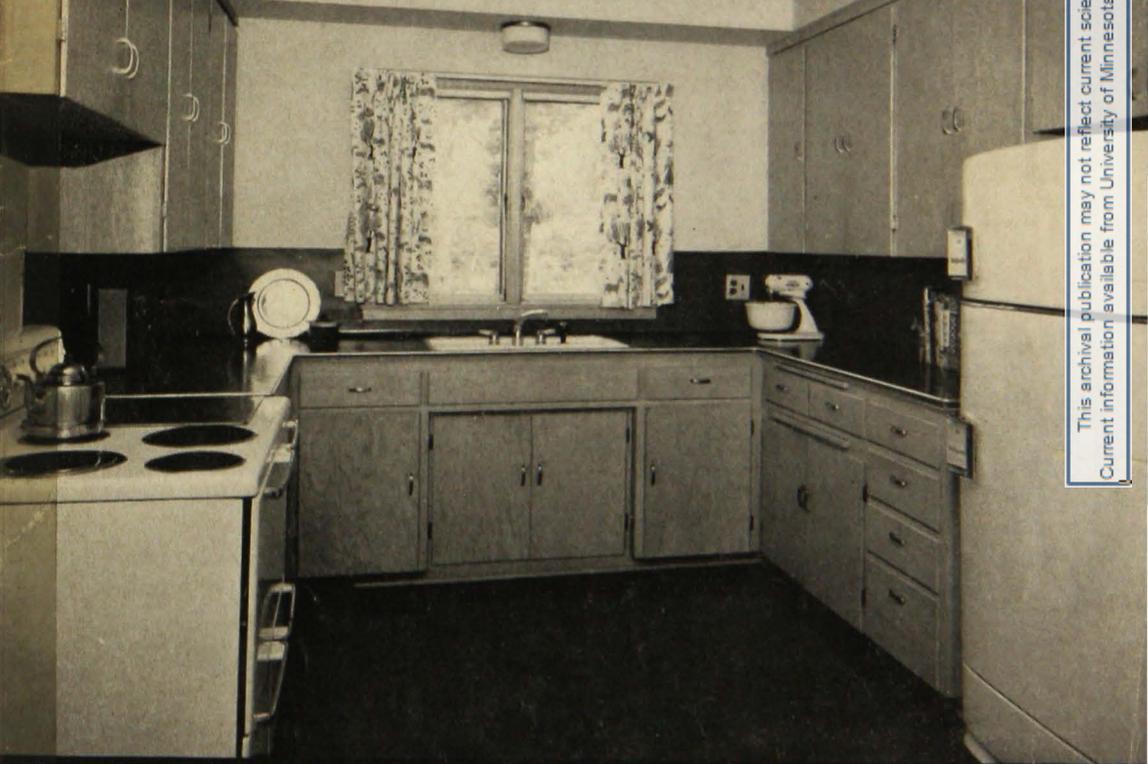


PLANNING THE HOME KITCHEN

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Planning the Home Kitchen

Elizabeth A. Rivers and Dana Hochhalter¹

DO YOU wish for a convenient and attractive kitchen? Perhaps you can have your wish sooner than you hoped. Your kitchen may not require costly remodeling or the addition of costly equipment—perhaps all it needs is more work surface and storage space. A rearrangement of your storage space or equipment may cut down the number of useless steps you make each day. A new decorating job can make your kitchen more attractive. On the other hand, you may want an extensively remodeled room or an entirely new room.

It is often very difficult to make an old kitchen perfect—in fact, it may be difficult to have an absolutely perfect new kitchen. You can improve your old kitchen or free your new kitchen from many of the common errors if you are careful in your planning. New approaches to kitchen planning, new equipment and cabinets, and new construction materials combine to challenge you.

Before starting your plans, your family should decide together what they would like in the kitchen. The trend is toward a larger kitchen equipped for several different activities.

Some of your family's decisions should relate to the number and type of activity areas or centers they desire. You should know if, in addition to the food preparation area, you will want a dining, planning, play or rest, laundry, food pres-

ervation, or sewing area. It is important to consider your present-day needs as well as your future needs. For example, a family with young children might need a small play area. This area could be converted to a teen-age activity area later, then serve some other purpose after that.

You must decide whether you will: use coal, wood, gas, or electricity for cooking fuel; have a free standing range or a built-in oven and cooking surface; choose a free standing refrigerator and freezer or built-in units; prefer a sink with one or two bowls; have a mechanical food waste disposer; install a dishwasher or leave space for one.

You must also decide if you want a separate kitchen or an open kitchen with no wall between the kitchen and living area. You may want a partly open kitchen with some type of divider so the kitchen

¹ Former staff member and Extension Home Improvement Specialist, respectively. Grateful acknowledgment is made to Mrs. Dorothy Bonnell Stulberg, Assistant Professor, Miss Helen Ludwig, Associate Professor, and Miss Juliette Myren, Assistant Professor, of the School of Home Economics staff of the University of Minnesota for their help in the preparation of this bulletin. Other Extension staff specialists gave valuable assistance.

isn't in full view of the living room. You may find it practical to use an island or peninsula arrangement in your kitchen.

There are some other things you must know if you are considering extensive repair or remodeling of an old kitchen. Be sure the kitchen can be made more convenient, will not cost too much, and is worth remodeling. You may be wise to get some advice from an architect, a contractor, or a carpenter if you are uncertain about the answers to these questions.

After your family has decided what they want, make some rough sketches of possible arrangements. Compromises will be necessary almost immediately. Shape and size of the room and the money available may not permit the fulfillment of all desires. If your family does a careful job of paper planning, you can prevent many costly mistakes and a much more convenient kitchen will result.

You can get help by visiting homes with new kitchens. Careful study of



Fig. 1. The family plans together.

house plans, books, recent bulletins, and magazine articles will also provide many suggestions and cautions. You can contact agricultural county extension workers, the local school home economics teacher, utility company home economists, architects, and builders for help. This bulletin will help answer some of your kitchen planning questions.

Kitchen Location

Farm families usually want the kitchen located so they can see the farm buildings, the driveway, or watch the children at play. Everyone would like an attractive view, if it's possible.

An east or northeast exposure will eliminate the hot afternoon sun. A corner location with windows on two sides

will provide cross ventilation. The kitchen should have easy access to the utility room, the dining room, the rear entry, and the basement stairway. If your old kitchen is poorly located, you may decide to use another room for the new kitchen.

Construction Items

Size and Shape

Many factors influence the size and shape of kitchens. Rooms in old houses are often square. Oblong rooms, if not too narrow and without jogs, may be

easier to arrange—although convenient arrangements can often be made in a large, square room.

The kitchen size you need will be determined by the size of your family, their activities, and the type and arrange-

ment of activity centers. In remodeling, the size is often limited by the space available in the old house. In a new house, cost of construction may be a limiting factor.

If all your meals will be served in the kitchen, if you desire a rest or play area, and if you will do your laundry there, then you will need a larger room. The size of the kitchen will determine the type and size of equipment. For example, smaller kitchens may require a small-sized range, a single bowl sink, and a smaller refrigerator.

Doors

Two doors are usually enough in a kitchen. Too many doors or doors poorly placed interfere with good arrangement of work space and equipment. Locate doors so that the swing will not interfere with other doors or with the use of equipment. A door may swing against the end of a cabinet or equipment. Often, a door near a corner opening against a wall will use wall space needed for a counter. Doors located in the center of the wall may interfere with the flow of the work.

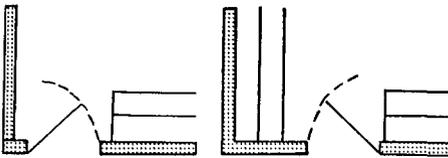


Fig. 2. A door in a corner takes wall space which might be used for a cabinet.

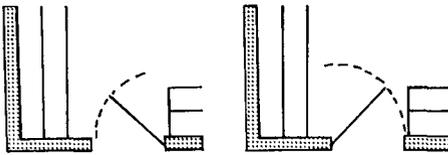


Fig. 3. Swing the door toward the end rather than the front of cabinets and equipment.

Locate them so that traffic does not go through the work area.

In remodeling, it is often desirable to close off unnecessary doors. A door may be removed entirely, a sliding door may be used, or the door can be hung to swing away from the kitchen. Outside doors should be wide enough (usually 3 feet) to allow today's equipment to pass through.

Windows

To give adequate light, windows should equal 10 to 15 percent of the kitchen floor space. For good light—15 to 20 percent is better. Too large a window space reduces cabinet space. One large window gives more light and uses less space than two small windows. A 3-foot window is better than two small ones placed side by side. A window in an outside door will give light without reducing cabinet space.

At least one work area should have good daylight. You may like a window over a sink or you may choose to have your kitchen-dining area in front of a window with an attractive view. A window at the end of the counter rather than over the sink will provide some light to that area. Casement windows above the sink or work counter are easier to open, when reaching over the counter, than double hung windows.

Work Surface Heights

The height of most commercial (ready-built) cabinets, free standing ranges, and sink counters is 36 inches from the floor. For many women, this is too high for mixing and cooking and the floor of the sink is too low for dish-washing. When you plan the heights of work surfaces for your kitchen, you must decide if you want uniform heights

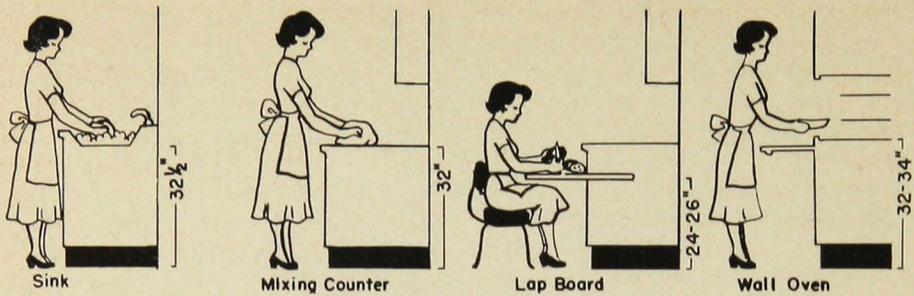


Fig. 4. Adjust work heights to the homemaker's height and to the job. The measurements given above are for a person of average height.

for all of them or if you will have each work counter adjusted to your height and to the type of work to be done. Kitchens may have two or three different counter heights.

You can find your best working height for each job by placing two stacks of books, magazines, blocks, or bricks on a low table and placing boards between them as a counter. Go through the motions of different jobs using the boards as your work counter, and keep adding or removing magazines, etc., until you find the height that is best for you.

Some commercial cabinets which are 36 inches from the floor can be adjusted slightly in the toe space area. Studies show that 32 inches from the floor is a better height for the mixing counter for a person of average height (5 feet 3 inches to 5 feet 5 inches). In custom-made cabinets (built at home or to order) the mixing counter can be built the height you want it. Some manufacturers of ready-built cabinets are now offering a 32 inch high cabinet. If you have your mixing counter 32 inches from the floor, your counter and equipment surfaces will not be uniform in height, but you will have a more comfortable place to work. You may plan for a pull out board (18-24 inches wide) or a portable work table about 32 inches from the floor where counters are too high and cannot be changed. A lap board must be sturdy,

steady, and deep enough to pull out well over the lap. It should be 2 to 3 feet wide across the front and about 24 to 26 inches from the floor. Tables can be lowered by cutting the legs or raised by adding casters or blocks of wood.

Studies show that for women of average height, the floor of the sink should be 32½ inches from the floor of the room to prevent stooping. If the sink is 6 inches deep, the sink counter will then be 38½ inches from the floor. If the sink is deeper than 6 inches and the floor of the sink is 32½ inches from the floor, the counter surface will be higher than 38½ inches from the floor. These high counter surfaces will be satisfactory for stacking dishes and setting up salads but will be too high for mixing. If the



Fig. 5. A lowered counter for mixing.

floor of the sink is lower than 32½ inches from the floor a rack may be placed under the dish pan to raise it.

The work counter beside the range should be the same height as the range surface. The cooking surface of a free standing range is usually 36 inches from the floor. Stooping, stretching, lifting, and accidents can be reduced to a minimum if you place built-in cooking equipment at the correct height. A separate built-in surface cooking unit can be placed into a counter 32 to 36 inches from the floor—whichever height is best for you.

For the woman of average height, the floor of a built-in or stack-on electric oven should be about 32 inches and of a built-in or stack-on gas oven 34 inches from the floor. This difference in height is because of the difference in the location of the broiler in the gas and electric ovens. When the floor of the electric oven is 32 inches from the floor of the room, the lowest rack will be 35 inches from the floor and the broiler usually will be about 40 inches from the floor. If you have a gas oven and the floor of the oven is 34 inches from the room floor, the lowest rack will be about 37 inches from the floor. Then the broiler, which is usually below the oven, will be 28 inches from the floor. If you have two ovens, place them side by side rather than one on top of the other so they will be the right height for you.

If you are taller or shorter than average try out different heights to determine the best height for you before in-



Fig. 6. The bottom of the inside of this oven is 32 inches from the floor. (Beltsville Energy-Saving Kitchen, USDA, 1956.)

stalling a built-in oven. In a recent study of over 50 women, the most popular height of the top surface of the opened oven door of a built-in electric oven (with a broiler in the top of the oven) was found to be 3 inches below the elbow height (distance from floor to elbow). It may be more or less than 3 inches for you.

The distance between the work counter and upper cabinets is important. The distance between the work counter and the bottom of upper cabinets should be from 14 to 16 inches. If a cabinet is installed above a range or built-in cooking surface, the distance between them should be from 18 to 24 inches. The person of average height should not store anything higher than 72 inches from the floor.

Basic Work Centers

Kitchens are made up of work areas or centers for preparing and serving food. These are: the preparation and mixing center, the cleaning and dish-

washing center, and the cooking and serving center. Each center is made up of the large equipment needed, adequate storage space for supplies, small equip-

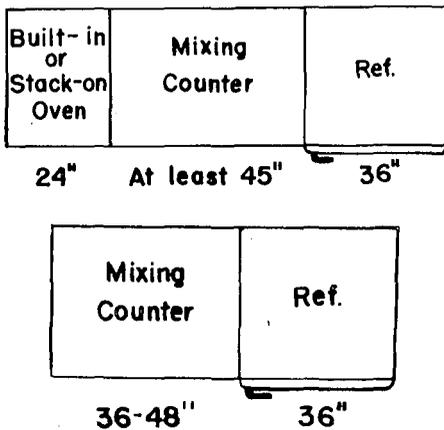


Fig. 7. If a built-in oven is located next to the mixing counter, then the counter should be longer to prevent a feeling of being shut-in while working.

ment and tools, and enough counter space for carrying on the work at the center.

The Preparation and Mixing Center includes a work counter usually 24 inches from front to back and 36 to 48 inches in length although it may be as long as 60 inches. If the sink counter space joins the mixing counter space, then the mixing counter need not be as long as it would be if the two counters are separate. Provide storage space here for staple supplies and for utensils and equipment used in the preparation and mixing of foods.

The mixing counter should be about 32 inches from the floor for the woman of average height. Thus this counter should be lower than the other counters in the kitchen. If it is not possible to have it this height, a sturdy pull-out board or a portable table could be used for mixing. A sit down work space with leg room under it is sometimes included in the mixing counter. If it is within easy reach of the sink bowl and faucets it is especially valuable. If the refrigerator is next to the mixing counter, which is a

good location for it, the handle of the refrigerator door should be next to the counter so the door will open away from the work counter. If the handle is on the other side it will add 6 feet of unnecessary steps each time it is opened. It is possible to get a refrigerator that opens on the left side, the right side, or on both sides. Cabinet storage at the mixing and at other centers is discussed in Extension Bulletin 249, *Kitchen Cupboards*.

The Cleaning and Dishwashing Center is planned around the sink. Here, soiled dishes are stacked, washed, and stored. Provide storage space for utensils and equipment used first at the sink as well as for supplies needed for dishwashing. Allow a 30- to 36-inch counter space at the left of the sink where the washed dishes are dried and stacked or stored and a 36-inch surface at the right for stacking dishes to be washed. Dishwashing proceeds from the right to left (for a right-handed person) therefore the dish cabinet should be at the left of the sink.

Sinks are different in type and size. Sinks set into counter tops require 24, 30, or 36 inches of space. Cabinet sinks range in width from 24 to 96 inches with 72 inches the most popular width. They may be obtained in 4, 6, 7, and 8-inch depths. You may choose to have a single or double bowl sink. The rim of the sink should be close to the front edge of the cabinet. Be sure the sink bowl is large enough for large utensils. The sink may have a ledge or short back with faucets. Faucets should come from the sink and not out of the counter, as moisture around the faucets may loosen or rot the counter top. Sit-down sinks with leg

Dry, Store ← Rinse ← Wash ← Stack

Fig. 8. Dishwashing moves from the right to left for the right-handed person.

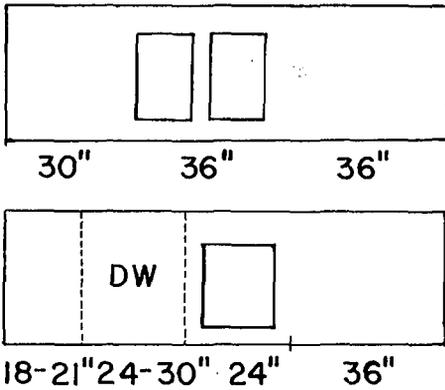


Fig. 9. Allow a minimum of 36 inches of counter space at the right of the sink and a minimum of 30 inches at the left. Allow 18 to 21 inches next to a top opening dishwasher.

room under them are usually less deep than others. The sink is often placed in front of a window, but it can also be placed on an inside wall. If you're planning to have a food waste disposer in your sink, plan for electric wiring.

Plan space for a dishwasher even though you may not be having one immediately. Allow from 24 to 30 inches next to the sink—preferably to the left—for the dishwasher. Be sure to plan for the needed electric wiring and plumbing. If you will be having an under counter, front opening dishwasher, then the top can be used as work counter. Plan for 18 to 21 inches of counter space next to a top opening dishwasher when dishes are stored nearby. If they are stored elsewhere, allow 33 to 36 inches. A single bowl sink is often used with a dishwasher. You can use the dishwasher space for a sit-down work space until you install your dishwasher.

The Cooking-Serving Center is planned around the range. It should have a work surface at least 24 inches long in addition to the 15 to 18 inches of counter space provided by a standard size (42-inch) range. Also provide this much counter space next to a built-in surface cooking

unit. Provide cabinet storage space for all equipment and supplies used at this center.

Avoid placing the range in front of a window since curtains may catch fire or a draft may blow out a gas flame or pilot light. If you're using a wood or coal range, place it about 12 inches from the wall. Today one may have either a free-standing gas or electric range or a stack-on or built-in oven with a built-in surface cooking unit. Most free-standing range surfaces are 36 inches from the floor. Work counters in this center are usually the same distance from the floor as the range surface. For height of surface units and built-in ovens see page 7. It is important to have these at the best height for you.

You'll need more floor space when you use separate oven and cooking units. Be sure you do not sacrifice needed counter space when you install a built-in oven. Locate the surface cooking unit in the cooking-serving center where you would normally place the free standing range. The oven is often placed at the extreme left end of this center.

You may also place the separate oven across a corner between two counters

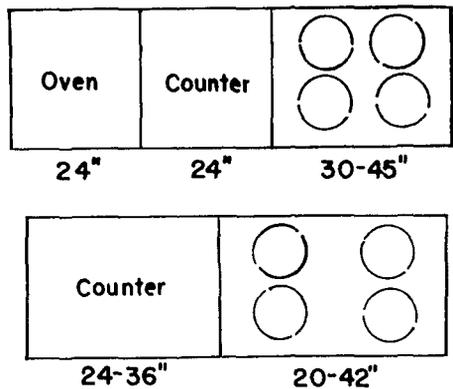


Fig. 10. The counter space in the cooking center should be 24 to 36 inches long. A built-in cooking surface or ovens also need work space beside them.

although it requires more space there. Do not place it next to the refrigerator, since walking around one piece of equipment to get to the other is not desirable and you will eliminate needed counter space. It is better to place it opposite the sink and mixing center than to place it between them if they are on the same wall. If you place it at the left of the mixing center, you should have a longer mixing counter to prevent a feeling of being shut in when working there. You may place the separate oven on an island

or peninsula. Be sure there is at least a 24-inch counter beside it.

Check installation cost and procedure before deciding on built-in equipment. The stack-on type of separate oven has a finished exterior and is placed on a regular cabinet, therefore it requires less remodeling. You must buy or build cabinets for built-in ovens and surface units. Consider also the difficulty of future kitchen rearrangement. It is extremely important that you follow the manufacturer's directions for installation.

Location of Basic Work Centers

The location of the basic centers with relation to each other and with relation to doors and windows determines the convenience and ease of work in the kitchen. The completeness of each center is, however, more important than its position in the kitchen. The general direction of work for a right-handed person is from right to left, and for a left-handed person from left to right. This is important to remember when planning the arrangement of work centers.

A basic principle of good kitchen arrangement is to have the three work centers as near each other as possible to reduce the number of steps. The distance around the triangle formed between the

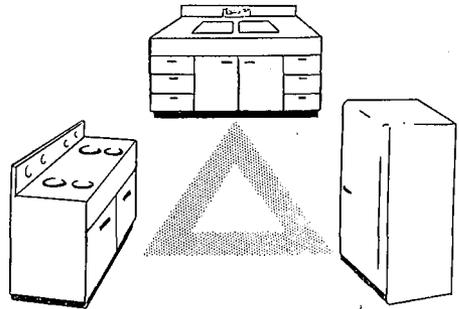


Fig. 11. The distance around the work triangle should be no more than 22 feet—less is desirable.

sink, range, and refrigerator should be not more than 22 feet and if possible less—15 to 20 feet is considered a de-

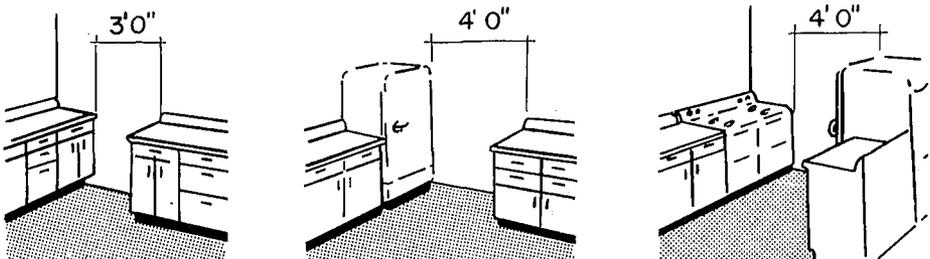


Fig. 12. Plan for enough clearance between cabinets and appliances.

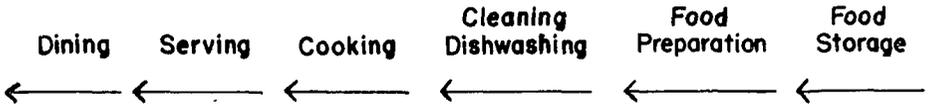


Fig. 13. The direction for food preparation and serving is from right to left for a right-handed person.

sirable distance. If it is less than 12 feet you will not have enough work counter.

Another important item in planning is to avoid having the traffic go through the work area. Plan the door placement to avoid this—or make an alternate route available to direct traffic another way.

There should be enough clearance or open space between cabinets and equipment so that you can work without interference. A minimum of 3 feet is needed between cabinets placed at right angles to each other, 4 feet between cabinets and appliances on opposite walls, and 4 feet between appliances placed at right angles to each other. Avoid placing appliances in a corner without adequate room to work around them.

The refrigerator should be convenient to all centers. It is closely related to the mixing center and is often placed at the right of the mixing counter. Where this is not feasible, it may be placed across from the work centers where it can be reached easily from all areas. In this case you should have at least 15 inches of counter space beside the refrigerator for placing foods when putting them in or taking them out of the refrigerator. The refrigerator door should open toward the counter space.

The range or cooking center should be as convenient as possible to the sink and the mixing center. Often it is placed at the left of the sink or at right angles to it. It may be placed in an island or a peninsula. If possible place it near the kitchen-dining area or the dining room.

A cart or a table on rollers or casters may be used at any center that does not have adequate work surface. If it has drawers or shelves, it may also be used

for storage. It can be used to transport foods or dishes to the dining area or elsewhere. If possible plan for a place to store it under a counter.

There are four commonly used basic plans of kitchen arrangement—the U-shape, L-shape, Two-wall, and One-wall. However, there are many variations in the placement of centers in each of these types due to structural conditions in the kitchen, such as: number and location of doors and windows, size and shape of the room, and the type of equipment to be used. Islands or peninsulas provide opportunity for variety in arrangement.

The U-Shaped Kitchen usually provides the shortest distance around the work triangle. The work surface is continuous around three sides of the room. The sink (cleaning and dishwashing center) is usually placed between the range (cooking and serving area) and the preparation and mixing area with the refrigerator at the right of the mixing center. This arrangement is especially good for a right-handed person since the work direction is from right to left. It can be reversed for a left-handed person. Other

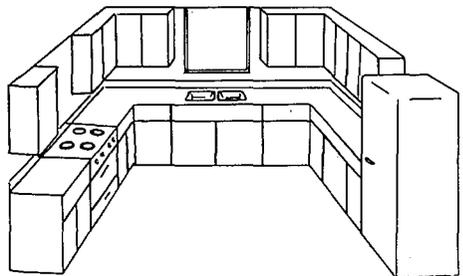


Fig. 14. U-shaped kitchen.

arrangements of work centers may be made in a U-shaped kitchen.

One of the chief advantages of the U-shape is that cross traffic is eliminated. The best U arrangement requires a room 10 to 11 feet wide if two people are to work in the kitchen at the same time. The minimum width for a U-shaped kitchen is 8 feet. This allows 4 feet between cabinets and equipment for opening doors and drawers.

You can provide dining space at the open end of the U which can then be decorated as a separate center. A U-

shaped kitchen is sometimes accomplished in a large kitchen by using a low partition or a peninsula to make the third side of the U—this may form a divider between the work and dining area.

Often the location of doors will necessitate a split U-arrangement with each work area on a different wall—this is sometimes called the “separate unit kitchen.” In this case, each door adds at least 3 feet to the length of the work triangle.

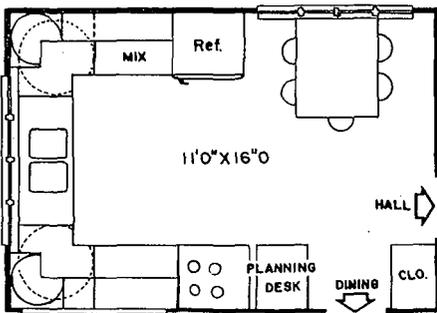


Fig. 15. U-shaped kitchen using free-standing equipment. (USDA "A Step-saving U Kitchen," 1951.)

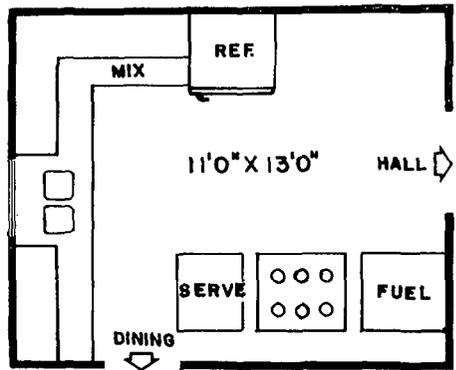


Fig. 17. Broken U-shaped kitchen using a wood range.

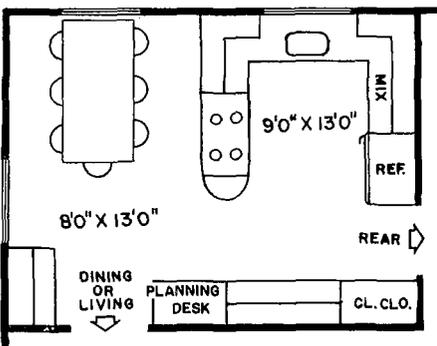


Fig. 16. U-shaped kitchen using a peninsula to form the third side of the U and to separate the kitchen-dining center from the kitchen work area.

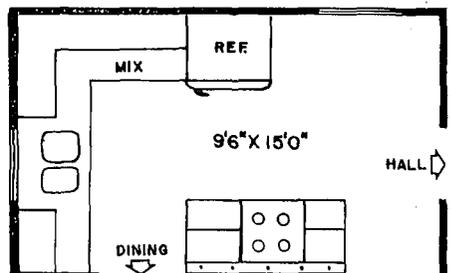


Fig. 18. Broken U using a half wall back of the cooking and serving center to separate the kitchen work area from the dining area (open planning).

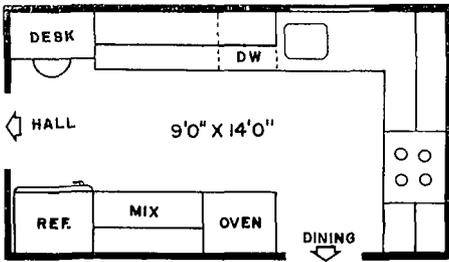


Fig. 19. Broken U using built-in equipment.

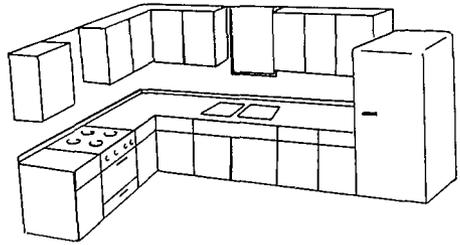


Fig. 21. L-shaped kitchen.

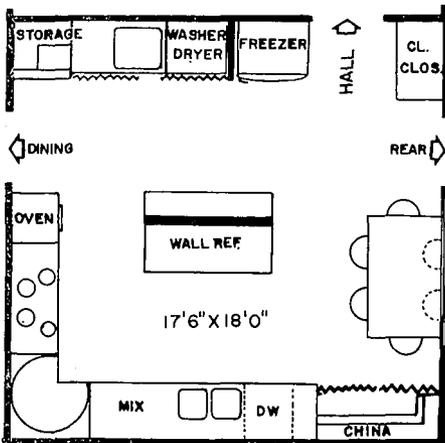


Fig. 20. Broken U-shaped kitchen using an island on which is located a wall refrigerator unit with counter space and storage cabinet beneath. The wheel cart is stored under the counter space. The island separates the laundry unit, freezer, and food storage from the kitchen. (Beltsville Energy-Saving Kitchen, USDA, 1956.) You can get working drawings of this plan (No. 7103) from the Agricultural Engineering Department, Institute of Agriculture, University of Minnesota, St. Paul 1.

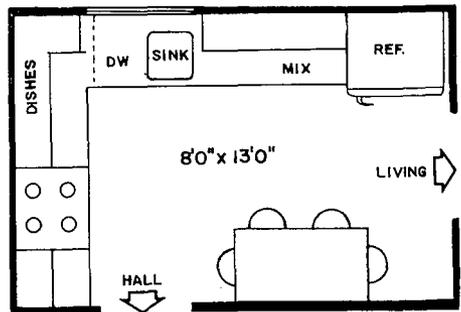


Fig. 22. L-shaped kitchen with the kitchen-dining area on the third wall of the kitchen.

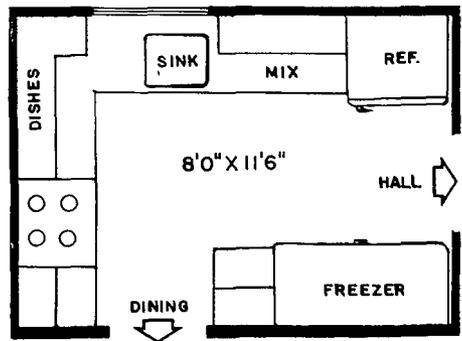


Fig. 23. L-shaped kitchen with the freezer on the third wall.

The L-Shaped Kitchen has equipment placed along two connecting walls. The work units can be placed in the same relative position as in the U-shape. In this arrangement two walls are left free for other areas and activities. This type of arrangement is often suitable to a wider room. If walls are long be sure that the distance around the work triangle does not get too long.

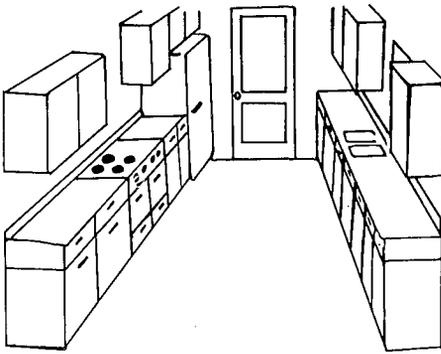


Fig. 24. Parallel or two-wall kitchen.

The Two-Wall (Parallel or Corridor) Kitchen with equipment on opposite walls can be convenient. The room should be at least 8 feet wide. However, it is better if it is wider. It may be necessary to use this arrangement in a long, narrow room. Two work centers can be located on one wall and one center on the opposite wall. If possible avoid having the traffic go through the work area.

The One-Wall (Straight or Pullman) Kitchen is seldom used except in apartments or when a long and very narrow room has to be used. All work areas are on one wall. Place work centers in order of work.

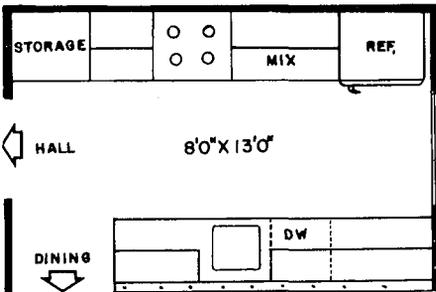


Fig. 25. Parallel, corridor, or two-wall kitchen using free-standing equipment. Good location of doors.

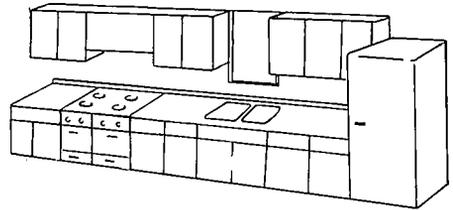


Fig. 27. Corridor or one-wall kitchen.

Variations

Islands and Peninsulas are quite common today. They are especially helpful in large kitchens where they act as another wall and help bring the work centers closer together. The range or sink is often located on them. They may act as a wall to separate the work area from the dining, recreation, or laundry centers. They are especially helpful in an old house where many doors and windows cut down wall space.

Open Planning with the kitchen as a part of the living area adds to the spaciousness. Before you decide upon this type of kitchen be sure you do not mind kitchen noise or cooking odors through-

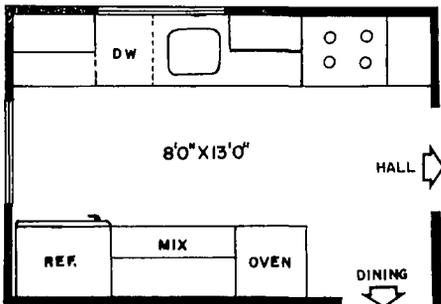


Fig. 26. Parallel, corridor, or two-wall kitchen using built-in equipment. Good location of doors.

out the house or the appearance of kitchen disorder from the living area. A good ventilating fan will help eliminate odors. Sometimes it is possible to place

the kitchen so that it is open only from the dining end of the living room. Be sure you do not sacrifice needed kitchen storage space to open planning.

Other Centers

The Kitchen-Dining Center is found in many of today's homes. Many other activities can be carried on in this center, such as sewing and studying. A comfortable chair may be placed in one corner of this area. Too often this center is not large enough. It should be a minimum of 8 to 9 feet wide. The length will be determined by the number to be served. Allow space for seating at least 6 persons comfortably. Allow 21 to 29 inches for each person (average 24 inches). Leave 30 inches between the wall and table for pulling out the chairs and sitting down. Chairs are more comfortable than benches. Snack bars are not desirable for



Fig. 29. The dish cabinet is conveniently located for use at the kitchen dining table and for storing dishes. A pull-out shelf brings toaster and appliances within easy reach. (Beltsville Energy-Saving Kitchen, USDA, 1956.)

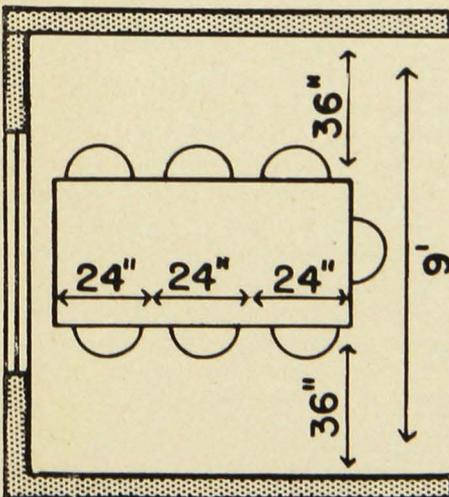


Fig. 28. The kitchen-dining area should be large enough to be comfortable.

family meals because they are often uncomfortable to sit at and do not encourage family relaxation and conversation.

If possible locate the kitchen-dining center away from the kitchen work area—a peninsula arrangement is often used as a separating device. A window in the dining area adds to its attractiveness, if it is low enough to see out when sitting at the table. Plan adequate stor-

age space near this center for dishes, silver, linen, and electrical equipment used at the table. Provide electrical outlets and adequate lighting.

The Planning Center provides a place to sit down to make the market order, check recipes, keep records, write letters, file bills, and conduct other household business. You will need a planning desk or table and chair with a good light and space for storing items you'll use at the desk. You might have the telephone and radio here. You'll need a space at least 2 feet deep and 3 feet wide.

The Laundry Center is gradually moving from its former location in the basement to the first or sometimes the second floor. Its ideal location is in a separate utility room on the first floor. Before installing laundry equipment, cabinets, and work space in the kitchen, consider if there is room to locate the laundry area away from the food preparation and the dining area. You should have ample space to store soiled clothes, laundry supplies, and equipment as well as counter space for sorting, removing stains, folding, and sprinkling clothes. You will need space for ironing as well as washing and drying equipment. Also, be sure you will not object to the extra noise and moisture in the kitchen. Here again, you could use an island or peninsula to separate the food preparation and serving areas from the laundry area. Make plans for electric wiring, ventilation, and lighting when planning for a kitchen laundry.

Food Preservation Center. Food preservation is an important activity in many homes. The preparation and processing of foods for canning or freezing is usually done in the kitchen or utility room. If you plan to do it in the kitchen, you will use the regular kitchen equipment—

sink, range, and counter and storage space. Research shows that, for a right-handed person, an L-shaped kitchen with the sink at the right end of the arrangement and the range at the left end with counter space between them is the best arrangement. A total of 5 or 6 feet of counter space in this area is desirable. You should have adequate and convenient storage space near by for the pressure canner, large kettles, small utensils, and canning and freezing supplies.

Often the freezer is in the basement or a utility room. If the freezer is to be in the kitchen, the upright type will require less floor space (30 to 32 inches) than the chest type (45 to 90 inches). Be sure to allow space for the door to swing out. The extra weight concentrated on a small area requires a reinforced floor. Built-in freezers are often located below a built-in refrigerator or below a work counter.

Sewing Center. You may often waste time and delay your sewing because your equipment and supplies are scattered all over the house. You may like to have a sewing center in or near the kitchen.

It is important to have a satisfactory arrangement of sewing equipment and supplies. Experience shows that a U-shaped work area with the counter space at the right, the sewing machine in the center, and the ironing board and iron at the left is the most convenient arrangement for a right-handed person. It is desirable to be able to work at the counter or table, machine, and ironing board while sitting down. Plan enough convenient drawers and shelves for storing sewing supplies. Your plans for such a center should also include adequate light for day and night work. You may find it convenient to have the sewing center combined with the laundry center.

Kitchen Facilities

Wiring and Lighting

Plan wiring and electrical outlets for safety and convenience. Follow electrical codes for installation. Large enough electric wire and well placed individual or strip outlets will insure safe and convenient use of small appliances. You can get competent advice on wiring from your power supplier.

Some electric kitchen appliances require separate circuits—such as the range, the dishwasher, the water heater, and the freezer. Remember to plan for all small electrical equipment you will use in the kitchen and the kitchen-dining area—including the kitchen clock, the radio, and the ventilating fan.

Place light switches where they will be convenient. Place a light switch at each door so you can turn on the lights when you enter or leave the room from any door. This will save steps and will eliminate walking across the room in the dark. One or two ceiling lights will provide general lighting.

In addition to ceiling lights, use lights under upper wall cabinets to light work areas under them. You might use an adjustable ceiling light over the dining and laundry area. All bulbs and fixtures should diffuse the light. A light colored ceiling and wall finish will help increase the light in the kitchen.

Heating

When remodeling or planning a new kitchen, place radiators or registers so

they won't interfere with equipment and cabinets. Sometimes a kitchen heater or trash burner is placed beside a gas or electric range to provide heat for the kitchen.

Ventilation

Good ventilation in the kitchen is essential. Cross ventilation through doors and windows is desirable. A ventilating fan, properly installed and the right size for the size of the room, will carry out steam and odors. A range on an outside wall simplifies ventilation. Locate the fan as near the range as possible. It can be vented through a hood over the range or through the wall or the ceiling. It should exhaust to the out-of-doors through a fireproof duct which is no longer than 10 feet and as straight as possible. Place the outlet away from the prevailing winds. A window fan will help ventilate but is less effective than a wall ventilator.

Water Supply and Plumbing

Your water system should provide an adequate supply of water for all household uses. The septic tank should be large enough to take care of all the family needs. If it isn't large enough it will require frequent cleaning. A tank of 850 gallons capacity is the minimum size recommended.² If you are considering an

² Ask your county agent for Extension Bulletin 247, *Sewage Disposal and Water Systems on the Farm*.

electric food waste disposer, increase the size of the tank 50 percent. This would increase the minimum size tank from 850 gallons to about 1,200 or 1,300 gallon capacity.

While you are building or remodeling your kitchen, install rough plumbing for all kitchen equipment you plan to purchase in the future since it is difficult and expensive to install it after the building is completed.

Food Waste Disposer

An electric food waste disposer in the sink requires special wiring and a drain opening of 3½ to 4 inches in diameter. You can get an adapter to adjust to the drain opening. If you do not have a mechanical disposer, keep a small garbage can near or under the sink. Provide space for a large wastepaper basket under a counter in the kitchen.

Surfaces and Finishes

Walls and Woodwork

Kitchen walls should be: smooth; resistant to stains, grease, and moisture; and clean easily. Lath and plaster walls, finished smooth, are considered the most satisfactory. Wall board or plywood is often used today.

There are several types of wall finishes for the kitchen. Semi-gloss washable paint or enamel is used more than other types of finish. Use paint on walls and enamel on woodwork. Avoid glossy finish paint or enamels as they may reflect light, which is hard on the eyes. Enameled steel, aluminum, ceramic, plastic, and linoleum tiles are also used on kitchen walls. They are easy to clean and are often used back of or near the range and the sink as a back splash. Wallpaper provides an opportunity to add design and is sometimes used in the kitchen-dining area. It should be water resistant to give the best service.

If woodwork is to be painted or enameled it can be of soft wood such as pine. If it is to be stained or finished naturally use woods such as birch, oak, maple, or pine. From the lighting standpoint, white

or light colored ceilings are desirable. Woodwork may be painted the same color as the walls or may contrast with the walls.

Counter Tops

In recent years, some new work surface materials have been developed. When you shop for counter-top materials, look for material that is smooth, is easy to clean, does not reflect light, and is light in color. It should be resistant to heat, grease, stains, food acids, and alkalies. It should not crack or chip. Choose a color that will harmonize with other colors in the room and is rather neutral.

Mottled or marbelized patterns are easiest to care for. The most commonly used materials for counter tops are linoleum, vinyl plastic, laminated plastic, stainless steel, and ceramic tile. Choose a material that can be extended up the wall or coved for a back splash. Be sure that your counter tops fit well and are carefully installed to prevent water getting underneath. Always consider the installation cost when estimating the cost of a counter top.

Floors

The kitchen floor can make your work easier if it is easy to stand on and easy to keep clean. To be comfortable a floor must be resilient. To be easy to care for it should be resistant to stains, grease, and water. It should also be smooth, should not show spots readily, and should be durable. The thickness of the top or wear layer generally affects its wearing quality.

Choose the color and design with care so that they will harmonize with more than one color, since floors will outlast several changes of kitchen decorating. A marbelized or mottled pattern is easier to care for than a plain color. Very light and very dark colors show soil and dust easily. Careful installation of floor covering over a smooth surface is essential for a satisfactory floor. Follow manufacturer's directions carefully.

Small But Important Items

Towel Racks

The problem of drying dish towels is handled in different ways. If there is a radiator in the kitchen you can put the towel rack near it. You may need a fan or heater. Commercial sink cabinets usually have rods that pull out on one or both sides of the sink. Have a paper towel rack near the sink. It may be under an upper cabinet, at the end of a cabinet, or inside a door.

Built-in Boards

You may like a cutting board (15 to 20 inches wide) under the counter in the mixing or in the serving area to pull out and use on the counter. It should be of hardwood such as birch or maple. A hardwood cutting section may be installed in the counter surface. However, it is easier to replace a pull-out board than a built-in one.

You'll find many uses for a pastry or kneading board. It should be 18 to 24 inches across the front and 32 to 35 inches from the floor.

You may like a food chopper board (6 to 10 inches wide) to which you can attach your food chopper. The rear part of the board should be thicker and wider so it will hold steady when in use.

Perforated Wall Board and Bulletin Board

A perforated or peg board is a valuable place for hanging many types of equipment. It may be large or small and can be placed wherever you need it. Finish is so that it is washable.

You'll find that a small bulletin board is a handy place to keep menus, time schedules, notes to each other, and reminders.

Stool or Chair

You should have an adjustable stool or chair for sitting at the counter, sink, or ironing board. A chair on casters or rollers moves easily from place to place and is especially valuable for a person who has difficulty getting around. Leave



Fig. 30. A sit down sink (the shallow bowl at the right has the drain set back to provide knee room). The adjustable, office type stool has wheels. The cart on wheels is used to bring dishes from the table. (Beltsville Energy-Saving Kitchen, USDA, 1956.)

an open space under a counter for storing it when it's not in use. A sturdy step stool will help you reach high things.

Cleaning Closet

The cleaning closet may be in the kitchen or an adjoining hall. It should be large enough to provide storage space for vacuum cleaners and their attachments, floor waxer, brooms and brushes, dust pan, carpet sweeper, and mops. Supplies such as furniture polish, wood stains, wax, dust cloths, and countless other items needed in caring for the house may be stored here.

The usual height of a cleaning closet is 6 to 7 feet. At least 5 feet clear space is needed. It should contain shallow shelves and hooks, may be double or single, and have one or two doors. The closet should be no smaller than 24 inches by 24 inches. A 36-inch wide closet is needed to store waxer, vacuum cleaner and attachments, mops, brooms,

etc. It is a good idea to collect all items you want to store and measure them in order to plan for enough space. Some families store their iron and ironing board in the cleaning closet.

Rear Entry and Utility Room

A rear entry that is convenient to the kitchen will save many steps. Furnish it with a clothes cabinet or hooks and a rod for storing outside garments and overshoes. Many families combine the utility or laundry room with the rear entry room. Plan on having a sink or lavatory for washing up. If possible, have the entry heated.

Knife Racks

Store knives so that the blade does not touch another surface. You may store them in drawers or on the wall or cabinet in slotted racks. There are magnetic holders that fasten to a wall or cabinet. Store knives where they are most often used.

Cabinet Space Savers

You can increase your storage space and reduce confusion by using half shelves, step shelves, pull-out shelves, spice racks, and vertical partitions or file dividers. For detailed information on these storage helps, see Extension Bulletin 249, *Kitchen Cupboards*.

Wheel Table or Utility Cart

A table or a counter on wheels or casters provides extra work space and may also provide some storage space if it has a drawer or shelves. You might use a

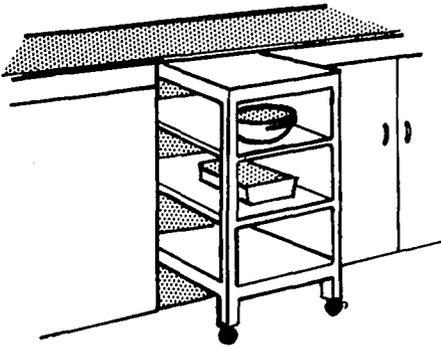


Fig. 31. Plan to store the wheel cart or tray under a counter.

small dining table, if it's on casters, for work space at different centers.

Corners

You often can use a dead end corner space in the cabinet area of a U- or L-shaped kitchen or drawer or cabinet space in an adjoining room. Or a small water heating tank could go there. Revolving or "Lazy Susan" shelves on ball bearing rollers can provide a place for storage in this difficult-to-use space.

Planning the Kitchen

Whether you are doing just one thing to your kitchen or are doing a more complete job of remodeling, it is important to work out your plans carefully. "Preplanning" is more important than "after-planning." To put in a sink and running water this year and something else next year is a common method of making improvements. Make a complete and well thought out plan before starting any remodeling. This will help you to avoid expensive mistakes.

Follow basic kitchen planning principles to insure a successful kitchen. Most plans will have some compromises in them. If walls are to be moved it may be necessary to ask the advice of a specialist.

Steps in Planning Kitchen Arrangement

1. Use ¼-inch squared paper (four squares equal 1 inch).

2. If you are going to do extensive remodeling, draw the floor plan of the entire first floor. Then you can see the relationship of the kitchen to other rooms and entries. Use a scale of ¼ inch to 1 foot for this plan.

3. Make another floor plan of the room to be used for your kitchen. Use a scale of ½ inch to 1 foot.

4. Make cut-outs out of contrasting colored paper cut to scale of your kitchen equipment, cabinets, and the furniture you plan to use. Use the same scale as for the room, using actual measurements of your equipment. If you are buying new equipment be sure to allow enough space.³

5. Make several arrangements until you find the one you feel will be most convenient.

6. If you are going to change doors or windows make a plan showing their

³ See United States Department of Agriculture Misc. Pub. No. 622, "Your Farm House—Cut-outs to Help in Planning." (Available at your county Extension office.)

changes and the position of work centers. If you are planning a new kitchen, locate the appliances and work centers before locating the windows and doors.

7. Check the final plan to determine if distances between cabinets, equipment,

doors, etc. are usable. Check to be sure the amount of work space is in line with recommended measurements.

8. When you have the best arrangement, pin or paste cut-outs in place.

You Will Save Steps If You Have

- adequate storage and work space at each work center.
- complete work centers near each other.
- work centers located so that work will proceed in the best direction for you.
- a continuous work surface unbroken by doors and equipment not used in food preparation and service.
- doors located so traffic does not cross the work area.
- supplies and utensils stored near the place of first use.
- the refrigerator opening away from the work space.
- the dish cabinet at the left of the sink.
- the mixing center between the sink and the refrigerator.
- a minimum of 4 feet of free floor space between the work centers on opposite walls. If more than one person works in the kitchen allow at least 5 feet.
- a table or utility cart on rollers.
- a sit down work space and a stool or chair.
- a large waste basket where it is easy to use.

Research by the U. S. Department of Agriculture and cooperating Experiment Stations of land grant colleges in various states has provided much of the information used in this bulletin.

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