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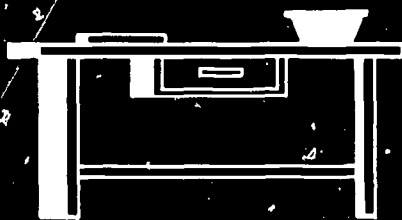
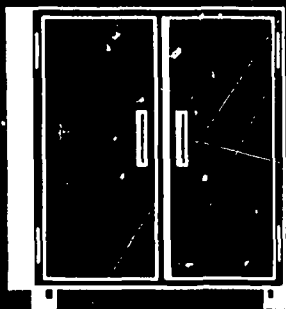
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ABSTRACT

The information in this pamphlet has been prepared to assist State agencies, service institutions, and others concerned with planning and equipping kitchens and dining areas of child service institutions participating in the U.S. Department of Agriculture's Special Food Service Program for Children. The minimum kitchen equipment and facilities necessary to prepare breakfast, lunch, supper, or any combination thereof for 15 - 100 children are specified. In suggesting the equipment to be used, the guidelines take into consideration the possible serving of supplemental foods between meals. (Author)

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Equipment Guide for Preschool and School Age Child Service Institutions

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U.S. DEPARTMENT OF AGRICULTURE
FOOD AND NUTRITION SERVICE • CHILD NUTRITION DIVISION

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February 1972

INTRODUCTION

This publication is printed in pamphlet form as a convenience to State agencies, service institutions, and others concerned with planning and equipping kitchens and dining areas of day care centers and other child service institutions participating in the U.S. Department of Agriculture's Special Food Service Program for Children. The contents of this pamphlet are essentially those of Division I of *Planning Food Service Facilities*, also published by the Facilities and Management Technology Branch, Child Nutrition Division, Food and Nutrition Service, USDA.

The minimum kitchen equipment and facilities necessary to prepare breakfast, lunch, supper, or any combination of these meals for 15 to 100 children are specified in this publication. The equipment suggested also takes into consideration the possible serving of supplemental foods between meals, depending upon the children's needs and the time of the day they are in attendance.

Many child food service programs are operated in basements of churches or in converted apartment buildings and food is served family style with teachers or aides eating at the same table with the children. When initiating a new program in locations where kitchen equipment is already available, judgment should be exercised to determine if the existing equipment is adequate to meet the recommendations, or if supplemental equipment is required to provide adequate food service. In determining the capacity of the equipment needed, future expansion should be considered.

The selection and specification of certain pieces of equipment in this publication are based on the cost, durability, and compatibility with other pieces of equipment. The type, capacity, or quantity of equipment may be adjusted to meet the requirements of age and needs of the children.

Because of the many variables associated with this type of feeding operation, it is impossible to give the exact quantity of equipment and facilities needed in the kitchen and the dining area.

In selecting equipment, particular care should be exercised to insure that it meets your State and local health, fire, and safety codes.

Applications for nonfood assistance can be requested from the appropriate State agency or USDA Food and Nutrition Service regional offices. Applications must be approved before financial assistance can be provided in the purchase of equipment. Financial assistance cannot be given for single-service items or land and buildings.

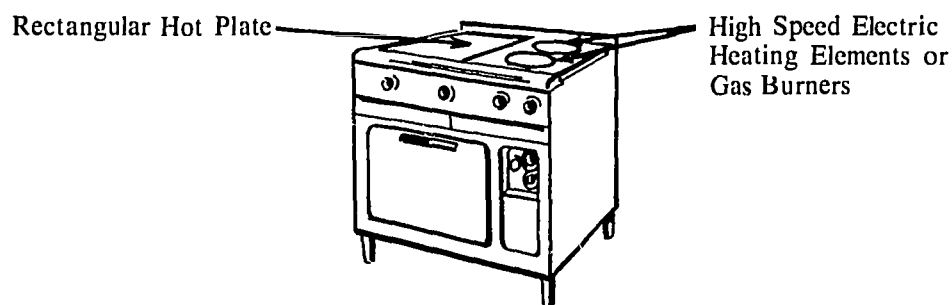
LARGE KITCHEN EQUIPMENT

RANGES AND EXHAUST SYSTEMS

Number Participants	Suggested Equipment			
	Number	Description		
		Type	Top Cooking Section ¹	Oven
15-30	1	Range, 30" domestic-type, gas or electric	4 Open Burners	Overall oven-shelf dimensions should be sufficient to accommodate interchangeably one 13" x 18" sheet pan or one 12" x 20" hot food service pan. Interior height of oven should be in excess of 14".
31-100	1	Range, 36" commercial hotel type, heavy-duty gas or electric	GAS ² Combination of 2 Open Burners 1 Rectangular Hot Plate (12" x 24") ELECTRIC ² Combination of 2 High Speed (Open Tubular Heating Unit) 1 Rectangular Hot Plate (12" x 24") ³	Overall oven-shelf dimensions should be sufficient to accommodate interchangeably one 18" x 26" sheet pan or two 12" x 20" hot food service pans. Oven may be convection type with electrical blower fan for circulating air within oven compartment.

¹ For domestic-type range, the distance between the center of the burners (from side to side and from front to back) should be more than 10". For commercial-type range, distances in excess of 12" is preferred.

² Suggest layout for commercial hotel-type range



³ Two French hot plates can be substituted for the rectangular hot plate.

Exhaust Systems

Ranges and other cooking equipment used in preparing foods that produce smoke or grease laden vapors should be equipped with an exhaust system. This system should comply with the requirements for hood (canopy), exhaust duct, grease removal device and fire extinguishing equipment as specified in the National Fire Protection Association Publication Number 96, *Ventilation of Cooking Equipment 1970*, or local codes. When considering inexpensive domestic-type hoods, check local codes before purchasing.

LARGE KITCHEN EQUIPMENT

REFRIGERATORS AND FREEZERS

Number Participants	Equipment	
	Number	Description
15-30	1	REFRIGERATOR-FREEZER, ¹ domestic-type, 2-door frostless (16-19 cubic feet combination). Capacity of freezer section should not be less than 5 cubic feet. Shelving in refrigerator section should have the capacity to accommodate interchangeably one 13" x 18" sheet pan or one 12" x 20" hot food service pan. Provide a thermometer for both the refrigerator and freezer sections. (See "Thermometers" on page 9.)
31-45	1	REFRIGERATOR, ² commercial-type, 1-section, 1-door, reach-in (20-25 cubic feet, net) with standard adjustable wire shelving. Each shelf should have the capacity to accommodate interchangeably one 18" x 26" sheet pan or two 12" x 20" hot food service pans. - PLUS -
	1	FREEZER, domestic-type, upright or cabinet (15-20 cubic feet capacity). Provide a thermometer. (See "Thermometers" on page 9.)
46-100	1	REFRIGERATOR, ² commercial-type, 2-section, 2-door, reach-in (40-50 cubic feet, net). Each shelf within each refrigerator section should have the capacity to accommodate interchangeably one 18" x 26" sheet pan or two 12" x 20" hot food service pans. Both sections should have standard adjustable wire shelving or the upper half of one section with pan files than can accommodate interchangeably 18" x 26" sheet pans and 12" x 20" hot food service pans. - PLUS -
	1	FREEZER, domestic-type, upright or cabinet (20-25 cubic feet capacity). Provide a thermometer. (See "Thermometers" on page 9.)

¹ If frequency of deliveries are such that additional refrigerator and freezer space is required, then a 16-19 cubic feet, 1-door, domestic-type refrigerator and a 15 cubic feet domestic-type freezer are suggested.

² Suggested specifications for commercial-type Reach-In Refrigerator

- (a) NSF and UL approved
- (b) 115 volts, single phase
- (c) Built-in (indicating) thermometer
- (d) Interior light
- (e) 6" legs

LARGE KITCHEN EQUIPMENT

FOOD MIXERS (ELECTRIC ¹)

Number Participants	Suggested Commercial-Type Electric Mixer ²	
	Number	Description
15-30	1	5 Quart, table model ³
31-45	1	10 Quart, table model ³
46-75	1	12 Quart, table model ³
76-100	1	20 Quart, table or floor model ^{3 4}

¹ If the Service Institution occasionally bakes bread, rolls, cakes, cookies, etc. be sure the mixer selected has the power, capacity and attachments needed.

² All mixers should be NSF and UL approved.

³ The following attachments are suggested:

Wire Whip (used to beat egg whites and whip cream)

Flat Beater (used for general mixing such as cakes)

Dough Hook (Optional, needed if bread and rolls are baked)

Meat Grinder (optional)

Vegetable Slicer (not recommended, see *cutter, salad* on page 8)

⁴ The 20 Qt. Table Food Mixer requires a special food mixer table or stand.

WORKTABLES AND COUNTERTOPS

Number Participants	Recommended Work Surface			
	Worktables ¹		-PLUS-	Countertops, ² Worktables, or Combination Countertops and Worktables (Length in Feet)
	Number	Minimum Size (Length in Feet and Width in Inches)		
15-30				10'
31-45	1	6' x 30"	-PLUS-	4'-6'
46-75	1	6' x 30"	-PLUS-	6'-8'
76-100	1	8' x 30"	-PLUS-	6'-8'

1. WORKTABLES:

New: Worktables should be 14 guage 18-8 stainless steel with stainless steel adjustable tubular legs, approximately 34" high, 30" wide, full length undershelf for storage of sheet pans, hot food service pans, etc. (optional, drawer located on bottom side of work top for storage of small utensils and shelf over table for condiments, etc.)

Existing: Worktables with laminated-plastic tops are acceptable, providing cutting board(s) and hot food pads are used.

2. COUNTERTOPS:

New: If built-in countertops over floor cabinets, under-counter refrigerators, dishwashers, etc. are used as worktables, then the countertop should be in excess of 18" deep (from front to back) and 24" wide (from side to side) otherwise the work space may not be adequate for efficient food preparation. Countertop should be stainless steel.

Existing: Countertop(s) with laminated-plastic tops are acceptable, providing cutting board(s) and hot pads are used.

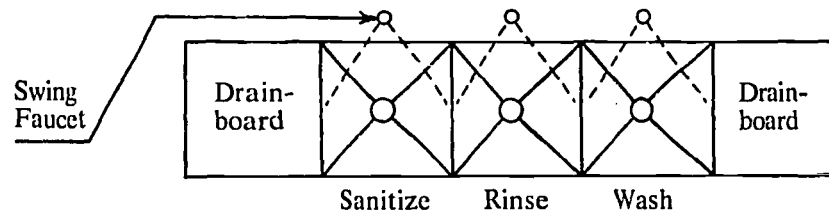
LARGE KITCHEN EQUIPMENT

DISHWASHERS, SINKS AND RELATED EQUIPMENT

Type Table Service	Number Participants	Suggested Equipment ¹	
		Number	Description
Non-disposables	15-45	1	Sink, 3 compartment (utilizing sanitizing solution for final rinse) ^{2 3}
		1	Sink, hand Dishwasher, domestic (optional) ⁴
	46-100	1	Sink, 3 compartment (utilizing sanitizing solution for final rinse) ^{2 3}
		1	Sink, hand
		- OR -	
		1	Dishwasher, commercial ⁵
1	Sink, 3 compartment ³		
1	Sink, hand		
Disposables	15-100	1	Sink, 3 compartment ³
		1	Sink, hand

¹ Based on USPH *Food Service Sanitation Manual*, PHS Publication #934. Sometimes an existing child service institution will have only one 1-2 Compartment Sink with drainboards in conjunction with dishpans, which is acceptable to local health jurisdiction. Generally speaking, any new institution or institutions where kitchens are undergoing alterations will have to comply with PHS #934 as minimum standards.

² Recommended 18-8 stainless steel sink with integral drainboards. Each compartment should measure at least 30" x 24" x 14" deep with exterior-operated lever waste control.¹ The following right to left layout is suggested:

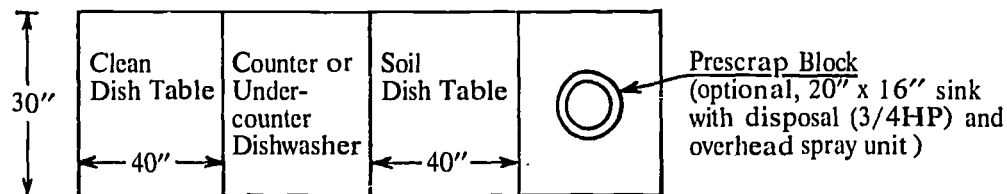


³ Recommend separate drain system for each compartment.

⁴ Domestic counter or undercounter dishwasher is permissible providing that there is sufficient time to allow for the long cleaning and rinsing cycle and it complies with the local health ordinances.

⁵ Commercial, counter or undercounter, stationary rack dishwasher with 3-4 minute wash/rinse cycle that utilizes either chemical sanitizing final rinse or hot water in excess of 180°F for final rinse. In the latter case, a hot water booster heater will be required and indicating thermometers should be installed for measuring wash water and final rinse water temperatures. (See page 10 for dish racks.)

Acceptable Right to Left Dishwasher Layout



NOTE:

If operation is to exceed 100 participants, a single tank, door type, stationary rack dishwasher should be considered.

SMALL KITCHEN EQUIPMENT

POTS, PANS AND RELATED ITEMS

Item	Number of Participants			
	15-30	31-45	46-75	76-100
Double Boilers ¹				
8½ Quart	1			
11 Quart		1		
17 Quart			1	
24 Quart				1
Stock Pots with covers				
3-3½ Gallon		1	1	1
5 Gallon			1	
8 Gallon				1
Sauce Pans				
3½-4 Quart	1			
5½-6 Quart	2	1	1	1
7 Quart		1		
8½ Quart			1	1
Sheet Pans				
(18" x 26" x 1")		2	2	2
(13" x 18" x 1")	4	2	4	4
Hot Food Service Pans ²				
(12" x 20" x 2")	2	3	4	5
(12" x 20" x 4")	1	1		
(12" x 20" x 6")			2	2
(10" x 12" x 4" with cover)	2	2	2	2
Muffin Pans				
Cup Size (2¾" dia. x 1½" depth)	2 (optional)	3-4 (optional)	5-7 (optional)	7-9 (optional)
Bread Pans				
(Approximate size 4" x 10" x 4")	1-2 (optional)	2-4 (optional)	4-5 (optional)	5-7 (optional)
Storage Containers (10 Gallon) ³	2-4 ³	2-4 ³	2-4 ³	2-4 ³

¹ Two loop handles per container. In addition, the inside (top) container should have straight sides and flat bottom. Both top and bottom of double boiler are usable as stock pots, i.e. one 8½-quart double boiler is usable as two 8½-quart stock pots.

² The Hot Food Service Pans are to be used for baking, roasting, mixing, serving, and storage.

³ Use for storing USDA-donated flour, rice, beans, rolled wheat, etc. Exact number of storage containers depends upon available USDA-donated foods. Galvanized metal or plastic garbage cans (new) with tight-fitting lids are recommended.

SMALL KITCHEN EQUIPMENT

CUTLERY, MEASURERS, UTENSILS AND RELATED ITEMS

Note:

Recommend one item each for 15-100 participants except where noted with *

BOARD, cutting, composition hard rubber or plastic, minimum dimensions 15" x 20" x 1/2"

BRUSHES

- Pastry, nylon bristles
- Vegetable, nylon bristles

CAN OPENER, institutional, table mounted, hand operated

*COLANDER, 11 quarts or larger, aluminum or stainless steel (2 colanders for 46-100 participants)

CUTTERS

- Biscuit, 2" diameter
- Butter, 1/4-1 pound, stainless steel
- Dough (**optional**, needed if bread and rolls are baked.)
- Salad, institutional, aluminum body with base clamp with stainless steel or chrome plated slicing and shredding cone, hand operated

DREDGES (shakers)

- Salt, aluminum
- Pepper, aluminum

FORK, cooks, 12-13" long, 2-tine, stainless steel

***GLOVES**

- Mitts, oven, asbestos (2 pairs)

HOT PADS (**optional** for protecting laminated-plastic work surfaces)

KNIVES

- Bread, 9" blade, stainless steel (**optional**, needed for slicing baked bread)
- Electric, 110-120 volts, 60 cycle, AC, serrated stainless steel blade with blade release (**optional**)
- *French, 8-10" blade, stainless steel (2 knives for 31--100 participants)
- Ham Slicing, 8-9" blade, stainless steel
- *Paring, clip point, 3-4" blade, stainless steel (2 knives for 31-100 participants)
- Utility (all-purpose), 6-8" blade, stainless steel

*LADLE, 12 ounce, short handle, stainless steel (2 ladles for 46-100 participants)

MEASURES, with pouring lip, aluminum

- *Cup, graduated in 1/4 and 1/3 cups (2 measurers for 46-100 participants)
- Quart, graduated in cups
- *Gallon, graduated in quarts (1 measure for 46-100 participants)

MEASURING SET, 1/4, 1/3, 1/2 and 1 cup for dry measure, aluminum (**optional**)

MEAT GRINDER, Number 10 (**optional**, needed when domestic-type electric mixer is purchased)

PEELER, fruit and vegetable, swivel, hand operated

SMALL KITCHEN EQUIPMENT

CUTLERY, MEASURERS, UTENSILS AND RELATED ITEMS

NOTE:

Recommend one item each for 15-100 participants except where noted with *

ROLLING PIN, revolving handles, 3" diameter x 15", aluminum or stainless steel (**optional**, needed if biscuits, cookies, etc. are baked)

SCALE, domestic-type, table model, 25-30 pound capacity in 1-ounce graduations

SCOOPS

Number 40, stainless steel (**optional**, needed if drop cookies are baked)

*Size 2 (grocer type), 5" x 8½", aluminum (2 scoops for 46-100 participants)

SCRAPER, bowl, 4½" x 2½" rubber blade

SIEVE, flour, 10-14" diameter, aluminum (**optional**, needed if such products as dehydrated eggs, etc. are used)

SILVERWARE BOX, compartmentized (**optional**, needed if nondisposables are used)

SKIMMER, 6", stainless steel

SLICERS

Cheese, wire, noncorrosive metal (**optional**)

Egg, wire, noncorrosive metal (**optional**)

SPATULA, frosting, approximate flat area 6½" x 1½", stainless steel in mirror finish

SPOONS

*Measuring set, graduated from ¼ teaspoons to 1 tablespoon, aluminum or stainless steel (2 measuring sets for 31-100 participants)

*Serving, solid, 12-14" long, stainless steel (2 spoons for 15-100 participants)

Serving, slotted or perforated, 12-14" long, stainless steel

Stirring, 14" long, wood

SPREADER, sandwich, 3½" blade with serrated edge

STRAINER, spaghetti, 3 quarts, with handles, size to fit top of stock pots and double boilers

THERMOMETERS

Meat, temperature range 130° to 195°F in 10° divisions, stainless steel stem

Oven, minimum temperature range 150° to 550°F in 25° divisions

Refrigerator/Freezer, -20° to 80°F in 10° divisions (Required wherever refrigerator or freezer lacks a built-in indicating thermometer.)

TONGS, salad, 9-11" long, stainless steel

TIMER, 1 hour in minute graduations with alarm

TURNER, hamburger, approximate flat area 3" x 7", stainless steel, with wooden handle

WHIP, french, 12-14" long, balloon type, fabricated from corrosion-resistant metal

SMALL KITCHEN EQUIPMENT

CLEANING EQUIPMENT AND RELATED ITEMS

NOTE:

Recommend one item each for 15-100 participants except where noted with *

BROOM, household-type, corn bristles

BRUSHES

Pot, nylon bristles
Scrub, nylon bristles

*CANS, garbage (trash), 20 gallon with tight-fitting lid, domestic, galvanized metal or heavy duty plastic (minimum of 2 cans for 15-30 participants/3 cans for 31-100 participants) or equivalent number of racks for holding disposable garbage (trash) bags.

GLOVES, rubber, elbow length

MOP, wet, 12" strands, wood handle

MOP PAIL, 14-16 quarts, with rollers and wringer

PAN, dust, commercial kitchen type, wood handle

RACKS

*Dish (**optional**, needed for commercial type dishwasher, minimum of 2 racks for 46-100 participants)
Dish drain (**optional**, needed when washing dishes by hand)

SCRAPER, plate, rubber

*TOWELING, cleaning and wiping. (Quantity depends upon local laundry services, number of participants, etc. Do not use for drying dishes or eating utensils.)

MISCELLANEOUS ITEMS

CARBORUNDUM STONE, double face, minimum length 8" (Use special mineral oil when sharpening knives)

CLOCK, wall, electric (**optional**)

CUTTER, wire (**optional**, needed for opening crates)

DISPENSER, paper towel (locate above hand sink)

HAMMER, claw (**optional**, needed for opening crates)

SHEARS, kitchen (**optional**)

STEEL, 12" fluted rod, with guard (**optional**)

DRY STORAGE

DRY STORAGE ¹

Number Participants	Dry Storage Area (Converted small room or closet) (Sq. Ft.)	Shelving ² (In dry storage room, or other areas used for storage) (Sq. Ft.)
15-30	18	30 ^{3 4}
31-45	27	45 ^{3 4}
46-75	45	75 ^{3 4}
76-100	60	100 ^{3 4}

¹ Selected area for dry storage should not be subjected to freezing temperatures, excessive heat, or extreme dampness and should have adequate ventilation, protection against rodent infestation and some means of securing area.

Dry storage areas for food should not be used for storing of nonfood items, such as cleaning compounds, mops, brooms, etc.

² Recommended shelving in Dry Storage Area should be 18" wide with minimum of 10" between shelves, except for first shelf off floor. Here the vertical distance between floor and first shelf should be approximately 36" where platform, storage cans for flour, sugar, etc. are located; otherwise, 6" off floor.

³ If base kitchen cabinets are used for dry storage, then the base kitchen cabinets should be in excess of 18" deep (front to back), 30-34" high (normal height for such cabinets) and a door(s) opening in excess of 12" wide and shelving spaced to accommodate No. 10 cans.

⁴ Upright storage cabinets may be used in conjunction with or in lieu of a storage room or base cabinets with the same capacity as base cabinets.

Since some of the space in kitchen cabinets cannot be utilized for storage due to obstructions, locations, etc., 1 sq. ft. of shelving in base kitchen cabinet equals approximately 0.75 sq. ft. of regular shelving.

DINING AREA EQUIPMENT

TABLE SERVICE (FOR FAMILY STYLE)

Note: The quantity of individual items needed depends upon such factors as the number of participants, type of dining room service, number of children per table, etc. Therefore, the quantities are not specified except for CARTS.

BOWLS

Cereal or soup, capacity in excess of one cup, without flange, plastic or china (**optional**)
Serving, oblong, plastic

CART, utility (all-purpose), 2 shelves with guard rails, approximate dimensions 32" x 20" (one cart for 15-100 participants, intended for kitchen, storage area and dining room use)

DISHES, fruit, 3½-4" diameter, plastic or china (**optional**)^{1 2}

DISPENSERS, sugar, glass with stainless steel top (**optional**)

GLASSES

Juice, 4 ounce, plastic or glass ^{1 2}
Water, 8-10 ounce, plastic or glass ^{1 2}

LADLES, soup (short handle), 4-6 ounces

MUGS, 6 ounce, china (**optional**)^{1 2}

PITCHERS, 2 quart, non-corrosive metal or heavy plastic (**optional**)

PLATES, dinner, 9" diameter, compartmented or noncompartmented, plastic or china ^{1 2}

PLATTERS, serving, plastic or china ^{1 2}

SHAKERS

Pepper, glass with stainless steel top (**optional**)
Salt, glass with stainless steel top (**optional**)

SILVERWARE (flatware)

Forks, stainless steel ²
Knives, stainless steel ²
Teaspoons, stainless steel ²

SPOONS, serving, solid, stainless steel

TONGS, salad, 9-11" long, stainless steel

TRAYS, carrying, approximate dimensions 14" x 18", plastic

¹ When ordering, include extra dinner plates, glasses, etc. to cover for breakage.

² Disposables can be used in place of plastic, china, or stainless steel items.

DINING AREA EQUIPMENT

FURNITURE

Tables and seating should be sufficient to accommodate the total number of children and teachers or aides that will be seated. The following considerations should be used when planning a dining facility in a child care center:

1. **Location of Dining Area:** For maximum efficiency, the dining area should be immediately adjacent to the kitchen, serving area, and the dish return area.
2. **Types of Dining Areas:**
 - a. **Dining**
This area is basically used only for dining and the furniture is generally of the stationary type. In such operations, mobile equipment is not necessary.
 - b. **Multi-purpose**
This area is used for many activities including dining, class room, play area, etc., and the furniture should be designed for moving and compact storage.
3. **Age of Children:**
The height of the tables and chairs and the distance between the children depends directly upon the age of the children being fed.

RECOMMENDED MEASUREMENTS FOR DINING AREA FURNITURE

Age ¹	Table Height	Chair Height	Space per Chair
Pre-school	20"—22"	10" —12"	15"—20"
Elementary	23"—27"	13½"—17"	18"—24"
Junior High School	27"—30"	15" —17"	20"—24"
High School	29"—30"	17" —18"	20"—24"

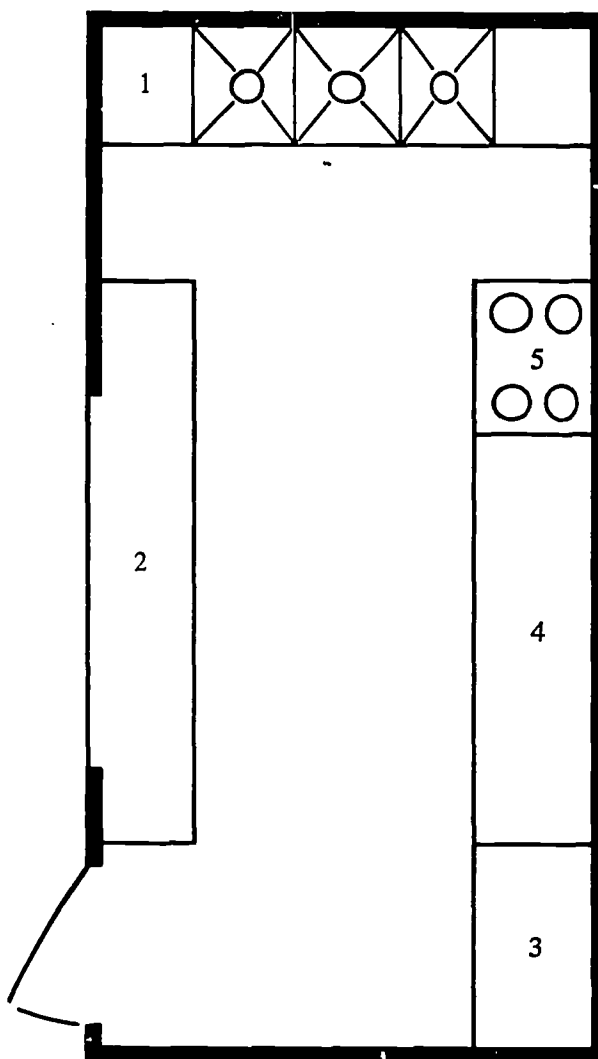
¹If the program is to accommodate both older and younger children, then the height and spacing of the furniture should be predicated on the older children.

4. **Types of Tables:**
 - a. Non-folding tables can be used in rooms that will be used for dining only.
 - b. Mobile—folding tables with casters should be considered for use in multi-purpose rooms. They may be used in areas designated for dining only to facilitate cleaning.
5. **Types of Seating:**
 - a. Separate chairs and benches can be used in both dining and multi-purpose rooms. For multi-purpose rooms, the chairs and benches should be either the folding or stacking type.
 - b. Integral seats (benches, stools, chairs) are attached to the table and fold with table when table is folding type.

SAMPLE KITCHEN LAYOUTS

The following sample layouts are intended to provide the reader with some indication of (1) shape and size of area required for an efficient kitchen operation and (2) the proper relationship of suggested equipment.

SAMPLE KITCHEN LAYOUT FOR 15-30 CHILDREN



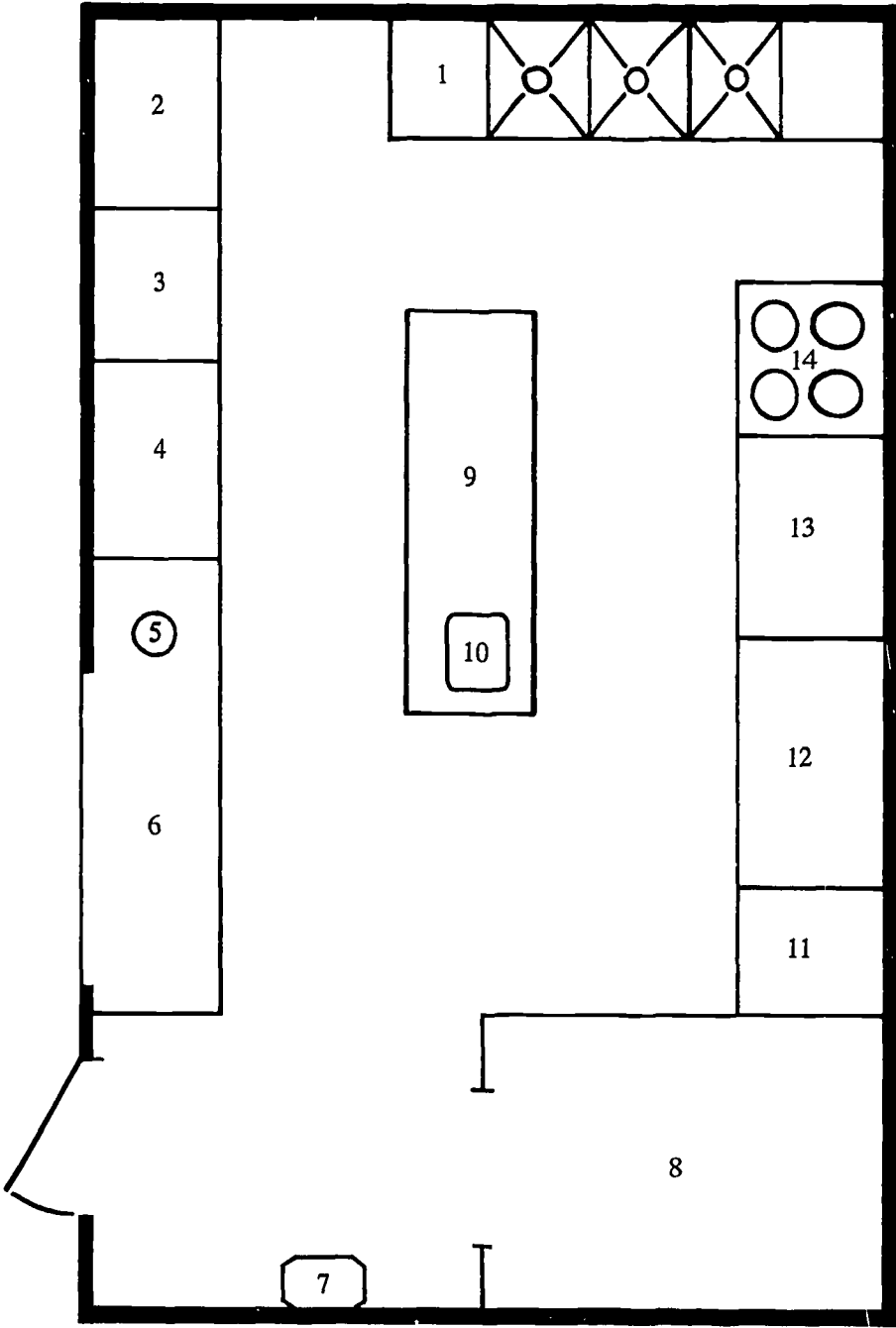
SCALE $\frac{1}{4}'' = 1'0''$

EQUIPMENT LIST

1. 3-Compartment sink
2. Counter with pass-through window
3. Combination refrigerator-freezer
4. Cabinet
5. Domestic range

SAMPLE KITCHEN LAYOUTS

SAMPLE KITCHEN LAYOUT FOR 100 CHILDREN



SCALE 1/4" = 1'0"

EQUIPMENT LIST

- 1. 3- Compartment sink
- 2. Clean dishtable
- 3. Dishwasher
- 4. Dirty dishtable
- 5. Prescrap block
- 6. Counter with pass-through window
- 7. Hand sink
- 8. Dry storage area
- 9. Worktable
- 10. Mixer
- 11. Freezer
- 12. Refrigerator
- 13. Counter
- 14. Commercial range

NOTES