Kitchen Planning Standards
This circular describes how to design and judge kitchen plans. It shows where to put counters, appliances, and cabinets, and it tells how much drawer and cabinet space to provide.

NEW KITCHENS, NEW DESIGNS
Kitchen design has changed a great deal in recent years. Today, when two cooks share meal preparation, they need additional counter space and even an extra sink. Also, households today own more kitchen equipment such as food processors, coffee makers, and microwaves. Finding space for these appliances can be difficult.

While storage space has always been one of the most important ingredients in a successful kitchen plan, providing adequate storage for recycling is a new challenge that designers did not have to consider before. Work islands with grills and cook-tops complicate the task of providing ventilation. Without a vent fan or hood over the cook-top, keeping the kitchen smoke and grease free may be more difficult.

To develop a functional and attractive kitchen, you may need to develop two or more preliminary kitchen plans. How can you compare kitchen plans and decide which cabinet or appliance arrangement "works best? While the design is still on the drawing board, evaluate the kitchen systematically. You may discover that the kitchen does not have enough storage, or that appliances are in awkward locations.

Kitchen plans can vary enormously. You may have to make compromises in the drawer or shelf space, in the counter space, or in the arrangement of appliances. Compare plans and choose one that is closest to the household's requirements.

In most cases, you can use stock cabinet dimensions to develop an efficient and workable plan. Dimensions in this circular are based on standard sizes of cabinets and appliances — not on custom cabinets. With custom cabinets, you will have greater design flexibility, but the kitchen will be more expensive. Even when the budget allows custom cabinets, use the same planning principles to guide the arrangement of appliances and cabinets.

PLANNING A KITCHEN
Although each household's possessions and living habits play a part in how much space is desired in the kitchen, research has established some guidelines for "typical" kitchen size. The amount of space in the house places an upper limit on kitchen size. (Few people would want a kitchen that takes up half or three-quarters of the house — even if they really like to cook.) To balance people's ideas about their dream kitchen against the reality of limited house size, home economists have established kitchen standards for "typical" house sizes.

Kitchens fall into three categories:
- Minimum
- Medium
- Liberal

The minimum standards are recommended for houses with a floor area of less than 1,000 square feet. The medium standards are for houses with 1,000 to 1,400 square feet; and the liberal standards are for houses over 1,400 square feet. ("Floor area" includes the total area for all floors finished as living space. It does not include space in the garage, attic, or unfinished basement.)

Four Steps to Kitchen Planning
Follow these four steps when planning a kitchen, and the kitchen will be efficient and comfortable.

1. Plan kitchen location and arrangement: Establish the relationship of the kitchen to the rest of the house, and plan the location of windows and doors.
2. Decide on a basic plan—U- or L-shaped, corridor, or one-wall: Check the traffic pattern through the kitchen.
3. Choose suitable space standards: Determine the amount of storage, appliance, counter, and activity space required by the persons in the household.
4. Plan for efficient operation: Select the location and relationship of appliances and cabinets. Block these out on the plan, and determine if they are adequate to provide efficient work centers.

Each of these steps is important, and all four must be coordinated to develop a successful kitchen plan.

Once you have a plan for the kitchen, check the plan by using the scoring system shown on pages 10 through 14. If the
check shows too many deficiencies, try arranging the appliances and cabinets in a different way. In some kitchens, moving a door or window will allow for a more efficient arrangement.

**Universal Design Features**

When you plan a kitchen, consider using universal design features. Universal design features provide safety, accessibility, and adaptability for a variety of users: children, elderly persons, and persons with disabilities ranging from mobility or vision loss to a weak grasp due to arthritis. Universal design covers many aspects of kitchen planning, clearance spaces and work heights; design of handles and controls; and the choice of appliances to minimize contact with hot surfaces. Kitchens with these features will be easier for all people to use throughout their lives. The scoring system at the end of this guide shows the dimensions and modifications needed for universal design.

**PLANNING KITCHEN LOCATION**

First, think about the location of the kitchen in the house. The kitchen should be directly connected to the dining area and be easily accessible to the front entrance as well as to the service entrance. Access to an outdoor eating area is also desirable.

If there are young children in the household, the kitchen should be located adjacent to, and have full view of, a play area. Avoid an arrangement that makes the work area the main thoroughfare to the rest of the house.

Individual household preferences will determine whether the kitchen will include space for eating or extra storage. Space for other activities such as hobbies, laundry, or sewing should be planned at the same time as the kitchen.

**Doorways**

The number of doorways, their location, and the direction of door swing affect kitchen efficiency. In new construction, avoid placing doorways in corners. In older houses, a kitchen designer may have to work around existing door locations. It is also desirable to avoid door swings which conflict with the use of appliances, cabinets, or other doors.

Doors should swing against the side of cabinets, or out of the kitchen. Do not allow doors to swing into the path of travel in hallways or other activity areas. Use sliding or folding doors in spaces with limited clearance.

**Windows**

The number and placement of kitchen windows affect the amount of space available for wall cabinets. Good building practice requires that the minimum glass area of a room equal 10% of the floor area. You may wish to increase the window area to 15% or 20% to take advantage of natural light. However, if the wall with the windows faces north, or the house is in a cold climate, you may want to keep the percentage near the minimum 10% level. If the kitchen is part of a dining or family room, the windows need not be in the kitchen work area, but should be at least 10% of the total area.

While daylight makes kitchens more pleasant to work in, obtaining the right balance between daylight and heat loss can be difficult. Skylights are an option to increase natural lighting. In cold climates, select skylights or windows with a high R-value to reduce condensation.

Where summers are very warm, and the window wall faces west, you may want to minimize exposure to the sun. The sun's rays are hottest in the afternoon, when the sun is low over the horizon. West-facing windows will cause the kitchen to overheat if the glass area is large.

**CHOOSING A LAYOUT**

The shape of well planned kitchens can vary. But all should have sufficient wall space for appliances and the necessary cabinets and counters.

**Using Space Wisely**

Sometimes the kitchen design is affected by certain fixed dimensions imposed by the plan or structure of the house. For example, the location of a load-bearing wall may set the maximum width or length of the kitchen unless structural modifications are made. This means that...
Kitchen Planning Standards

Kitchen assemblies can take many shapes.

In measuring the base-cabinet, wall-cabinet, and counter frontage, the inaccessible space in corners is not included.

A lazy-susan adds storage equal to 6 inches.

CABINET SPACE

The typical base cabinet is 34 1/2 inches high. After the cabinet is installed, the countertop is placed on the cabinet, bringing the overall height to 36 inches. Most base cabinets have one drawer and two shelves. Typically, base cabinet shelves in stock cabinets are not adjustable. (Fixed shelves cause disorder and fatigue. The storage space cannot be tailored to the cook’s needs.)

To provide the most functional storage, the plan should call for base cabinets with more drawers, pull-out shelves, and flexible storage. Drawers, properly sized for the stored items and with good adjustable dividers, are the most functional storage units. Pull-out shelves, trays, and baskets work well and can be adjusted according to need.

The length of the accessible base-cabinet front is known as the base-cabinet frontage. This frontage is an initial measure of the adequacy of kitchen storage.

Although the bulk storage space under the sink is useful, it does not have multiple shelves, and, therefore, is not included in the base-cabinet frontage. Drawers as a part of a freestanding or slide-in range do not provide adequate convenient layouts; the cook does less walking than in the other arrangements.

CABINET SPACE

After deciding on the basic configuration, the next step is to determine how much storage space will be needed. The amount of cabinet space the plan provides depends on the number of food items, utensils, and dishes to be stored. Families with special dietary needs (such as kosher kitchens where meat and dairy products are stored separately) may need additional storage.

For efficient use, items should be stored where they are first used. Cabinets near the kitchen eating area or the sink should provide enough space for dishes and glasses. And cabinets for serving dishes should be placed near the range. If the cook uses a microwave oven instead of a range, serving dishes used to heat food in the microwave should be stored near the food preparation area.

Base Cabinets

The typical base cabinet is 34 1/2 inches high. After the cabinet is installed, the countertop is placed on the cabinet, bringing the overall height to 36 inches. Most base cabinets have one drawer and two shelves. Typically, base cabinet shelves in stock cabinets are not adjustable. (Fixed shelves cause disorder and fatigue. The storage space cannot be tailored to the cook’s needs.)

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storage and should not be included in frontage calculations.  

The recommended standards for total base-cabinet frontage are as follows:  
- Minimum 6 feet  
- Medium 8 feet  
- Liberal 10 feet  

Items stored in corner base cabinets with stationary shelves are difficult to reach. Do not include this storage when computing base-cabinet frontage. Use of turn-around shelves (lazy-susans) or other fully accessible corner storage devices makes it easier to reach items stored in a corner base cabinet. Full use of the corner area provides extra storage equal to 6 inches of base cabinet frontage. However, shallow turn-around cabinets add no storage.

**Wall Cabinets**

The typical wall cabinet is 30 inches high and has two to three adjustable shelves. As with base cabinets, adjustable shelves allow the shelves to be spaced according to the height of the stored items, thereby reducing wasted space.

Place wall cabinets 15 to 18 inches above the counter. This allows ample room for a mixer or other equipment used on the counters. For convenience in daily use, place the third shelf of wall cabinets no more than 72 inches from the floor.

The amount of dinnerware is the key to wall-cabinet storage requirements.

- With dinnerware storage for four people, wall-cabinet frontage should equal the recommended base-cabinet frontage.
- When planning to store dinnerware for 12 people, the wall-cabinet frontage should be increased by 48 inches.

Place wall cabinets for everyday dishes near either the sink or the dining area (preferably accessible to both). Also, place wall cabinets above all counters where food will be prepared and above the major appliances.

When measuring the frontage of wall cabinets, do not count wall cabinets over the refrigerator, oven, sink, and range or built-in range-top. These cabinets are generally too high for everyday use, but they provide storage space for items used infrequently.

**Storage-Wall Cabinets**

If wall-cabinet frontage needs exceed the amount of base-cabinet frontage, or if the space available for wall cabinets is limited, as in kitchens with large windows, use a full-height cabinet.

A full-height cabinet, known as a storage wall or pantry, contains six or more shelves and provides storage at a convenient and accessible height. A storage wall or pantry unit is 12 to 24 inches deep and 72 to 84 inches tall. Each inch of frontage in a storage wall at least 12 inches deep is equal to 2 inches of wall cabinet frontage. Each inch of frontage in a storage wall at least 20 inches deep equals 2 inches of base-cabinet frontage.

The location of the storage wall may violate the recommendations for putting storage at the place of first use. However, this is not a severe disadvantage if the kitchen has at least 6 feet of three-shelf wall cabinets over the work counters and a counter near the storage wall.

**SPACE FOR APPLIANCES**

Space must be planned for the major kitchen appliances. The frontage for each appliance varies with the different makes and models.

If you plan the kitchen before selecting the appliances, use the following allowances:

- 36 inches for the refrigerator  
- 36 inches for a double-bowl sink  
- 27 inches for a single-bowl sink  
- 24 inches for a dishwasher  
- 30 inches for a built-in wall oven  
- 24 inches for a separate microwave oven  
- 30 inches for a freestanding range  
- 36 inches for a built-in cook-top

If you select appliances before planning the kitchen, use the actual dimensions. Also try to select appliances (such as the dishwasher and kitchen ventilation fan) that operate quietly.

The size and type of appliances will affect the available storage and counter space. For example, a built-in oven will decrease counter space; however, base cabinet frontage may increase depending on the overall height of the built-in oven. A built-in cook-top usually increases base-cabinet frontage because a cook-top is shallow and provides usable storage below.
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Combine the counter frontage on both sides of a corner. This determines the frontage serving appliances on either side of the corner.

If two people cook and share food preparation, separate the cooking units, such as a cook-top and a microwave oven. Also, add a second sink, even if this reduces counter and storage space slightly. In two-cook kitchens, the second sink can reduce traffic in the work area.

COUNTER SPACE
Provide counter space on both sides of the sink and adjacent to all appliances. The recommended standards for minimum, medium, and liberal amounts of counter space for various locations are shown below.

<table>
<thead>
<tr>
<th>Location</th>
<th>Minimum</th>
<th>Medium</th>
<th>Liberal</th>
</tr>
</thead>
<tbody>
<tr>
<td>On the latch side of the refrigerator for setting out supplies</td>
<td>15&quot;</td>
<td>15&quot;</td>
<td>18&quot;</td>
</tr>
<tr>
<td>At the right of the sink for stacking dirty dishes*</td>
<td>24&quot;</td>
<td>30&quot;</td>
<td>36&quot;</td>
</tr>
<tr>
<td>At the left of the sink for stacking clean dishes (if a dishwasher is placed to the left, 24 inches is liberal)</td>
<td>18&quot;</td>
<td>24&quot;</td>
<td>30&quot;</td>
</tr>
<tr>
<td>Somewhere in the assembly for food preparation</td>
<td>36&quot;</td>
<td>36&quot;</td>
<td>42&quot;</td>
</tr>
<tr>
<td>Beside the range or built-in surface unit for setting out serving dishes or plates (This does not include any area on the range.)</td>
<td>15&quot;</td>
<td>18&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>Beside the regular oven</td>
<td>15&quot;</td>
<td>15&quot;</td>
<td>18&quot;</td>
</tr>
<tr>
<td>On the latch side of the microwave oven</td>
<td>15&quot;</td>
<td>15&quot;</td>
<td>18&quot;</td>
</tr>
</tbody>
</table>

* These assume a right-to-left dish washing sequence. If the sequence is reversed, the counter requirements are reversed.

In most kitchens, the counter space is continuous; some counters can be used for more than one function. Whenever two or more counters are combined, the multiple-use counter should equal the longest counter in the group plus 12 inches. However, the combination of multiple-use counters should not reduce the total base-cabinet frontage below the recommended total.

ACTIVITY SPACE
Activity space is the space a person needs to function efficiently in the kitchen. Cooks need space to move around without bumping into open cabinets, dishwashers, or refrigerators. Activity space falls into two categories — access space and work area.

Access space is the space needed to open and close cabinets and appliances. This space is critical in corners and when cabinets are at right angles to each other. Cooks also need adequate work areas. Work area space is provided so that another person can walk or edge past the cook.

Two other space requirements are also important in a kitchen — space for a dining area and access space in front of a storage wall. The “minimum,” “medium,” and “liberal” allowances for the four activity spaces are given below.

<table>
<thead>
<tr>
<th>Activity Space</th>
<th>Access Space</th>
<th>Work Area</th>
<th>Dining Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access space</td>
<td>Work area</td>
<td>Dining area</td>
<td></td>
</tr>
</tbody>
</table>
| Work area space should provide room for another person to walk or edge past. The recommended clearance for the work area between base cabinets or appliances opposite each other is 48 inches minimum, 54 inches medium, and 60 inches liberal. The medium and minimum standards are only wide enough to allow a person to turn sideways and edge past the cook.

The same clearances are required from a counter front to a table, a wall, or to the face of a storage wall if the space is part of a work area.

Dining Area
The dining area can be part of the kitchen or separated by a peninsula or counter. Different clearances are recommended for the space beside a dining table that does not face a workspace.
If there is no passageway or counter space (see "B," at left), the clearance from the table to a wall or counter back should be 26 inches minimum, 30 inches medium, and 36 inches liberal. Liberal clearance allows a person enough walking space to leave the table without disturbing others.

If there is a passageway along one side of the table (see "A," at left), the clearance to a wall or counter back should be 30 inches minimum, 36 inches medium, and 44 inches liberal. The liberal clearance allows room for a person to walk past a seated person; an additional 6 inches is needed for a person to walk past a person seated in a wheelchair.

Storage wall access is space in front of the storage wall (see "C," at left). If there is no passageway, the clearances between the front of a storage wall with sliding doors and a table or a wall should be 30 inches minimum, 34 inches medium, and 38 inches liberal. For storage walls with hinged or folding doors, allow room for the door to swing open plus 16 inches. For access by a person in a wheelchair, 60 inches of clearance is needed in front of the storage wall.

**Combined Clearances**

Space in a kitchen may fall into more than one category. For instance, you may have a dining area adjacent to the storage wall access.

*When an area qualifies under two of the following categories, use the largest clearance:*

- Access space
- Work area
- Dining area
- Storage wall access

Clearances never need to be larger than those given for the "liberal" allowance. Clearances larger than the "liberal" recommendations require the cook to do more walking. Most people prefer additional storage space, not more clearance. The space allowances shown for "liberal" clearances also allow adequate access and work clearance for persons using wheelchairs or walkers.

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**PLANNING FOR EFFICIENT OPERATION**

After determining the kitchen layout and choosing suitable space standards, the next step is to arrange the appliances and work areas for maximum efficiency. Each kitchen has areas for food preparation or clean-up. The arrangement of these work areas, or *centers*, is critical to a functional kitchen. As you plan the general kitchen arrangement, concentrate on the location of these work centers.

*The following four work centers should be included in every kitchen plan:*

- Refrigerator
- Sink
- Food preparation
- Range-serve

Each center includes storage cabinets, work counters, and the appliances required for that particular activity.

Arrange the work centers to reduce the amount of walking in the kitchen and to allow work to flow easily from one center to another. The work areas should not be split by traffic. Normally, the greatest number of trips during meal preparation occurs between the sink and the primary cooking unit (top of the range, cook-top, or microwave); many trips occur between the food preparation center and the sink and between the food preparation center and refrigerator.

A convenient sequence for a right-handed person is from right to left; that is, the refrigerator center followed in turn by the food preparation, sink, and range-serve centers. However, having each center complete in itself, with adequate counter and storage space, is more important than having the correct sequence.

Counter space for two or more centers can be combined. It is usually best to combine counters for at least two centers into one continuous counter, with corresponding storage above and below. For instance, the plan may call for the sink center to include a dishwasher. The range-serve center can be modified to include range ventilation, an oven, or microwave. The microwave may be part of the range-serve center, or it can become its own center.

An isolated unit is satisfactory if it is a complete center (with storage cabinets and
Tall equipment between two counters blocks the flow of work.

A sink too close to the inside corner of a counter restricts access to the sink counter when two people are working.

A counter surface 12 inches wide at each side of the range or surface unit provides for safety and serves as a place to put hot pans.

work counters), and not merely an appliance standing by itself. Perhaps the plan will work better with a separate oven or microwave center.

Refrigerator and Oven Centers

The first step in planning the arrangement of the centers is to place the tall appliances — the refrigerator and built-in oven. Locate these appliances to avoid blocking the flow of work from one counter to another.

Position the refrigerator to avoid interfering with the transfer of food between counters and the dining table. If the refrigerator is hinged at the right, it should be at the right end of the counter. This location is convenient for transferring food to and from the refrigerator. The door swing on most refrigerators, with the exception of side-by-side models, can be easily reversed by putting the hinge on the other side.

In meal preparation, the built-in conventional oven is used much less than the sink, refrigerator, or cook-top. Therefore, saving steps is not an important factor in establishing the built-in oven location. If practical, it should be near the food preparation center.

Sink Center

The sink with its adjoining cabinets is by far the most-used center. It should be centrally located. A second sink is convenient in kitchens used by more than one person. Installing the sink along an interior wall, possibly back-to-back with another room with plumbing in it, will cost less and in cold climates is a good building practice. With a corner sink, the plumbing can be placed on the interior wall, while a window near the corner provides the view.

When planning the location of the primary sink in an "L" or "U"-shaped assembly, it is important to allow standing space on each side of the sink. For minimum and medium kitchens, 9 inches of counter frontage is needed, measured from the edge of the sink bowl to the corner of the counter fronts. In liberal kitchens, 15 inches is recommended. When there is more than one sink in the kitchen, the counter frontage and storage recommendations apply to the primary sink.

Food Preparation Center

A food preparation center will be equally convenient if it is placed between the refrigerator and sink or between the sink and range. If a microwave oven is used in meal preparation, it should be placed near the food preparation center. Storage for most packaged, canned, and bottled foods should be nearby.

If one food preparation center is to be used simultaneously by two persons, extend the counter frontage requirement by 24 inches to a minimum of 60 inches. However, if the center is located at a corner, even a 60-inch center is difficult for two persons to use at the same time.

Range-Serve Center

Avoid placing the range or cook-top under a window. The curtains may catch fire, and reaching over the range to open windows would be hazardous. To prevent passers-by from accidentally hitting the handles of pots containing hot liquids, include a minimum of 12 inches of counter on each side of the cooking unit. Since this counter will also serve as a space to set down hot pans, a heat-resistant counter material or insert should be used on at least one side.

Today, meals are often prepared in a microwave oven, not on the top of the range. If the microwave is essential to efficient meal preparation, ensure that the microwave is placed in the central work area. When planning the central work area, you may need to place the microwave where you would normally place the range.

If the microwave is used primarily for heating snack or convenience foods, it may be placed out of the central work area. There should be a minimum of 15 inches of counter next to the microwave. Also, place the microwave at a height that is accessible and safe for all users.

When planning the location of cooktops or ranges, consider how these smoke-producing appliances will be ventilated. Use kitchen ventilation at the range or cook-top to remove water vapor, grease, smoke, odors, and combustion gases. Grease and smoke will make walls and ceilings dirty.
Two types of ventilation appliances are common — recirculating and exhaust systems. While both are sold as range ventilation systems, the recirculating systems do not remove water vapor or combustion gases. They merely pass the air above the range top through a filter then return it to the room. Effective ventilation can only be achieved with an exhaust system.

For cook-top ventilation, select a hood that extends over most of the cooking area to remove cooking contaminants. When the range or cooking top is placed in an island, down-draft ventilation systems, usually incorporated in the cooking appliance, may be used. Down-draft ventilation removes combustion gases and other cooking contaminants from low pans and grills that are closest to the vent. However, down-draft ventilation is not as effective in venting vapors from large pots or pans farther from the vent intake.

Work Triangle

Establish an efficient “work triangle” between the major appliances. Meals can be prepared more efficiently if the sink, refrigerator, and the primary cooking unit (e.g., top of the range, cook-top or microwave) are at points of a triangle. The total of all three sides should preferably be less than 23 feet, but never over 26 feet. The distances should be measured from the center front of each appliance. The triangle is smallest with the corridor and “U” assemblies. Check the location of doorways, and make sure the traffic pattern through the kitchen will not cut across the work triangle.

Kitchens designed for use by more than one person may have two work triangles. The refrigerator center is typically common to both triangles, and two sinks and/or two separate cooking centers (e.g., cook-top and microwave oven) are provided.

HOW TO SCORE KITCHEN PLANS

The most difficult part of the kitchen to design is the food preparation area, not the great room or dining alcove that may adjoin the kitchen. This working heart of the kitchen should be arranged for maximum efficiency.

A “Kitchen Rating System,” based on the planning recommendations in this circular, has been devised by the Building Research Council as a guide for judging kitchen designs. The rating system can be used on any residential kitchen using conventional storage cabinets.

The rating system assigns a point value to each item in the kitchen plan. The higher the score, the better the kitchen plan. Since some planning faults are more serious than others, the points assigned to each factor below have been weighted accordingly.

The basic requirements for the successful design of the kitchen work area are the following:

- Storage
- Appliance space
- Counters
- Activity space

The scoring system is divided into two parts. Part I is used to evaluate the amount of storage and counter space. Part II is used to evaluate the arrangement of appliances, storage, and activity space.

All of the requirements of the second part of the scoring system are not applicable in every kitchen arrangement. When a requirement does not apply, score the maximum number of points to avoid penalizing a kitchen unnecessarily. The liberal kitchen is desirable in a large house, but may be an extravagant use of space in a small house. Therefore, several items in the scoring system have three separate ratings to evaluate the kitchen according to the total house area.
**Kitchen Planning Scoring Chart**

**PART I: Storage and Counter Space**

### Storage

Base cabinets must have at least one drawer and two shelves not less than 20 inches deep. Drawers are preferable to stationary shelves. Include storage below built-in cooking surface unit and below oven if the storage space is at least 20 inches high. Each inch of frontage in a full-height storage wall at least 20 inches deep as equal to 2 inches of base cabinet. Do not include cabinet space under the sink, drawers in ranges, corner cabinets with stationary shelves.

1. **Total base-cabinet frontage** = ____ inches.

<table>
<thead>
<tr>
<th>House size</th>
<th>less than 1,000 sq. ft.</th>
<th>1,000-1,400 sq. ft.</th>
<th>over 1,400 sq. ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
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</table>

Wall cabinets must have 3 or more shelves at least 10 inches deep. Include each inch of frontage in a full-height storage wall at least 12 inches deep as equal to 2 inches of wall cabinet. Do not include cabinets over ranges, refrigerators, built-in ovens, sinks, or corner cabinets with stationary shelves.

2. **Total wall-cabinet frontage** = ____ inches.

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</table>

### Counter Space

The "length of counter" refers to the total frontage for a section of counter that extends between appliances or that extends from an appliance to the end of the counter. This may be the combined frontage of a continuous counter on two adjoining walls. The frontage of any section of counter can be scored for more than one of the following needs.

3. **Length of counter frontage adjacent to the latch side of the refrigerator** = ____ inches.

<table>
<thead>
<tr>
<th>House size</th>
<th>less than 15&quot;</th>
<th>15&quot; to 17&quot;</th>
<th>18&quot; or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 1,000 sq. ft.</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
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<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>over 1,400 sq. ft.</td>
<td>0</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>
4. Length of counter frontage to the right of the sink bowl** = ___ inches.

<table>
<thead>
<tr>
<th>House size</th>
<th>less than 24&quot;</th>
<th>24&quot; to 29&quot;</th>
<th>30&quot; to 35&quot;</th>
<th>35&quot; or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 1,000 sq. ft.</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>1,000-1,400 sq. ft.</td>
<td>0</td>
<td>6</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>over 1,400 sq. ft.</td>
<td>0</td>
<td>3</td>
<td>6</td>
<td>10</td>
</tr>
</tbody>
</table>

5. Length of counter frontage to the left of the sink bowl** = ___ inches.

<table>
<thead>
<tr>
<th>House size less than</th>
<th>18&quot;</th>
<th>18&quot; to 23&quot;</th>
<th>24&quot; to 29&quot;</th>
<th>30&quot; or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 1,000 sq. ft.</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>1,000-1,400 sq. ft.</td>
<td>0</td>
<td>6</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>over 1,400 sq. ft.</td>
<td>0</td>
<td>3</td>
<td>6*</td>
<td>10</td>
</tr>
</tbody>
</table>

* If dishwasher is used score 10 points.
** These counter requirements assume a right-to-left dishwashing sequence.

6. Length of counter frontage to both sides of either the range or built-in surface unit = ___ inches.

<table>
<thead>
<tr>
<th>House size</th>
<th>less than 15&quot;</th>
<th>15&quot; to 17&quot;</th>
<th>18&quot; to 23&quot;</th>
<th>24&quot; or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 1,000 sq. ft.</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>1,000-1,400 sq. ft.</td>
<td>0</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>over 1,400 sq. ft.</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

7. Length of counter frontage to one side of the oven = ___ inches.

<table>
<thead>
<tr>
<th>House size</th>
<th>less than 15&quot;</th>
<th>15&quot; to 17&quot;</th>
<th>18&quot; or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 1,000 sq. ft.</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>1,000-1,400 sq. ft.</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>over 1,400 sq. ft.</td>
<td>0</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

8. Length of counter frontage at the microwave oven = ___ inches.

<table>
<thead>
<tr>
<th>House size</th>
<th>less than 15&quot;</th>
<th>15&quot; to 17&quot;</th>
<th>18&quot; or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 1,000 sq. ft.</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>1,000-1,400 sq. ft.</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>over 1,400 sq. ft.</td>
<td>30</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

9. Length of counter frontage for mixing = ___ inches.

<table>
<thead>
<tr>
<th>House size</th>
<th>less than 36&quot;</th>
<th>36&quot; to 41&quot;</th>
<th>42&quot; to 47&quot;</th>
<th>48&quot; to 53&quot;</th>
<th>54&quot; or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 1,000 sq. ft.</td>
<td>0</td>
<td>7</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>1,000-1,400 sq. ft.</td>
<td>0</td>
<td>7</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>over 1,400 sq. ft.</td>
<td>0</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>10</td>
</tr>
</tbody>
</table>

10. Total amount of counter frontage = ___ inches.

<table>
<thead>
<tr>
<th>House size</th>
<th>less than 72&quot;</th>
<th>72&quot; to 95&quot;</th>
<th>96&quot; to 107&quot;</th>
<th>108&quot; or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 1,000 sq. ft.</td>
<td>0</td>
<td>13</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>1,000-1,400 sq. ft.</td>
<td>0</td>
<td>8</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>over 1,400 sq. ft.</td>
<td>0</td>
<td>3</td>
<td>8</td>
<td>13</td>
</tr>
</tbody>
</table>

Total Part I
PART II: Arrangement

Storage

11. If the base cabinets have at least 9 drawers or pull-out trays (one at least 24 inches wide and 12 inches deep with vertical pan dividers and another not more than 3 inches deep inside): ....................... score 3 points

12. Wall cabinets are scored according to the location and storage capacities:
   a) If wall cabinets have adjustable shelves ....................... score 4 points
   b) If there are at least 42 inches of wall cabinets within 72 inches of the center front of the sink: ....................... score 3 points
   c) If there are at least 72 inches of wall cabinets over the counter space: ....................... score 10 points
   d) If the wall cabinets are at least 15 inches above the counter top and if the third shelf is no more than 72 inches above the floor: ....................... score 6 points

Counter

13. If the length of the counter front between the edge of the sink and the corner of a counter is: at least 15 inches in a house larger than 1,400 sq. ft., or at least 9 inches in a house smaller than 1,400 sq. ft.* ....................... score 3 points

   *If a kitchen has a sink without counter space on either side, it should be automatically ranked poor.

Appliances

14. If two or more of the primary work centers (sink, range-serve, refrigerator) adjoin each other: ....................... score 10 points

15. The scoring for dishwashers varies according to whether the dishwasher is built-in or portable:
   a) If the center front of a built-in dishwasher is not more than 72 inches from the center front of the sink: ....................... score 10 points
   b) If a portable dishwasher is stored so that it does not interfere with usage of any cabinets or appliances: ....................... score 10 points
   c) If there is no dishwasher, these requirements are not applicable, therefore: ....................... score 10 points

16. If no two work centers are separated by a tall appliance (refrigerator or built-in oven) or a full-height storage wall: ....................... score 6 points

17. If there is a double-bowl sink or a single-bowl sink and an automatic dishwasher (front opening) in a liberal or medium kitchen, or a single-bowl sink in a minimum kitchen: ....................... score 3 points

Activity Space

18. Clearance to provide access between the front of a cabinet or appliance and the blank face of an assembly at right angles to it = _______ inches.

<table>
<thead>
<tr>
<th>House size</th>
<th>less than 30&quot;</th>
<th>30&quot; to 33&quot;</th>
<th>34&quot; to 37&quot;</th>
<th>38&quot; or more</th>
<th>not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 1,000 sq. ft.</td>
<td>0</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>1,000-1,400 sq. ft.</td>
<td>0</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>over 1,400 sq. ft.</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>
19. Clearance for the work area between base cabinets or appliances opposite each other = _____ inches.

The same clearance is required from a counter front to a table, wall, or face of a storage wall if the space is a work area.

<table>
<thead>
<tr>
<th>House size</th>
<th>less than 48&quot;</th>
<th>48&quot; to 53&quot;</th>
<th>54&quot; to 59&quot;</th>
<th>60&quot; or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 1,000 sq. ft.</td>
<td>0</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>1,000-1,400 sq. ft.</td>
<td>0</td>
<td>4</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>over 1,400 sq. ft.</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

20. Determine the score for the work triangle by adding up the legs of the triangle:

a) If the length of the work triangle (the sum of the distances between the center front of the primary sink, refrigerator, and the primary cooking unit) is less than 23 feet .............................................................. score 8 points

b) If the length of the work triangle is 23 to 26 feet .............................................................. score 4 points

c) If the length of the work triangle is more than 26 feet .............................................................. score 0 points

21. If the traffic from the front door or service entrance to the rest of the house does not cross the work triangle or there is an alternative route outside of the work triangle that does not conflict with other activities: .............................................................. score 6 points

22. Check the location and swing of doors, and score accordingly:

a) If all doors, including the refrigerator door, swing so they do not interfere with the work area in front of counters or appliances: .............................................................. score 10 points

b) If only one door interferes .............................................................. score 5 points

c) If two or more doors interfere .............................................................. score 0 points

The kitchen plan can be reviewed to avoid faults. Some of the critical measurements and placement factors are shown here. The numbers refer to the corresponding steps in the scoring system.
Windows

If the window dimensions cannot be measured or determined from plans, assume a glass height of 36 inches. For a kitchen that has a wall that opens into a dining or family room, the windows need not be in the kitchen, but they should equal 10% of the combined room area.

23. If the total glass area in windows (width times height) is at least 10% of the total floor area of the kitchen: ....... score 6 points

Ventilator

For mechanical ventilation use either a kitchen exhaust system with a minimum air-flow capacity of 100 cfm (cubic feet per minute) or a continuous low-flow exhaust system of 25 cfm. Mechanical ventilation must be provided in cold climates.

24. If there is an operable window in the kitchen or there is mechanical ventilation .... score 3 points

Safety

25. If the heating units of the range or cook-top are arranged so that the pot handles overhang the front or side of the counter or extend over other heating units: ....... deduct 6 points

26. If the vertical clearance above the range or cook-top to cabinets is less than 30 inches or if the vertical clearance to cabinets protected with a flame retardant millboard covered either with sheet metal or a metal ventilating hood is less than 24 inches: ......... deduct 15 points

27. If the range or cook-top is below a window: ......... deduct 10 points

Rating

The scoring system is divided into two parts. For example, 96/91, would indicate 96 (Excellent) in storage and counter space and 91 (Fair) in arrangement. The rating for each part shall be as follows:

- Excellent .......... 96-100
- Good ............ 92-95
- Fair ............ 85-91
- Poor ............ 84 or less

Total Part I = (Storage)

Final Score Part II =

Total Deductions

Final Score, Part II
The Kitchen Score—How To Use It

COMPARING TWO PLANS

The two kitchen plans illustrated show how the scoring system can be used to plan efficient kitchens. Cabinet sizes and clearances are shown, but cabinet heights, drawers, and adjustable shelves are not. The scores assume the cabinets meet these requirements. The plans are scored based on recommendations for liberal kitchens.

Both plans occupy the same space, 10'-0" by 13'-6", and have the same number of doors and the same provisions for dining area. The difference between them lies in the number of appliances, the amount of storage and counters, and the arrangement of those elements. However, the available space is used better in Plan B.

Plan A

In this plan, the sink unit and the adjoining cabinets furnish all the storage and counter space for the kitchen. The range and refrigerator are placed together, away from the rest of the equipment.

The faults in the kitchen result in a "poor" rating for both Part I, Storage and Counter Space, and Part II, Arrangement.

Plan B

This room is the same size as in Plan A, with planning faults corrected. The location of the corner door has been changed to allow more cabinets, which occupy two walls. The additional storage space for dinnerware for 12 people, credited in step 2, was obtained by using part of a storage wall between the kitchen and an adjoining room — space which is outside the kitchen.

Because wall cabinets are installed above all counters, there is room for only one window. To provide sunlight, more window area was needed. The additional glass area is in a room opening into the kitchen, but it could have also been provided by skylights.

This plan has a built-in oven, cook-top, and dishwasher. With the dishwasher placed at the right of the sink, the requirements for sink counter-space improve.

This kitchen rates "excellent" in both Part I and Part II of the scoring system and more closely meets recommendations for universal design and two-cook kitchens.

The primary faults are the following:
- Insufficient base cabinet and wall cabinet;
- Lack of counter beside the range and refrigerator;
- Inadequate counter for the mix center;
- Traffic through the work triangle;
- The dining area interferes with the work area;
- The door interferes with the use of the refrigerator.

* The score is based on use of cabinets which meet these requirements.
UNIVERSAL DESIGN

Universal design features contribute to the safe, accessible, and adaptable use of the kitchen and accommodate varying needs throughout a person's life.

All items in the score sheet are important for universal design; however, the following items must be met:

- Items 1 through 10 must all meet minimum standards or greater.
- For items 11, 12a, 14 and 16, use the minimum requirements indicated.
- For items 18 and 19 use the liberal requirement.
- The unsafe conditions described in items 25, 26, and 27 must not occur.

As in every kitchen, going beyond the minimum requirements will make the kitchen a more comfortable space in which to work. Additional desirable features include:

Endnotes

1 In establishing these standards, the number and kinds of items to be stored were based on previous research as reported in *Small Homes Council Circular C531*, "Cabinet Space For The Kitchen." Kitchens meeting limited-minimum requirements are called "minimum" kitchens; those meeting limited-ample or liberal-minimum requirements are called "medium" kitchens; and those meeting liberal-ample requirements are called "liberal" kitchens.

2 The "liberal" space standards are from *Space Standards for Household Activities*—University of Illinois Agricultural Experiment Station Bulletin 686 by H.E. McCullough, Kathryn Philson, Ruth H. Smith, Ann L. Wood and Avis Woolrich.

3 Data reported in "Illinois Research" by the Illinois Agricultural Experiment Station, Winter, 1961, in article entitled "Kitchens to Date — Practical, Convenient Arrangements," by Helen McCullough and Mary B. Farnham.


5 Building Research Council, "Kitchen Rating Systems." Although most of the principles set forth are applicable to large houses, it is not the intent of this scoring system to analyze kitchens where storage and counter space is more than "liberal."