables will result in more effective decision-making on home construction issues (9-12)

**The Sale** – Students will receive a score and critique based on how effectively they used their budgets to build homes that satisfy ecological/community concerns, meet prospective buyers needs and make a profit. Students may use tables, graphs and words to assess costs of production vs. profits (6-8)

### ***Represent and analyze mathematical situations and structures using algebraic symbols.***

**The House** – During the construction phase, students will use symbolic algebra to represent situations and solve problems. For example, the costs of landscaping a home. They will learn that smart landscaping (creating energy efficiency through careful tree planting for example) may cost more in landscaping and save dollars in heating/cooling.

**The Sale** – Parameters imposed by the game create conditions for judging the meaning, utility, and reasonableness of the results incurred, including those carried out via the technology of the game (9-12)

***Use mathematical models to represent and understand quantitative relationships.***

**The Site** – Students may use iterative factors to determine the cost effectiveness of various sites (9-12), placing those factors into solvable symbolic expressions.

**The House** – Using various physical home representations, students can graph the effectiveness of several construction planning decisions (such as the cost of removing three each of four different types of trees)

Using the mathematical models inherent in home construction, students should draw reasonable conclusions about the factors affecting the construction process.

***Analyze change in various contexts.***

**The Sale** – By performing a class analysis of profits, students can analyze factors that changed the end result (such as square footage, location, costs of environmental factors) and can apply the interpretation of those changes to subsequent building projects (higher levels of the program).

## Geometry

***Analyze characteristics and properties of two-and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.***

**The House** – Understand relationships among types of two and three dimensional objects (physical shapes, or footprints, of homes)

In floor planning, students will understand relationships among angles, side lengths, perimeters, and areas (grades 6-8) and will use trigonometric relationships to determine length and angle measurements (grades 9-12)

In home design (i.e., room placement), creates and critiques inductive and deductive arguments concerning geometric relationships

***Specify locations and describe spatial relationships using coordinate geometry and other representational systems.***

**The Site** – As students determine placement of the house footprint on their lot, they will coordinate geometry and shaping.

***Apply transformations and use symmetry to analyze mathematical situations***

**The Site** – Students will justify home placement through description of size, position and orientation ( grades 6-8.)

**The House** – Students apply appropriate transitions to blueprints and sketches for home construction (grades 9-12.)

***Use visualization, spatial reasoning, and geometric modeling to solve problems.***

**The House** – Through the home construction tasks, students can recognize and apply geometric ideas and relationships in areas outside the math classroom.

As they develop a floorplan, students can draw geometric objects with specified properties (such as lengths and angle measures) and use visual tools to represent and solve problems.

In the construction phase, students use Vertex edge graphing to create models and solve problems ( grades 9-12.)

## Measurement

***Understand measurable attributes of objects and the units, systems and processes of measurement.***

**The House** – As an extension exercise as they are constructing the house, students can look at actual tools that builders use in construction. Tools are gauged both metrically and in customary measurements. Students can then compare and convert between the systems.

***Apply appropriate techniques, tools and formulas to determine measurements.***

**The Site** – As they determine the optimal placement for house footprints on the lots, students will need use the concepts of area, approximation, and angle.

**The House** – In floor planning, students will need to be aware of the process of drawing to scale, determining area, and measuring angles.

## Data Analysis and Probability

***Formulate questions that can be addressed with data and collect, organize and display relevant data to answer them.***

**The Site** – Students will need to formulate questions regarding the best location for their home on the particular lot they choose. With multiple game play, students will be able to organize numerical data around relevant site knowledge. They will use data to answer questions that enable them to obtain permits.

**The House** – Students will use data to answer questions about materials and blueprints.

**The Sale** – The questions that students formulate in the sale of their home will provide them with the tools necessary for statistical reflection on the efficacy of their previous decisions and choices.

***Select and use appropriate statistical methods to analyze data***

**The Site** – Students will need to select statistical tools that allow them to make informed decisions in lot purchase and house placement.

**The House** – Appropriate methods will allow students to see the relevance of having a “control” with which to effectively and fairly compare data. Research tools provided in the program such as Budget Watch, Options sheets and the Resource Panels will provide information and resources.

**The Sale** – The questions that students formulate in the sale of their home will provide them with the tools necessary for statistical reflection on the efficacy of their previous decisions.

***Develop and evaluate inferences and predictions that are based on data.***

**The Site** – As they play different levels of the program, or review the results of several student teams, students will be able to organize numerical data around relevant site knowledge.

**The House** – The reference tools available within the program (Planning, Budget Watch, Options sheet) will allow students to form opinions and evaluate decisions based upon factual data.

**The Sale** – The ability to make inferences using game data will allow students to engage in self and group reflection.

## **Problem Solving**

***Build new mathematical knowledge through problem solving.***

**The House** – Students will track spending with the Budget Watch and other program research tools. As they encounter and address challenges, they can build new mathematical knowledge.

***Solve problems that arise in mathematics and other contexts.***

**The Site and The House** – Many of the problems encountered in *Building Homes of Our Own* are everyday, real world problems that can be solved using mathematical concepts. For example, students must select a house footprint and determine the most cost effective and efficient placement of the home on the lot, considering a variety of real-world factors such as ecological factors and zoning restrictions

***Apply and adapt a variety of appropriate strategies to solve problems.***

**The Sale** – Students will discover the effectiveness of the problem solving strategies used when they receive a critique and score. Sharing strategies and discussing the relative effectiveness will enable students to analyze and adjust strategies for future use of the program.

***Monitor and reflect on the process of mathematical problem solving.***

**Throughout the Program** – Through all phases of the program, students will find themselves using math to problem solve. Through the process, student teams should take the time to reflect on the problem-solving process to make it more effective for individual teams and the class.

## Communication

***Organize and consolidate mathematical thinking through communication.***

**The House** – Mathematical skills are necessary throughout the construction phase. In order to do the tasks found in the other mathematical standards, students will need to communicate verbally, graphically, and with technical representations. Mathematical reasoning will be inherent in this communication.

**The Sale** – In order to assess the profitability of their homes, students will need to organize the data gathered through each phase of the construction and justify how they achieved outcomes.

***Communicate mathematical thinking coherently and clearly to peers, teachers and others.***

**Throughout the Program** – One key teaching of the program is the teamwork and decision-making required to build a home and make a profit. Standards dictate preparedness, teamwork, collaboration and communication. Coherent communication will be integral throughout the building process within peer groups and/or to a Math instructor.

***Analyze and evaluate the mathematical thinking of others.***

**Throughout the Program** – In order to achieve a cohesive end result, students will need to analyze and give appropriate feedback to others with regard to their mathematical thinking throughout the process.

## Connections

***Recognize and use connections among mathematical ideas.***

**The Sale** – As they complete the program, and receive their scores and critiques, student groups compare and contrast the methods they used and the profits secured. This will allow them to make connections regarding the most effective processes used.

***Understand how mathematical concepts interconnect and build on one another to produce a coherent whole.***

**Throughout the Game** – Students will need to apply different math concepts and principles to achieve their goal of building and selling a home profitably. And they will discover the interconnectedness in the building/home selling process.

***Recognize and apply mathematics in contexts outside of mathematics***

**Throughout the Game** – In order to be successful using **Building Homes of Our Own**, students must recognize and apply mathematical concepts to accomplish the tasks during each phase of the game, generalizing them to real life activities.

## Representation

***Create and use representations to organize, record and communicate mathematical ideas***

**The Site** – Students will use representations to determine scale and subsequent home placement on a lot.

**The House** – Representation in the form of charts, graphs, and tables can be used to build a home that complies with regulations and stays within budget.

Floor planning can be accomplished through representations such as blueprint drawings and scale models.

**The Sale** – Student teams can compare methods used and the results (profits). This can be done with a variety of representations.

***Select, apply and translate among mathematical representations to solve problems.***

**The Sale** – In the selling phase, representations of the unique student projects can be compared with a market analysis activity.

***Use representations to model and interpret, physical, social and mathematical phenomena***

**Throughout the Program** – The expected outcome of the program is a physical representation of a new home. There are several stages of representation in the process from site planning to home placement to floor planning to budget graphing.

[Go to Math Lesson Starters.](#)

## Science

The following National Content Standards for Science align most closely with this program.

### For Grades 5-8

#### **Standard A – Science as Inquiry**

*“Middle school students can develop the skills of investigation and an understanding that scientific inquiry is guided by knowledge, observations, ideas and questions.”*

#### **Abilities necessary:**

- *Identify questions that can be answered through scientific investigations*
- *Design and conduct a scientific investigation*
- *Use appropriate tools and techniques to gather, analyze and interpret data*
- *Develop descriptions, explanations, predictions and models using evidence*
- *Think critically and logically to make the relationships between evidence and explanations*
- *Recognize and analyze alternative explanations and predictions*
- *Communicate scientific procedures and explanations*
- *Use mathematics in all aspects of scientific inquiry*

**The Site** – Students can use the lot challenges they encounter to learn how to ask questions, gather and use data and evidence to conduct an investigation, arrive at a conclusion and devise possible solutions. When they explore different lots, they will uncover clues to problems: there may be endangered species or soil problems hinted at. They can do further investigations by consulting experts, going to the library or lab, or attending a community meeting. Once they understand the problem, they can research and act on remedies.

### **Standard E – Science and technology**

*“In the middle school years, students work with scientific investigations can be complemented by activities that are meant to meet a human need, solve a human problem or develop a product... Tasks should be based on contexts that are immediately familiar in the home, school and immediate community of the students.”*

#### **Fundamental abilities and concepts**

- *Abilities of technological design*
- *Understandings about science and technology*
  - *Scientists propose explanations for questions about the natural world, and engineers propose solutions relating to human problems, needs and aspirations.*
  - *Science helps drives technology; technology is essential to science.*

**The Site** – Various Experts (short animated videos) can help illustrate the roles of scientists and engineers in clarifying questions and solving problems.

**The House** – Through the construction process, students can see how technology has been applied to home building in areas from climate control to plumbing to fully integrated communications systems.

### **Standard F – Science in personal and social perspectives**

- *Populations, resources and environments*
- *Natural Hazards*
  - Internal and external processes of the earth system cause natural hazards, events that change or destroy human and wildlife habitats, damage property, and harm or kill humans.*
  - Human activities also can induce hazards through resource acquisition, urban growth, land-use decisions, and waste disposal. Such activities can accelerate natural changes.*
- *Science and technology in society*
  - Science influences society through its knowledge and world view.*
  - Technology influences society through its products and processes.*

**The Site** – As students explore lots, visit the Lab, attend Community Meetings, and do further research on their discoveries, they will learn about natural and man-made hazards and their impacts on different environments. They will discover how society has been influenced by science and technology and in turn how those influences have shaped attitudes and actions.

## **Standard G. – History and nature of science**

### **Fundamental concepts and principles:**

- *Science as a human endeavor*

*“Women and men of various social and ethnic backgrounds – and with diverse interests, talents, qualities and motivations –engage in the activities of science, engineering and related fields...”*

*-Science requires different abilities, depending on such factors as field of study and type of inquiry. Science is very much a human endeavor, and the work of science relies on basic human qualities, such as reasoning, insight, energy, skill and creativity – as well as on scientific habits of minds, such as intellectual honesty, tolerance of ambiguity, skepticism and openness to new ideas.*

- *Nature of science*

*-Scientists formulate and test their explanations of nature using observation, experiments, and theoretical and mathematical models.*

**The Site** – Students will learn about the people in science and their different abilities and specialties as they consult The Experts in the Resource Panel. These include Architect/Land Planner, Archeologist, Civil Engineer, Environmental Consultant, Soil Scientist, Structural Engineer.

## For Grades 9-12

### **Standard A – Science as Inquiry**

*“Investigations should derive from questions and issues that have meaning for students. Scientific topics that have been highlighted by current events provide one source; actual science and technology related problems provide another source of meaningful investigations.”*

#### **Fundamental abilities and concepts**

*Identify questions that guide scientific investigations*

- *Design and conduct scientific investigations*
- *Use technology and mathematics to improve investigations and communication*
- *Formulate and revise scientific explanations and models using logic and evidence*
- *Recognize and analyze alternative explanations and models*
- *Communicate and defend a scientific argument*

**The Site** – Students can use the lot challenges they encounter to learn how to ask questions, gather and use data and evidence to conduct an investigation, arrive at a conclusion and devise possible solutions. When they explore different lots, they will uncover clues to problems: there may be endangered species or soil problems hinted at . They can do further investigations by consulting experts, going to the library or lab, or attending a community meeting. Once they understand the problem, they can research and act on remedies.

### **Standard B – Physical Science**

#### **Fundamental concepts and principles**

- *Interactions of energy and matter*
  - Waves, including sound and seismic waves, waves on water, and light waves have energy when they interact with matter.

**The Site** – The Lab provides students with an opportunity to observe and learn about natural phenomena such as mud slides and earthquakes.

### **Standard C – Life Science**

#### **Fundamental concepts and principles**

- *Interdependence of organisms*
  - Matter, energy and organization in living systems

**The Site** – Four different locations – Urban, Suburban (rural), Rivers & Lakes and Coastline – provide an opportunity to identify and explore different geographic, geologic and biological environments, and to understand how they would affect and be affected by human habitation.

## **Standard E – Science and technology**

### **Fundamental abilities and concepts**

- *Abilities of technological design*
  - Identify a problem or design an opportunity
- *Understandings about science and technology*
  - Science often advances with the introduction of new technologies
  - Science inquiry is driven by the desire to understand the natural world and technological design is driven by the need to meet human needs and solve human problems.

**The House** – Through the construction process, students can see how technology has been applied to home building in areas from climate control to plumbing to fully integrated communications systems.

## **Standard F – Science in Personal and Social Perspectives**

### **Fundamental concepts and principles:**

- *Natural resources*
  - Human populations use resources in the environment to maintain and improve their existence.*
  - The earth does not have infinite resources; increasing human consumption places severe stress on the natural process that renew some resources, and it depletes those resources that cannot be renewed.*
- *Environmental quality*
  - Natural ecosystems provide an array of basic processes that affect humans, including the quality of the atmosphere, generation of soils, control of the hydrologic cycle, disposal of wastes and recycling of nutrients. Humans are changing many of these basic processes, and the changes may be detrimental.*
  - Materials from human societies affect both physical and chemical cycles of the earth.*
  - Many factors influence environmental quality.*
- *Natural and human-induced hazards*
  - Normal adjustments of earth may be hazardous for humans.*
  - Human activities can enhance potential for hazards.*
  - Some hazards, such as earthquakes, volcanic eruptions and severe weather, are rapid and spectacular. But there are slow and progressive changes that also result in problems for individuals and societies. These include erosion and sedimentation in lakes and harbors.*
  - Natural and human-induced hazards present the need to assess potential danger and risk.*

**Standard F – Science in Personal and Social Perspectives (cont.)**

- *Science and technology in local, national and global challenges*
  - Science and technology are essential social enterprises, but can only indicate what can happen, not what should happen.*
  - Progress in science and technology can be affected by social issues and challenges.*
  - Humans have a major affect on other species*

**The Site** – As students explore lots, visit the Lab, attend Community Meetings, and do further research on their discoveries, they will learn about natural and man-made hazards and their impacts on different environments. They will discover how society has been influenced by science and technology and in turn how those influences have shaped attitudes and actions.

[Go to Science/Technology Lesson Starters.](#)

## Social Studies – Middle Grades and High School

The National Content Standards for Social Studies are expressed in 10 Themes, each of which has specific learner expectations. The following most closely align with this program.

### ***I Culture***

#### ***In the Middle Grades***

**d.** *Explain why individuals and groups respond differently to their physical and social environments an/or changes to them on the basis of shared assumptions, values and beliefs*

#### ***In High School***

**a.** *Analyze and explain the ways groups, societies and cultures address human needs and concerns*

**The Site** – Students will encounter different community issues and concerns and different responses to those concerns as they select a home site in an Urban, Suburban, Rivers and Lakes or Coastline setting.

### **III. People, Places and Environments**

#### **In the Middle Grades**

- c. Use appropriate resources, data sources and geographic tools as aerial photographs, satellite images, geographic information systems (GIS), map projections and cartography to generate, manipulate, and interpret information such as atlases, data bases, grid systems, charts, graphs and maps*
- e. Locate and describe varying land formations and geographic features such as mountains, plateaus, islands, rain forests, deserts and oceans, and explain their relationship within the ecosystem*
- g. Describe how people create places that reflect cultural values and ideals as they build neighborhoods, parks, shopping centers, and the like*

#### **In High School**

- c. Use appropriate resources, data sources and geographic tools as aerial photographs, satellite images, geographic information systems (GIS), map projections and cartography to generate, manipulate, and interpret information such as atlases, data bases, grid systems, charts, graphs and maps*
- e. Describe, differentiate and explain the relationships among various regional and global patterns of geographic phenomena such as land formations, soils, climate, vegetation, natural resources and population*
- g. Describe and compare how people create places that reflect culture, human needs, government policy and current values and ideals as they design and build specialized buildings, neighborhoods, shopping centers, urban centers, industrial parks and the like.*

**The Site** – Students will be able explore different geographic regions and will encounter physical features and attributes of those areas. As they zoom in from a region and select an individual lot, they will be able to explore the topography and learn through experimentation the considerations that go into planning building placement on a particular property.

The Lab area in the Resource Panel gives students an opportunity to study different natural occurrences such as mud slides and earthquakes.

As students plan their homes and outdoor features (pools, patios) they will discover that their own interests and preferences have to be tempered with those of the community, and more important, they must adhere to established codes and zoning regulations.

## ***V. Individuals, Groups and Institutions***

### ***In the Middle Grades***

**c.** *Describe the various forms institutions take and the interactions of people and institutions*

**d.** *Identify and analyze examples of tensions between expressions of individuality and group or institutional efforts to promote social conformity.*

**f.** *Describe the role of institutions in furthering both continuity and change.*

**g.** *Apply knowledge of how groups and institutions work to meet individual needs and promote the common good.*

### ***In High School***

**c.** *Describe the various forms institutions take and explain how they develop and change over time*

**d.** *Identify and analyze examples of tensions between expressions of individuality and efforts used to promote social conformity by groups and institutions.*

**f.** *Evaluate the role of institutions in furthering both continuity and change.*

**g.** *Analyze the extent to which groups and institutions meet individual needs and promote the common good in contemporary and historical settings.*

## **The Site**

Students will interact with and understand how financial institutions (banks), communities and local government (codes and zoning departments) facilitate, regulate and direct individual action to promote social conformity and enable change (progress/growth of communities).

**The Sale** – The objective of the program is to find a qualified buyer in the home that has been built, and to sell that home at a profit. That will depend on a buyer’s credit worthiness as determined by lending institutions and credit organizations.

### **VI. Power Authority and Governance**

#### **In the Middle Grades**

*c. Analyze and explain ideas and governmental mechanisms to meet needs and wants of citizens, regulate territory, manage conflict and establish order and security*

#### **In High School**

*c. Analyze and explain ideas and mechanisms to meet needs and wants of citizens, regulate territory, manage conflict and establish order and security, and balance competing conceptions of a just society*

**The Site** – Students must obtain a permit to build on the lot they purchase. They may need to do research to find out what factors are preventing the issuing of a permit. Each lot has challenges which must be addressed; a number of these will affect their ability to obtain a permit. Students will discover how local governments and community leaders

## **VII. Production, Distribution and Consumption**

### **In the Middle Grades**

**d.** Describe a range of examples of the various institutions that make up economic systems such as households, business firms, banks, government agencies, labor unions and corporations

### **In High School**

**d.** Describe relationships among the various economic institutions that comprise economic systems such as households, business firms, banks, government agencies, labor unions and corporations

**Throughout the Program** – Students will interact with a bank, the permit office, contractors and labor as they go through the home building process, and will see how each affects their objective – to build and sell a home profitably.

## **VIII. Science, Technology and Society**

### **In the Middle Grades**

**b.** Show through specific examples how science and technology have changed people's perceptions of the social and natural world, such as in their relationship to the land, animal life, family life and economic needs, wants and security

### **In High School**

**b.** Make judgements about how science and technology have transformed the physical world, and human society and our understanding of time, space, place and human-environment interactions

**The Site** – When students choose a lot in an Urban, Suburban, Rivers and Lakes or Coastline setting, they will explore their land and discover the wildlife and vegetation that exists on the property, as well as natural and man-made problems that must be addressed (leaking oil tank is on the lot, freeway off-ramp is being built near the property, there is no water/sewer hookup, an oceanfront lot has erosion issues.

**The House** – As they construct a home, students can choose to make their house more energy efficient, more technologically advanced and more suitable In the types of potential buyers they are likely to attract. (In the example, one lot is in an area with a large senior population. Students may opt to build a single level home that doesn't require occupants to climb a lot of stairs.)

## **X. Civic Ideals and Practices**

### **In the Middle Grades**

- b.** *Identify and interpret sources and examples of the rights and responsibilities of citizens*
- c.** *Locate, access, analyze, organize and apply information about selected public issues – recognizing and explaining multiple points of view*

### **In High School**

- b.** *Identify, analyze, interpret and evaluate sources and examples of citizens' rights and responsibilities*
- c.** *Locate, access, analyze, organize, synthesize, evaluate and apply information about selected public issues – identifying, describing, and evaluating multiple points of view*

**The Site** – Students encounter local issues and concerns as they select their lots and prepare to build. They must satisfy certain conditions to obtain a permit and they will discover that as part of a community they will need to be sensitive to local attitudes and interests. As they find potential problems on their lot (endangered species, water runoff), they can research the issues and find solutions and remedies. A number of experts are available to clarify issues and offer assistance.

[Go to Civics Lesson Starters.](#)

[Go to Economics Lesson Starters.](#)

[Go to Family and Consumer Science Lesson Starters.](#)

## Technology

The International Technology Education Association is a professional educational association devoted to enhancing technology education through experiences in the schools (K-12).

ITEA has developed 20 standards for technological literacy among students. The following standards most directly apply to *Building Homes of Our Own*.

### The Nature of Technology

**Standard I.** *Students will develop an understanding of the characteristics and scope of technology.*

**Standard II.** *Students will develop an understanding of the core concepts of technology.*

**Standard III.** *Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study.*

**Throughout the Program** – The CD-ROM delivers information using technology. Students can study the structure of the program and discover how the technology enables game play.

Students can compare CD-ROM as delivery system for information with a printed textbook, a live speaker, an audio or video tape. How are these vehicles similar? How do they differ? How does the technology change or enhance the learning process?

## Technology and Society

**Standard IV.** *Students will develop an understanding of the cultural, social, economic, and political effects of technology.*

**Standard V.** *Students will develop an understanding of the effects of technology on the environment.*

**Standard VI.** *Students will develop an understanding of the role of society in the development and use of technology.*

**The Site** – As students discover the lot challenges on their property, they will look to the Experts for solutions. Through their research they will understand that technology can be both the cause of some problems and the solution.

**The House** – As students build and equip their homes, they will discover a range of enhancements they can purchase that have been made possible by technology (all-house communications systems, security systems) and dictated by consumer need and demand.

## Design

**Standard VIII.** Students will develop an understanding of the attributes of design.

**Standard IX.** Students will develop an understanding of engineering design.

**Standard X.** Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.

**Standard XIII.** Students will develop abilities to assess the impact of products and systems.

**The Site** –As they explore their options for solving problems they encounter on their lots, students will learn how solutions were developed and what kinds of technologies and skills were key to those solutions.

**The House** – Students will learn how to design and build a home that is appropriate and effective given the environmental conditions, community interests and buyer needs.

## The Designed World

**Standard XX.** Students will develop an understanding of and be able to select and use construction technologies.

**The House** – As they explore their choices of building materials, interior features and enhancements, students will discover how and when different options are appropriate and necessary.

[Go to Science/Technology Lesson Starters.](#)

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# Assessment and Scoring



## Authentic Assessment

*Building Homes of Our Own* provides a natural framework for authentic assessment strategies. The program process actively engages students in applying knowledge and reasoning skills.

The score and critique they receive when they build and sell a home is based on the same criteria that apply in a real-world setting. See scoring framework.

Once you determine how *Building Homes of Our Own* will be most effective in your classroom environment, there are a wide variety of ways students can demonstrate learning. Here are some starter ideas that may work for you as you develop assessment tools and rubrics.

## Self Assessment

- Individual performance assessment. Develop an assessment form or checklist with class input to help students evaluate their own performance. How well did they apply subject knowledge (such as math concepts) or thinking skills (problem-solving) to the tasks they encountered in the program – selecting a site, designing a floorplan, etc.? What could they have done better? How? What was easy for them to accomplish? What was more difficult? What did they learn about their individual learning style? (How they are most comfortable acquiring and retaining information.)
- Use these same assessment forms in a class brainstorming/discussion at the end of the project. Students can then go through the program again using what they have discovered to improve scores and change outcomes.

## Peer assessment

- Peer feedback. After students have started the process of building their home, ask individuals or student teams to explain to the class how they are approaching their assignment and why. Other students can give feedback and offer suggestions. Teams should write down the suggestions and at the completion of the project, students should be able to explain how those suggestions (if they used them) had a positive or negative effect on the outcome.
- Team member critiques. Assign student teams to build a home as an exercise in group cooperative learning. Give each team assessment sheets to fill out, assessing the group experience. How did each member perform? How does each student feel he or she performed in a group environment? How did the group approach contribute to success of the project? Did working as a group make the project more difficult? How? Could that be overcome?

## Performance Assessment

**Math/Family & Consumer Science:** In the program, students will learn the importance of accurate measurement as they create a floorplan and construct a home.

Assessment: Have students “remodel” the classroom by selecting paint, wallpaper, tiles, carpeting and shelving. Have students obtain brochures, color swatches and product sample sheets from a home improvement or hardware store. They should prepare a plan to present to their “clients” in the class. The plan should include a mock-up or drawing showing samples, and calculations of quantities of materials needed based on room dimensions. Add a cost component by giving them a starting budget to work with.

**Science/Civics:** In the Site phase, students will encounter challenges and issues they will have to address to obtain building permits and/or satisfy community concerns.

Assessment: Have students select one subject from the Lab or one Expert from that section of the Resource Panel for an independent study project.

***In the lab students will find:***

- Mud slides
- Earthquake/shake Test
- Blower Door Test (air leakage)
- Missile Test (resistance to hurricane force winds)
- Flame spread test
- Snowload
- Shading/Energy Efficiency

***The experts include:***

- Architect/landplanner
- Archeologist
- Environmental Consultant
- Civil Engineer
- Structural Engineer
- Soil Scientist

The topic they select to report on should be one that is relevant to local conditions or issues. (Snowload in Minnesota, for example.) The completed piece can consist of interviews with experts (written or recorded), photos, drawings, charts, graphs and a written report. The completed piece should describe the impact/effect of your subject on local life over time, and describe current and future actions to address the subject.

**English Language Arts:** To sell the home they build, students will create and “run” an ad to attract buyers.

**Assessment:** Ask students to “sell” their house, or a neighbor’s house. The presentation they give to the class must consist of two or three written pieces: a newspaper ad, complete with photos or sketches, a sales flyer, a brochure or even an article for a home magazine describing the features and advantages of the home. Assign students one or more specific prospective buyer audiences to address. Ads that attract seniors will highlight different features than ads directed to college kids or a young couple with children.

## Process Assessment

- Listening and communications skills. Invite expert speakers to talk about their area of home building and answer students’ questions. Students can be assessed on questions that show an understanding of the program processes. Students also can be asked to explain experts answers in their own words and relate the speaker’s information to their experience with *Building Homes of Our Own*.
- Problem-solving. Ask students to explain to the class how they approached and solved problems and challenges they encountered as they selected a lot or began to build a home. You can focus on one phase of the program, such as the Site. There are eleven lots (in four different

locations.) Assign more than one student team to the same lot so they will be able to compare and contrast problem-solving techniques. Ask students to begin the program and work up to the point where they are approved for a permit. Ask students to explain what challenges they faced and the process or methods they used to address those challenges.

## **Portfolio Assessment**

- Students print out the critiques and scores they receive at the end of the program to put into their portfolio. If they have used the program more than once, they may have several critiques they can include along with a comparison of the results they obtained. Ask them to write a brief summation of their experience to go with the critique(s). How did they feel about their effort and their score? What did they learn about the real home building process? What surprised them? What did they learn about their own abilities? How will they be able to use what they have learned in their own lives in the future?
- Students can put the independent study project they created as a performance assessment for science in their portfolio. (See Performance Assessment earlier in this section).
- Students create new floorplans of their own homes (staying within the same square footage) , and write a brief explanation of why the new floorplan is beneficial to the residents.

## Journals

- Students keep a running commentary on their experience of building the home.
- Students record one new/surprising thing they learn about the home building process or about core subjects they are studying, each day.

## Scoring Framework

When students or student teams build and sell a home, they receive a score and a critique. The score is determined by a formula that is based on real world criteria.

The total Fair Market Value of the house = value of the lot + basic value of the house + value of the features added.

Students must achieve a score of 70% or higher to move to the next level. Students will discover that planning, careful research (investigation) and good decision-making are rewarded. The following are the factors that determine scores in the three key areas.

- 1) The basic value of the lot** – Students identified the challenges or problems that existed and took steps to correct the situations. For example, one lot has endangered species living on it; another lot is near the site of future freeway off ramp. They could discover these issues through a variety of available sources and resources. They could then hire experts to assess their options and take steps to address the issues. These lot improvements take time and may cost money. They generally pay off.

**2) The basic value of the house** – Students created a floorplan that is well designed and in line with the needs of buyers that would be attracted to that home and location. Since the house design and layout is totally up to students, it is possible to build a house with a giant game room, small bedrooms and not much else. It might be fun to create a fantasy environment, but it probably won't attract many buyers or particularly good offers. There are also subtleties in building the home that will affect their scores. Landscaping with shade trees is an energy-saving move that earns points.

**3) Value of the features added** – Students added features that are appropriate for the types of buyers that will be interested in their house. Did students add a garage in an area where parking is tight? That would add to the value. Or, did students build a guitar-shaped swimming pool on a small lot in a neighborhood that is mostly seniors? That addition would detract from the home's value and lose points.

Note: You can determine how to structure the learning experience by allowing students to discover successful strategies on their own or giving some direction with pre-game discussions about the factors that will be considered in the scoring formula.

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# Resources



## **People to look for in your community**

### ***Home Financing***

Bankers/ mortgage brokers

Real estate lawyers

Real estate professionals

### ***Home Design & Construction***

Architect

Builder/Developer

Contractor

Carpenter

Landscape Architect

Interior Designer

### ***Land & Building Experts***

Soil Scientist

Civil Engineer

Structural Engineer

Environmental Consultant

Archeologist

### ***Community & Government***

City planner

Codes and zoning official

Community leaders and activists

## **Places to visit or get information**

- Home sites/new developments in your area
- Home centers and building supply stores
- Local codes and zoning office/planning office
- Testing facilities that conduct various home stress and safety tests
- Nurseries/conservatories/natural habitats
- Nature/natural history museums
- Historical societies/historic homes and sites
- Local home builder association

## **Web Sites for Reference**

### ***Building Materials***

[www.nahbrc.org](http://www.nahbrc.org)

[www.concretehomes.com](http://www.concretehomes.com)

[www.worldsteel.com](http://www.worldsteel.com)

### ***Codes***

[www.intlcode.org](http://www.intlcode.org)

[www.nahbrc.org](http://www.nahbrc.org)

### ***General Information***

[www.b4ubuild.com](http://www.b4ubuild.com)

[www.housingzone.com](http://www.housingzone.com)

[www.homebuilder100.com](http://www.homebuilder100.com)

[www.nwbuildernet.com](http://www.nwbuildernet.com)

[www.nahb.org](http://www.nahb.org)

## **Government**

[www.hud.gov](http://www.hud.gov)

[www.usdoj.gov/crt/ada/adahom1.htm](http://www.usdoj.gov/crt/ada/adahom1.htm)

[www.energy.gov/house/index.html](http://www.energy.gov/house/index.html)

## **Energy**

[www.eia.doe.gov](http://www.eia.doe.gov)

[www.energystar.gov](http://www.energystar.gov)

[outreach.missouri.edu/edninfo/energy.htm](http://outreach.missouri.edu/edninfo/energy.htm)

## **Environment and Growth**

[www.smartgrowthamerica.com/](http://www.smartgrowthamerica.com/)

[www.smartgrowth.org/](http://www.smartgrowth.org/)

[www.cyburbia.org](http://www.cyburbia.org)

[www.sustainable.org](http://www.sustainable.org)

[www.lincolninst.edu/main.html](http://www.lincolninst.edu/main.html)

[www.uli.org](http://www.uli.org)

## **Finance**

[www.bankrate.com](http://www.bankrate.com)

[www.fhfb.gov/](http://www.fhfb.gov/)

[www.housingfinance.com/](http://www.housingfinance.com/)

[www.mbaa.org/](http://www.mbaa.org/)

[www.interest.com/mmis.shtml](http://www.interest.com/mmis.shtml)

[www.fanniemaec.com](http://www.fanniemaec.com)

[www.freddiemac.com](http://www.freddiemac.com)

## **Floor Plans**

[www.dreamhomesource.com](http://www.dreamhomesource.com)

[www.eplans.com](http://www.eplans.com)

## **Landscaping**

[www.hgtv.com](http://www.hgtv.com)

[www.xeriscape.org](http://www.xeriscape.org)

[www.co.mo.md.us/services/dep/greenman/shady.htm](http://www.co.mo.md.us/services/dep/greenman/shady.htm)

## **Statistics**

[www.nahb.org](http://www.nahb.org)

[www.census.gov](http://www.census.gov)

[www.bls.gov](http://www.bls.gov)

[www.realtor.com](http://www.realtor.com)

## **Technology**

[www.pathnet.org](http://www.pathnet.org)

## **Transportation**

[www.bts.gov/](http://www.bts.gov/)

These sites are intended to be used by you and your students as references to provide additional information about various aspects of home building and the home building industry. NAHB makes no representations, warranties, or assurances as to the availability, accuracy, or completeness of the sites listed. Any reference to a specific commercial product, process, or service does not constitute or imply an endorsement by NAHB of the product, process, or service, or its producer or provider. The views and opinions expressed in any referenced document do not necessarily state or reflect those of NAHB.

Because web sites can change so quickly, NAHB can't guarantee the content of these sites and is not responsible for what may be found on the Internet when following links on these sites. Furthermore, a link to another web site does not create or imply any relationship between NAHB and such web site.

## **Educational Programs**

*Build a Home, Build a Career* from the Home Builders Institute ([www.hbi.org](http://www.hbi.org)), the training and development arm of the National Association of Home Builders (NAHB).

“For The Classroom.” Visit the NAHB web site, [www.nahb.org](http://www.nahb.org) and take a look at “For The Classroom” in the section For Consumers.

## **Organizations**

Fannie Mae, [www.fanniemae.com](http://www.fanniemae.com)

Freddie Mac, [www.freddiemac.com](http://www.freddiemac.com)

Home Builders Institute, [www.hbi.org](http://www.hbi.org)

International Conference of Building Officials (codes), [www.icbo.org](http://www.icbo.org)

National Association of Home Builders, [www.nahb.org](http://www.nahb.org)

NAHB Public Affairs phone number: 1-800/368-5242, ext. 8447

## **Local Home Builder Associations**

The National Association of Home Builders is a federation of 850 local and state builder associations located across the country. Chances are there is a local builder association in your community that can provide you with expert, inside information on the building industry – from land development to construction to final sale. To find a local home builders association near you, visit [www.nahb.org](http://www.nahb.org) and go to “Site Short Cuts.” Or, call NAHB at 1-800-368-5242.

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# Teacher Backgrounders



## About the Teacher Backgrounders

These teacher backgrounders are your “cheat sheets” that contain information the student should find out on their own as they go through the process.

Having this information will help you direct your teams and will enable you to customize a home building experience by defining some of the parameters at the beginning of an assignment. This program was designed to be open-ended, so you can shape the experience in a variety of ways.

**Home Building Industry Careers** – Because the home building process encompasses so many facets of business and industry, it naturally incorporates a wide range of careers. This backgrounder lists the more than 100 careers and occupations in home building identified by the Department of Labor.

**Lot Challenges** – The challenges on each lot are a key part of the program. The way the students address the challenges they find will factor into their final scores. (This is assuming they do their investigation and correctly identify the problem.)

This guide tells you what the student will encounter on each lot and what they could do to amend the problems. In some cases, they will not receive a permit to build until they find the right expert, buy a report and undertake a mitigation plan.

**Options List of Costs** – These are all the items that can/must be purchased in each phase of the program.

**Steps in the Home Building Process** – What does it take to build a home? Your students to discover the wide range of tasks and disciplines that must come together. This backgrounder details the steps in home building as identified by the Home Builders Institute, the training and development arm of NAHB.

**Vocabulary Terms** – The building industry encompasses a number of professions and trades. Each of these distinct areas has its own distinct language. A number of the terms that students will encounter are defined in the Resources section (show icon). Students can go there any time to find these words. Lists of the terms are provided here so you can develop vocabulary exercises and assignments.

## Home Building Industry Careers

### Executive, Administrative & Managerial

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- Administrative Service Managers
- Construction Managers
- Financial Managers
- General Managers & Top Executives
- Industrial Production Managers
- Marketing, Advertising, & Public Relations Managers
- Personnel, Training, & Labor Relations Managers
- Property & Real Estate Managers
- Purchasing Managers
- Management Support Occupations
- Accountants and Auditors
- Construction & Building Inspectors
- Cost Estimators
- Wholesale & Retail Buyers
- Personnel, Training, & Labor Relations Specialists
- Special Agents, Insurance Assessors
- Purchasing Agents

### Precision, Production, Craft & Repair

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- First Line Supervisors
- Bricklayers & Stone Masons
- Carpenters
- Carpet, Floor Layers, & Floor Sanding Operators
- Ceiling & Tile Installers, & Acoustical Carpenters
- Concrete & Terrazzo Finishers
- Drywall Installers, Finishers & Tapers
- Electricians
- Glaziers
- Hard Tile Settlers
- Insulation Workers
- Painters & Paper Hangers
- Plasterers
- Plumbers, Pipe Fitters & Steamfitters
- Roofers
- Heat, Air Conditioning & Refrigeration
- Mechanics & Repairers
- Earth Drillers, except Oil & Gas
- Installers & Repairers, Manufactured Buildings, Mobile Homes & Travel Trailers

- Pipe Layers & Pipe Laying Fitters
- Structural & Reinforcing Metal Workers
- Sheet Metal Duct Installers
- Lathers
- Fence Erectors
- Mechanics, Installers, Repairers (Electrical & Electronic Equipment)
- Mechanics, Installers & Repairers (Machinery & Related Mechanics)
- Assemblers & Fabricators
- Installers & Repairers
- Millwrights
- Vehicle & Mobile Equipment Mechanics & Repairers
- Home Appliance & Power Tool Repairers
- Gas Appliance Repairers
- Locksmiths & Safe Repairers
- Cabinet Makers & Bench Carpenters
- Furniture Finishers
- Upholsters
- Wood Machinists

## **Technicians And Related Support**

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- Engineering Technicians (see above)
- Drafters
- Computer Programmers
- Legal Assistants & Paralegals
- Title Examiners & Searchers

## **Professional Specialty**

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- Engineers: Civil, Electrical & Electronic, Industrial, Mechanical, Safety
- Architects, including Landscape Surveyors
- Systems Analysts & Data Base Administrators
- Regional & Urban Planners
- Lawyers
- Teachers, Librarians, & Counselors
- Interior Designers
- Public Relations Specialists & Publicity Writers
- Writers & Editors, i.e., Technical Writers
- Merchandise Displayers & Window Trimmers

## **Marketing & Sales**

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- Counter & Rental Clerks
- Insurance Sales Workers
- Marketing & Sales Worker Supervisors
- Real Estate Agents, Brokers & Appraisers
- Sales Engineers
- Sales Persons, Retail
- Sales Persons, Parts
- Stock Clerks, Sales Floor

## **Service**

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- Sales Agents & Placers, Insurance
- Cleaning & Building Service Occupations
- Pest Controllers & Assistants
- Guards
- Crossing Guards

## **Administrative Support Occupations**

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- Adjusters, Investigators, & Collectors
- Real Estate Clerks
- Information Clerks: Receptionists, Mail Clerks, Messengers
- Material Recording, Scheduling, Dispatching, & Distributing
- Dispatchers
- Meter Readers
- Order Fillers, Wholesale & Retail Sales
- Shipping, Receiving & Traffic Clerks
- Procurement Clerks
- Stock Clerks
- File Clerks
- Bookkeeping, Accounting & Auditing Clerks
- Personnel Clerks
- Secretaries
- Typists/Word Processors
- Credit Authorizers, Credit Checkers & Loan & Credit Clerks
- General Office Clerks

## **Operators, Fabricators & Laborers**

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- Metal Fabricators, Structural Metal Products
- Industrial Truck & Tractor Operators
- Truck Drivers, Heavy or Tractor Trailer
- Truck Drivers, Light (Delivery & Route)
- Material Moving Equipment Operators
- Crane & Tower Operators
- Excavating & Loading Machine Operators
- Operating Engineers
- Helpers, Construction Trades
- Gardeners & Grounds Keepers, except Farm

## **Lot Challenges**

This is your key to the challenges students will face on each of the lots. These challenges test their ability to explore, investigate, gather information, draw conclusions and take action to address situations. Students will need to pay attention to cues and clues they receive and synthesize information from a variety of sources. This section of the program can be a rich learning experience and can even be the basis for an entire unit of study.

There are 11 lots in the game. Each lot has at least one challenge. Sometimes that challenge can prevent them from obtaining a permit, and it certainly can affect the final score. Decisions also will have budgetary consequences. In the Coastline, a decision to place the house where it will block the neighbor's view will result in a lawsuit when the player actually builds the house in the construction phase. If the builder ignored earlier advice about positioning the house, he or she will have to face angry neighbors and receive a lower score at the end.

None of the problems on the lots will be immediately or directly revealed. As soon as the student selects a lot, an animated hint will appear. When the student scrolls across the lot, he or she will see names of trees, evidence of animal life. There also will be clues that there may be other hidden problems that should be addressed (the smell of oil). Students may realize that they can choose to look at other lots if they do early research and discover problems on a particular lot.

Students can proceed to purchase the lot and try to get a permit without doing any research. The permit may be denied. Then they need to find out why. Or, the permit may be granted, but problems they have ignored can surface later when they build or try to sell.

All the answers students need to address the challenges are within the program. The community meeting, library, planning office and experts area all contribute to knowledge and hold the key to solutions. As in real-life situations, resourcefulness, tenacity, attention to detail and problem-solving will pay off.

Boys and girls who use CD-ROM or internet games will be comfortable with the tasks of investigation and exploration. If some of your students are finding this phase of the program a little too challenging in the beginning, you can use this information to direct their efforts. Ask questions that will guide them to problem-solve

You can also assign specific lots to focus on particular issues and areas of science, civics, economics or consumer science that you want to emphasize. Or, you can use these challenges as starting points for a more in-depth exploration of a particular issue or concern that affects your community. Ask students to explore a particular lot, identify the challenge and research the various solutions provided. Then compare that with what is actually happening in your area with a similar challenge.

## **Urban/Surban Lot Challenges**

### ***Lot #111 (a predominately senior citizen neighborhood)***

This lot is located in a neighborhood composed almost entirely senior citizens. It's an urban infill with no parking. They can find out if they are watching and listening that one-story dwellings are more desirable.

Census data in the library reveals the make-up of the area, and there is some information on preferences—such as single-story, traditional-style homes. If they attend a community meeting, they will learn that the neighborhood is almost entirely seniors. Even if they decide to build a two-story home, there are smart design choices students

can make (putting the essentials such as master bedroom, kitchen, bath, living space, etc. on the first floor) they can make.

***Lot #112 (urban brownfield lot being sold very cheaply)***

A former house on this lot was heated by oil. The house has been demolished, but the oil tank was abandoned and has leaked. This lot is for sale for about a third of what other lots cost. Players will be attracted by the price, and they may not realize why the lot is so inexpensive or, they may not realize how expensive and time-consuming it can be to clean up such a site, as required by law.

Players can discover the lot's history and the likelihood that it is contaminated by exploring the lot (oil spill and fumes), visiting the planning office or having the soil tested by a soil scientist in the Experts area. If they don't find out earlier, they will know when they are turned down for a permit.

Although clean-up is expensive, students who do a little more research will find out that there is a Housing and Urban Development (HUD) grant to fund brownfield reclamation.

***Lot #113 (urban infill lot with old infrastructure that is near the site of a future freeway off-ramp)***

The lot is visually attractive and centrally located. It is near the freeway for homeowners who have to commute to work. And it has an old infrastructure that was originally done in the 1930s by the Work Projects Administration. Repair and modernization of the utilities is complicated by the fact that they are buried under the streets, requiring more time and money. They will find out they need to consult a civil engineer.

Players who consult the planning office will learn that a new off-ramp from the freeway will lead traffic directly by the lot, contributing to the noise and creating congestion. Careful positioning of the house footprint on the lot and additional landscaping to hide the freeway

from view can make it more valuable to prospective buyers. When they reach the construction phase, students can choose to add soundproofing and position certain rooms, such as bedrooms, away from the ramp.

***Lot #121 (no septic tank)***

The suburban lot for sale was part of an old farm that was subdivided. It is a beautiful lot, but there is no water/sewer hook-up. Students can learn about the lot (before or after purchasing it) by paying a visit to the planning office. After purchase, they can attend a community meeting to hear neighbor comments. To fix the problem, students can hire a Civil Engineer to install septic tank and drill for a well or extend the county water and sewer lines out to their lot.

***Lot #122 (lot at the base of a hill with drainage problems)***

This lot is very attractive visually—nestled in a small valley formed at the base of hills. What unwary players may not realize is that, when it rains, the water falling on the hills runs down into the small valley.

If they do their research, students will discover an engineer can help them build a drainage system that will channel the rainwater away from the house. However, this plan also will threaten some of the local wildlife. At this point, they can move ahead or purchase another plan that takes the wildlife into consideration.

**Lot #123 (suburban lot whose runoff empties into an impaired river)**

The storm water from this lot empties into the Mud River, which has just been added to the Impaired Waters List. Students need to take steps to prevent further contamination of the river by runoff.

Students can learn of the problem and its implications through research in the planning office. They can find a letter from a government agency notifying them of the river's impaired status and requiring them to take precautions.

**Rivers And Lakes Lot Challenges**

**Lot # 231 (trees on the lot are favored by an endangered bat)**

On this lot, there are many white oak trees (*Quercus alba*). The Indiana bat, or *Myotis sodalis*, an endangered species, is known to use those trees for habitat during the summer, fall, and spring, when it isn't hibernating in caves or mines. The bats like to roost under the flaking and exfoliating bark and return to the site repeatedly. In order to obtain a permit to build, students will need to obtain a permit from the FWS. This involves adapting a conservation plan.

**Lot #232 (recreation pond negatively impacted by construction)**

Neighbors use the pond near this lot for recreation—fishing and swimming. Construction on this lot risks negatively impacting the pond, as the neighbors well know. Only last year, construction near a small lake in the area devastated the fish population and made that pond unpleasant and unsafe for swimming.

Students who are alert to visual cues will learn right away that the pond is used by the locals. Students who attend a community meeting (before or after buying it) will learn about the neighbors' attachment to the pond near the lot and their concern about possible pollution. One solution is to hire an Architect/land Planner to set up buffer zones.

### ***Lot #233 (lot of archaeological importance)***

This lot is on a small hill and contains some Native American burial grounds. Students who learn about the issue early on can hire an archaeologist to evaluate the lot. Students who don't discover the cultural importance of their lot until after excavating can choose to do nothing and proceed with their building. One of the workers will inform the city and the preservation society. Construction will stop for site evaluation, and the player will be fined.

### **Coastline Lot Challenges**

#### ***Lot #341 (lot with complaints from neighbors about blocking ocean views)***

This lot is not ocean-front property, but, situated in the foothills near the coast, it has a great view of the ocean and is elevated from the surrounding ground, making it less susceptible to flooding. The people who own the house behind the lot are concerned that the new house will block their view of the ocean. Students who build without heeding advice will later have to deal with neighbors' complaints. They will get a lower score at the end.

***Lot #342 (coastline lot on the ocean with erosion problems)***

Although erosion is really an issue for almost all coastal property, in this game the challenge will be tied to this one specific lot on the ocean.

Players who research erosion in the lab or read about it in the library will realize that their lot runs the risk of severe erosion. Players who do not know about the danger of erosion and who take no measures will have difficulty selling their house.

Students can also hire an expert to develop erosion management techniques. The most effective mitigation technique is building as far away from the ocean as possible on the lot.

## List of Options Costs

The following sheets contain some of the standard costs for the Site and all of the costs for the House and Sale phases of the program. Students will find these costs in the Options Drawer as they go through the process. These lists are provided to enable you to help students plan expenditures.

Not listed on these sheets are lot prices, the base cost of different houses and the foundation costs. There are 11 different lots and dozens of possible combinations of house costs. All of these are detailed in the Options Drawer and within the Site phase of the program. Encourage students to check out costs of building materials, interior items and landscaping BEFORE they settle on a house footprint and a foundation style. This will help them plan ahead and spend more carefully so they have budget remaining for items they may want later.

<i>The Site</i>	
<i>Category</i>	<i>Cost</i>
Expert Fees	\$2,500 and \$5,000 for reports. Cost of executing a plan will vary by solution chosen
Building Permit	\$50.00
Tree Removal	
Regular Tree	\$500.00
Palm Tree (Coastline Only)	\$1500.00
Grading and Cleanup	\$3,000 to \$6,000 approximately

## The House

<b>Building Materials</b>	
<i>Category</i>	<i>Cost</i>
<b>Exterior Siding and Finishes</b>	
Aluminum, 1st Floor	\$9/sq. ft.
Aluminum, 2nd Floor	\$12/sq. ft.
Brick, 1st Floor	\$14/sq. ft.
Brick, 2nd Floor	\$17/sq. ft.
Stucco, 1st Floor	\$10/sq. ft.
Stucco, 2nd Floor	\$13/sq. ft.
Stone, 1st Floor	\$28/sq. ft.
Stone, 2nd Floor	\$35/sq. ft.
Vinyl, 1st Floor	\$8/sq. ft.
Vinyl, 2nd Floor	\$11/sq. ft.
Wood 1st Floor	\$9/sq. ft.
Wood, 2nd Floor	\$12/sq. ft.
<b>Roofing</b>	
Asphalt	\$2.99/sq. ft.
Slate	\$9.96/sq. ft.
Tile	\$6.71/sq. ft.

<b>Building Materials</b>	
<b>Category</b>	<b>Cost</b>
<b>Windows</b>	
Bay, Aluminum	\$602 each
Bay, Vinyl	\$586 each
Bay, Wood	\$1,736 each
Picture, Aluminum	\$216 each
Picture, Vinyl	\$253 each
Picture, Wood	\$396 each
Single, Aluminum (with shutters)	\$380 each
Single, Vinyl (without shutters)	\$256 each
Single, Wood (with shutters)	\$465 each
Single, Vinyl, 2nd Floor	\$11/sq. ft.
<b>Doors</b>	
Interior, Wood	\$150 each
Exterior, Wood	\$860 each
Exterior, Metal	\$1,000 each
Exterior, French, Wood Frame	\$1,764 each
Exterior French, Metal Frame	\$446 each
Exterior, Sliding Glass, Wood Frame	\$1,764 each
Exterior, Sliding Glass, Metal Frame	\$495 each

<i>Interior</i>	
<i>Category</i>	<i>Cost</i>
<b><i>Flooring</i></b>	
Slate	\$8/sq. ft.
Ceramic Tile	\$6/sq. ft.
Oak	\$7/sq. ft.
Vinyl	\$2/sq. ft.
<b><i>Fireplaces</i></b>	
Wood Burning	\$4,300 each
Gas Burning	\$2,700 each
<b><i>Staircases</i></b>	
Wrought Iron	\$10,000 each
Wood	\$5,000 each
<b><i>Kitchen Packages</i></b>	
Gourmet Deluxe	\$17,170 each
Gourmet	\$13,669 each
Classic	\$7,460 each
Economy Plus	\$4,480 each
Economy	\$3,340 each

<i>Interior</i>	
<i>Category</i>	<i>Cost</i>
<b><i>Bathroom Packages</i></b>	
Grande Deluxe	\$11,676 each
Deluxe	\$8,975 each
Classic	\$5,100 each
Economy Plus	\$2,200 each
Half Bath	\$2,200 each
Powder Room	\$1,400 each
<b><i>Interior Amenities</i></b>	
Central Music System	\$1,000 each
Electronic Air Cleaner	\$2,500 each
Lighting Control System	\$3,000 each
Multiple Phone Lines	\$500 each
Security System	\$2,000 each
Sound Proofing	\$1/sq. ft.
High-Speed Internet Access	\$1,000 each

<b>Outdoor</b>	
<i>Category</i>	<i>Cost</i>
<b><i>Special Features</i></b>	
Guitar-Shaped Pool	\$35,000 each
Heart-Shaped Pool	\$25,000 each
Large Pool	\$60,000 each
Standard Pool	\$30,000 each
Spa Hot Tub	\$10,000 each
Patio	\$6,500 each
Basketball Court	\$5,000 each
Two-Car Garage, Brick	\$30,000 each
Two-Car Garage, Stucco	\$30,000 each
Skateboard Park	\$22,300 each
Gazebo	\$10,000 each

<b>Outdoor</b>	
<b>Category</b>	<b>Cost</b>
<b>Trees</b>	
Bishop Pine	\$500 each
Cherry	\$500 each
Choke Cherry	\$500 each
Hockberry	\$500 each
Hornbeam	\$500 each
Littleleaf Linden	\$500 each
Limber Pine	\$500 each
Noble Fir	\$500 each
White Oak	\$500 each
<b>Palm Trees</b>	
American Oil Palm	\$1,500 each
Betel Palm	\$1,500 each
Betel Tris Palm	\$1,500 each
Canary Island Palm	\$1,500 each
Palmetto Palm	\$1,500 each
<b>Plants</b>	
Boxwood	\$50 each
Holly	\$45 each
Flowers	\$150 total
Cactus	\$100 each
Saguaro	\$1,000 each
Aloe	\$100 each

<b>Outdoor</b>	
<i>Category</i>	<i>Cost</i>
<b>Gates and Fences</b>	
Archway	\$400/4 linear ft.
Bio-Retention	\$100/4 linear ft.
Brick	\$200/4 linear ft.
Brick Post	\$100/4 linear ft.
Iron	\$120/4 linear ft.
Iron/Brick	\$140/4 linear ft.
Stone	\$400/4 linear ft.
Stone Post	\$200/4 linear ft.
Wood	\$75/4 linear ft.
<b>Additional Options</b>	
Asphalt	\$100/tile
Rocks	\$80 each

## The Sale

<b>Miscellaneous Costs</b>	
<i>Category</i>	<i>Cost</i>
Advertising	\$250 each
Interest & Overhead (based on loan & rate)	
The Site	3 months
The House	6 months
The Sale	2 months
Additional sale time if first buyers are rejected	2 months

## **Steps in the Home Building Process**

### ***PLANNING AND DESIGN PHASE***

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- Development/Construction Management
- Financial Management
- House Design
- Site Selection
- Determine Materials/Costs
- Zoning/Permits
- Site Preparation

### ***CONSTRUCTION PHASE***

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- Purchase Materials
- Laying Foundation
- Framing
- Electrical/Plumbing/HVAC Installation
- Insulation
- Flooring
- Roofing
- Window Installation
- Drywalling/Finishing and Tapers
- Select plumbing, electrical, cabinet fixtures and floor coverings
- Finishing—carpentry, painting, tiling
- Flooring installation
- External finishing

## **Steps in the Home Building Process (cont.)**

### ***THE HOME INTERIOR***

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- Smart House Enhancements
- Interior Design

### ***LANDSCAPING***

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### ***HOME BUYING***

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- Financing/Closing

### ***HOME SELLING (ongoing throughout process)***

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- Public Relations/Advertising
- Marketing and Sales

## Vocabulary

### The Site

These are terms students will encounter in this phase of the program. Definitions can be found in the Library under the Research button on the WorkSpace Bar. Use these sheets for vocabulary exercises and assignments. Encourage students to add to the lists as they learn more about home building/home selling.

*Average house costs*

*Base house cost*

*Basement*

*Berm*

*Bioremediation*

*Bioretention*

*Brownfield*

*Buffer zone*

*Building codes*

*Building permit*

*Caissons*

*Clean Water Act*

*Concrete*

*Contaminate*

*Crawlspace*

*Critical habitat*

*Endangered species*

*Endangered Species Act*

*Erosion*

*Fauna*

*Flora*

*Footprint*

*Foundation*

*Grade*

*Green Building*

*Guano*

*Impaired Waters List*

*Infrastructure*

*Leech field*

*Lot*

*Mitigation*

*Multi-family housing*

*National Association of Home*

*Builders (NAHB)*

*Pilings*

*Retaining wall*

*Septic system*

*Setback*

*Single-family housing*

*Slab*

*Smart Growth*

*Storm sewer*

*Survey*

*Swale*

*Threatened species*

*Universal design*

*Urban infill housing*

*Water table*

*Zoning*

## Vocabulary

### The House

These are terms students will encounter in this phase of the program. Definitions can be found in the Library under the Research button on the WorkSpace Bar. Use these sheets for vocabulary exercises and assignments. Encourage students to add to the lists as they learn more about home building/home selling.

*Aluminum siding*

*Asphalt shingle*

*Bay window*

*Brick*

*Building envelope*

*Ceramic tile*

*Direct costs*

*Drywall*

*Energy efficiency (includes building envelope, heating and cooling, water and plumbing, lighting, appliances and other equipment, trees)*

*Engineered wood*

*Fiber cement siding*

*Floorplan*

*Framing*

*Indirect costs*

*Landscaping*

*Metal roof*

*Overhead*

*Profit*

*Project cost*

*Roofing materials (includes asphalt/composite, slate, tile, metal, wood)*

*Shutter*

*Siding (includes aluminum, brick, fiber-cement, steel, stone, stucco, vinyl, wood)*

*Shingle*

*Slate*

*Steel*

*Stone*

*Story*

*Stucco*

*Tile*

*Traditional lumber*

*Vinyl siding*

*Wood shingle*

## Vocabulary

### The Sale

These are terms that you will discover when you buy or sell a home. Definitions can be found in the Library under the Research button on the WorkSpace Bar. Use these sheets for vocabulary exercises and assignments. Encourage students to add to the lists as they learn more about home building/home selling.

*Appreciation*

*Credit*

*Default*

*Depreciation*

*Fair market value*

*Fannie Mae*

*Freddie Mac*

*Gift letter*

*Inquiries*

*Interest*

*Liquid assets*

*Loan risk*

*Marketability*

*Mortgage*

*Origination Fee*

*Points*

*Private Mortgage*

*Insurance*

*Profit*

*Project cost*

*Selling price*

*Three Cs*

*Tradeline*

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# Student Worksheets



## About the Student Worksheets

These student worksheets have been provided for student use to assist in planning and problem-solving. Print and copy them as needed.

**Budget Planning Worksheet** – This sheet will help students/student teams plan their spending as they go through the home building process. Careful planning can help students become smart builders, making good choices and staying within their budgetary limits.

**Credit Analysis Worksheet** – In the Sale phase of the game, students will select buyers after reviewing their profiles. This sheet can help them analyze and compare credit and income information that determines creditworthiness and affects a buyer's ability to acquire financing. Mathematical formulas figure prominently.

**House Footprints** – In The House phase students will create a floorplan in the house footprint they have chosen. These handouts can be used in hands-on practice or extra-credit exercises to supplement the activity in the program. The footprints can be enlarged on the copier if desired. See Teaching by Game Phase for floorplan activity suggestions

## Budget Planning Worksheet

Use this in conjunction with the Budget Watch and the Options drawer to plan and manage costs through the home building process. (Note: You may have no costs in some categories. For example, you may have only one bathroom in your home or you may not have a fireplace or a pool.)

Student/Team Name:		
Class:	Start Date:	
Bank Loan:	Interest Rate:	
Location:	Lot #:	Sq Ft.:

	Item	Cost
<b>The Site</b>	Lot Improvements	
	Base Cost of House (Includes framing, drywall, electrical and plumbing)	
	Foundation type -----	
	Expert Fees	
	Tree Removal Costs	
	Lot Grading and Cleanup	
	Permit	\$50

<b>Building Materials</b>			
<b>Item and Type</b>	<b>Material Choice</b>	<b>Cost per Sq. Ft.</b>	<b>Cost</b>
<b>Exterior Siding/Finish</b>			
1st Floor			
2nd Floor			
<b>Roofing</b>		each X	
<b>Windows</b>			
Bay			
Picture			
Single (with shutters)			
<b>Exterior Doors</b>			
Regular			
French			
Sliding			
<b>Interior Doors (wood only)</b>			

*The House*

<i>Interior</i>			
Item and Type	Material Choice	Cost per Sq. Ft.	Cost
<b>Flooring</b>			
<b>Fireplace(s)</b>		each X	
<b>Staircase(s)</b>		each X	
<b>Kitchen</b>		each X	
<b>Bathroom</b>			
1st Floor		each X	
2nd Floor		each X	
<b>Interior Amenities (list type)</b>			

*The House*

<b>Outdoor</b>		
<b>Item and Type</b>	<b>Each</b>	<b>Cost</b>
<b>Special Features (list type)</b>		
<b>Landscaping – Trees</b>		
<b>Landscaping – Palm Trees</b>		

*The House*

<b>Outdoor</b>		
<b>Item and Type</b>	<b>Each</b>	<b>Cost</b>
<b>Landscaping – Plants</b>		
<b>Gates and Fences</b>	<b>Per 4 Linear Ft.</b>	
<b>Additional Options</b>		

*The House*

<b>The Sale</b>	<b>Item</b>	<b>Each</b>	<b>Cost</b>
	<b>Ad Cost</b>	\$250	
	<b>Additional Ad</b>		

## Credit Analysis Worksheet

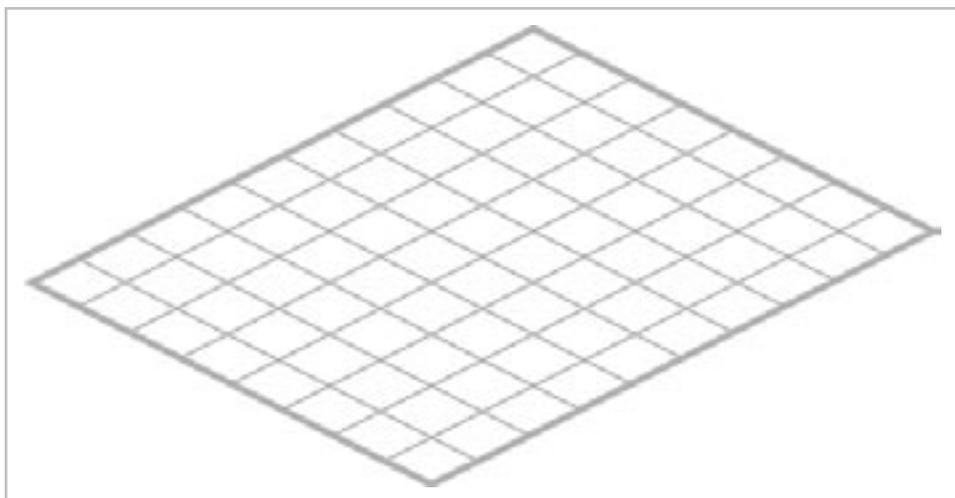
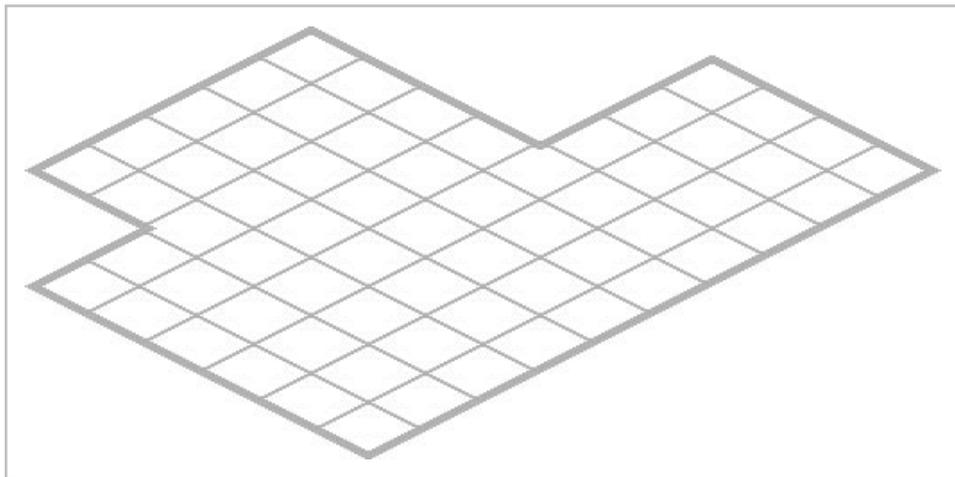
Selecting a qualified buyer for your home is more complicated than picking the highest bid. Even income alone is not a total indicator that a person will be eligible for a loan. Bankers and mortgage lenders look at percentages of debt in relation to earnings. Once again, math skills are key. Do the calculations as suggested on the Credit Information sheets and use this worksheet to record the results and help you determine your best prospective buyer.

<b>Credit Analysis Worksheet</b>					
<b>Buyer:</b>	# of 4 star ratings:		Mortgage Payment:		% of income
	# of ratings below 2 stars:		Total Monthly Debt:		% of income
<hr/>					
<b>Buyer:</b>	# of 4 star ratings:		Mortgage Payment:		% of income
	# of ratings below 2 stars:		Total Monthly Debt:		% of income
<hr/>					
<b>Buyer:</b>	# of 4 star ratings:		Mortgage Payment:		% of income
	# of ratings below 2 stars:		Total Monthly Debt:		% of income
<hr/>					
<b>Buyer:</b>	# of 4 star ratings:		Mortgage Payment:		% of income
	# of ratings below 2 stars:		Total Monthly Debt:		% of income

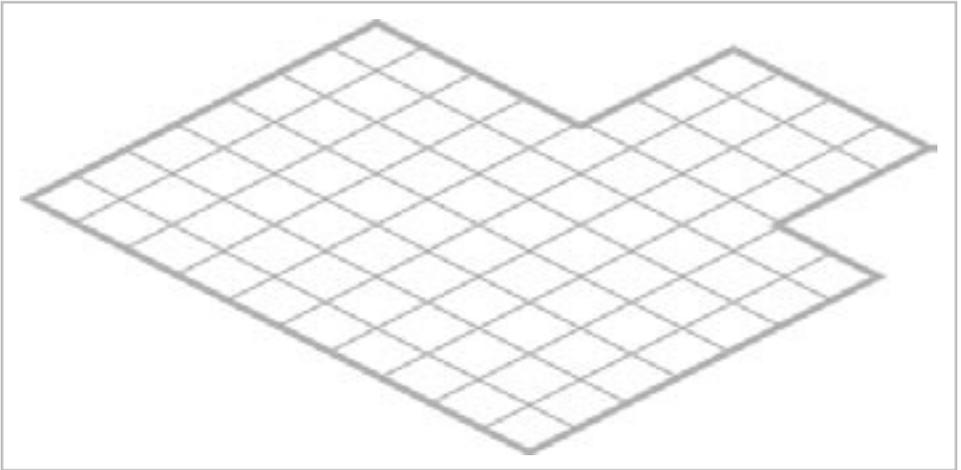
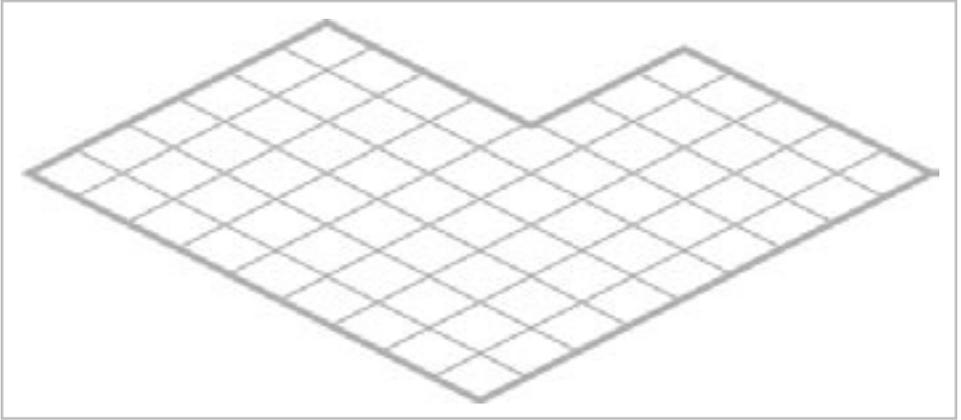
## House Footprints

Creating a floorplan takes some planning and math skills. Use these sheets to practice or perfect your floorplan. Each square = 4 square feet. (And, don't forget windows, halls and interior doors!)

### *Urban Footprints*



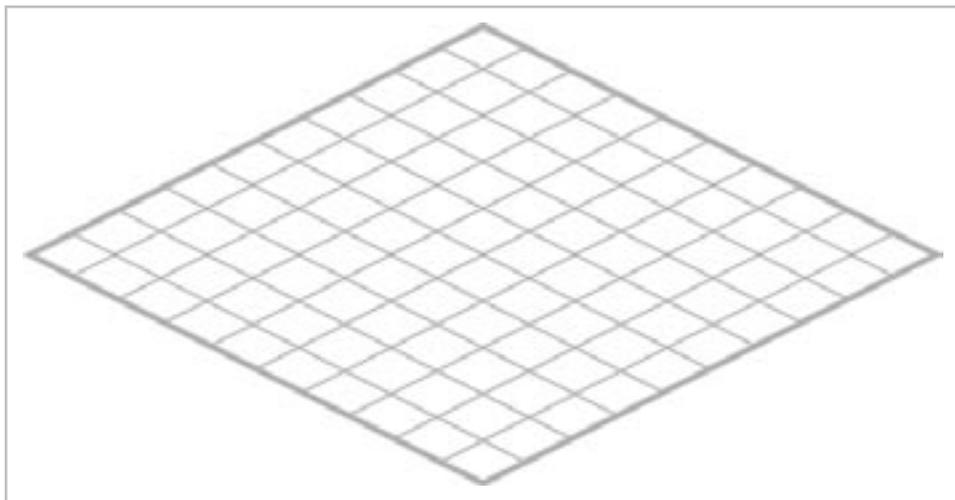
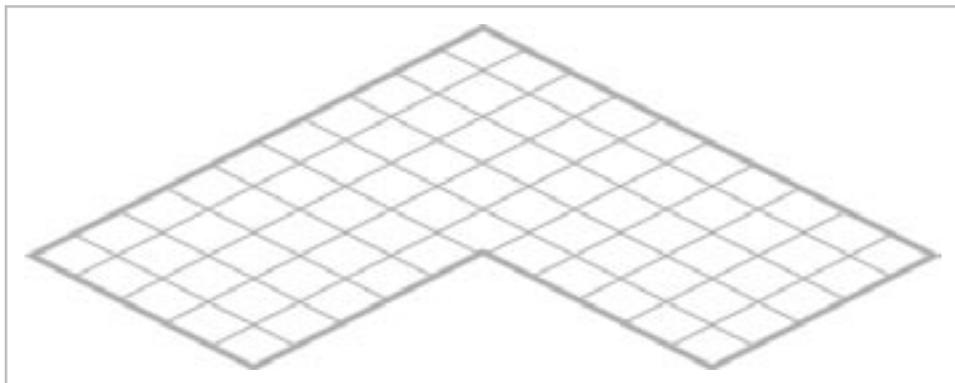
*Urban Footprints (cont.)*



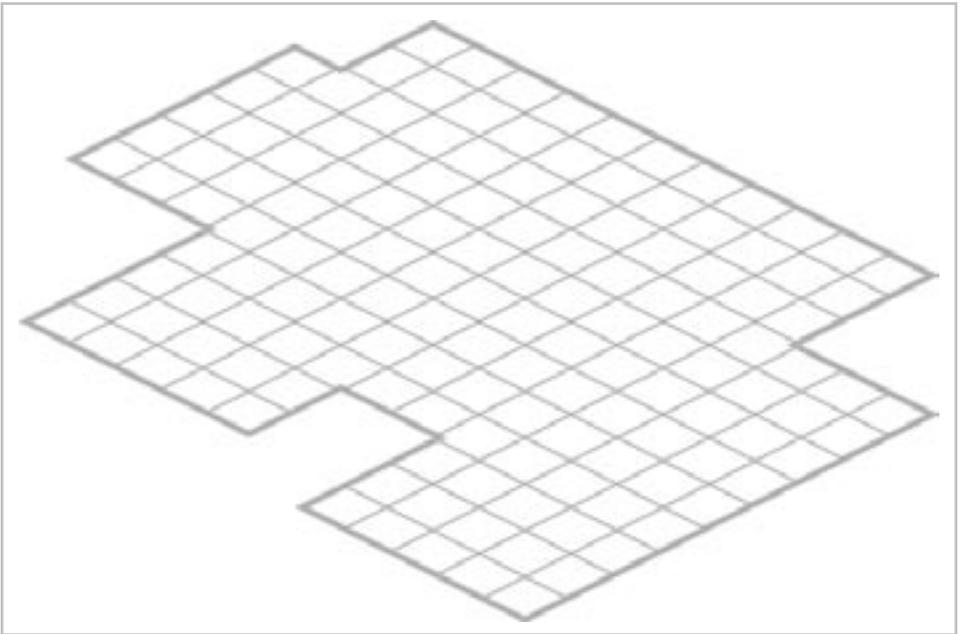
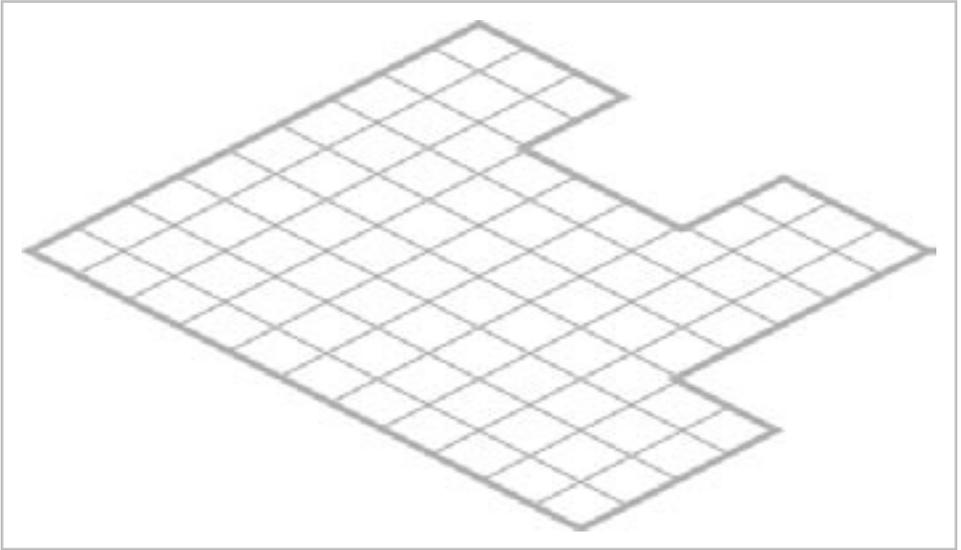
## House Footprints

Creating a floorplan takes some planning and math skills. Use these sheets to practice or perfect your floorplan. Each square = 4 square feet. (And, don't forget windows, halls and interior doors!)

### *Suburban Footprints*



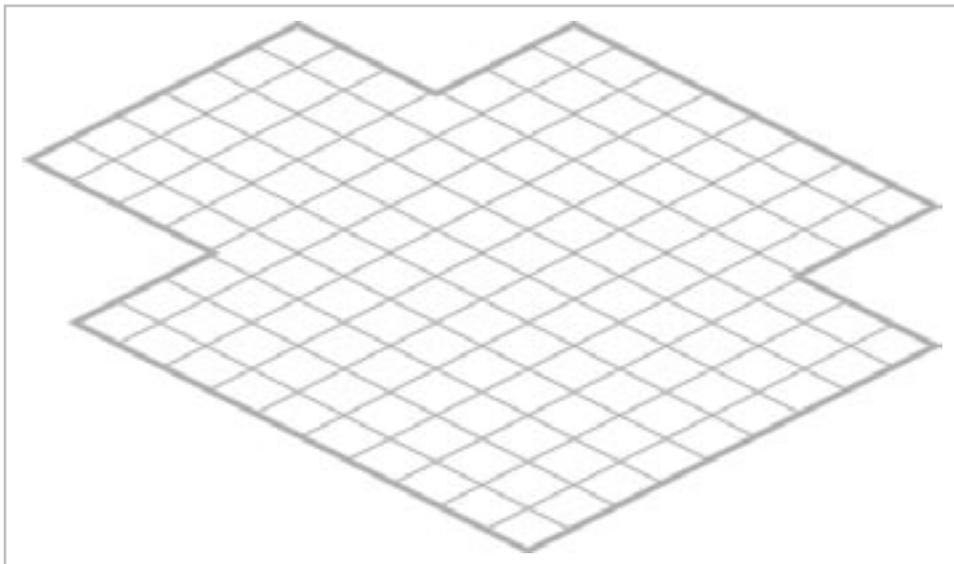
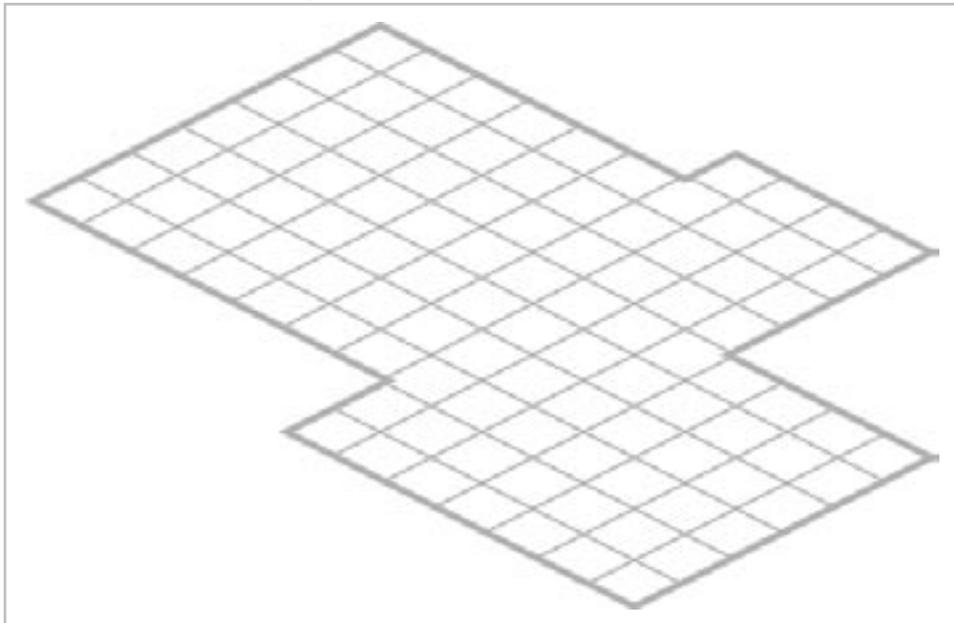
*Suburban Footprints (cont.)*



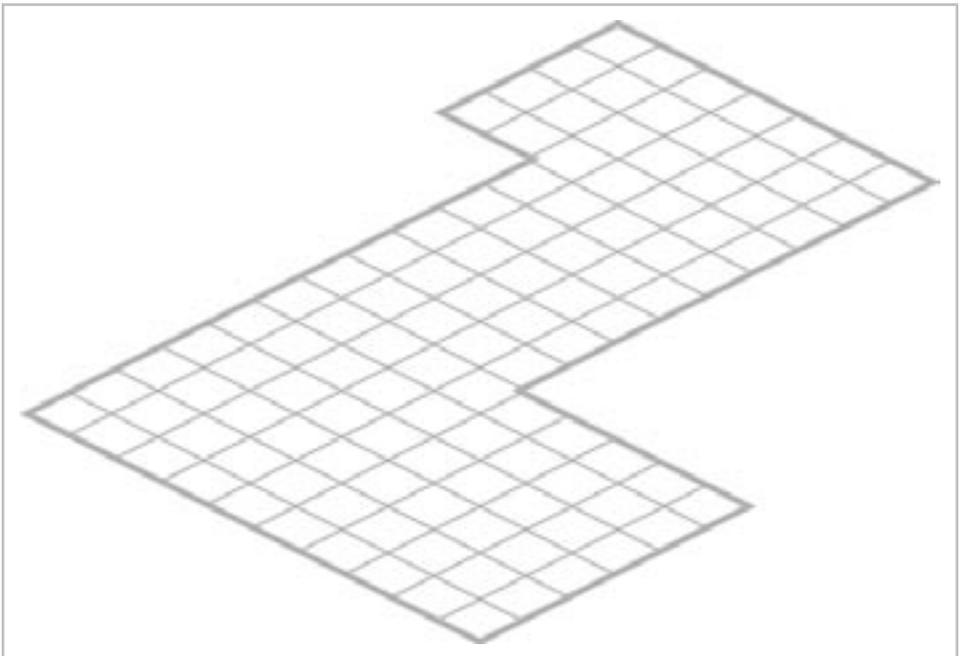
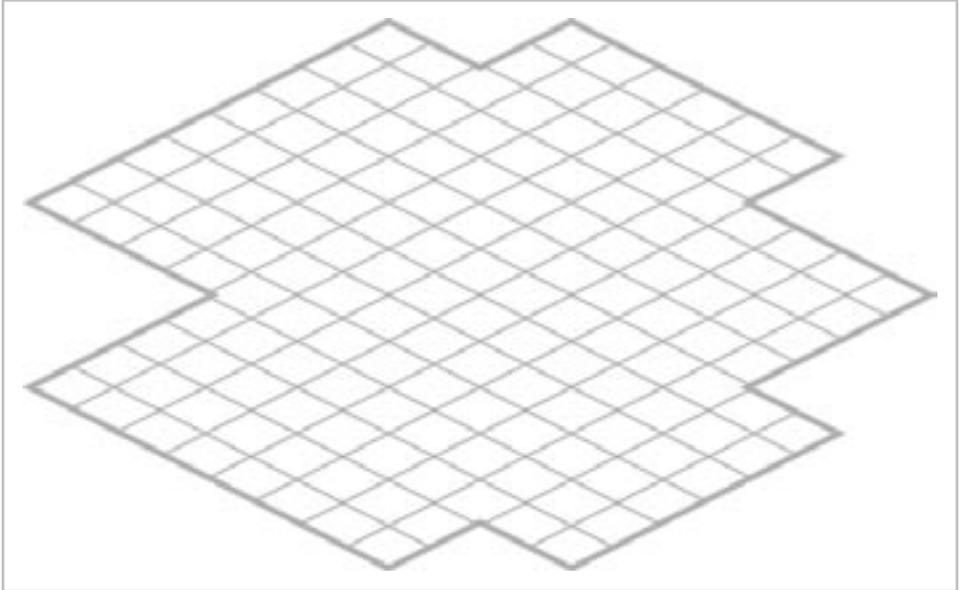
## House Footprints

Creating a floorplan takes some planning and math skills. Use these sheets to practice or perfect your floorplan. Each square = 4 square feet. (And, don't forget windows, halls and interior doors!)

### *Rivers and Lakes Footprints*



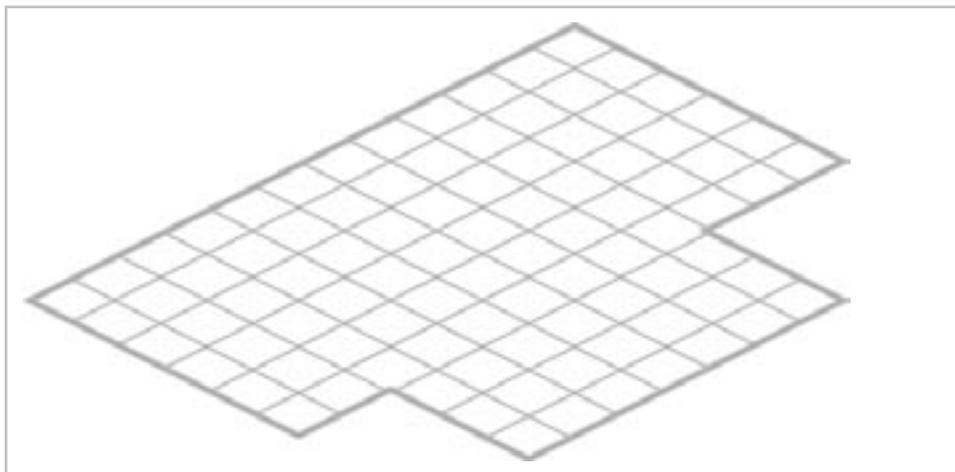
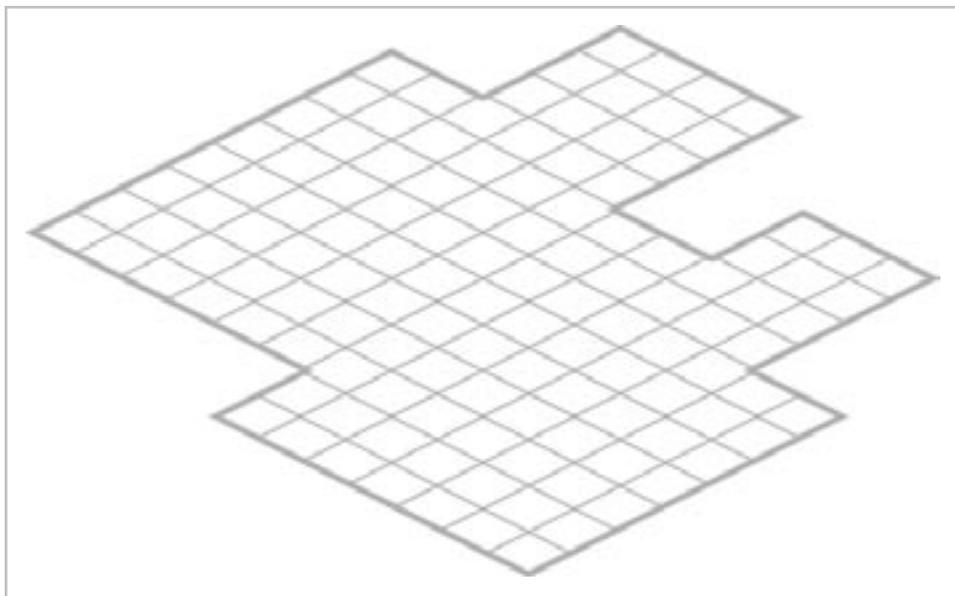
*Rivers and Lakes Footprints (cont.)*



## House Footprints

Creating a floorplan takes some planning and math skills. Use these sheets to practice or perfect your floorplan. Each square = 4 square feet. (And, don't forget windows, halls and interior doors!)

## Coastline Footprints



*Coastline Footprints (cont.)*

