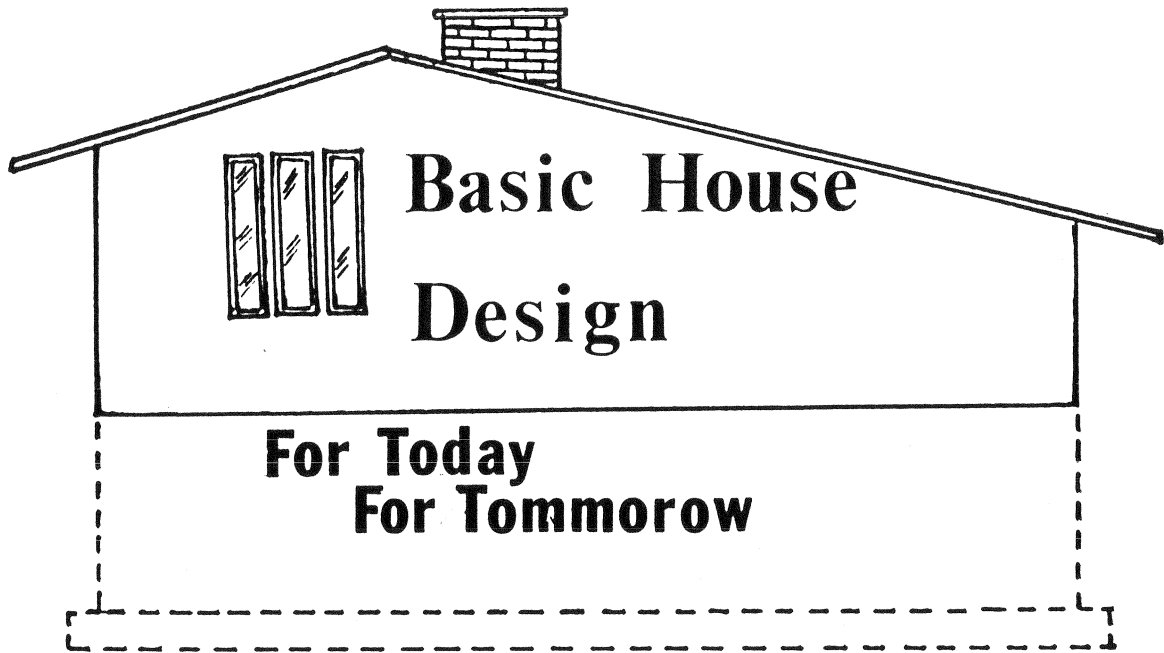
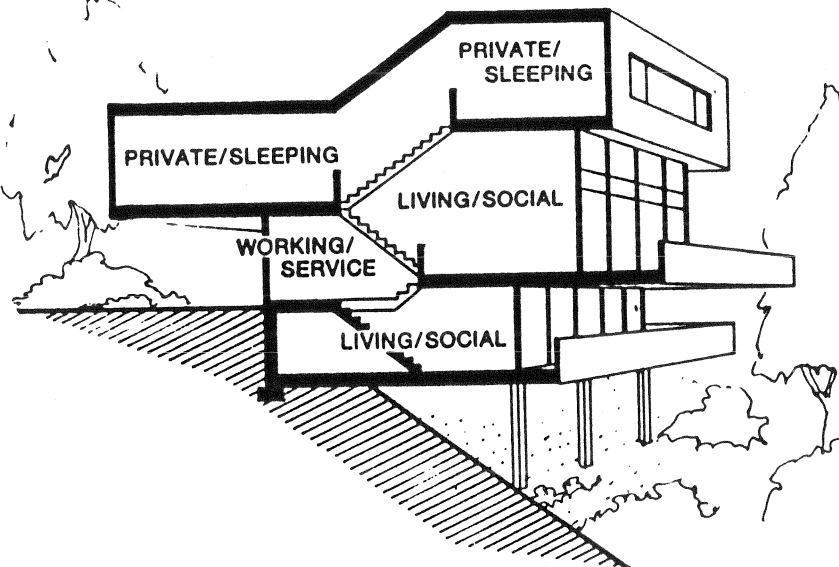


# Architectural Drwg. Series



## **An Independent Learning Unit**



## BASIC HOUSE DESIGN

### Introduction

\*\*\*\*\*

Have you noticed, in looking around you, that some older homes appear to have a particularly distinctive "style?" This is because houses built in certain periods in history contain sets of architectural details which are unique. The case with which you recognize them as being something special is your first clue that they are a true "style." The repeated use of certain design elements for a period of years results in a style. These styles help identify neighborhoods or communities as unique areas in which residents take pride.

Today's standardized housing can't be viewed and appreciated with the depth of feeling that people have for the old styles. Most mass housing design doesn't get beyond selection of a floor plan, such a ranch or split level. Some feel this lack of effort to design using the creative spirit is unfortunate, because it indicates the apathetic way we view our communities and the world. There is much mixing of elements from old styles but very little effort to create overall design continuity or a new style. Many builders and others who supply consumers with house plans aren't specialized to do designing beyond superficial concerns such as selecting a floor plan and signing a contract.

Another factor causing local architectural styles to disappear is that today's building is carried on by industrialized trades who get mass produced materials from specialized sources that supply the entire country. Often incompatible materials are mixed because usually the industry has not seen fit to use professional designers. The result is a nation-wide network of ill-conceived houses which result in houses which fall short of what we are capable of producing.

Within this instructional package you will see the four basic house styles identified. These four styles have been used and combined to form many of the houses that are built today. There are advantages, disadvantages, and general characteristics listed for each basic style. Using the self-study outline, located in the package, read through the material and learn about basic house design. As you do this try to think about where you think the housing market will be in the year 2040. You will be asked to design your futuristic house later in the package. A self examination at the end of the package will test your comprehension of the material. Good Luck.

OBJECTIVES  
Basic House Design

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- 1) Students will learn the four basic house designs.
- 2) Students will be made aware of disadvantages and advantages of each style along with general characteristics.
- 3) Students will be able to visually identify the four basic house designs.
- 4) Students will be able to adapt the basic house designs to other residential designs.
- 5) Students will be given the opportunity to develop an insight into future housing needs.

PROCEDURE FOR COMPLETING THE PACKAGE

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- ( ) 1. Read the information sheets on each of the four basic house designs.
- ( ) 2. Complete the worksheets(1-4) at the end of each of the information sections. Upon completion of each worksheet have your instructor check you off. (Check Points 1-4)
- ( ) 3. Complete Activity Sheet #1. (Check Point 5)
- ( ) 4. Complete Activity Sheet #2. (Check Point 6)
- ( ) 5. Read the information and thought statements about the futuristic home.
- ( ) 6. Complete Activity Sheet #3. (Check Point 7)
- ( ) 7. Review the entire package.
- ( ) 8. Turn in the entire package for grading.
- ( ) 9. When you feel you know the material in the package ask your instructor for the final test. Complete the final test and return for grading.

TIME SPAN

\*\*\*\*\*

The approximate time to complete the package should be six hours.

GRADE SHEET  
Basic House Design  
\*\*\*\*\*

<u>CRITERIA</u>	<u>POSSIBLE</u>	<u>EARNED</u>
CHECK POINT #1 (Worksheet #1)	3	_____
_____ Instructor	_____ Date	
CHECK POINT #2 (Worksheet #2)	3	_____
_____ Instructor	_____ Date	
CHECK POINT #3 (Worksheet #3)	3	_____
_____ Instructor	_____ Date	
CHECK POINT #4 (Worksheet #4)	3	_____
_____ Instructor	_____ Date	
CHECK POINT #5 (Activity Sheet #1)	10	_____
_____ Instructor	_____ Date	
CHECK POINT #6 (Activity Sheet #2)	10	_____
_____ Instructor	_____ Date	
CHECK POINT #7 (Activity Sheet #3)	22	_____
_____ Instructor	_____ Date	
FINAL QUIZ	25	_____
	TOTAL	_____

Grade Breakdown:

A= 73-79

B= 66-72

C= 57-65

D= 52-56

51 & Below = Redo

BASIC HOUSE DESIGN  
Independent Study Outline

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Single Story Ranch

- |                                       |                                 |                                    |
|---------------------------------------|---------------------------------|------------------------------------|
| A. Charactersitics<br>1.<br>2.<br>3.  | B. Advantages<br>1.<br>2.<br>3. | C. Disadvantages<br>1.<br>2.<br>3. |
| D. Additional Notes<br>1.<br>2.<br>3. |                                 |                                    |

Story-and-a-Half

- |                                       |                                 |                                    |
|---------------------------------------|---------------------------------|------------------------------------|
| A. Characteristics<br>1.<br>2.<br>3.  | B. Advantages<br>1.<br>2.<br>3. | C. Disadvantages<br>1.<br>2.<br>3. |
| D. Additional Notes<br>1.<br>2.<br>3. |                                 |                                    |

Two Story

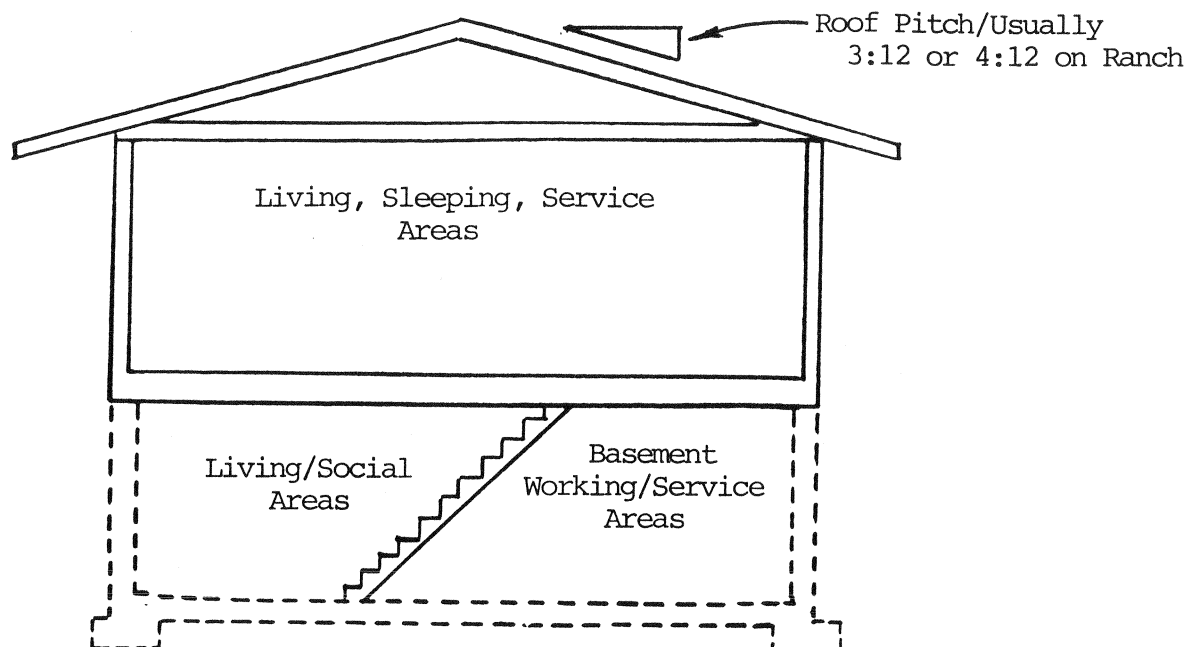
- |                                       |                                 |                                    |
|---------------------------------------|---------------------------------|------------------------------------|
| A. Characteristics<br>1.<br>2.<br>3.  | B. Advantages<br>1.<br>2.<br>3. | C. Disadvantages<br>1.<br>2.<br>3. |
| D. Additional Notes<br>1.<br>2.<br>3. |                                 |                                    |

Split Level

- |                                       |                                 |                                    |
|---------------------------------------|---------------------------------|------------------------------------|
| A. Characteristics<br>1.<br>2.<br>3.  | B. Advantages<br>1.<br>2.<br>3. | C. Disadvantages<br>1.<br>2.<br>3. |
| D. Additional Notes<br>1.<br>2.<br>3. |                                 |                                    |

# Single Story Ranch

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General Characteristics: The one-story house has all the regular living space on one level. It may have a basement depending on the section of the country in which it is built and preference of the prospective owner. Homes built in warm or wet climates will probably be built without basements. Homes built in cold climates will usually have basements because the footings must be deep enough to be below the winter frost line. It should be noted however that the basement gives added storage space along with having it as an option for future expansion.

## Advantages of Building and/or Living In A One-Story Ranch Home

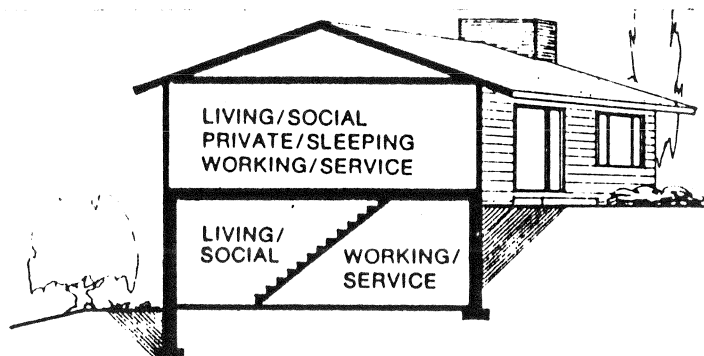
1. It lends itself well to indoor and outdoor living. It is possible to bring the outdoor surroundings in side through the use of large glass areas. An outdoor patio or deck can also become a part of the living or family rooms with the use of sliding glass doors.
2. There are a minimum number of stairs, which would probably only be the basement stairs. This feature is popular with families with small children or with older people.
3. The single story ranch home will usually have a 3:12 or a 4:12 pitch on the roof. This low pitch makes for easy maintenance.

### Advantages - cont.'

4. Due to the low pitched roof and also the fact that the home is only a single story the jobs of cleaning gutters, removing screens, painting, along with other general maintenance jobs are simplified.
5. The low height simplifies construction.
6. There are also a number of options you have when building the single story home:
  - a) It may be built with a crawl space which would give accessibility for service and maintenance. The total cost of the home would be less than if a full basement were planned and built.
  - b) It could be built using the slab-construction in the warmer climates. This form of construction will reduce the costs and simplify construction considerably.
  - c) It could be built with a full basement which would give you valuable extra space for storage or expansion.
7. The single story home also lends itself very well to expansion and modification because all living area is on one level.

### Disadvantages of Building and/or Living In A One-Story Ranch Home

1. The single story ranch is usually more costly to build than a comparative home because it requires more roof area and also you have more linear feet of foundation involved. This would be a factor to consider when calculating the costs of roofing materials and concrete.
2. The single story ranch will require a larger lot because every thing is spread out over one floor.
3. Some heating problems could be created by the large floor area and having to send heat any great distances.
4. Maintenance costs could be more because of the larger roof area and the greater linear feet of eaves.
5. Careful planning is necessary to keep the hall space to a minimum so the greatest possible use is made of the available floor space.



The Hillside Ranch

WORKSHEET #1 - SINGLE STORY RANCH

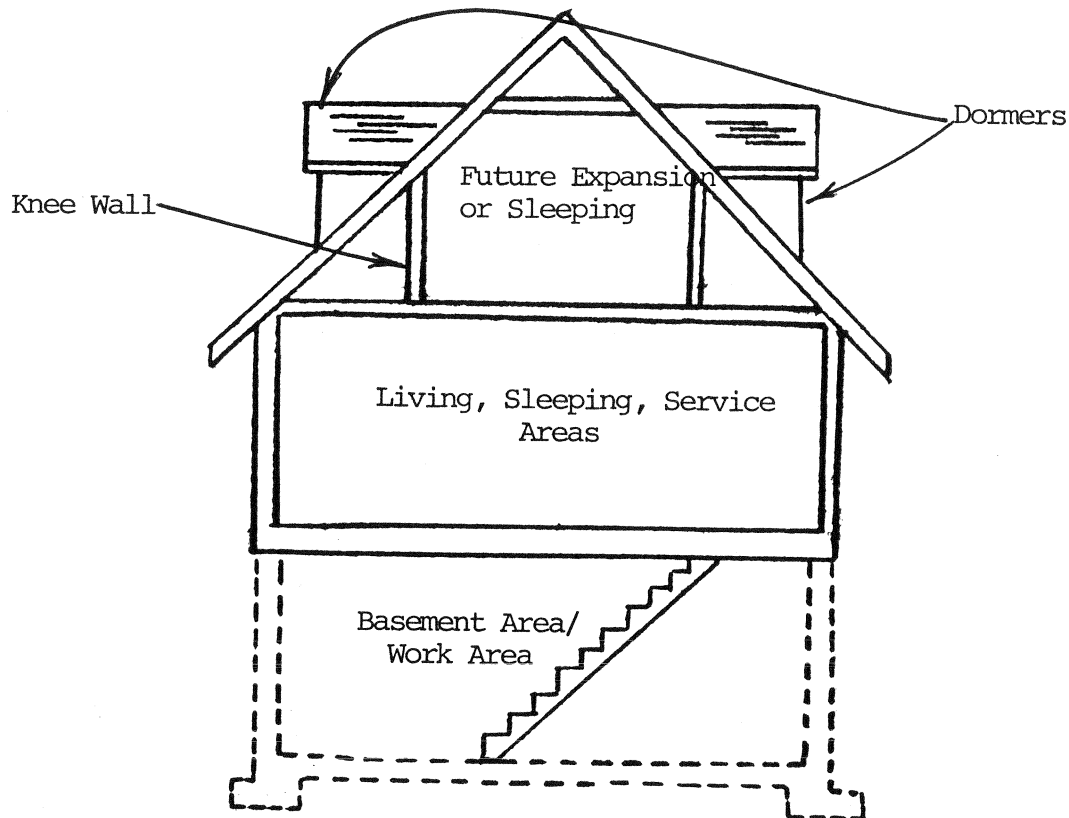
Directions: Answer the following questions accurately and neatly. Print your answers. This worksheet is worth 3 points.

1. The single story ranch style of home has all the regular living space on \_\_\_\_\_ level(s).
2. The most popular roof pitches for single story ranch style of houses are what?
  - A.
  - B.
3. How can single story ranch style homes be adapted to indoor/outdoor living?
4. What three construction options in reference to the foundation do you have when building a single story ranch style of home?
  - A.
  - B.
  - C.
5. Why will a single story ranch style home usually be more costly to build than some other styles?
6. Why do single story ranch style homes built in cold climates usually have basements?

\*\*\*\*\*CHECK POINT #1



# Story & A Half



General Characteristics: The one-and-one-half story house is essentially one-story with a steeper roof which allows for expansion of the attic. Dormers can be added to provide for additional head room, light, and ventilation to the upper area. This style of home is sometimes called a "Cape Cod."

## Advantages of Building and/or Living In A 1½ Story Home

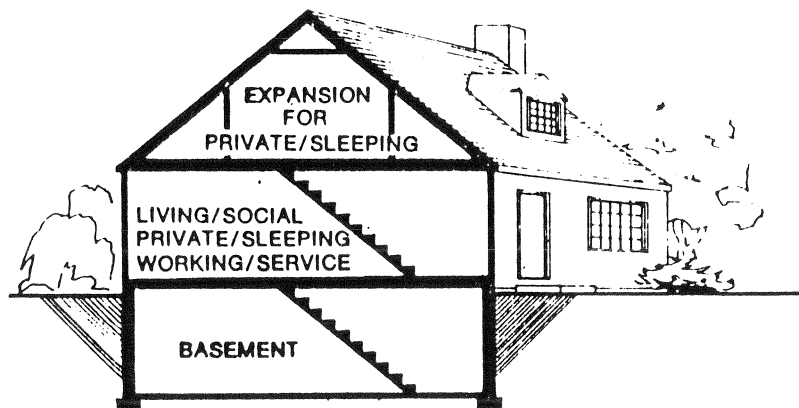
1. The cost to build will be considerably less than any of the other styles of homes considering the floor area.
2. The steep roof allows for built in expansion.
3. Heating costs are minimized by the small outside wall area.
4. Can be built on a relatively small lot.
5. The 1½ story home can be built as an expandable house with the second story to be finished later. This could help a person that could not afford the house to be able to by holding the initial costs down.
6. The house could be zoned off so adults are on one floor, with the children's bedrooms and playrooms on the second floor.

### Advantages - cont.'

7. You are allowed some flexibility in that as the family needs change the top could be closed off, thus a saving on heating and cooling costs.

### Disadvantages of Building and/or Living In A 1½ Story Home

1. The bedrooms on the second floor may be separated from the first floor bathroom.
2. If a bathroom is provided on the second floor, it will increase the total home cost.
3. The upstairs tends to be quite warm in the summer.
4. The 1½ story home does not look as large as it actually is.
5. The second floor rooms are cut up, in the sense that they will have knee walls and sloped ceilings. This means that careful planning is necessary from the outset.
6. Future expansion has to be planned with both electrical and plumbing systems in mind.



**One and One-Half Story**

#### **Common Problems**

- Insufficient insulation under roof.
- Insufficient ventilation for second floor.
- No provision to heat second floor or heating plant too small to heat second floor when finished.
- No water pipes or waste lines roughed into second floor for future bathroom.

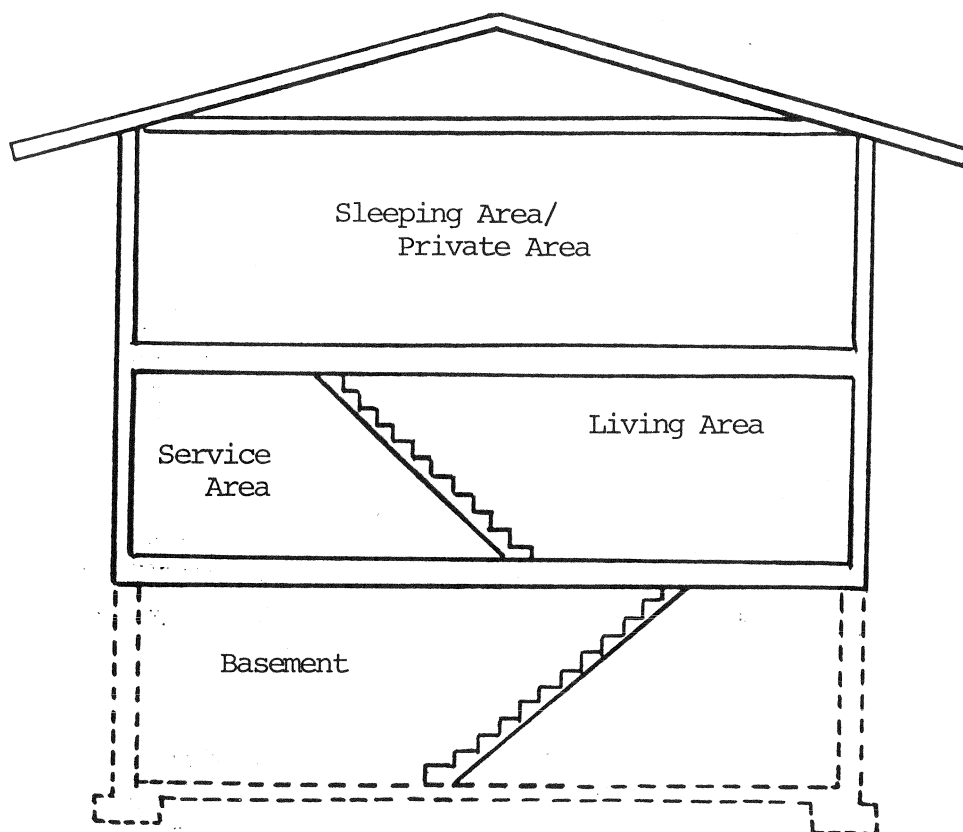
## WORKSHEET #2 - STORY-AND-A-HALF

Directions: Answer the following questions accurately and neatly. Print your answers. This worksheet is worth 3 points.

1. Why are domers added to a story-and-a-half style of home?
  - A.
  - B.
  - C.
2. What is meant by an expandable home in reference to a story-and-a-half style of home?
3. Why could knee walls on the upper level be a disadvantage?
4. Sketch what and where knee walls are located on a story-and-a-half home.
5. How can heating costs be minimized with a story-and-a-half home?
  - A.
  - B.
6. What is another name that story-and-a-half homes are sometimes called?
  - A.

\*\*\*\*\*CHECK POINT #2

# Two Story



General Characteristics: The two-story house has two full living areas with full ceiling heights on both levels. The living and service areas are usually located on the first floor with the sleeping areas on the second floor.

## Advantages of Building and/or Living In A Two-Story Home

1. The two-story home is more economical to build than the ranch or the one-and-a-half story home because you do not have the floor area to contend with. Thus you are using less material and having probably the same amount of square footage. It is also cheaper to heat a two-story home as warm air will have a tendency to rise thus giving some heat to the second level.
2. The two-story home may be built with or without a basement. However, you are gaining valuable extra space by including a basement.
3. Heating and cooling of the two-story home is usually simple and more economical in relation to some other styles.

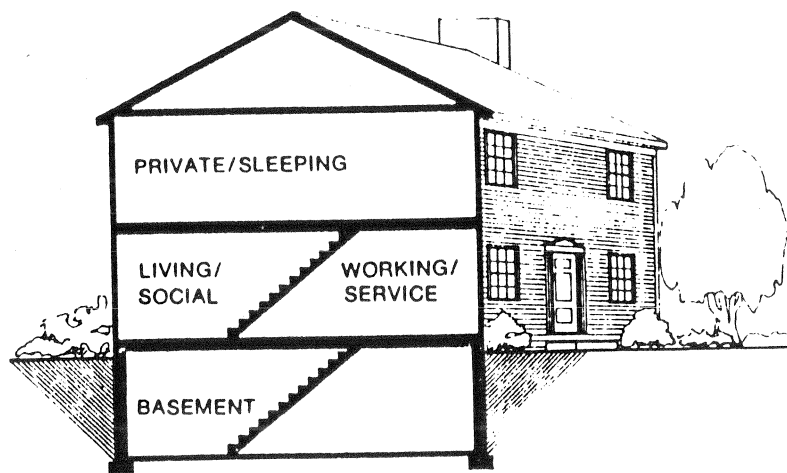
### 3. Heating and Cooling, cont.'

- a) Heat from the first floor naturally rises giving some warmth to the second floor without any added expense.
- b) With an ample amount of windows provided it is possible to have excellent ventilation.
- c) The ceiling is not directly under the roof as is the case with the story-and-a-half and thus aids in the cooling of the second level. This also helps with preventing the heat loss during the colder months.

### Disadvantages of Building and/or Living In a Two-Story Home

- 1. The two-story home unless located among other similar styles may appear out of place.
- 2. The exterior maintenance of a two-story home may be more difficult and costly because of the height involved with two levels.
- 3. It is necessary to climb stairs from level to level which may be a hinderance to some people.
- 4. Could mean the necessity of provided an extra bath in the plan. One on the living level and one on the sleeping level.
- 5. There is some wasted space involved with the stairway area that cannot be prevented.

NOTE: The two-story home may gain in popularity as the cost and availability of land become more of a problem and also as building materials and heating expenses rise.



Two-Story

WORKSHEET #3 - TWO STORY

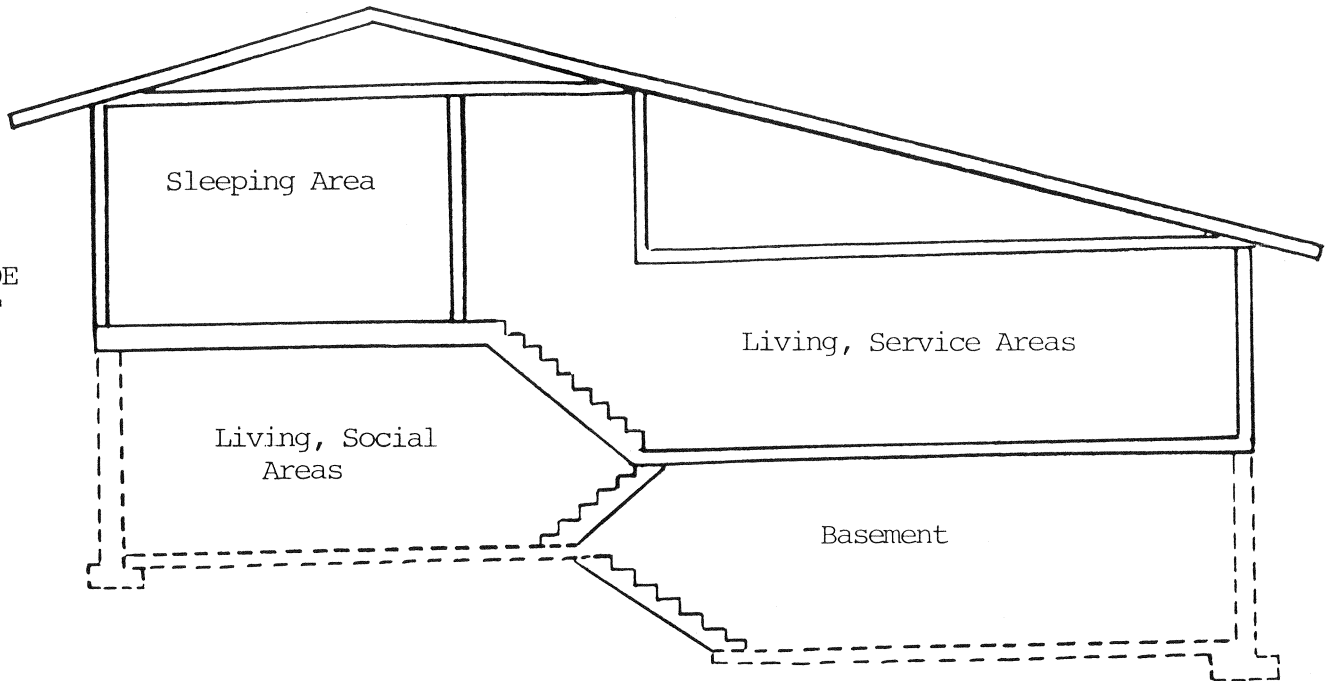
Directions: Answer the following questions accurately and neatly. Print your answers. This worksheet is worth 3 points.

1. How is the two story design different from the story-and-a-half design as far as ceiling heights?
2. Where is the sleeping area usually located in a two story home?  
A.  
Why?
3. Why can two story homes be more economical to build?
4. Warm air rises. What effect could this have when dealing with a two story house design?
5. What are the three basic areas within not only a two story house but all house designs?  
A.  
B.  
C.

\*\*\*\*\*CHECK POINT #3

# Split-Level

SIDE BY SIDE  
ARRANGEMENT



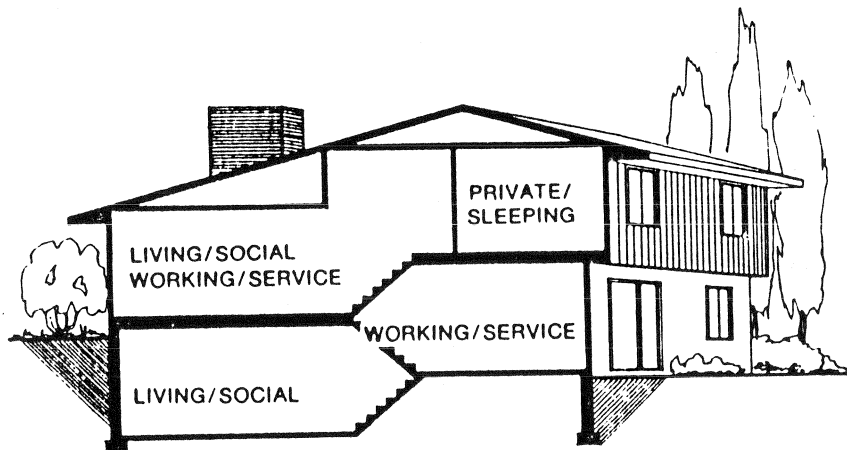
General Characteristics: The split level design was conceived for a sloping or hilly lot. It takes advantage of what might otherwise prove to be a troublesome difference in elevation and uses it to an advantage. The home usually consists of 3 - 4 separate levels. As a general rule, a split level home should never be built on a flat lot.

## Advantages of Building and/or Living In A Split Level Home

1. The general arrangement of the split-level home makes it easy to separate the sleeping, living, and recreation areas of the home.
2. Little or no hall space is required for the floor plan layout.
3. The basement usually equals about 40 - 60% of space occupied by the house.
4. Patios, terraces, and decks can greatly enhance the split-level design and add an extra feature to the home.
5. The split-level design gives a lot of space for the money. The split-level will usually look larger than the ranch style home.

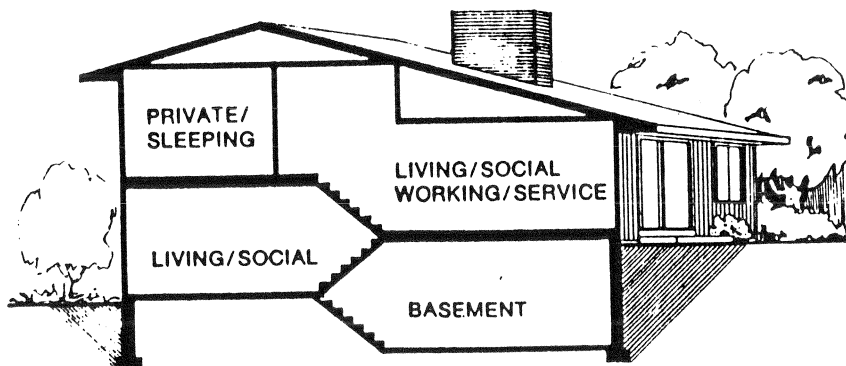
## Disadvantages of Building and/or Living In A Split Level Home

1. It is necessary to always climb one-half flight of stairs when entering or when going from one area to another.
2. It is more difficult for the home owner to maintain than a ranch type home.
3. It will usually be more expensive to build than other styles of houses.
4. Heating could be a problem if not carefully planned.
5. Attaching a garage at the living level is usually a problem in the design, thus you be probably walking up and down stairs to get from the garage to the living area of the home.
6. The two-story height at the front of the split-level can look monstrous if not planned carefully.



TWO TYPES OF SPLIT LEVEL  
ARRANGEMENTS

SPLIT LEVEL — BACK TO FRONT



SPLIT LEVEL — FRONT TO BACK



#### WORKSHEET #4 - SPLIT LEVEL DESIGN

Directions: Answer the following questions accurately and neatly. Print your answers. The work sheet is worth 3 points.

1. Split level homes are suited for \_\_\_\_\_ lots and are not as well suited for \_\_\_\_\_ lots.
2. The split level home usually consists of how many levels?  
A.
3. Why are stairs a main concern of people considering a split level home?
4. The basement usually equals about \_\_\_\_\_ of the occupied house area.
5. Why and how does split level design make it easy to separate living areas?

\*\*\*\*\*CHECK POINT #4

## ACTIVITY #1 - IDENTIFYING BASIC HOUSE DESIGNS

**Introduction:** You now should be familiar with the four basic house styles along with knowing general characteristics, advantages, and disadvantages of each. In this activity you will find pictures of house styles and properly identify them.

**Materials:** Old magazines and/or newspapers  
Scissors  
Rubber Cement

**Procedure:**

1. Find one example of each of the basic house styles in a magazine or newspaper and neatly cut it out.  
NOTE: If you are using the materials in the IMC check with the IMC director for permission before cutting.
2. Rubber cement the pictures on the Activity Sheet in their proper locations.
3. Print the magazine or newspaper name and date from which you got your example below each.

### SINGLE STORY RANCH STYLE

Magazine or Newspaper Name: \_\_\_\_\_

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

STORY-AND-A-HALF DESIGN

Magazine or Newspaper Name: \_\_\_\_\_

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

TWO STORY DESIGN

Magazine or Newspaper Name: \_\_\_\_\_

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

\*\*\*\*\*CHECK POINT #5

SPLIT LEVEL DESIGN

Magazine or Newspaper Name: \_\_\_\_\_

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

## ACTIVITY #2 - COMMUNITY AWARENESS OF BASIC HOUSE DESIGN

Introduction: Our community is made up of houses of many styles, sizes, shapes, colors, and designs. In this activity you will identify four houses from our community that portray each of the basic house designs.

Material: Pencil or Pen  
Interview Initiative  
Camera Optional

- Procedure:
1. Find an example of each of the four basic house designs within our community.
  2. Knock on the door, introduce yourself, and explain that you are working on a school project.
  3. Interview the occupant of the residence and fill out the information about the house on a data sheet.
  4. Ask the occupant if he/she would sign and date your data sheet.
  5. OPTIONAL: ( 5 Points Extra per Design) Take a photograph of the house and attach the picture to your data sheet with a paper clip.

### DATA SHEET Single Story Ranch

Name of Occupant \_\_\_\_\_

Address of Home \_\_\_\_\_

Does Occupant; Own Home \_\_\_\_\_ Rent \_\_\_\_\_

Number of Bedrooms; \_\_\_\_\_ Full Basement; yes no

Year Built; \_\_\_\_\_ Type of Siding; \_\_\_\_\_

Type of Roof Material; \_\_\_\_\_

Interior Ceiling Height \_\_\_\_\_ Windows; Style \_\_\_\_\_ Sgl., Dbl., Trp Pane?

Storm Windows; yes no Insulation; Walls \_\_\_\_\_ Ceiling \_\_\_\_\_

Occupant Signature; \_\_\_\_\_ Date; \_\_\_\_\_

DATA SHEET  
Two Story

Name of Occupant \_\_\_\_\_  
Address of Home \_\_\_\_\_  
Does Occupant; Own Home \_\_\_\_\_ Rent \_\_\_\_\_  
Number of Bedrooms; \_\_\_\_\_ Full Basement; yes no  
Year Built; \_\_\_\_\_ Type of Siding; \_\_\_\_\_  
Type of Roof Material; \_\_\_\_\_  
Interior Ceiling Height \_\_\_\_\_ Windows; Style \_\_\_\_\_ Sgl., Dbl., Trp. Pane  
Storm Windows; yes no Insulation; Walls \_\_\_\_\_ Ceiling \_\_\_\_\_  
Occupant Signature; \_\_\_\_\_ Date; \_\_\_\_\_

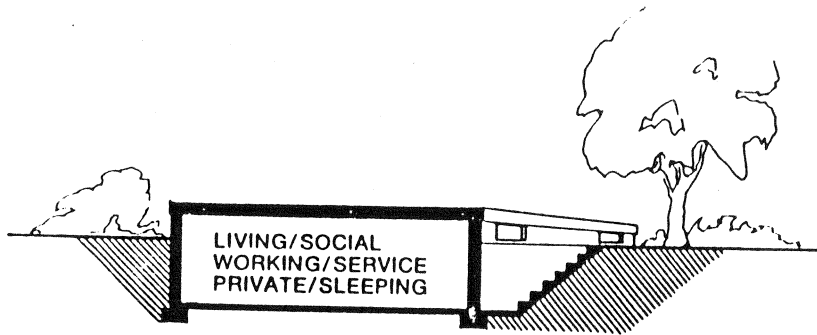
DATA SHEET  
Split Level

Name of Occupant \_\_\_\_\_  
Address of Home \_\_\_\_\_  
Does Occupant; Own Home \_\_\_\_\_ Rent \_\_\_\_\_  
Number of Bedrooms; \_\_\_\_\_ Full Basement; yes no  
Year Built; \_\_\_\_\_ Type of Siding; \_\_\_\_\_  
Type of Roof Material; \_\_\_\_\_  
Interior Ceiling Height \_\_\_\_\_ Windows; Style \_\_\_\_\_ Sgl., Dbl., Trp. Pane  
Storm Windows; yes no Insulation; Walls \_\_\_\_\_ Ceiling \_\_\_\_\_  
Occupant Signature; \_\_\_\_\_ Date; \_\_\_\_\_

DATA SHEET  
Story-and-a-Half

Name of Occupant \_\_\_\_\_  
Address of Home \_\_\_\_\_  
Does Occupant; Own Home \_\_\_\_\_ Rent \_\_\_\_\_  
Number of Bedrooms; \_\_\_\_\_ Full Basement; yes no  
Year Built; \_\_\_\_\_ Type of Siding; \_\_\_\_\_  
Type of Roof Material; \_\_\_\_\_  
Interior Ceiling Height \_\_\_\_\_ Windows; Style \_\_\_\_\_ Sgl., Dbl., Trp. Pane  
Storm Windows; yes no Insulation; Walls \_\_\_\_\_ Ceilings \_\_\_\_\_  
Occupant Signature; \_\_\_\_\_ Date; \_\_\_\_\_

# Where are we going?



WHAT IS THE FUTURE OF  
THE RESIDENTIAL STRUCTURE?

Homes of today are derivatives of earlier building ideas and construction styles. Technology however, has had a definite effect on styles and designs. This is because of new and better materials that are available today along with new building ideas and philosophies. Fifty years ago there were no asphalt shingles as we know them today, no vinyl aluminum, or steel sidings like today, no PVC plumbing pipe, no double or triple glazed windows, just to name a few. The use of plastics and synthetics has greatly changed both the design and construction industries.

Fifty years ago the principal design for the majority of residential structures was that they be of stick built construction and rectangular or square in shape. Today, although we still have many, many traditional homes designed and constructed, efforts are being made to improve on our forms of shelter. What will the typical residence be fifty years from now. A few considerations might be:

1. What new building materials will be available?
2. Will the family structure be as we know it today?
3. How will fuel availability change the concept of housing?
4. Will the single family dwelling be a thing of the past?
5. Will advancements in space exploration change where we live and work?
6. Will environmental changes (pollution, waste disposal, etc.) effect how and where we live?
7. Will the automobile still be our main mode of transportation or will a vast mass transit network effect our life styles?

### ACTIVITY #3 - THE FUTURISTIC HOME

**Introduction:** Let your imagination go. How do you think society will be living in another fifty years. What will be the typical residential structure?

**Material:** Drawing Pencil & Straightedge(Triangle)  
Eraser  
Sketch Paper & Drawing Vellum  
A Creative, Imaginative Mind

- Procedure:**
1. Brainstorm to yourself for a few minutes. Try to think of as many changes that you think might occur in the next fifty years. Jot these down on paper so that you can work them into your final idea possibly.
  2. Make a number of freehand sketches of floor plans and outer elevations that will portray you futuristic home.
  3. Evaluate your freehand sketches.
  4. Do your final draft on a sheet of drawing vellum using a straightedge for neatness. Do not make the drawing to scale but to proportion. This is what we will call an instrument sketch.
  5. When completed turn the final copy into your instructor for evaluation.
  6. Review the entire package. When you feel confident in knowing the material ask your instructor for the final exam.

\*\*\*\*\*CHECK POINT #7

