



# 4-H Housing Design and Improvement

7th-8th Grades



Louisiana 4-H is an  
educational program  
of the LSU AgCenter



# How to Use This Book

This project book can be used for three years. It contains three levels of activities. **Level 1** activities will give you introductory learning experiences. **Level 2** activities build on those experiences. **Level 3** activities will draw on many things you have learned and integrate them into more complex projects.

Choose Level 1 activities in the first year you enroll in this project. Then, move on to higher levels in the following years. You can also create your own activities and learning experiences.

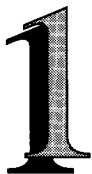
Some of these activities give you practice with the scientific method or teach other science concepts. They are labeled **Science Wise**. In a few activities, you practice your math skills; these are labeled **Math Matters**. Also, several activities are labeled **Going Further**.

These are ideas for learning experiences that go beyond the information provided in this book.

There are other special sections in this book that call your attention to related jobs and careers, important alerts and

helpful tips. Throughout the book, look for these symbols:

## Level 1 Activity



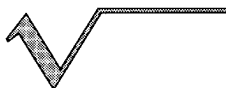
## Level 2 Activity



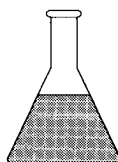
## Level 3 Activity



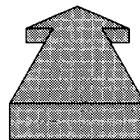
## Math Matters



## Science Wise



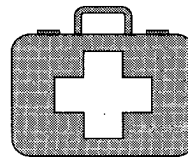
## Going Further



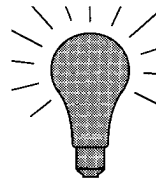
## Things People Do



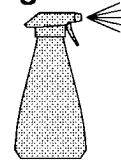
## Health and Safety Alert



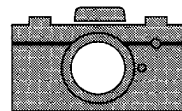
## Energy Note



## Taking Care



## Camera



# Project Requirements

To complete your project each year, you need to choose and accomplish at least the number of activities indicated below.

<b>Year</b>	<b>1</b>	Complete at least 15 Level 1 activities.
	<b>2</b>	Complete at least 10 Level 2 activities.
	<b>3</b>	Complete at least 5 Level 3 activities.

Name \_\_\_\_\_

Club \_\_\_\_\_

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## Introduction

In this project book, you will explore design and home improvement. You will use the design principles to plan appealing spaces in your home. You will practice making choices after looking at your options. You will do things to make your home look better, work better and feel more comfortable. You will learn ways to save energy in your home and why that's important.

## Design

Design has a language all its own. The *words* are called *design elements*. The ways these *words* are combined are called *design principles*. In this project you will learn the basics for creating and judging design. You will continue to use these skills all your life, from designing your own home to choosing a new car.

## Design in Nature

Design is found in the world all around us. Nature is a good place to find good design.

## Design in Our Lives

Design is found in our everyday lives. We use design when we live, when we work and when we play.

# 1 L1 Activity - Choose a Tree

Go outside and look around at the trees. Decide which tree you think looks best. Why do you like the design of that tree better than the others?

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## Design in Our Homes

Our homes must do more than provide shelter. People need to make their homes pleasing and comfortable places.

In this section you will:

- Learn about - what makes good design.
- the design elements- the design principles

Learn to - use the elements and principles to recognize good design as well as to create your own exciting designs.

## Formulas for Design

When you begin to design, you quickly find there are no step-by-step rules. Design comes from your feelings and things you do. So, design is as individual as you.

There are, though, guides to help you design well. Design happens when certain things (design elements) are combined in different ways (design principles).

### Design Elements

- Color
- Texture
- Line
- Form
- Space

### Design Principles

- Rhythm
- Balance
- Proportion
- Harmony and Unity
- Variety
- Emphasis

Good design serves three purposes.

#### 1. Function

A good designer wants to choose and organize materials to create order and meet people's needs.

#### 2. Beauty

A good designer uses the design principles to create pleasing surroundings.

#### 3. Individuality

Although design is based on age-old forms, it can have a new approach. It says something about the designer.

# 1 L1 Activity - Best Design in the House

Make a list of things in your home you feel are useful, beautiful and unique. Circle the item which you feel has the best overall design. Consider its function, beauty and individuality.

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## Elements of Design

### Color

Color comes from light. If there were no light, there would be no color. The color of an object is a result of which light rays are absorbed and which light rays are reflected to our eyes. The light ray reflected by an object is the color seen.

As a ray of light passes through a prism, it is broken down into colors we see. This is what happens when light passes through rain or mist and forms a rainbow.

A rainbow is a spectrum of light. A spectrum is the order of colors in a ray of light. If you take a spectrum and bend it in a circle, you will have a color wheel.

In working with color, there are some terms you need to know: Hue-Value-Intensity.

# Hue

The hue is the name of a color. To build a color wheel (See Figure 1), you begin with the **primary hues** - red, yellow, blue. These colors cannot be made by mixing other colors.

**Secondary hues** are created by mixing two primary colors together. Red and yellow mixed together make orange. Red and blue make violet. Yellow and blue make green.

**Intermediary hues** are created by mixing the primary and secondary colors. These are yellow-orange, orange-red, red-violet, blue-violet, blue-green and yellow-green.

## 1 L1 Activity - Make a Color Wheel

Trace the color wheel on this page onto clean white paper. Mix water color paints or food coloring to make the secondary and intermediary hues.



### Safety Alert

Color is often used as a warning for a possible dangerous situation. Example--a blinking yellow light means caution.

## 1 L1 Activity - Color for Safety

List as many examples as you can of how colors are used for safety. After you list all your examples, ask your family for more examples.

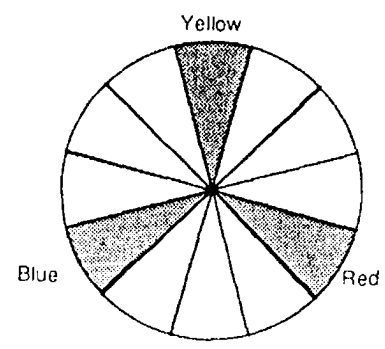
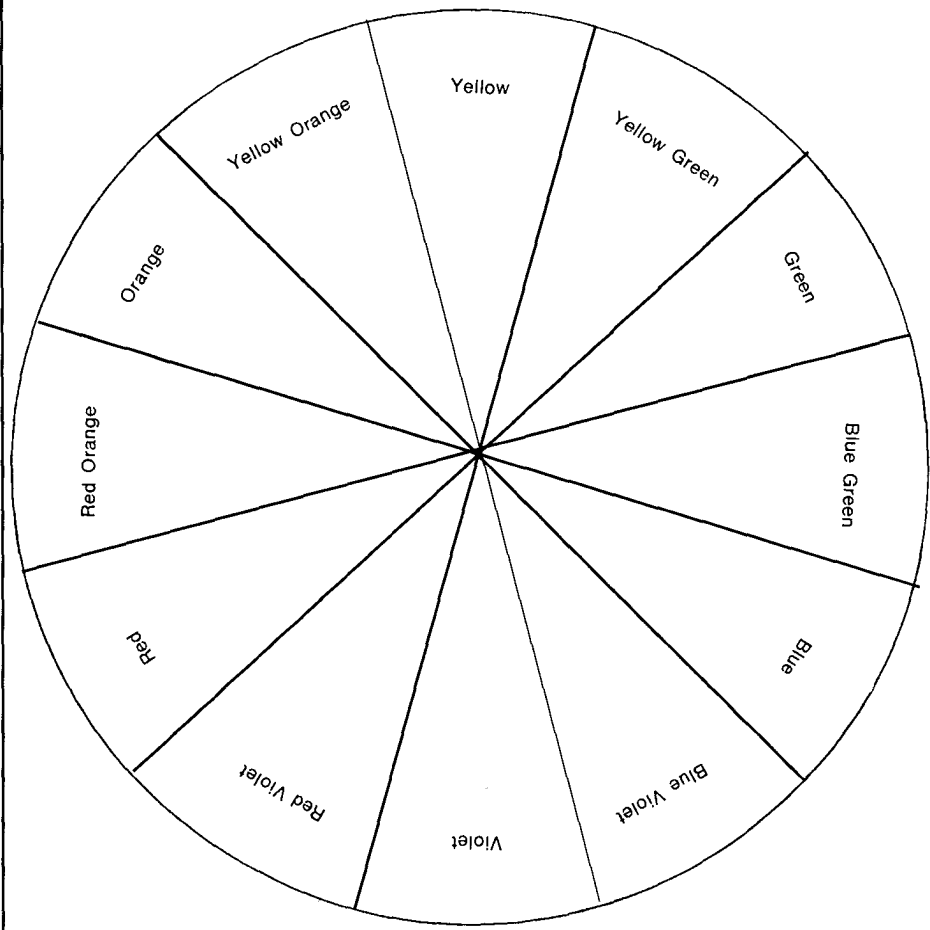
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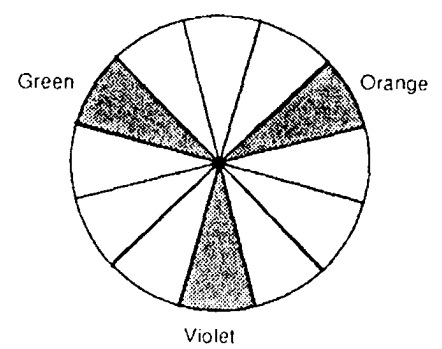
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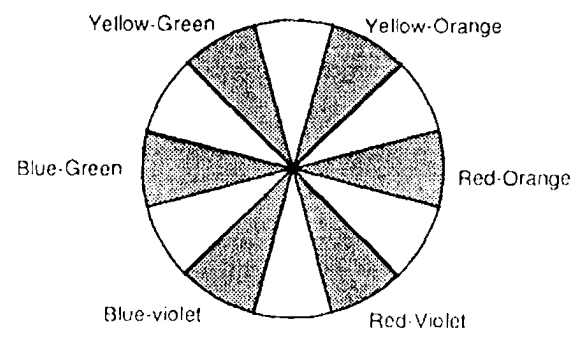
Figure 1. Color Wheel



Primary colors



Secondary colors



Intermediate colors



## Harmony

Colors can be combined in many different ways. These combinations are called color harmonies or color schemes. Some of the most basic color harmonies are:

### Monochromatic (mon'-o-kro-mat'-ik)

Mono means one. This harmony is made of one hue that can vary in value and intensity. For instance, reds can be used, combining pure red, bright pink and gray-pink.

### Analogous (e-nal'-e-ges)

This color harmony consists of colors that are next to each other on the color wheel, such as blue, blue-green and green.

### Complementary

Colors exactly opposite each other on the color wheel are known as complements. Examples are blue and orange, yellow and violet, and green and red.

## 1 L1 Activity - Name That Color Harmony

Which type of color harmony is:

1. red, red-violet, violet?

\_\_\_\_\_

2. yellow, gold, light yellow?

\_\_\_\_\_

3. blue-green and red-orange?

\_\_\_\_\_

## 2 L2 Activity - Design Color Harmony Rugs

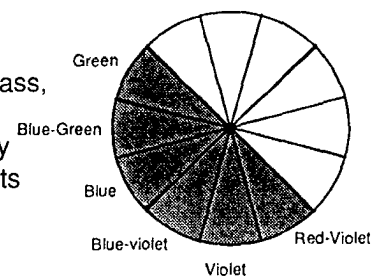
Use crayons or paint to make three rug designs--(a) one using monochromatic colors; (b) one using analogous colors and (c) one using a complementary color scheme. Look at rugs in stores and catalogs to get design ideas.

## Warm and Cool

Hues, values and intensities affect our feelings. They also influence the size we think objects are and how far away from us they seem.

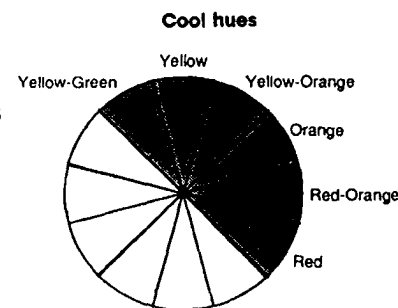
### Cool Hues

Cool colors remind us of water, grass, sky and mountains. Cool colors give a feeling of coolness and calmness. They attract less attention. They make objects seem smaller and farther away.



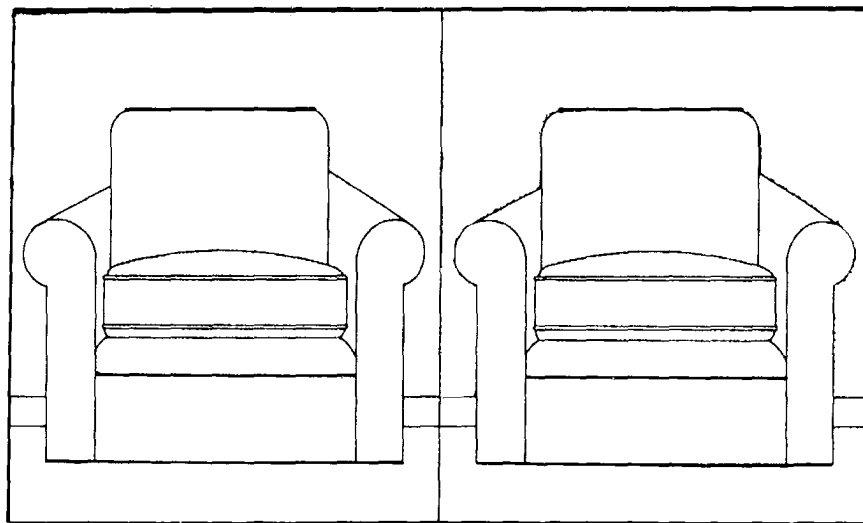
### Warm Hues

Warm colors remind us of sunlight and campfires. Warm colors give a feeling of warmth. They are stimulating and attract more attention. Warm colors make objects seem larger and closer.



## 1 L1 Activity - Color It Warm, Color It Cool

Use crayons to color these two chairs. Use only warm colors on one and only cool colors on the other one. Compare the finished chairs. Write down your impressions.



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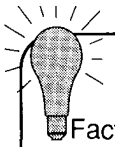
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## 2 L2 Activity - Effects of Color Temperature

Go through old magazines. Cut out pictures of rooms that mainly use warm colors and rooms that use mostly cool colors. Paste or tape each picture on paper. Below each picture, describe the effects of the warm or cool colors in those rooms.



### Energy Note

Color can actually make you feel warmer or cooler.

Factory workers who said they felt cold when the temperature was 72° stopped complaining when the blue-green walls were painted coral. It could make you more comfortable to use warm colors in the coldest part of the house and cool colors in the warmest part of the house.

Color makes us feel...(Add your own feelings.)

Red--anger, excitement, heat, happiness,

Green--nature, relaxation, summer, envy,

White--purity, cleanliness, winter,

Blue--royalty, water, coolness, sadness,

Yellow--autumn, cowardice, intensity, warmth,

Black--depression, night, sleep, sophistication

Color can increase your pulse, blood pressure and nervous tension. The same color does not always have the same effect on different people. Nearly everyone has strong likes or dislikes when it comes to color.



### Things People Do

There are people called color stylists who advise architects, engineers, city planners, product designers and others on what colors to use in subways, factories, restaurants, hospitals, prisons and other places as well as on automobiles, telephones and most other things we buy.

## Texture

Texture is how something feels. We use our sense of touch to feel texture.

There are two ways we perceive texture:

1. **Tactile** - texture we feel (and can also see)

*Examples:* tree bark, sand, paper, fur

List other textures you can feel:

2. **Visual** - texture we see but cannot feel.

*Examples:* fabric design, art, pottery glaze

List other textures you can see:

Different textures have different effects:

**coarse/rough** -- informal, masculine, makes objects look larger, softens light and sound, blends color well.

**smooth/satiny** -- formal, feminine, makes objects look smaller, accents light and sound, separates color.

### Combining Textures

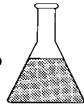
When using different textures together, they should have something in common, or be a pleasant contrast. Textures can have different feelings (like formal or informal, for example).



# 1 L1 Activity - Texture Game

Play this game with your friends. Collect safe objects (no sharp edges) with different textures. Place them one at a time into a brown bag. Take turns putting your hand into the bag, and try to guess what the object is just by using your sense of touch.

## Science Wise



# 1 L1 Activity - Experiment with Light and Texture

*What you need:* Many different texture samples, a flashlight and an area that can be darkened.

*What to do:* Compare the texture samples at different light levels. Write down what you discover:

- In a darkened area

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- With overall room lighting

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- With the flashlight (try different angles)

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# 2 L2 Activity - Make a Texture Collage

*What you need:* texture samples (scraps of fabric, lace, ribbon, buttons, paper, cotton balls, bark, twigs, etc.)

poster board  
scissors  
glue

*What to do:*

- a. Collect whatever textures you like.
- b. Arrange them into a grouping on the poster board.
- c. When you are satisfied with your arrangement, glue them onto the poster.
- d. Describe your collage.

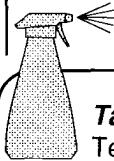
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## Taking Care

Texture affects when and how something needs to be cleaned. Smooth textures are easier to clean, but show dirt more. Rough textures are harder to clean, but show dirt less.

## Line

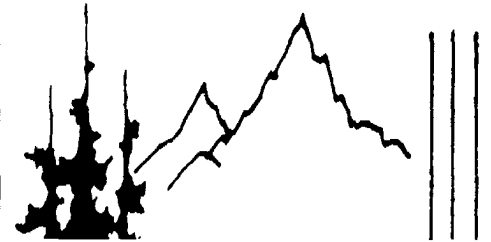
Lines can be thick or thin. Lines can express motion. They can be slow and flowing like a river, or short and frenzied like flames.



Horizontal lines are usually considered restful, like a still lake or the far horizon. They imply an informal atmosphere.



Vertical lines are thought of as reaching and aspiring, like towers and mountains that reach to the sky. They are formal and dignified.



A thin line suggests daintiness.



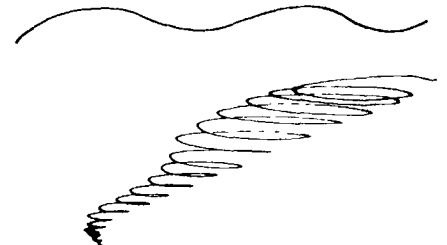
A heavy line suggests boldness.



Diagonal lines show action, like lightning or falling trees.



Curved lines can be gentle and restful, or they can be active and dynamic.

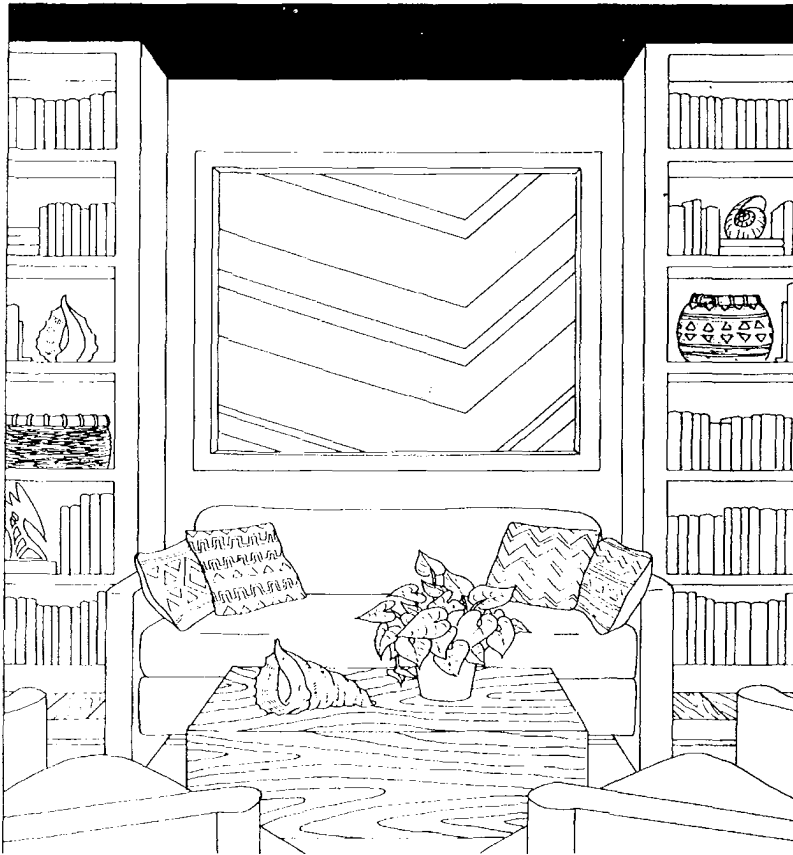


Lines can actually cause things to appear different than they really are. The type of line has a certain feel.

Gently curved - softness

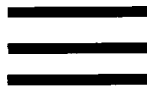
Straight - strength, stability

Broken or tightly curved - action



The direction of line also creates illusions.

Horizontal lines make things look shorter and wider.



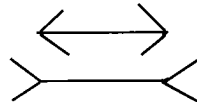
Vertical lines make things look taller and thinner.



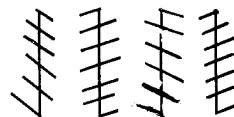
Diagonal lines make things look smaller.



Which line is longer?



Are the vertical lines straight?



**1 L1 Activity - Drawing Feelings**

Draw the kind of line that expresses each feeling.

calm

excitement

anger

**2 L2 Activity - Find Line in Furnishings**

List three things in your home that are examples of:

Horizontal line

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Vertical line

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Diagonal line

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Curved line

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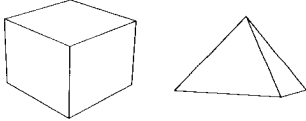
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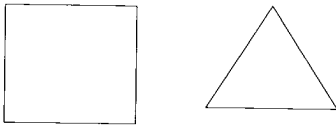
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## Form

Form is created when lines join. **Form** is 3-dimensional, meaning it has height, width and depth--like a cube or pyramid.



**Shape** - is usually considered 2-dimensional, meaning it has height and width--like a square or triangle.



Good form is important. No amount of color, texture or decoration can make up for poor form.

Types of form express different feelings:

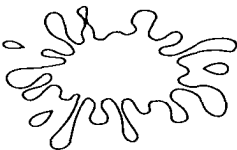
**Rectangular** - stable, strong, secure



**Angled** - dynamic, aspiring



**Curved** - flowing, moving



### Form Follows Function -

This design theory says that the shape of an object should show its use. So, if something is designed well, it looks like what it is - such as a teapot, a chair, a telephone. Do you agree?

## 1 L1 Activity - Find Forms

Name something in your home that is an example of:

form following function:

\_\_\_\_\_

form not following function:

\_\_\_\_\_

## Space

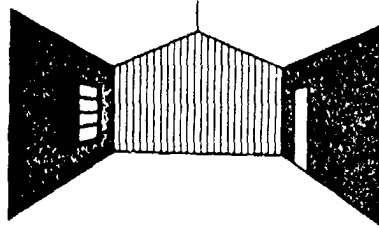
Space is the distance between things. It is found everywhere. It surrounds people, objects, even sounds. In music, silence (or space) is as important as the notes.

Space contains forms. (A house is located in the space of an area.)

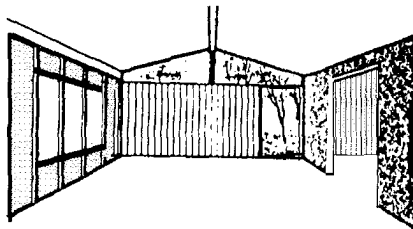
Space is shaped by forms (the space in a house is defined by the walls, ceiling and furnishings).

Space suggests the possibility of change and freedom to move. This can be either real or illusion.

**Closed Space** - A room feels small and enclosed when there is only one small window.



**Open Space** - The same size room feels big and open when visual space is added with more windows and large openings to other rooms.



## Principles of Design

Design principles are guidelines on how to organize the design elements. Everything we touch has line, form, texture, color and involves space. It is the way all these are combined that makes good design. It is the relationship of these elements that makes design.

## Rhythm

To most people, rhythm refers to music and dancing. Rhythm is organized movement. It occurs in all kinds of art and design. Rhythm occurs in nature. Rhythm in design leads the eye from one area to another with smooth movement.

Ways to achieve rhythm:

1. **Repetition** - The same form is repeated.



2. **Alternation** - Two or more forms follow one another.



3. **Progression** - A form changes gradually.



## 1 L1 Activity - Name That Rhythm

Name the type of rhythm created by each of the following:

- heartbeat \_\_\_\_\_

- day and night \_\_\_\_\_

- small stream leads to river, which goes to ocean  
\_\_\_\_\_

- tree twigs, branches, trunk  
\_\_\_\_\_

How did you do? The answers are at the bottom of the page.

## 2 L2 Activity - Make a Rhythm Poster

**What you need:**  
 colored paper  
 glue  
 poster board  
 scissors

**What to do:**  
 Cut simple shapes out of the colored paper. Arrange them on the poster board using either repetition, alternation or progression. When you have a design you like, glue the pieces in place.

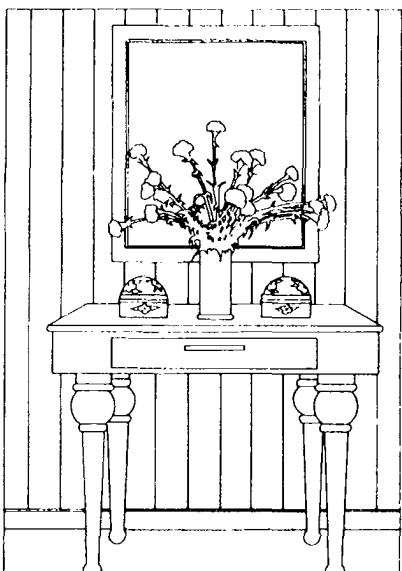
### Balance

Balance is needed if anything is going to work well. People must have balance to walk. Balance in design provides security, but if it is too obvious it can be boring.

#### Three Types of Balance

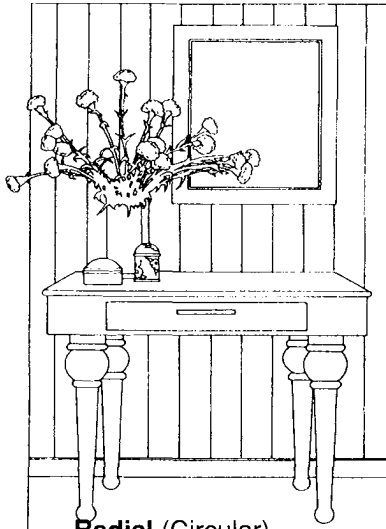
##### Formal (Symmetrical)

This is the simplest form of balance. One side is just like the other side--like looking in a mirror.



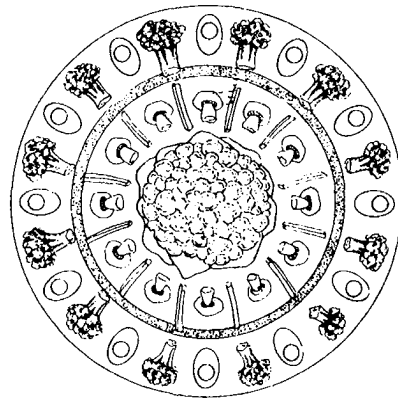
##### Informal (Asymmetrical)

The two sides are different, but one side does not overpower the other side.



##### Radial (Circular)

The main parts radiate from the center, like the spokes on a wheel.



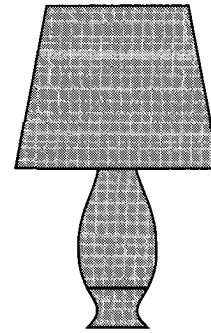
### Proportion and Scale

Proportion is how the different parts of a design relate to each other. It refers to the ratio of:

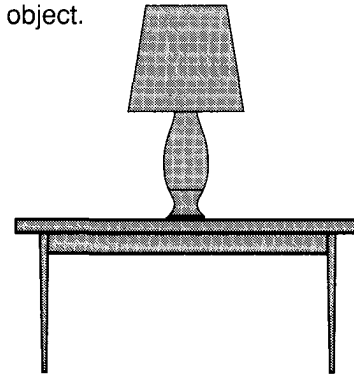
-one part to another part,



-one part to the whole or



-one object to another object.



In general, unequal amounts are more appealing to look at than equal amounts.



THIS



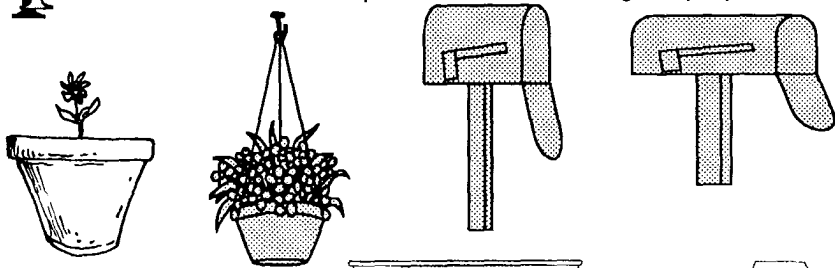
OR THIS



NOT THIS

Answers: (Repetition, alternation, progression, progression)

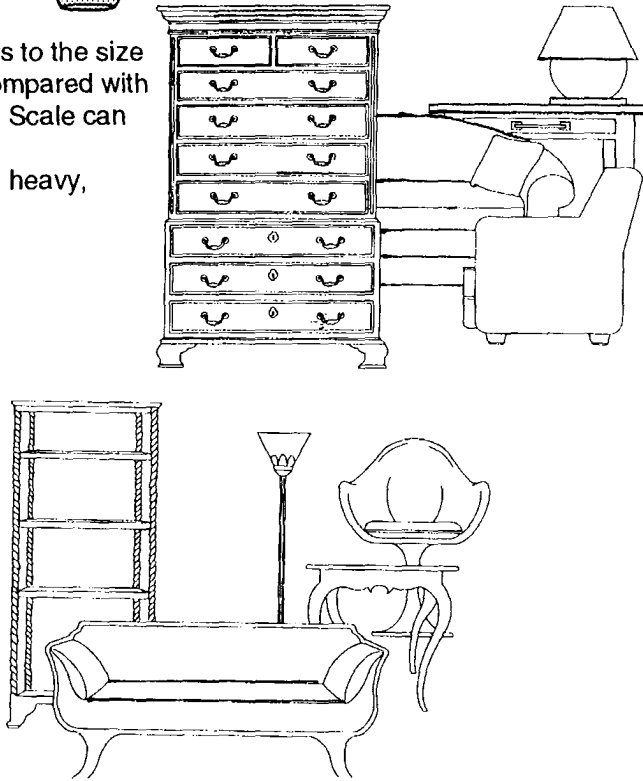
**1 L1 Activity - Judge Proportion**  
 Draw an X over the examples that do not have good proportion.



Scale refers to the size of something compared with something else. Scale can be described as:

low, broad, heavy, large, bold or

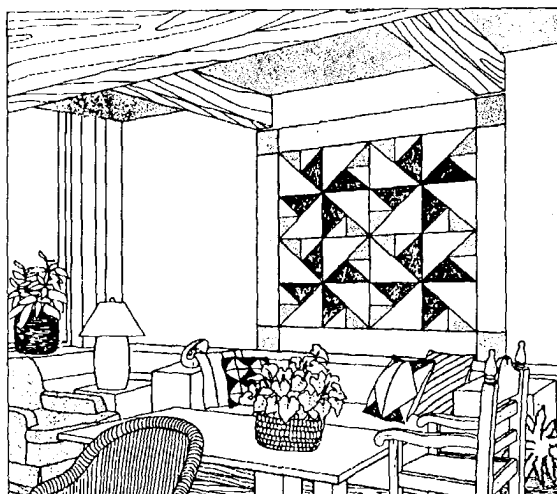
high, light, graceful, small.



**Emphasis**

Emphasis means center of interest.

A piece of art or a room should have a center of interest. This is something that you notice first. There should be only one center of interest, or everything becomes unimportant.



Emphasis can be created many different ways:

**Size** - A sofa demands more attention than a chair -- a skyscraper, more than a house.

**Color** - Bright colors catch your eye more than dull or neutral colors.

**Position** - Placing an object in the center of a wall instead of in the corner makes it more important.

**1 L1 Activity - What is the Emphasis?**

What is the center of interest in your own room?

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What makes it the center of interest?

What are the emphases on both the outside and inside of a church or other building you have seen?

outside \_\_\_\_\_

inside \_\_\_\_\_

**Variety**

Variety, or differences in objects, keeps design interesting. If everything was alike, it would be boring. Differences hold our interest. Variety is a welcome surprise, but it needs to be controlled or there is just confusion.

**Unity and Harmony**

Unity gives a sense of oneness. Harmony makes everything look as if it belongs. For unity in design, parts are chosen and combined to create a whole.

Harmony is the end result of using the other principles of design.



### Ways of Creating Unity/Harmony

1. Repeating the same thing definitely creates unity, but it can be boring.
2. Items that are similar, but not exact, can work well together.
3. Different objects that belong together because of association (the way they are used together) create a sense of harmony.
4. Different objects that carry out the same theme can harmonize.

### 3 L3 Activity - Make a Design Scrapbook

Make a design scrapbook of all the elements and principles of design. Label the top of each page with one of the design elements or principles. Collect and mount on each page pictures from magazines or photographs that illustrate each. Under each picture, write your feelings about the effects of that design element or principle in the picture. Above each picture, identify the type of color scheme that dominates. (Don't consider the bits of accent colors used.)

### 3 L3 Activity - Make Before and After Swatch Boards

Make two color-texture swatch boards for your own bedroom. Make one which reflects your current bedroom colors and textures. Make a second one which shows the color/texture scheme you would use if you redecorated.

Cut out and arrange samples of fabrics, wallpaper, paint chips, flooring, etc. on 8-1/2" x 11" poster boards. Make the swatches different sizes to show the colors in the same proportions as they appear in the room. (Example: bedspread swatch is bigger than pillow swatch)

*Tip:* Visit with an interior designer to see a professional's swatch boards.

## Planning Interior Spaces

Close your eyes and imagine that you and your family live in a big, empty box. Think about all the things you do in your home throughout a day and night. Imagine what it would be like with no furniture, no rooms, no bathroom fixtures and no appliances. What would you miss the most?

Now, imagine your home had furniture, fixtures and appliances, but no inside walls. How would it feel living with your family in only one big room?

### When Is a House a Home?

The inside of your home is called its interior space. To make a dwelling into a home, the interior space must be divided and furnished to meet the needs of the people who live in it. Home is a special place to do things with family and friends.

### 1 L1 Activity - Describe Home Activities

- Things my family does together at home:

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- Things I do alone at home:

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- Things my mom (or other adult) does alone:

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### Shared Spaces - Private Places

People have different needs at different times. That's why most homes are divided into rooms or areas to fulfill these needs. Nearly everyone feels a need for some personal space--that's a private area you can call your own. In different cultures, people tend to want different amounts of personal space. North Americans tend to like a lot of personal space.

Because of people's needs for personal space, homes need some private places.

- The private places in my home are

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These rooms make up the private zone of your home.

Because of people's desire to do things with family and friends, homes need shared spaces. Most homes have places for household work (the service zone) and places designed for being with family and friends (the public zone).

- The service rooms or areas in my home are

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- The public rooms or areas in my home are

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### Large Spaces - Small Spaces

American culture values wide open spaces, but most people cannot afford homes where every room is as big as they would like it to be. Even if a room is big enough to fulfill its functions, it might feel small or cramped.

There are ways to use design elements and principles to make a space look and feel larger.

**Color:** Light, neutral colors make a room look larger. Dark colors appear to move walls closer together, making a room seem smaller. If you want a small space to look larger, make the walls of the entire room the same light color.

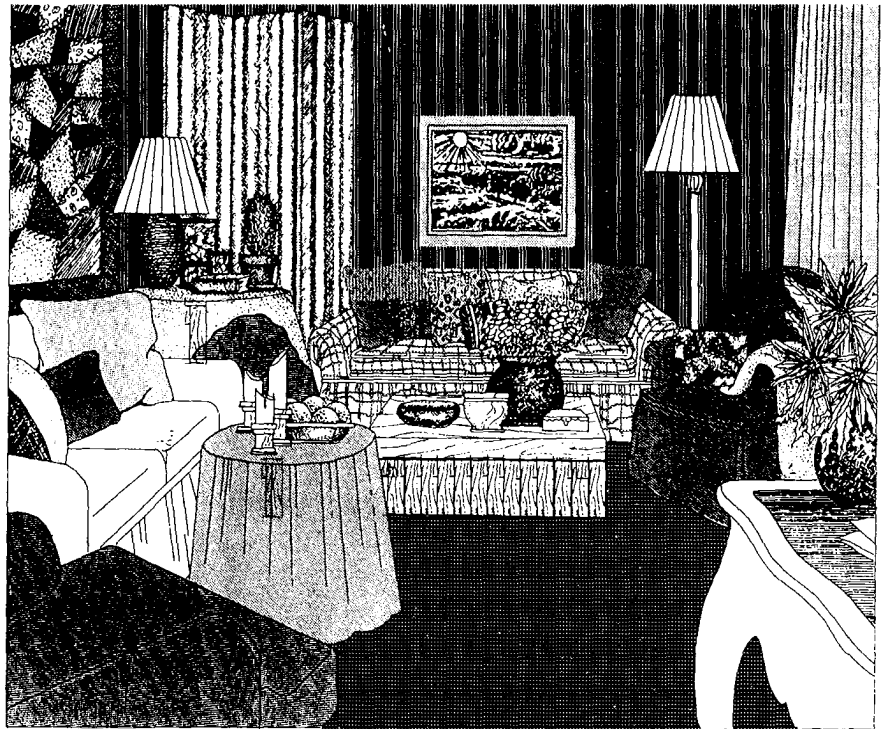
**Lighting:** Light makes rooms seem larger. Without light, you cannot see any colors. With dim light, even large, light-colored rooms may seem small. With a great deal of light, a small and dark-colored room may seem larger.

**Mirrors:** Mirrors make a room look larger because the space is repeated in the reflection. When an entire wall is covered with mirrors, it looks twice its actual size.

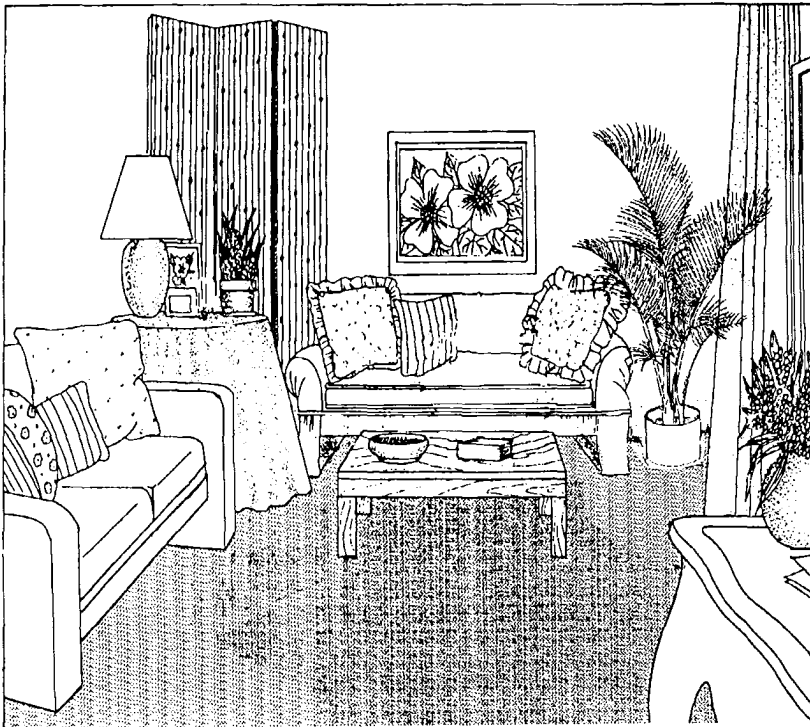
**Openings:** Uncovered windows open a room to the outside. Large openings to other rooms inside the home make both areas feel larger than they are.

**Scale:** Large, solid and bulky furniture takes up a lot of space in a room and makes it feel more cramped. Small scale furnishings and furniture that has open parts (wicker, chairs with legs, etc.) consume less of the room's space.

**Clutter:** Clutter (too many accessories, items out of place, etc.) consumes visual space. It competes with you for the space in a room. The less clutter there is, the more spacious the room will feel.



*This room looks and feels smaller than it is.*



The same room is furnished to seem spacious.

**1** **L1 Activity - Identify How to Expand Space**  
 To make a room look and feel as large as possible, combine:

\_\_\_\_\_ colors and \_\_\_\_\_ lighting with mirrors,  
 \_\_\_\_\_ furniture and \_\_\_\_\_ accessories.

**2** **L2 Activity - Enlarge a Room**  
 Choose a room in your home that you would like to be more spacious. Describe the room. Make a list of all the things that could be done to make that room look and feel larger. Discuss your list with your family. Circle the ones you plan to do (if any). As you do them, write the date each change was made.

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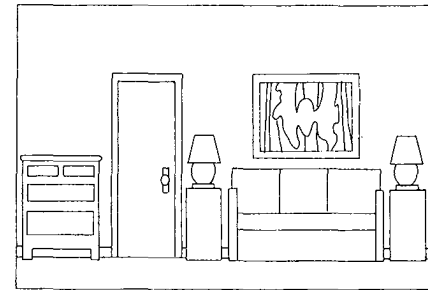
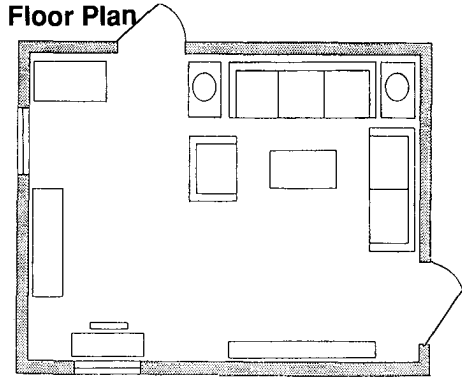
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*Answers: Light colors, bright lighting, small or open furniture, few accessories*

## Drawing a Room To Scale

The key to beauty, comfort and convenience of any room begins like many things--on the drawing board. In the case of housing, this is called a floor plan. A good, scaled floor plan shows the size and shape of a room. It also shows details such as doors and windows. It can show furnishings. Putting your ideas on paper first will save time, money, effort and prevent frustration.

### Floor Plan



### Elevation

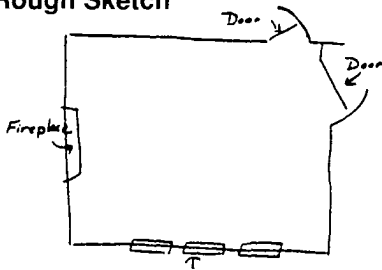
#### Step 1 - Rough Sketch

The best way to begin drawing a floor plan is to make a rough sketch of the space. This sketch doesn't need accurate measurements. It just needs to show all of the room's features (doors, windows, etc). Imagine a room that had been sliced across it and had the top half removed. Imagine that you are floating in the air directly above this room. Look downward into the room below you. Take a photograph.



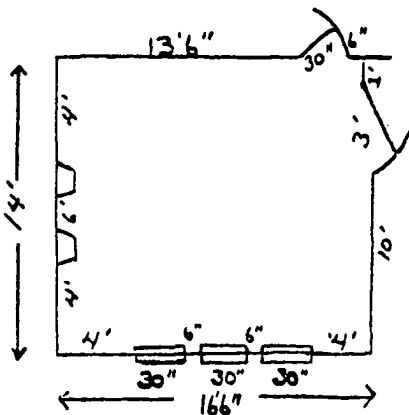
That photograph is the view represented by a floor plan. You see the cutaway walls, doors, windows and the tops of the furniture.

**Rough Sketch**



**Step 2 - Measure Dimensions**

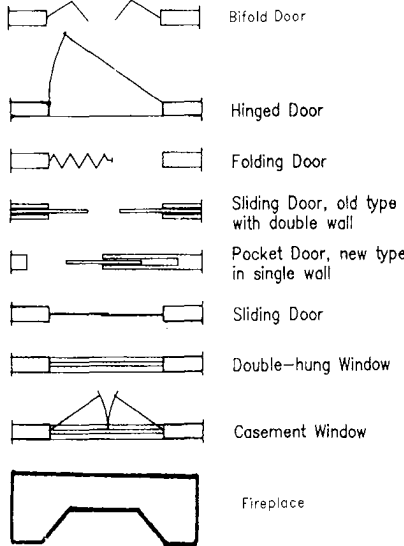
Measure the width of each section of wall, each window, each door, etc. Use a yardstick or retracting, steel tape measure. Write these measurements (the dimensions of the room) on your rough sketch. Include the measurements of each side of the room. Note the total width and length of the room on the sketch.



**Step 3 - Draw It to Scale with Graph Paper**

Use the rough sketch and measurements as guides to draw the room to scale. That means all the dimensions of the drawing equal a chosen fraction of the dimensions of the actual room. It's easier to do if you place a sheet of tracing paper over a sheet of 1/4-inch graph paper. Hold it in place with several paper clips or removable tape.

Each 1/4-inch space on the graph paper can represent one foot of floor space. Count spaces or use a ruler to draw the walls of the room. Use architectural symbols to represent all the features (doors, windows, etc.) of the room.



**1 L1 Activity - Draw a Rough Sketch of Your Bedroom**

In the space below, draw a rough floor plan of your bedroom. Show the doors and windows. Measure all the width dimensions in your room to the nearest 1/2 inch. Write the door and window dimensions on the inside and the wall dimensions on the outside of the walls to avoid confusion.

**Math Matters**

**2 L2 Activity - Draw a Floor Plan of Your Bedroom**

Draw your room to scale on a clean sheet of white paper. Use a 1/4 inch = 1 foot scale.

**Arranging Furniture**

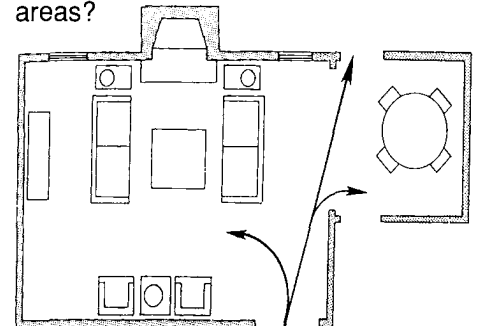
Once your floor plan is complete, you are ready to plan your furniture arrangement. The convenience and comfort of any room depend on how the furniture is arranged.

Here are some tips:

- a. Keep traffic paths open. The paths that people take when walking through a room form the traffic pattern. Conversation areas need to be placed so they are not disturbed by traffic.
- b. Place large pieces of furniture parallel to a wall so they conform to the line of the room.
- c. Each room should have a center of interest or focal point. This can be a fireplace, a window area, an important piece of furniture or a beautiful accessory.
- d. Group together pieces that are used together. (Example: Sofa with chairs for conversation.)

**1 L1 Activity - Find the Traffic Patterns**

Walk all through your house. Go from room to room. Evaluate the traffic patterns you have discovered. Does any furniture get in the way? Does a path cut across any activity areas?



e. Arrangement can shape function. Furniture can be used as a room divider.

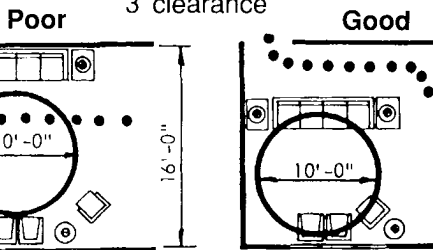
f. Harmony of scale, line and color adds more to unity than does furniture style. You can combine different styles of furniture but they should have similar scale and line and harmonize with architectural features. Surfaces should not all be the same height.

g. Create a spacious look. When rooms are small, make them seem as large as possible. Keep the number of furniture pieces to a minimum. When space is limited, arrange furniture close to the walls to have floor space open.

h. Make sure there is enough open space to move around and do the things you need to do. Here are some guidelines:

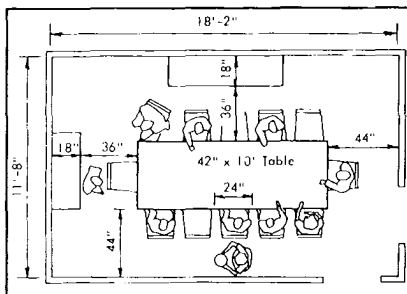
#### Living Area

major traffic path--4'-6" wide  
minor traffic path--2'-4" wide  
seating at desk--  
3' clearance



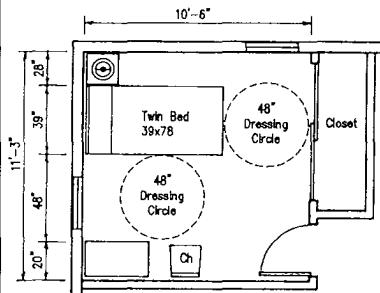
#### Dining Area

table space for each adult--  
24" wide  
space to rise from the table--  
32" clearance  
space between table edge  
and wall--44"  
(3' minimum)



#### Sleeping Area

space for bed making--22"  
space in front of closet--36"  
space for dressing--40"-48"  
circle  
space in front of dresser--  
40"-48"



i. One final tip--real furnishings will appear larger and bulkier than cut-outs on flat paper. Take care not to use every inch of space.

#### Furniture Arrangement Checklist

1. Are large pieces of furniture parallel to the wall?
2. Is there a center of interest?
3. Is the arrangement useful and convenient?
4. Does the room look spacious?
5. Does the furniture arrangement look unified?
6. Is the furniture in proportion and in scale with the size of the room?
7. Is the arrangement balanced in the room?
8. Do pieces of furniture form groups in pleasing proportion and scale?
9. Are chairs and sofas grouped so conversation can be carried on easily?
10. Is furniture grouped for convenience, sleep, grooming and study?
11. Are chairs for reading placed where there is good light?
12. Is there an open traffic lane?
13. Are major conversational or TV viewing groups disturbed by traffic?

## 2 L2 Activity - Rearrange Your Furniture (On Paper)

Make a copy of your bedroom floor plan so you have two.

Make cut-outs of all the furniture in your room. Make a copy of cut-outs on page 19. On one floor plan trace the cut-outs to show your furniture arrangement as it really is now. On the other floor plan, use cut-outs of your furniture to experiment with new arrangements. Trace the cut-outs in what you decide is the best arrangement. Use the Furniture Arrangement Checklist and make needed changes in your plan. Show the final arrangement to your family. Ask your parent if you could try the new furniture arrangement in your room. How did it work?

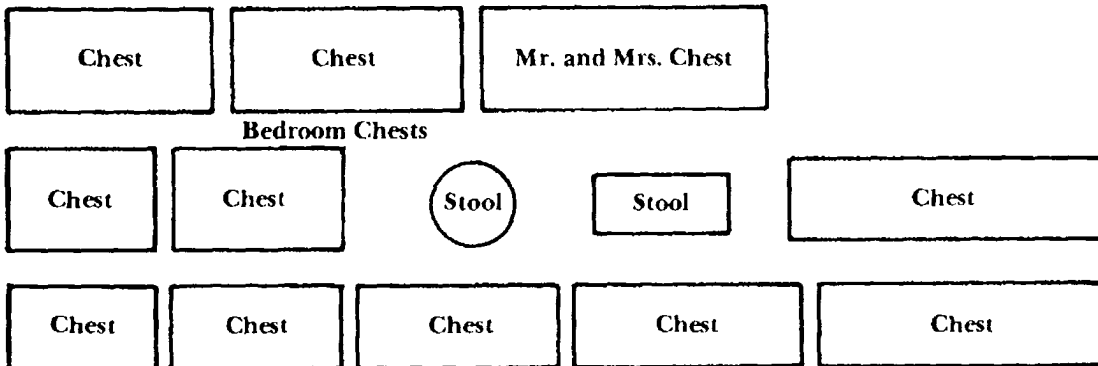
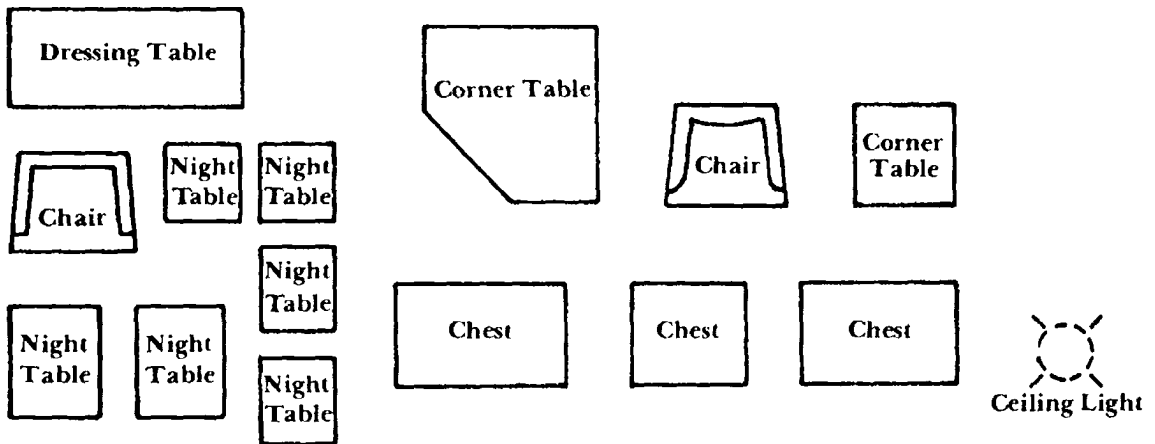
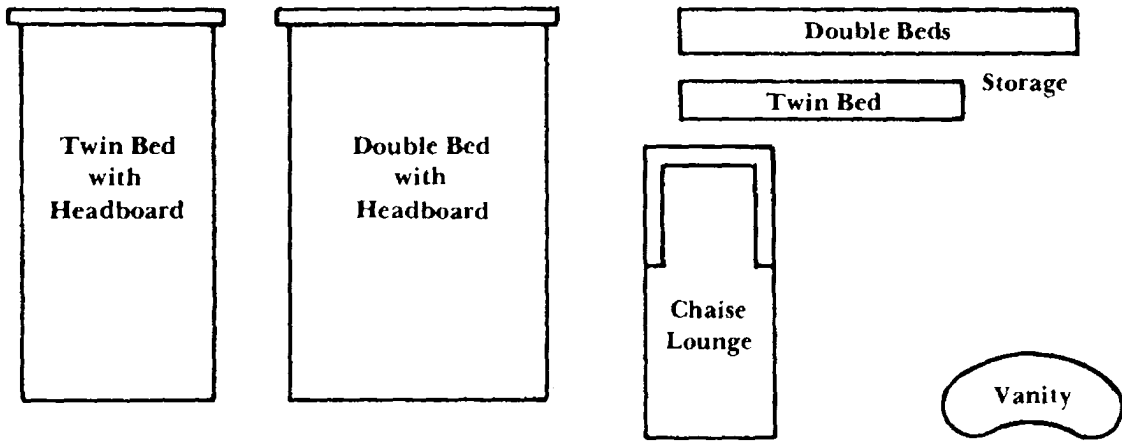
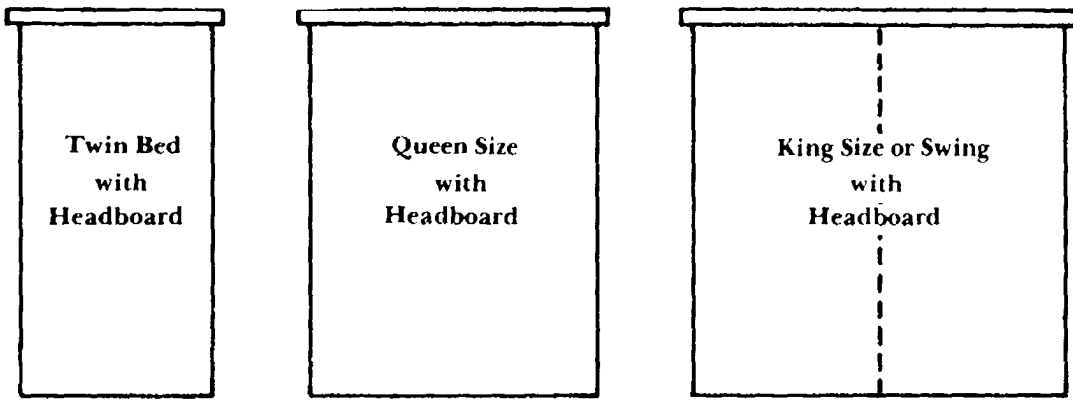


#### Things People Do

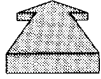
Interior designers are professionals (usually with specialized education) who analyze and creatively plan the functions, quality and look of interior spaces. They need to understand the desires and needs of the people who will use the building. They also need to know about the products used in interior spaces. They solve design problems.

## 3 L3 Activity - Make a Detailed Floor Plan of Your Rearranged Bedroom

Now that you have analyzed and rearranged your bedroom, make a final floor plan to show its new, improved arrangement. This time, make the floor plan as detailed and accurate as you can. Use correct architectural symbols. Make it very neat.



### Going Further



### 3 L3 Activity - Make Elevations of Your Bedroom

Visit with an interior designer or project leader to see examples of elevation drawings. Draw the view of each wall of your room. Show any furnishings that are placed against the wall. Use a straight edge and pencil. Make it neat.

### 3 L3 Activity - Plan a New Furniture Arrangement for Your Living Room

Draw a floor plan of your living room or den to scale. Make and use furniture cut-outs to plan a new, improved arrangement. Show it to your family. Describe what you then did.

## Everyone Needs a Storage Plan

Do you hate to hear the words, "Clean up your room now!?" Do you spend a lot of time hunting for things that you can't find right away? If you answered "Yes," you need a storage plan to make your life easier. A storage plan will save you time and trouble.

### Take Inventory

First, you need to look at what you have. It's helpful to make a list. That's called an inventory.

### Cut the Clutter

The most important step for a more convenient home or room is to get rid of things you don't really need. If you haven't used something in over a year, put it in either a throw-away or give-away box and don't look at it again. Unused things are nothing but clutter that robs you of valuable storage space.

### Use a Storage Strategy

Plan where to store each type of item you keep by asking yourself these three questions:

- (1) Where do I use it first and most often?
- (2) Do I use it every day, a few times a month or only once each year?
- (3) How could it be placed so the things I need often are easy to reach?

Sort everything by its use, then store things together that are used together.

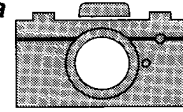
Store things you use often at the place where they are used first. Place these things in front of seldom used things. Don't stack unlike items. Your goal is to store things so they are easy to see, easy to reach and easy to put away. Store heavy things near elbow height for easier lifting.

Use storage aids. Drawer dividers, hooks, racks, step shelves, pocket shoe bags are just a few examples.

### Think Double Duty

Choose things that serve more than one function. This will cut down on the number of things that need to be stored. For instance, a single all-purpose cleaner takes less storage space than a bunch of special cleaners.

### Camera



### 1 L1 Activity - Make a Storage Plan for Your Chest of Drawers or Desk

Take inventory, cut clutter and use the storage strategies to organize your chest of drawers or desk. Make or buy drawer dividers. Take before and after pictures if you can.

### 2 L2 Activity - Make a Storage Plan for Your Closet

Try to find creative ways to improve storage in your closet. Visit home centers, hardware stores and look in catalogs for ideas. Take before and after pictures if you can.

### 3 L3 Activity - Make a Big-Time Storage Plan

Choose one:

1. Make a storage plan for everything you own.
2. Make a storage plan for your kitchen. Work together with your family. Take before and after pictures.

## Making Choices

Rooms aren't useful without furniture, accessories, lighting and home equipment that meet your needs. All of these things together are your home furnishings.

What you like and what you need change over time. What types of furnishings did you have when you were a baby? What types of furnishings would you like to have now? As families change, so do their furnishings. Choosing furnishings is something nearly everyone does sooner or later. Making a choice that turns out to be a mistake is also something that most people do sooner or later.

### **1** L1 Activity - Discover the Best and the Worst

Ask your parents about the best and worst furnishings choices they ever made.

Since many types of furnishings are costly, it's important to try to avoid bad choices. How long does your family tend to keep the same living room furniture?

### Make a Furnishings Plan

The most important thing to do when buying your first home furnishings is to make a plan.

**a.** List activities that will happen in each room. This will help you know what types of furnishings are needed.

**b.** Determine the mood or theme you want to express. Do you want the room to be formal? Informal? Bright and cheerful or more on the restful side? Do you want it to reflect your interests, hobbies or perhaps your family heritage?

**c.** List your needs and your wants separately.

**d.** Make before and after inventories. Your first inventory will include the furnishings you already have. Very few people start with absolutely nothing. Consider hand-me-downs, hand-made items, etc. Your second list will be things you need to buy. If the list is long, you may have to make a buying plan to spread the purchases out over a period of time.

**e.** Write down your furniture budget.

The best choice for a first piece is a basic article that will serve many functions over a long time. For example: a chest that can be used as a coffee table or in a bedroom.

Resist the temptation to purchase a fad item that will end up in next year's garage sale. Furnishings fads come and go. Costly items should have a classic design that you will enjoy for many years.

### **1** L1 Activity - Make a List of Room Activities

Make a room-by-room list of the activities that happen in your bedroom and your living room. List what types of furnishings are needed for each activity. Make a separate list of wants.

### **3** L3 Activity - Make Your Bedroom Furnishings Plan

Choose a real or pretend budget for making a furnishings plan for your bedroom. Complete and describe on paper each of the steps a - e. Attach this plan to your final bedroom floor plan and furniture arrangements.

## Choosing Furniture

The price of furniture is affected by its:

- design (simple, ornate, designer)
- materials (type of wood, type of fabric, etc.)
- workmanship (sturdy construction, precisely made)
- finish (type of protective treatment or coating)

Some of these things can be seen and judged for quality. Some are hidden. Reading labels can help you make comparisons. Using the following checklists will help, too.

## Shopping Checklist for Wood Furniture

### Consider Your Needs

- Is it the style I want?
- Is it easy to care for?
- Does it blend with other furnishings to be used in the room?
- Will it fit into the space I have available?
- Will it serve my needs?
- Does it reflect my personality?
- Does this type of wood have the characteristics I need?

### Look at the Label

- Does the label indicate if the wood is solid, genuine, a combination or an imitation?
- Does the label name the type of finish?

### Look at the Finish

- Is the finish smooth and free of bumps or ridges?
- Is the finish free of dents and scratches?
- Is the stain evenly applied?
- Is the color and wood grain even all over?

### Look at the Cabinets

- Are the cabinet backs screwed into the frame?
- Do movable parts move easily?
- Are shelves adjustable?
- Are joints accurately cut, closely matched, tight-fitting and free of excess glue?

### Look at the Drawers

- Are the insides and sides smooth?
- Are dust panels provided?
- Are joints sturdy?
- Are stops provided so drawers don't come off easily?
- Are drawers deep enough to serve my needs?
- Do drawers open and close smoothly without binding?
- Do drawers line up when closed?

### Look at the Doors

- Do doors open and close smoothly and quietly?
- Do doors remain closed and not swing open?
- Do closed doors fit into cabinet without sagging?
- Are magnetic or secure catches provided at top and bottom?
- Are glass insets and panels secure and rattle-free?
- Are hinges properly secured with screws?

## Shopping Checklist for Upholstered Furniture

### Consider Your Needs

- Is it the style I want?
- Does it reflect my personality?
- Does it suit my lifestyle?
- Is the price in my budget?
- Will it fit in the space planned for it?
- Will it fit through doorways, hallways, etc.?

### Look at the Outer Fabric Construction

- Is the design, if any, centered on the cushions, sides, back and skirt?
- Does the skirt, if any, hang straight?
- Are any welts, tufting, etc. well-constructed?
- Are buttons securely sewn through filling, not tacked on?
- Are seam stitches close together?
- Are back seams on a sofa minimal?
- If seams are top-stitched, are stitches short?
- Are cushion zippers and straps concealed?
- Do cushions fit without gaps or overlappings?
- Are there no loose threads?
- Is the deck fabric the same or similar to outer fabric?
- Are arm covers included or available?

### Consider the Fabric Itself

- Is the fiber content listed or available?
- Is the fabric closely woven when held to light?

- Is the fabric durable enough?
- Does the fabric return to normal after being stretched?
- Is it colorfast?
- If a pile fabric (like velvet or corduroy), does the pile stand upright when crushed?
- Is it firmly attached to the base fabric?
- Does any printing rub off?
- Has a stain-resistant finish been applied?
- Are care instructions given?

### Check the Inner Construction

- Does the piece feel secure when you sit and bounce on it, without squeaks and wobbles?
- Is the seat depth comfortable?
- Is it easy to rise from?
- Can you feel wood or metal through any upholstered areas?
- Are the sides and arms padded and not hollow?
- Is the underside covered with muslin?
- Is any exposed wood smooth to the touch?
- Are cushions comfortable?
- Do the springs provide the needed comfort for the style?

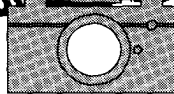
### 1 L1 Activity - Compare Prices

Look through furniture and appliance catalogs (or stores). Compare prices and features. Make a list of types of furnishings and the highest and lowest prices you found for each. For each pair, make a list of reasons for the price difference.

### 2 L2 Activity - Visit a Furniture Store

Visit a furniture store. Use the shopping checklists to evaluate at least two pieces of furniture. Ask a parent or salesperson to help you answer any of the questions about features that are unfamiliar.

### Camera



### 3 L3 Activity - Shop for Your Plan

Shop for the furnishings in your plan. Use the shopping checklists. Gather pictures or take photographs of your selections. Mount and label each with its price, features and completed checklist.

### Choosing Accessories

In most cases, furniture isn't the only thing needed to make a room's furnishings complete. Accessories are all the other things that add a nice touch to a room. Lamps, throw pillows,

towel racks and houseplants are some examples. What are some others?

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Accessories should look good with the other room furnishings. The ideal accessory is one that both looks good and is useful. One example is a decorative wall clock. Can you think of others?

# Home Improvements

It's safe to say that no home is perfect. Even if you felt your home was perfectly designed and furnished for you, would it stay perfect? Probably not.

Your needs and wants change. Things wear out as you use them. The outside elements (rain, sun, dirt, etc.) can damage exterior parts of your home.

In this section you will:

- learn ways to keep your home in good shape
- learn about simple do-it-yourself home projects and
- learn how to make your home use less energy.

## 1 L1 Activity - Count Accessories

Count the number of accessories in your living room.

How many of them have a useful function?

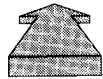
## 2 L2 Activity - Judge Your Accessories

Evaluate the accessories in your home with your family. Which ones should be replaced?

Should any be removed?

What new accessories are needed?

## 2 Going Further



## 3 L2 and L3 Activity - Plan and Create a Study Area

Plan a study area in your home. Look through magazines and books for ideas. Consider noise, comfort, convenience, storage, lighting, quality of furniture and design. Make a scale drawing of your plan. Make a furnishings plan and budget. Take photographs of your finished study area.

# Keeping Your Home in Good Shape

Home maintenance means keeping your home in good shape. How does the condition of a house affect:

its dollar value? \_\_\_\_\_

its looks? \_\_\_\_\_

its function? \_\_\_\_\_

## Be a Home Detective

The key to keeping your home's value, looks and convenience is a home inspection. Doing a home inspection every spring and fall can help you find little problems before they become big, expensive problems. What is an example of a little problem that could become a big expense if not fixed early?

Be a detective. Look for needed repairs. Use a checklist to make sure you don't miss anything. Then make a plan for getting everything in good shape.



### Things People Do

Professional home inspectors are trained to find and analyze hidden problems. They are typically hired by people who plan to buy a home and want to know its condition.

### For More Help:

Get the Extension publications, How to Make Your Home Interior Last Longer and Look Better (#2058) and How to Make Your Home Exterior Last Longer (#2213).



# 1 L1 Activity - Inspect Your Bedroom

Closely examine each of the following parts of your room to find signs of wear, damage, unevenness, soft spots, mildew or dirt. Indicate the condition of each on this checklist. Discuss your findings with your parents. Make a family plan for the repair of any problems.

Looks Good ✓	Needs Attention (Describe)
Flooring	
Walls	
Ceiling	
Windows (including operation and hardware)	
Doors (including operation and hardware)	
Closets	
Electrical (lights, cords, plugs, switches, outlets, etc.)	
Fan, air conditioner, heater (or vents)	

# 2 L2 Activity - Inspect Your Home Interior

Closely examine each of the following parts of your home to find signs of wear, damage, unevenness, soft spots, mildew or dirt. Indicate the condition of each on this checklist. Discuss your findings with your parents. Make a family plan for the repair of any problems.

Looks Good	Needs Attention (Describe)
Flooring	
Walls	
Ceiling	
Windows (including operation and hardware)	
Doors (including operation and hardware)	
Closets	
Electrical (lights, cords, plugs, switches, outlets, etc.)	
Plumbing (faucets, drains, toilets, tubs)	
Air conditioners and heaters (filters, vents, operation, gaps, leaks)	
Appliances	
Cabinets and counters	
Other:	

### 3 L3 Activity - Inspect Your Home's Exterior

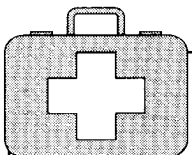
Closely examine the outside of your home for problems that need attention. (Do not go in the attic or on the roof without your parents' permission.) Make a family plan for home repair and maintenance.

Looks Good ✓	Needs Attention (Describe)
Foundation and Pavement (slab, driveway, steps, walks, etc.)	
Ground slopes away from house	
Condition of wood under house (not wet, soft or rotting)	
No signs of termites, etc. (mud tunnels, holes in wood)	
Roof (shingles, flashings, gutters, trim)	
Attic (no wet spots, no insulation gaps)	
Doors	
Window (frame, glass and putty)	
Weatherstripping and caulk	
Outside faucets and pipes (no leaks, insulated)	
Main water shut-off valve	
Main electrical disconnectors or breaker	

### Mildew - The Louisiana Home's Black Plague

Have you ever found black stains growing on a shower curtain, tile grout or shoes? Have you ever noticed a bad smell when damp clothes were left too long in a bundle? If so, then you've found mildew.

Mildew is a thin black (sometimes white) growth produced by molds. Mildew not only looks ugly and smells bad, it can also damage things. It can ruin leather and paper with stains. It can rot fabrics.



#### Health Alert:

Molds can also cause health problems for people with asthma and certain types of allergies. For those people, controlling molds in the home can make them feel better. It can also reduce their need for medication and cut medical expenses.

#### Mildew Rhyme and Reason

##### **The Rhyme:**

*Mildew, Mildew, quite contrary. How does your mold grow? When spores are met with things that are wet. Then it spreads and spreads, you know.*

##### **The Reason:**

For molds and mildew to grow, they must have moisture. They grow fastest in warm temperatures (77-86 degrees F). These are the reasons why mildew and molds thrive in Louisiana's warm, humid climate.

Molds also need food. That's why they grow best on organic materials (paper, leather, natural fibers, wood or surfaces coated with any oil, soil or food).

Where do you think mildew is likely to be found in a home?

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What are all the places where your parents have ever found mildew?

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The best cure for mildew in a home is prevention. The key is to keep everything dry and clean. Even when mildew is cleaned away with a chlorine bleach and water solution or other mold killing product, it will come back if the area is not kept dry.

**Science Wise**



**1 L1 Activity - Create Condensation**

Water exists in three states--gas (water vapor), liquid (water) and solid (ice). Condensation is the process of water vapor changing to liquid water. Dry objects can become wet through condensation.

Pour equal amounts of cold water into a drinking glass (made of glass) and an insulating foam cup. Add two ice cubes to each. Place them in your living room for about 10 minutes. What happened to the outside of:

- the glass?

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- the insulated cup?

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Next, put the two glasses in a steamy bathroom. What happened?

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Touch the outside of the glass and cup.

Which is colder?

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Which is wetter?

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What have you discovered about condensation?

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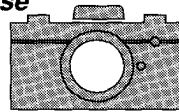
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**Science Wise**

**Camera**



**2 L2 Activity - Experiment with Mold Growing Conditions**

Find two identical, clean cotton rags (old towel or cotton socks). Place one out in the open in your room. Dampen the other one and place it in a plastic bag or container. Do not seal it airtight. Place the container in a shoe box. Check the fabrics

every week for a month. What do you find?

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Repeat the experiment with various types of materials (such as wood, paper, plastic, polyester fabric, oily rags, etc.). Keep a record of your findings. Take photographs, if you can. Mount and label each in a notebook or on a poster.

## Do-It-Yourself Projects

With a little know-how and practice, you can make some high quality home improvements and repairs at a fraction of the cost of hiring someone else to do them.

### Repainting a Room

A fresh paint job can spruce up a room or give it a new look. For a good looking, long-lasting paint job, you need to:

- (1) Use good quality paint and tools
- (2) Properly prepare the surface for painting and
- (3) Apply the paint properly.

### Choosing the Paint

The best choice for a beginning painter is a high quality latex paint. It is easy to apply and touch up, non-flammable, fast drying and cleans up with soap and water. Check the label for its warranty, guarantee or expected service life as a clue to quality.

Look for a scrubbable paint that makes the wall easy to clean. Semi-gloss (medium shine) paints are generally more scrubbable than flat (no shine) paints. Semi-gloss is usually used for kitchens, bathrooms and trim (door and window frames).

Good alkyd or oil-based paints are often lower cost and can usually cover the old paint color with one coat. Alkyds are also very durable. On the other hand, they are flammable, more toxic and cleaning up is not as easy. Dangerous solvents (mineral spirits, turpentine, etc.) are needed for cleanup.

### Color Tips

- Choose a color lighter than you think you want. Color in wall-sized amounts looks much more intense than on a small color sample.

- Light colors make rooms look bigger.

- Dark colors absorb light and make spaces look darker and smaller.

## 1 L1 Activity - Compare Paints

Visit a store or look through a catalog that sells paints. Compare the prices and features of different paints.

### How Much Paint?

Be sure to buy enough paint. If you run out, a later batch may not match perfectly in color.

The paint label usually states the number of square feet a gallon will cover (one coat). You need to figure out the area of the walls to be painted and the number of coats you will use. Ask the paint dealer (if possible) to help you decide how much paint you need.

## 1 L1 Activity - Compare Paint Coverages

Read several paint labels to find how many square feet a gallon will cover. Compare latex and alkyd paints.

### Math Matters

## 2 L2 Activity - Calculate Paint Needs for Your Room

Use this formula to figure the amount of paint you would need to paint your room. Show your calculations.

$$\frac{[\text{Wall area} - (\frac{\text{Area of openings}}{2})]}{\text{Paint Coverage}} \times \text{Number of coats} = \text{Number of Gallons of paint needed}$$

Wall Area (sq.ft.) = Distance around room x height of the walls  
 Area of Openings (sq.ft.) = the sum of the areas (length x width) of all doors and windows

Paint Coverage (sq.ft./gallon) = the number shown on the label

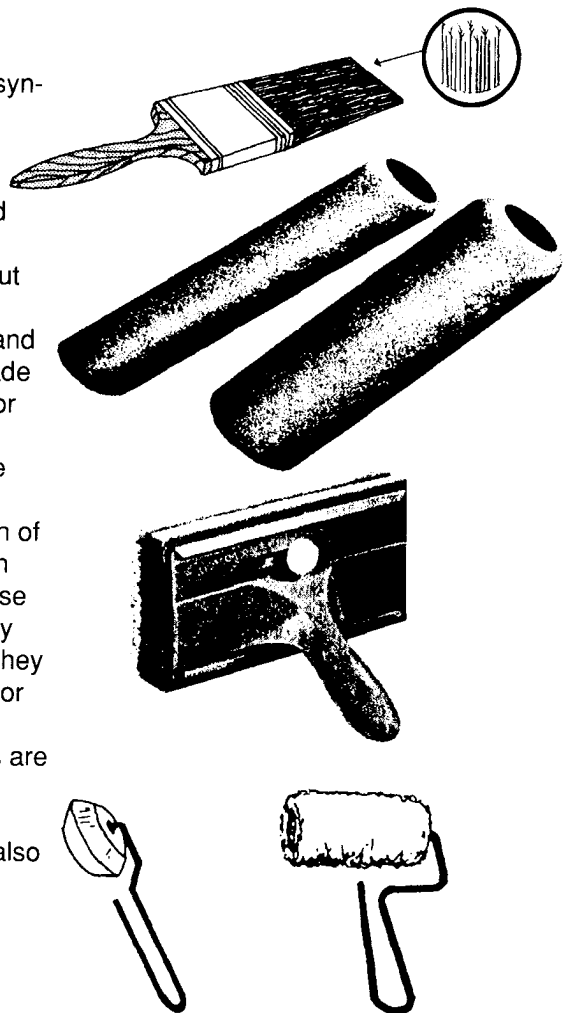
### What Painting Tools?

For latex paint, choose synthetic (nylon or polyester) brushes and rollers or pads. Good quality brushes have bristles that vary in length and have split ends. The brush should feel full and spongy, but tapered (thinner) at the tip.

Good rollers save time and work. There are specially made rollers for smooth walls and for textured (bumpy) walls.

Pad applicators offer the speed of a roller (without the splatter) and the smooth finish of brushes. They are for smooth surfaces. Pads are easy to use and low in cost. Because they are made of a spongy foam, they are hard to clean thoroughly for reuse.

Special rollers and pads are available for painting edges, corners, woodwork and other close places. A small brush also works well for these jobs.



## 1 L1 Activity - Compare Painting Tools

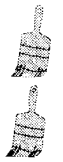
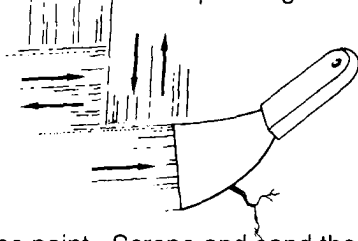
Examine new brushes, rollers and pads in a store. Compare prices and quality features.

### Getting Ready to Paint

Surface preparation is the most important part of the job. Doing it right can take more time than the painting, but it is worth it. Use this checklist.



- Cover the floor and furniture.
- Remove switch plates, pictures, curtains, etc. from walls.
- Protect fixtures and unpainted molding with masking tape.
- Patch cracks and nail holes with non-shrinking spackling. Follow the directions on the spackling label.



- Remove loose paint. Scrape and sand the surface smooth.
- Clean all surfaces to be painted. Dust and, if needed, wash off dirt and grease.



**Safety Alert**

Old paint layers of older homes may have high levels of lead in them. The dust created by sanding or scraping lead-based paint is a dangerous poison. Do not disturb old paint layers unless you know they are lead-free.

Even newer homes built before 1980 can have some lead in the paint. It's a good rule to avoid exposing young children, pregnant women and pets to any paint dust and for adults to take careful precautions when sanding.

**Painting Procedures**

If you plan to paint the ceiling, do it first. Then, start painting a wall at one upper corner and work down toward the floor. Paint the woodwork last -- after the walls are dry.

Dip a brush only half its bristle length into the paint. Tap the brush lightly against the inside of the can to remove excess paint. Don't scrape it on the edge. For a smooth finish, use only light pressure on the brush as you paint.



**Cleanup**

Use soap and water to clean latex paint off your tools as soon as you finish. Don't let the paint dry in the can or on your tools. With a damp rag, wipe any spills as you go along.



**Safety Alert**

Always paint in a well-ventilated space. Even after you finish painting, keep windows open as much as possible.

Don't stand on chairs or tables to paint. Use a sturdy step ladder or extension pole for your pad or roller.

For more information on painting tips and techniques, visit your local paint dealer. Paint stores often have free how-to leaflets.

**2 L2 Activity - Experiment with Paints and Tools**

Buy a sheet of gypsum wall-board from a lumber yard or home store. Try different types of paints and tools on different spots. Label them. Which worked best for you?

**3 L3 Activity - Paint a Room**

Paint a room. If possible, try out different types of painting tools. Evaluate the finished job. What did you learn?

**Simple Home Repairs**

Things wear out from time to time. What's the last thing that was repaired in your home?

Who did the repair job?



**Things People Do**

Some repairs are complex, difficult or dangerous. These should be done by trained professionals. Electricians work with the electrical wiring and fixtures. What could happen if the wiring was not correctly installed?

Plumbers work with the pipes and water fixtures. Appliance service technicians repair air conditioners, heaters, refrigerators and other appliances. Carpenters work with wood objects.

# 1 L1 Activity - Explore Costs of Repairs

These business people usually charge by the hour for their services. Ask your parents or make some phone calls to find out the hourly rate charged for each type of repair work.

- electrical repairs \$ \_\_\_\_\_ per hour plus cost of parts
- plumbing repairs \$ \_\_\_\_\_ per hour plus cost of parts
- appliance repairs \$ \_\_\_\_\_ per hour plus cost of parts
- carpentry work \$ \_\_\_\_\_ per hour plus cost of parts

Some repair jobs are simple. You can learn to do them without special technical training. You just need to know how things work and what tools can help.

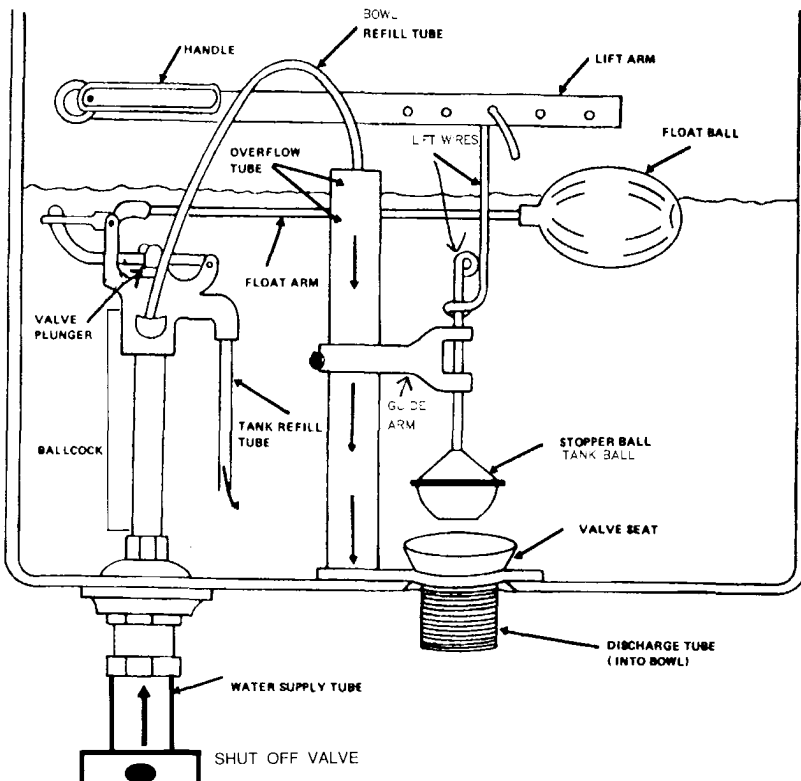
# 1 L1 Activity - Tighten Knobs on Furniture

Try to wiggle and turn each knob on cabinets and furniture. Open the drawer or door with any loose knob and see if you can reach the screw which holds it in place. Use a screwdriver (or old dinner knife with a round tip) to tighten the screw while you hold the knob still with your other hand.

# 2 L2 Activity - Observe the Mechanics of a Flush

Repairing a toilet is simple. Knowing what to do comes from understanding what happens inside the tank during a flush.

With your parent's permission, carefully remove the lid from the toilet tank. (It is heavy and can easily break.) Compare the parts inside the tank with this illustration of a typical flush tank. Some newer types of parts may replace several of those shown.



Read the following description, then flush your toilet to observe the process.

When a toilet is flushed by turning the outer handle:

1. The lift arm raises the stopper ball (also known as a tank ball) from the valve seat, opening the discharge tube and letting water flow into the toilet bowl.

2. When the tank is emptied, the stopper ball falls back into the valve seat, cutting off further water flow into the discharge tube.

3. The float ball falls when the water tank level drops, opening the ballcock valve. Water is resupplied to both the tank and bowl once the discharge tube is closed.

4. The tank is refilled through the tank refill tube; the toilet bowl is refilled through the bowl refill tube and overflow tube.

5. Flushing is completed when the tank water level reaches the proper pre-set level, and the rising float arm closes the ballcock valve.

### Science Wise



# 2 L2 Activity - Diagnose Toilet Problems

To diagnose is to figure out the cause of a problem or symptom. To repair a toilet, you must first diagnose the possible causes for its problem symptoms. Then try the various cures until you find the right one.

Can you figure out what would happen if:

- the stopper ball was warped or torn?

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- the float ball was filled with water?

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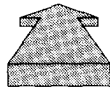
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- the ballcock valve had a worn washer inside and would not shut off?

- the refill tube was not clipped to the overflow tube?

- the lift wire was corroded and got stuck in the guide arm?

### Going Further



## 2 L2 Activity - Repair a Toilet

The next time your family has a running toilet or other problem symptom, analyze the cause and find the cure. For more information, get Extension publication 2215, How to Repair a Toilet.

## 3 L3 Activity - Replace a Screen

With a little practice, it's a simple task to replace the screening in an aluminum frame.

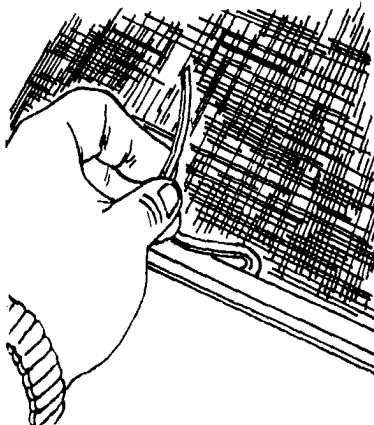
### What you Need:

- Neoprene spline or bedding strip
- Screening - Fiberglass is easier and safer to work with, but aluminum is stronger.
- Screening tool
- Tin snips or scissors
- Sharp utility knife

### How To

1. Remove screen frame from door or window. Place on smooth, flat surface.

2. Remove the spline. Pry one end of it out of the channel, and slowly pull up. Remove the old screening.



3. Measure the frame opening, and cut a new piece of screening that is 3 to 4 inches larger all around, following the grain of the mesh. Put the new screening in place so the mesh is parallel to the side of the frame and there is an even overlap all around.

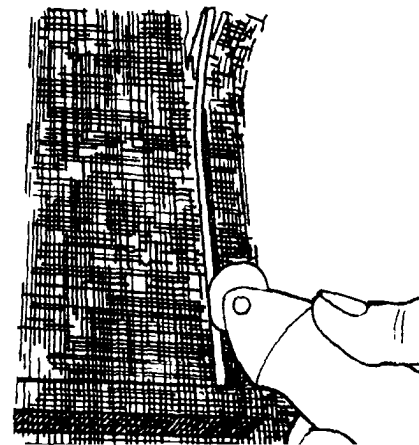
Note: If aluminum screening is used, take care not to crease it. Creases cannot be completely smoothed out. Also, avoid handling the sharp edges without wearing gloves.

4. Inspect the old spline. If it is in good condition, it may be reused. If it is dried out or damaged, measure it and buy a longer piece of spline.

Splines are available in a variety of diameters, so take the old spline to the hardware store. Compare the diameters end to end to assure an exact match.

5. With the rounded wheel of the screening tool, push the screening into the channel on one side. Then use the grooved wheel of the screening tool to push the spline into the channel.

If the screening is fiberglass, the screening does not need to be pushed into the channel as a separate preliminary step before the spline.



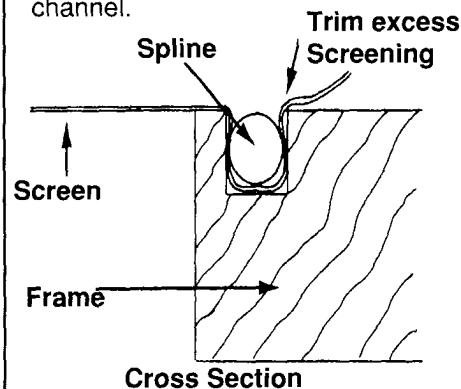
Hold the screening taut (but not tight) across the frame and secure the other side in the same way with another piece of spline.

After both long sides are in position, bend the spline around the corner of the channel and repeat the above procedure with the ends of the frame.

As the spline is pushed into the channel, the screen will be pulled tight.

Tip: If the screen is not tight enough, pry up a small area of spline and pull out the slack in the screening. The spline can then be pushed back into the channel while holding that section of screen taut. Repeat as needed.

6. With your parent's permission, use the utility knife to trim off the excess spline and screening that extend beyond the channel.

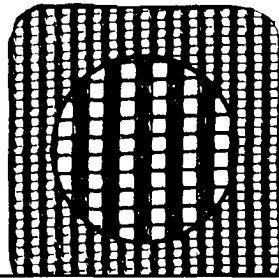


If you have wooden frames, the process is a little more involved but not difficult. To learn how, get the Extension publication 2218, How to Replace a Screen in a Wooden Frame.

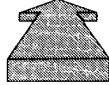


**Energy Note**

A great way to save a lot of energy and make your home more comfortable in summer is to replace your standard insect screening with solar screens. Solar screens have a tighter weave. This blocks about 70 percent of the sun's heat from entering the window. For more information, get the Extension publications, Sun Control Strategies (2355) and Do-It-Yourself Solar Screens (2351).



**Going Further**



Learn how to do other types of simple home repairs. Ask others to show you how. Collect how-to information from hardware stores, home centers or bookstores.

**Energy-Saving Home Improvements**

What do all of the following problems have in common?

- high utility bills
- uncomfortable rooms (too warm or too cold)
- global warming
- the hole in the upper atmosphere ozone layer
- depletion of nonrenewable natural resources

Give up? The answer is that all of those problems are worsened by inefficient buildings and homes.

Energy-efficient buildings are more comfortable and use less energy. Saving energy helps to protect the environment and preserve natural resources that will eventually run out. Saving energy in the home also means that your family can keep more of its money--or spend more on things other than utility bills.

You can begin saving energy and keeping more of your money by knowing what uses the most energy.

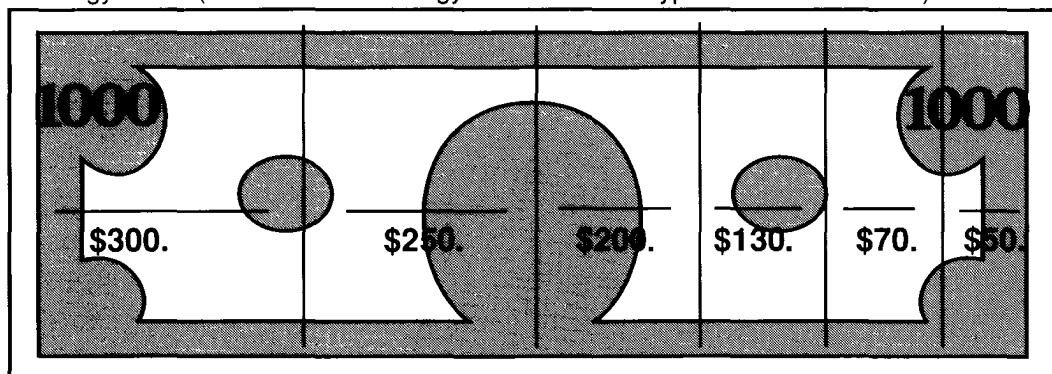
**1 L1 Activity - Match Energy Users with Energy Dollars**

If a typical Louisiana homeowner spent \$1,000 on utility bills in a year, guess how much of that expense would be created by each of the listed energy users. Write your guesses on the \$1,000 dollar bill.

Energy Users

- Lighting
- Refrigerator & Freezer
- Heating
- Cooling
- Water Heater
- All Other Appliances

Energy Costs (based on % of energy consumed in a typical Louisiana home)



Answers: Cooling - \$300; Heating - \$250; Water Heating - \$200; Refrigeration - \$70; Lighting - \$50; All others - \$130.

Are you surprised at the answers?

To identify your own home's energy consumption, find your electricity and gas meters and learn to read them. Carefully recording your readings for a while along with outside temperatures and daily activities can give you a sense of what uses more or less energy.

**1 L1 Activity - Learn to Read Your Meters**

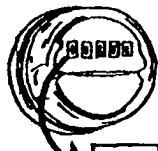
Electric and gas meters may have four to six dials or may be digital. The hand on each dial rotates in a different direction as a result of the gear mechanism.

The rules for meter reading are:

1. Read the dials from right to left because the dial on the right may affect the reading of the dial to the left.
2. Unless the dial hand is exactly on a number, always record the lower number.
3. If the dial hand points directly to a number, look at the dial on the right. If the hand on the right dial has passed zero, the left dial is read as the number to which the hand is pointing. If the hand on the right dial has not passed zero, the dial is read as the lower number even if the hand appears to point directly at a number.

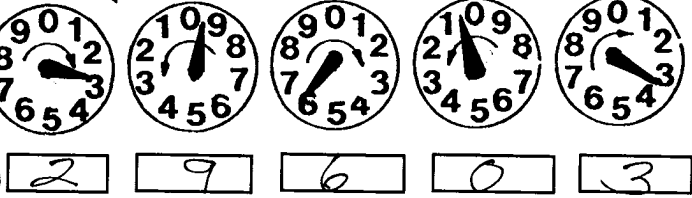
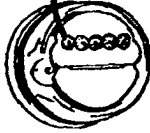


**Electric**



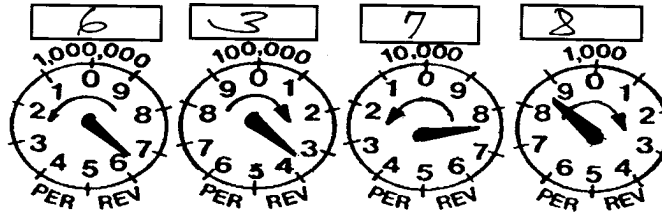
If you have a digital meter like this, just write down the numbers.

2 9 6 0 3



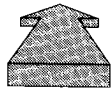
Look! Some of the hands turn right and some turn left. If your meter has dials like this, read the right-hand dial first. Write down the last number the hand has passed.

**Gas**



**CUBIC FEET**

**Going Further**



**2**

**L2 Activity - Record Your Meter Readings**

Read your meters at the same time each day for a week. Do this three times a year -- during cold weather, hot weather and mild weather. Describe your family's activities, and record your readings each day on these charts.

**Cold weather**

Date	Electric Meter Reading	KWH Used	Gas Meter Reading	Cu. Ft. Used	Outdoor Temperatures		Activities
					High	Low	

What did you discover?

Date	Electric Meter Reading	KWH Used	Hot weather		Outdoor Temperatures		Activities
			Gas Meter Reading	Cu. Ft. Used	High	Low	

What did you discover?

Date	Electric Meter Reading	KWH Used	Mild weather		Outdoor Temperatures		Activities
			Gas Meter Reading	Cu. Ft. Used	High	Low	

What did you discover?

Science Wise

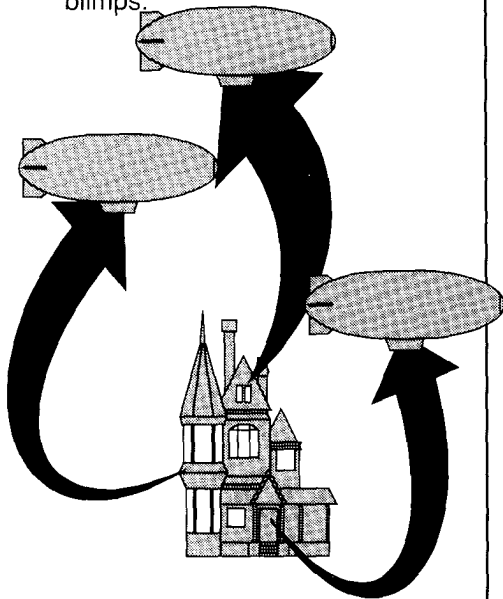


**3** L3 Activity - How Does Energy Conservation Protect the Environment?

Find out why energy conservation helps to protect the environment. How is energy produced? How does that affect the environment? How is energy used? How does that affect the environment? Write a paper about your findings.

**Home Improvements That Pay**

Contrary to popular belief, studies have shown that drafts are the biggest energy wasters in the average home. A study of new well-built homes found that, on the average, all the air inside was exchanged for outside air every 40 minutes. During a 24-hour period, enough air leaked from the typical house to fill three blimps.



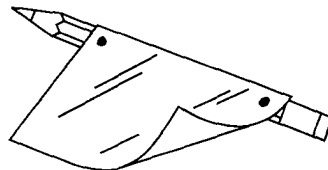
Energy-saving improvements like insulation and storm windows are nearly useless in a very drafty house. The solution is finding and sealing all draft points. This is not expensive, but it takes some effort. Finding the leaks is usually the trickiest part.

Science Wise



**1** L1 Activity - Make a Draftometer and Find the Air Leaks

To make a draftometer to check for air leaks, you need a pencil, a piece of thin plastic wrap (dry cleaner bags are good) and two thumbtacks. As you hold the pencil horizontally, lay the plastic over the pencil and thumbtack it to the pencil, leaving a rectangle of plastic hanging from it. The draftometer is now ready to use in your air leak search around your home.



Close all your home's doors and windows. Turn on all your exhaust fans, or wait for a cold, windy day. Hold the draftometer to the edges of doors, windows, outlets and baseboards. If the plastic wrap moves, there is an air leak.

List all the air leaks you find in your home.

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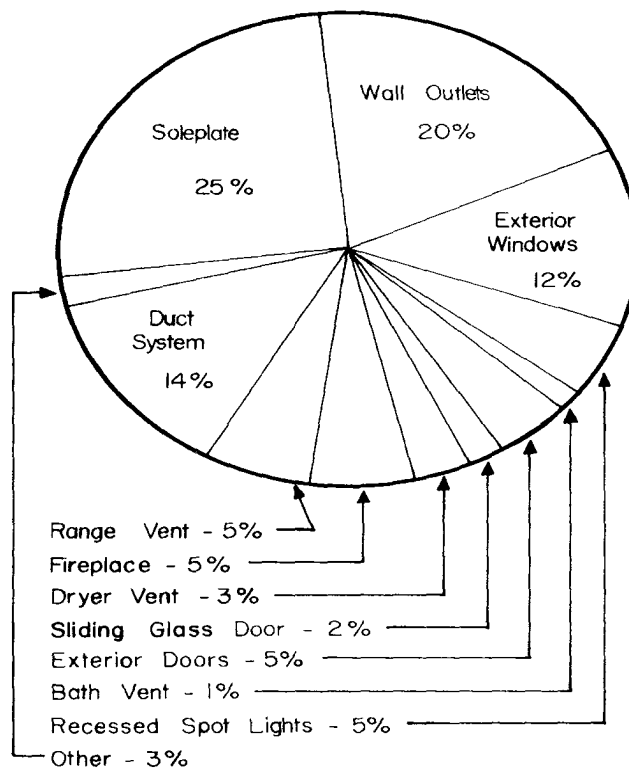
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This pie chart represents the sources of air leakage in a typical home. Are you surprised? Most people are. The soleplate or baseplate (where the wall framing meets the foundation or slab) is the biggest source. Little can be done about it in existing homes. However, you can do something about outlets and many other energy wasters.

FOR AVERAGE HOME OF 1,780 SQ. FT.

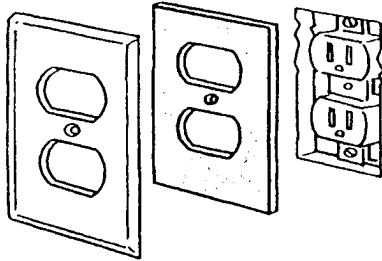


## Weatherization

Weatherizing means improving the building's ability to protect against the weather. Such improvements are usually your best energy-saving investments. To weatherize your home, focus attention on the following five areas.

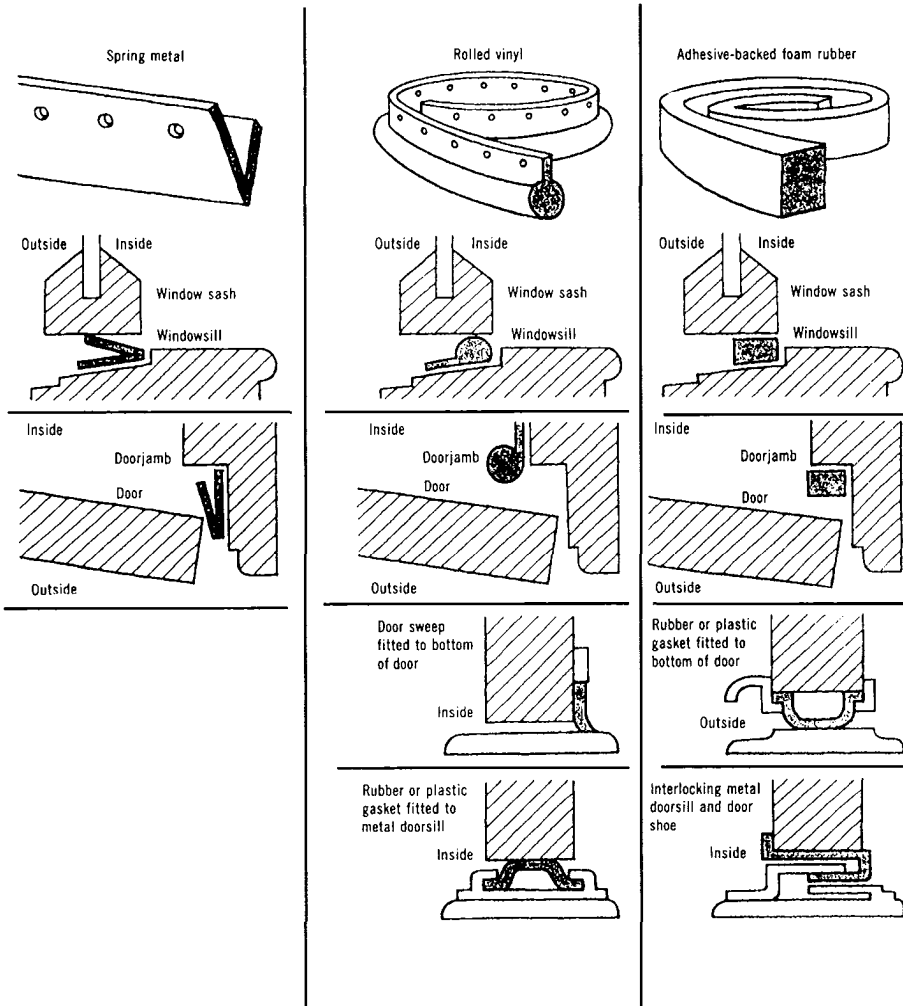
### Wall Outlet and Switch Plate Gaskets

- Turn off power, and install gaskets behind outlet and switch plates.
- This applies to interior and exterior walls.
- Gaskets are available at hardware stores.



### Weatherstripping

- Cost usually increases with durability.
- Weatherstrip doors, windows, attic entrances and other openings.

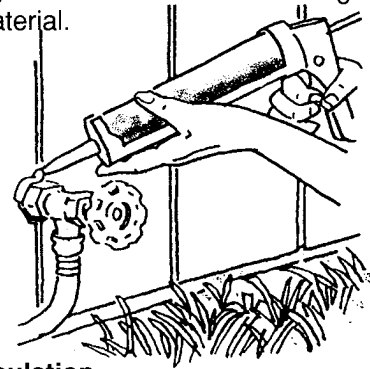


## Door Sweeps and Thresholds

- A one-fourth-inch gap under a door is equivalent to a nine - square-inch hole.
- Thresholds should make a tight seal with the door sweep or shoe.

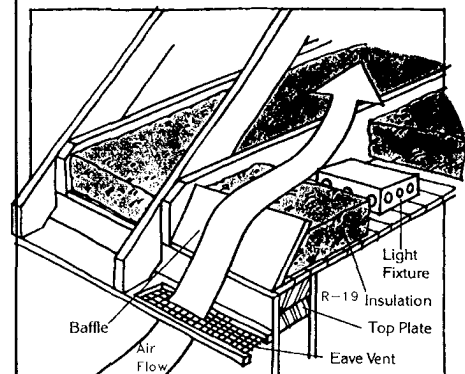
### Caulk

- Cost generally increases with life expectancy.
- Apply wherever different materials meet.
- Fill wide cracks with an expanding foam sealant or an insulating material.



### Insulation

- Buy insulation and installation services by R-value (resistance to heat flow), not by the inch.
- Usually the best payback will result from insulating the ceiling to R-30 (most important) and the floor of a raised house to R-19.



View of insulation in attic (increase to R-30)

### Safety Alert



- Keep insulation away from heat-producing fixtures such as lights, chimneys, furnaces, water heaters, etc.



## Refrigeration

Refrigeration is often overlooked as a significant energy consumer; but remember, refrigerators and freezers maintain low temperatures 24 hours a day, often in the warmest room in the house, the kitchen.

Turn off anti-sweat heaters (energy-saver switch) when not needed to keep the outside of your refrigerator dry.

Check door gaskets by closing the door on a dollar bill. If the bill pulls out easily, replace the gasket.

Keep refrigerator condenser coils clean. Vacuum them regularly. Defrost freezers when frost is one-fourth inch thick.

Look for energy efficiency ratings on new appliances. Compare total cost (the purchase price plus operating costs) instead of just the initial cost.

(Name of Corporation)  
Model(s) F117, F317

Refrigerator Freezer  
Capacity 17 Cubic Feet  
Type of Defrost: Full Automatic

# ENERGYGUIDE

↓

## \$51

Estimates on the scale are based on a national average electric rate of 4.97¢ per kilowatt hour. Only models with 16.5 to 18.4 cubic feet are compared in the scale.

Model with lowest energy cost **\$50**      Model with highest energy cost **\$88**

▼ ▼ THIS MODEL ▼

**Estimated yearly energy cost**

**Your cost will vary depending on your local energy rate and how you use the product.** This energy cost is based on U.S. Government standard tests.

**How much will this model cost you to run yearly?**

		Yearly cost
Estimated yearly \$ cost shown below		
Cost per kilowatt hour	2¢	\$21
	4¢	\$41
	6¢	\$62
	8¢	\$82
	10¢	\$103
	12¢	\$124

Ask your salesperson or local utility for the energy rate (cost per kilowatt hour) in your area.

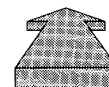
**Important** Removal of this label before consumer purchase is a violation of federal law (42 U.S.C. 6302)

## 2 L2 Activity - Plan and Make Energy-Saving Home Improvements

Share what you have learned with your family. Make an energy-saving plan together. Mark and date each listed energy-saving improvement you make.

For more information, a variety of home energy conservation publications is available from the Extension Service.

Going Further



Science Wise



Math Matters

## 3 L3 Activity - Experiment with Energy Use











Determine the energy use per hour of various appliances, equipment and activities. Read your meter at one-hour intervals, varying only one factor at a time. For example, take readings with the air conditioner on one hour and off one hour on a warm day. Make sure all other energy users are the same for both hours. Make a record of your readings, the differences between them and the conditions. Summarize your findings.

# Housing Leadership and Citizenship Activity Ideas

## Housing Leadership

-  Here are some good examples of housing activities that build leadership skills. Add your own ideas to the list.
-  Serve as project leader for jr. 4-H housing and home environment project members. (Hold monthly project meetings or tours.)
-  Serve as chairman of a jr. leader 4-H committee that raises funds by doing home repairs.
-  Help friends select new furnishings for their bedrooms.
-  Recruit members into the housing and home environment project.
-  Secure and show a slide program on energy conservation and lead follow-up discussion.
-  Conduct a workshop for jr. members on making storage accessories.
-  Give illustrated talk at 4-H meeting on furniture arrangement, principles of design or mildew control.
-  Help jr. members with their housing and home environment records.
-  Make and display a poster about the 4-H home environment project.
-  Help parents research, plan and carry out home weatherization.
-  Help others plan a home environment demonstration.
-  Present a demonstration at school on finding air leaks.

## Housing Citizenship and Community Service

-  Here are some good examples of housing activities that demonstrate good citizenship or community service. Add your own ideas to the list.
-  Do simple home repairs, and remove interior mildew for elderly people.
-  Tape radio spots, and write newspaper articles on home weatherization.
-  Collect furniture and home accessories for donation to house fire victims.
-  Create and set up a display in schools and parish libraries on low-cost energy conservation techniques.
-  Make solar screens for a needy single parent who could not afford her summer utility bill.
-  Conduct home inspections for elderly neighbors, make a list of needed maintenance and investigate the costs of having each job professionally done.
-  Help plan the interior design of a half-way house for battered women, and help to paint it.
-  Help families clean and restore their flooded homes.
-  Write legislators about your views on:
  - affordable housing policy,
  - wetlands issues, or
  - energy policy.

**This book has provided the  
opportunities to develop the following  
life skills:**

**Decision Making  
Creative Problem Solving  
Critical Thinking  
Social Interaction  
Communication Skills  
Self-Esteem  
Practical Knowledge  
Occupational Awareness**



# 1 Level 1 Housing and Home Environment Project Records

## I. Design

- A. Elements of Design
- B. Principles of Design
- C. Planning Interior Space
- D. Making Choices

- \_\_\_ Name That Color Harmony
- \_\_\_ Draw a Rough Sketch of Your Bedroom
- \_\_\_ Color It Warm, Color It Cool
- \_\_\_ Find the Traffic Patterns
- \_\_\_ Texture Game
- \_\_\_ Make a Storage Plan for Your Chest of Drawers or Desk
- \_\_\_ Experiment With Light and Texture
- \_\_\_ Drawing Feelings
- \_\_\_ Discover the Best and the Worst
- \_\_\_ Find Forms
- \_\_\_ Name That Rhythm
- \_\_\_ Make a List of Room Activities
- \_\_\_ Judge Proportion
- \_\_\_ Compare Prices
- \_\_\_ What is the Emphasis?
- \_\_\_ Describe Home Activities
- \_\_\_ Count Accessories
- \_\_\_ Identify How to Expand Space

### Check each of the Level 1 activities that you completed:

- \_\_\_ Choose a Tree
- \_\_\_ Best Design in the House
- \_\_\_ Make a Color Wheel
- \_\_\_ Color for Safety
- \_\_\_ Make a Paint Chip Value Scale
- \_\_\_ Find Two Intensities

### List five new things you learned.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

### How did you use what you learned?

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### How did this benefit you or your family?

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How did you share what you learned?

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**II. Home Improvement**

**A. Keeping Your Home in Good Shape**

**B. Do-It-Yourself Projects**

**C. Energy-Saving Improvements**

\_\_\_ Inspect Your Bedroom

\_\_\_ Create Condensation

\_\_\_ Compare Paints

\_\_\_ Compare Paint Coverages

\_\_\_ Compare Painting Tools

\_\_\_ Explore Costs of Repairs

\_\_\_ Tighten Knobs on Furniture

\_\_\_ Match Energy Users with Energy Dollars

\_\_\_ Learn to Read Your Meters

\_\_\_ Make a Draftometer and Find the Air Leaks

Check each of the Level 1 activities that you completed.

List five new things you learned.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

How did you use what you learned?

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How did this benefit you or your family?

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How did you share what you learned?

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# 2 Level 2 Housing and Home Environment

## Project Records

### I. Design

A. Elements of Design

B. Principles of Design

C. Planning Interior Spaces

D. Making Choices

\_\_\_ Make a Texture Collage

\_\_\_ Find Line in Furnishings

\_\_\_ Make a Rhythm Poster

\_\_\_ Enlarge a Room

\_\_\_ Draw a Floor Plan of Your  
Bedroom

\_\_\_ Rearrange Your Furniture

\_\_\_ Make a Storage Plan for  
Your Closet

\_\_\_ Visit a Furniture Store

\_\_\_ Judge Your Accessories

\_\_\_ Plan and Create a Study  
Area

Check each of the Level 2  
activities that you completed:

\_\_\_ Design Color Harmony  
Rugs

\_\_\_ Effects of Color  
Temperature

List five new things you learned.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

How did you use what you learned?

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How did this benefit you or your family?

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How did you share what you learned?

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**II. Home Improvement**

**A. Keeping Your Home in Good Shape**

**B. Do-It-Yourself Projects**

**C. Energy-Saving Improvements**

\_\_\_ Experiment With Mold Growing Conditions

\_\_\_ Diagnose Toilet Problems

\_\_\_ Calculate Paint Needs for Your Room

\_\_\_ Repair a Toilet

\_\_\_ Experiment With Paint and Tools

\_\_\_ Record Your Meter Readings

**Check each of the Level 2 activities that you completed.**

\_\_\_ Inspect Your House Interior

\_\_\_ Observe the Mechanics of a Flush

\_\_\_ Plan and Make Energy-Saving Home Improvements

**List five new things you learned.**

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_

**How did you use what you learned?**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**How did this benefit you or your family?**

\_\_\_\_\_

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**How did you share what you learned?**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# 3 Level 3 Housing and Home Environment Project Records

## I. Design

A. Elements of Design

B. Principles of Design

C. Planning Interior Spaces

D. Making Choices

\_\_\_ Make a Detailed Floor Plan of Your Rearranged Bedroom

\_\_\_ Make a Big Time Storage Plan

\_\_\_ Make Elevations of Your Bedroom

\_\_\_ Make Your Bedroom Furnishing Plan

Check each of the Level 3 activities that you completed:

\_\_\_ Make a Design Scrapbook

\_\_\_ Plan a New Furniture Arrangement for Your Living Room

\_\_\_ Shop for Your Plan

\_\_\_ Make Before and After Swatch Boards

\_\_\_ Plan and Create a Study Area

List five new things you learned.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

How did you use what you learned?

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How did this benefit you or your family?

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How did you share what you learned?

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Check each of the Level 3 activities that you completed.

**II. Home Improvement**

- A. Keeping Your Home in Good Shape
- B. Do-It-Yourself Projects
- C. Energy-Saving Improvements

Inspect Your Home's Exterior  
 Paint a Room

Replace a Screen  
 Experiment with Energy Use

List five new things you learned.

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_

How did you use what you learned?

\_\_\_\_\_  
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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

How did this benefit you or your family?

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\_\_\_\_\_  
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\_\_\_\_\_

How did you share what you learned?

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\_\_\_\_\_

**Notes**

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