

Spatial Planning

OBJECTIVES

In this section you will cover the following topics:

- The functions of different rooms in a home
- The space requirements of rooms
- The co-functions of different rooms and their best positions
- Drawing interior walls in Cadsoft Envisioneer

Room Functions

Each room in a house has a specific function and each function in a home has specific space requirements. As you are planning a home you must take a look at the specific needs of the owners and the associated space requirements. Then combine the rooms to create the home.

Let's take a closer look at individual rooms and their requirements.

The Kitchen



The main function of a Kitchen is obviously to store and prepare food, but it has developed a social function as well. Kitchens have become the center point of a home, where the family meets, eats and entertains. All of these factors must be taken into consideration when laying out a kitchen space.

1. How many people are in the home? Space requirements must be considered when designing eating areas.
2. Who prepares the meals? If there are multiple "chefs" in the house, it is important to consider the size and layout of the food preparation area.

The key factor when designing a kitchen is adequate workspace that is accessible. A kitchen should leave a 36" - 42" working aisle in front of the counters so that one person can work at the counter and others can walk freely in the kitchen without causing interruption.



For information about laying out a kitchen, see the *Interior Design* chapter on page 95.

The Living Room



The Living Room, formally known as the Parlor, is a room where guests are entertained. The living room needs to accommodate furniture for people to sit, relax and converse comfortably. Room dimensions vary depending on the size of the home and the number of guests that the occupants entertain.

In the living room you must also consider the architectural elements, namely windows, doorways and fireplaces. These elements and their placement in a room can have a great impact on the design of the room. Traffic must flow through the room but it should not interrupt the designated entertaining areas. A fireplace is a great focal point in a room, but it should not take over the room. The designer's main priority is to create comfortable, adequate space for entertaining and relaxing.

Designing a living room is a two-part process:

1. Make a list of functions that are important to the occupants.

- Will this room be strictly for entertaining? If so it needs to be an impressive space with adequate seating for the number of people normally entertained.
- How many people are in the family? This will affect seating requirements in the room.
- Will this room hold a television? This will affect the size of the room and the layout of the space.

2. Make a list of architectural elements.

- Doorways for access to the room.
- Windows to add light and views to the room.
- Fireplaces and entertainment units can serve as focal points, but they can also break up a room. Placement of such items should be considered carefully.

Remember: the living room is a place to sit and talk. Leave enough space in the room so furniture can be arranged appropriately for this purpose without interruption from architectural elements.

Bedrooms



The Bedroom has two main functions. It is a place to sleep, and a place to store clothing and personal belongings.

When designing a bedroom, it is important to consult the local building codes. Since this is a sleeping area, careful consideration should be taken when choosing a window size and room size. All bedrooms must have a proper means of egress in case of fire, and must meet the minimum size requirement stipulated by local building codes. Check local building codes for size requirements in your area.

The size of the furniture is another important consideration in bedroom design. Below is a chart of average bed sizes in North America. (Countries around the world have different sizing standards.) Consult the chart to determine if the bedroom is large enough to hold the bed and storage furniture.

Crib	Twin	Double	Queen	King
28" x 52"	39" x 75"	54" x 75"	60" x 80"	76" x 80"

The Bathroom



Even though it is the smallest room in the home, the bathroom involves the greatest number of professionals to install. A plumber, tiler, electrician, flooring installer, painter and cabinet installer are just a few of the skilled tradesmen required, which is why the bathroom is one of the most expensive rooms to build (based on cost per square foot). Thousands of dollars in fixtures can be found in an area as small as 50 sq. feet.

Bathrooms require a sink, toilet, tub and shower. New homes, however, are being built with luxurious bathrooms with multiple sinks, toilet and bidet, and separate tub and shower stalls.

Make sure you consider materials when designing a bathroom. Bathing and showering make bathrooms prone to high condensation. Design the space with materials that are resistant to moisture and mold. Ventilation systems should also be installed to prevent moisture problems.

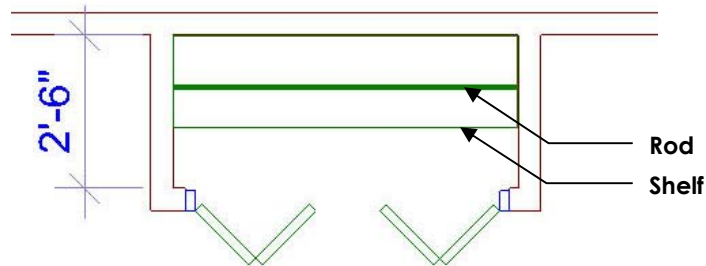


See the Interior Design section for more information about designing a bathroom.

Storage

An integral part of any home is storage space. Each room has items that need to be stored. In kitchens, cupboards are used to store food, dishes, and other food prep items. In a bedroom, closets are used to store clothes and other personal items. When designing a home you must make sure that each room has enough storage space.

A closet should be at least 2'-6" deep to accommodate a rod and shelf, as well as the hanging of clothing. Each bedroom should have at least one closet. Closets can vary in length.



In a master bedroom you must remember that you are serving the needs of two occupants. Larger amounts of space should be provided for storage. Not only are occupants storing clothing, but also accessories and shoes. Walk-in closets in bedrooms are popular because they provide adequate space to store and organize items and have a dressing area as well. Closet organizing companies are devoted to creating storage solutions for residential spaces. With their expertise they can turn a bare 5'x10' walk-in closet into a functional, organized storage system.



Consideration should also be given to entrances into the home, where removal of outdoor clothing and footwear occurs. An entrance can have a closet, wall with hooks, or an entire room devoted to storage. A mudroom, for example, serves as a transition area from outdoors to indoors and provides storage for outdoor clothing and accessories.

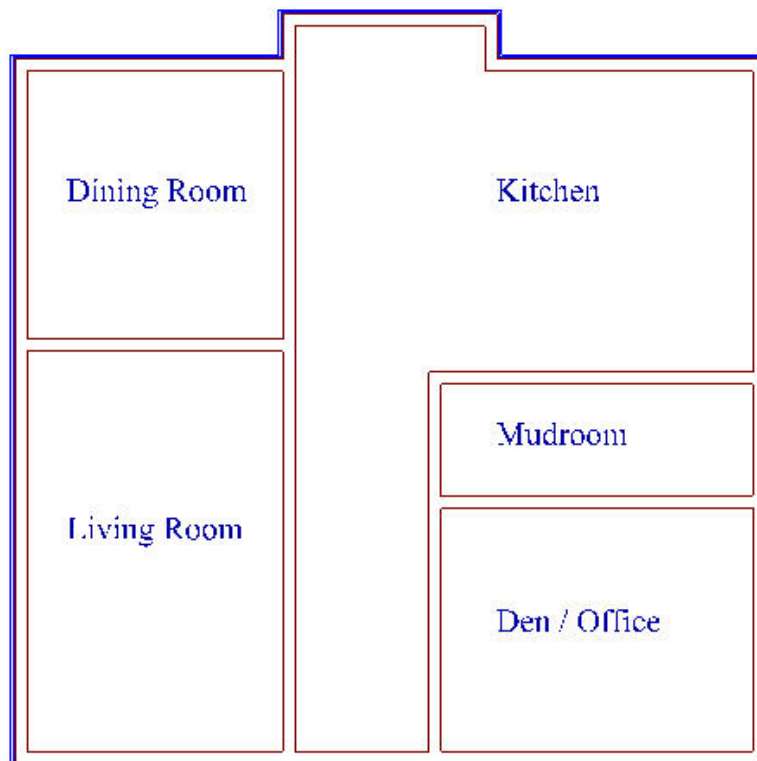
Creating a Floor Plan

Certain rooms function best in close proximity to others. Plan a zone for activities in each room: cooking, dining, entertaining, media viewing, conversation, play, etc. Also, make sure that the passageways through the house are unobstructed and will not disturb ongoing activities. Now look at how these rooms function together.

The kitchen and dining room, for example, should be close together so that food can be served in an efficient manner. You will want an area in your home for entertaining, but you will also want to offer personal space. Try to place rooms used for entertaining (living rooms and dining rooms) away from rooms that will be used for the family's personal spaces (bedrooms and family room). Also remember the storage needs of each room and plan a closet or storage feature of adequate size.

Depicting Walls in a Floor Plan

A floor plan depicts a home's wall layout from an overhead view. Walls are drawn to scale and show thickness.






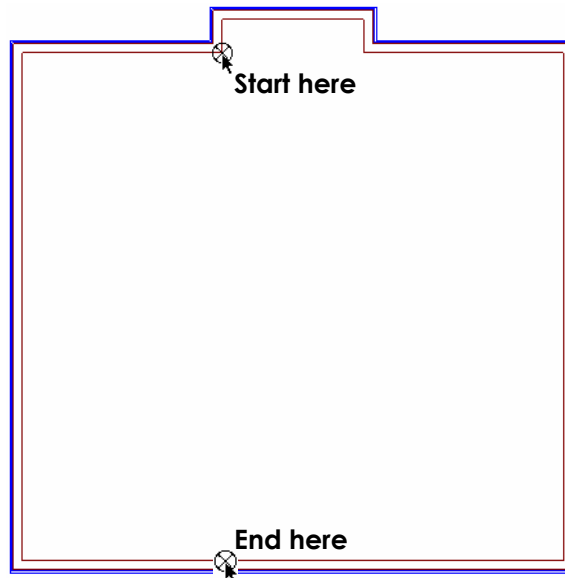
Exercise – Drawing Interior Walls

We will now insert several interior walls in our model to create interior spaces using the following insertion methods:

- Point-and-click method
- Insertion Offset option
- Copying existing walls

DRAWING WALLS USING YOUR MOUSE

1. Select **Insert > Walls**, or click the Walls button on the Building toolbar. 
2. In the catalog panel, select the **Interior Walls** category, and then the **2x6 Wood Framed Wall**.
3. Move your cursor onto the drawing screen area. Place your cursor at the intersection indicated in the diagram below. As you move your cursor towards the intersection the Object Snap drawing aid detects the walls and snaps to them. This ensures that a clean intersection is formed.



Object Snaps snap your cursor to common points on objects, such as endpoints.

 Intersection Snap cursor

4. Click to start drawing the wall.

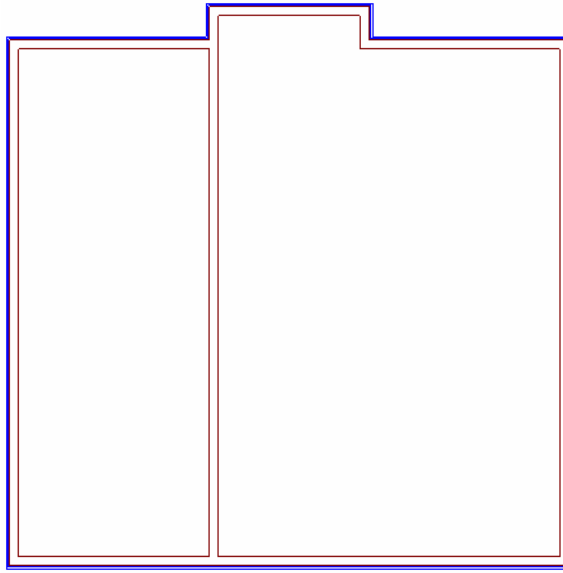


Tip: To draw right-angled walls make sure that the ORTHO drawing aid is on. If you want to draw walls on an angle, turn ORTHO off. For this lesson make sure ORTHO is turned on.

GRIDSNAP OBJSNAP ANGLESNAP GRID **ORTHO** COLLISION

5. Move your cursor downward. Onscreen dimensions are displayed as you draw the wall. Click inside the lower exterior wall.

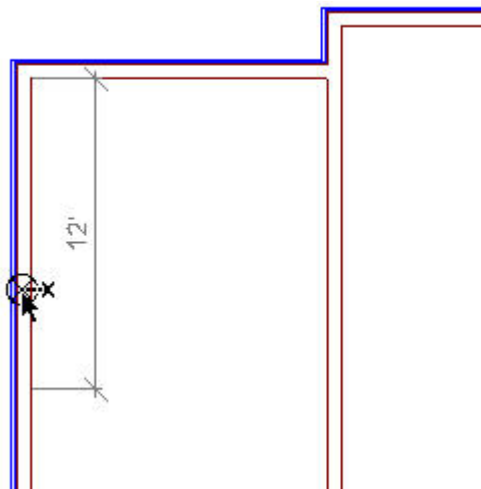
The first interior wall is drawn.



DRAWING WALLS USING THE INSERTION OFFSET OPTION

Now we're going to draw some walls using the Insertion Offset option, which lets you start a wall a specified distance away from the endpoint of an existing wall.

1. With the **Walls** tool still active, right-click and select **Enter insertion offset**.
2. In the **Enter insertion offset** dialog, type **12'**, then click **OK**.
3. Position your cursor inside the left exterior wall as indicated in the diagram below. When you see the 12' onscreen dimension, click to start the wall. Your cursor automatically snaps to a point that is 12' away from the upper wall intersection.

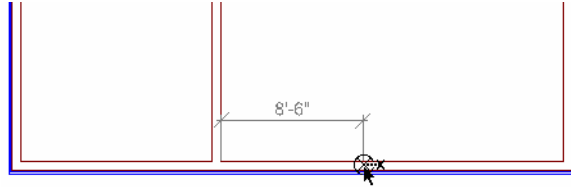


4. Move your cursor to the right and then click inside the first interior wall that you drew.
5. Right-click and select **Enter insertion offset**.
6. In the **Enter insertion offset** dialog, type **8'6"**, then click **OK**.

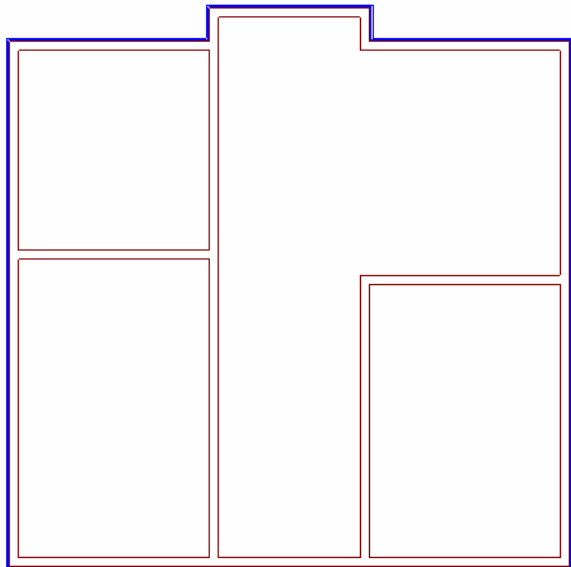


Tip: When typing a measurement in inches, you do not have to type the inches symbol ("). However, you do need to type the feet symbol (') if you are specifying a measurement in feet.

7. Position your cursor inside the front exterior wall, to the right of the vertical interior wall. When the onscreen 8'-6" dimension appears, click to start the wall.



8. Move your cursor upward and type **17'** and press **Enter**. (The distance appears in the Commander's *Distance* edit box as you are typing.)
9. Move your cursor to the right and then click inside the right exterior wall.
10. Right-click and select **Finish**.



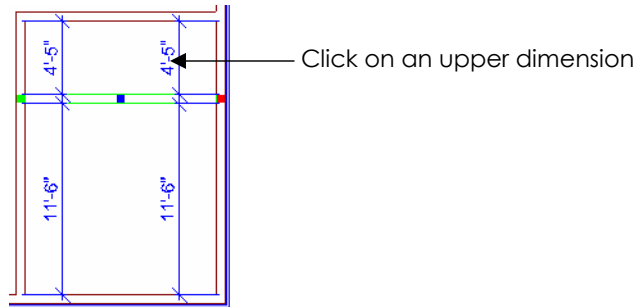
CREATING WALLS BY COPYING EXISTING WALLS

Walls can be copied to create new walls. You can click and drag the copy to a new position, or use the Commander to specify a precise move distance and direction.

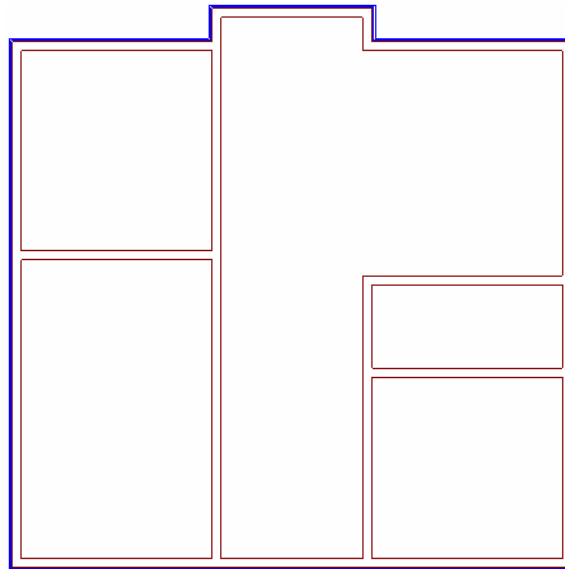
1. Click on the last interior wall that you created.
2. Right-click and select **Duplicate**. The *Drag to new position* prompt appears on the status bar.
3. Click a point on the wall. A copy of the wall is now attached to your cursor.
4. Move your cursor downward. When the *Distance* value in the Commander reads approximately 5', click to insert the wall in that location.

MOVING A WALL

1. Notice the dimensions that appear around the new wall indicating its distance from adjacent walls. Click one of the upper dimensions.



2. In the **Edit Dimension** dialog, type **5'** and click **OK**. Now the wall is exactly 5' from the wall above it (from inside face to inside face).
3. Select **File > Save**.



Review – Spatial Planning

- Each room in a home has a specific function and those functions require a specific amount of space.
- Certain rooms function best in close proximity to others. A home is “functional” if the rooms have been laid out in an efficient manner.
- When designing a floor plan remember to designate areas for entertaining (dining rooms, living rooms) and distance those areas away from personal spaces (bedrooms, family rooms).
- Each room has its own storage needs. Make sure you plan for adequate storage space in each room.

Additional Activities

Calculating a home's space requirements is a very critical design step. Take the time to do these additional activities.

1. Measure the rooms in your own home. Lay out the rooms in Envisioneer. Move the walls around to form new spaces and see if you can make the home more functional.
2. Review several floor plans from a home plan book. Rate the designs on their functionality. Did they group the entertaining and personal spaces adequately? Is the dining room close to the kitchen? Is there too much wasted space in hallways?
3. Visit a closet organizing company. Interview the staff about the needs of storage in a home and special design tips that can be used in a home for storage.
4. Visit a kitchen design studio. Speak with the designer to obtain more tips on kitchen space planning.