

GRADE

7

HOME SCIENCE

LESSON

NOTES

STRAND ONE

a. Food Nutrients

Nutrients are the substances in food that our bodies process to enable it to function. Your nutrient requirements are influenced by factors including your age, growth stage and activity. Nutrients are so small that the naked eye can't see them.



Role of Home science in contemporary life

(i) Use of scientific knowledge in managing Home life:

Great advances have been made in the areas of health, nutrition, textile, psychology, housing and managerial skills, which the home maker requires in her day-to-day life of managing and maintaining the household. Hence, it is essential that such knowledge and skills are made available to every home maker for creating a healthy, happy and enriched family life.

(ii) Use of available services and facilities:

Modern day society has changed a great deal in terms of availability of various services to each and every household. Therefore, a formal and systematic approach of understanding and utilizing these services has become necessary as a preparation for home making. Moreover, use of modern technologies, its maintenance and management also is of great importance, which Home science education tries to fulfill.

(iii) Economic necessities:

More and more women are working outside the home due to basically economic necessities. In this context, managing and balancing both household and

professional life is essential. Home science education tries to train and educate one to make a perfect interface between these two spheres of women's life.

(iv) Managing day to day family affairs:

Human relations are undergoing sea-change during the last few decades. Family values, ethos are severely affected. People are becoming more and more individualistic in nature, contrary to our Indian collectivism. Thus children are growing up in a very complex psychological environment and thus leading to very many problems found among children in general and the problems of working women, elderly people in particular. Today family problems are in rise, leading to various types of domestic violence, abuse, crimes etc. Home Science education tries to educate and acquire the ability to manage this crisis at right time with proper emphasis.

(v) Preparing for a healthier and purposeful life:

Happiness and Peace in the family are the goals of purposeful family life. Home science education tries to create an environment and outlook, which will enable people to live richer and more purposeful lives. It tries to provide a wholesome knowledge and attitudes towards family health (both physical and psychological), nutrition, child care, home decoration, use of clothing's, elderly care and management during risk and eventualities. It tries further to enrich the lives of each and every members of the family through better understanding of the human relationships.

(vi) Family Life Education:

Home science education helps in preparing for home making, in the development of right values, appreciation, and understanding for better family life. It enables the pupils to understand the functions of parenthood, responsibilities of family membership and management of one's resources. It helps them to develop a sound philosophy of personal and family living. Understanding oneself (in terms of strengths and weaknesses) and others is the basic essence of family life. Moreover, it helps us in careful weighing of and balancing competing demands and making intelligent selections and decisions.

Thus, the objective of Home science education is to foster the growth, development and wellbeing of individual's families and communities, utilising the findings and advances of science and technology. The overall objectives of Home science education aim at:

1. To foster the growth, development and well-being of individuals, families and communities in utilizing the findings and advances of science and technology.
2. To achieve family happiness and overall well-being of the society.

(vii) The study of Home Science familiarizes us with the household problems and the ways to solve them.

(viii) Home science is an art and science. It teaches us to do all the household jobs in a systematic and scientific manner. For example, it teaches us not only to cook food, but also teaches how to provide nutritive food to all members of the family economically.

- It also teaches us the art of managing jobs like cleanliness, washing of clothes, etc. by spending less time and energy. These days, the market is flooded by a large variety of garments. A student of home science can make proper selection and maintenance of these clothes.
- Home Science teaches us about the child development and human relationship. In child development, the students are taught about the physical, mental, social, and emotional development of the child. This knowledge helps us to know whether the child is growing at proper rate or not. The student learns to control his emotions and to adjust in the society well.
- The study of Home Science helps us to become a conscious consumer so that we should know our duties and rights as a consumer and not easily exploited by the sellers.
- In earlier times, the duties of a housewife were confined to home only but these days because of modernization and socialization, she is also working outdoors. The knowledge of home science helps her to manage resources like time, energy, skill, interest, etc. efficiently so that she can do all the household chores along with her outdoor duties.

Guidelines for Nutrient conservation during food preparation and cooking

CONSERVATION OF NUTRIENTS IN PREPARATION AND COOKING OF VEGETABLES

Loss of nutrients in vegetables begin from preparation onward and is greater during the cooking process.

1. When fruits and vegetables are peeled the vitamins present under the skin may be lost.

2. Nutrients are also lost when the edible leaves of carrot beetroot and outer layer of cabbage are discarded.
3. Vitamin B complex and Vitamin C are water soluble and are lost when the water in which vegetables are cooked is discarded. Sodium, potassium and chlorine are also lost when cooking water is discarded.
4. Vitamin C is lost by oxidation due to exposure of air.
5. During dehydration ascorbic acid and carotene are lost.
6. Addition of soda results in heavy loss of B - Vitamins during cooking.

Guidelines to minimize nutrient losses during preparation:

1. Wash vegetables before cutting. Soaking or washing time should be reduced to minimize nutrient loss.



The kitchen rule is to always wash the vegetables first and then chop them rather than doing the other way around. Chopping first and washing afterward can take away vital nutrients from the food.

2. Cut vegetables into big pieces so that exposure of vitamins to water is less while cooking and washing.



3. Use a vegetable peeler to remove skin as it helps remove only a very thin layer of skin. (*This especially for Root vegetables*)



Vegetables that have roots, like potatoes and carrots should be boiled with skins on and then peeled after boiling as it will help the nutrients to migrate to the center of the vegetables and help in their retention within.

Soaking



If you soak vegetables in water for a long period then, almost 40% of soluble vitamins and minerals are lost. If you really have to soak them, use the remaining water as vegetable stock, or to knead the dough, prepare soups and gravies.

4. Use minimum water for cooking. Bring the water to boil and add the vegetables to cook.
5. Cook vegetables by steaming and pressure-cooking to conserve nutrients.
6. Cover the vessel with a lid while cooking as it hastens cooking.
7. Do not use soda while cooking vegetables as it destroys valuable vitamins.



Baking soda makes cooking water alkaline and thus helps retain the colour of vegetables as well as speed up the cooking process, but it destroys vitamin C content of the veggies.

8. Vegetables salads should be prepared just before serving to conserve nutrients.
9. Use acids such as lime juice or vinegar to salads as it prevents loss of Vitamin C since Vitamin C is stable in acid.



10. Excess water



Use the excess water of boiled rice or vegetables in preparing gravies, kneading the dough as it is loaded with a lot of nutrients.

11. Cooking time



The longer the cooking time and the higher the temperature, the more nutrients are destroyed as most of the vitamins are sensitive to heat and air exposure.

Blanching during cooking



Whether cooking certain recipes or preparing to preserve produce, blanching is often a recommended technique. That's because certain fruits and vegetables, such as cauliflower, green beans, and tomatoes, benefit from this simple process that quickly cooks the food and then abruptly stops the cooking. To blanch, food is briefly immersed in boiling water (often just a minute or two), followed by an ice bath to rapidly cool off the food. Blanching is used both by home cooks and in industrial food processing.

Why Blanch?

- When a food is blanched properly, the flavor, color, texture, and nutritional value is preserved. Blanching gently softens the outside of the food while keeping the interior crisp, sweetens the produce a little, and causes the vegetable to hold its color for a longer period of time.
- Vegetables will be crisp-tender and bright in color in salads and on a crudités platter.
- Before incorporating into a quick-cooking recipe such as a stir-fry, blanching will soften vegetables that take longer to cook like broccoli and carrots.
- Some of the bitterness is removed from cabbage, leafy greens, and onions after blanching.
- Blanching loosens the skin on fruits such as tomatoes and peaches to assist in peeling, which is required for certain recipes.
- Before freezing, drying, and canning, blanching is often called for so the produce is a pleasant texture and color when used later on.

How to Blanch

There are three ways to blanch fruits and vegetables: boiling, steaming, and microwaving. Each is simple to do and requires basic cooking equipment and water. Prepare the produce (wash, peel, slice, chop, etc.) per the recipe or personal preference.

Water or Boiling Method

1. Set a large pot of salted water to boil.
2. Once it is boiling, immerse the vegetable or fruit in the boiling water.
3. Once the water returns to a boil, begin timing for the length of blanching recommended, which is usually just a couple of minutes.
4. Quickly remove the food items from the boiling water and plunge them into an ice-water bath.
5. As soon as they're cool, drain the fruit or vegetable and set aside either to use in a recipe or to process for canning, drying, or freezing.

Steaming Method

1. Add an inch or two of water to a pot that will fit a steamer basket.
2. Set a steamer basket inside a pot so that the basket is about 3 inches above the bottom of the pan.
3. Bring the water to a boil and add the vegetables or fruits to the basket in a single layer.
4. Cover the pot and continue to cook over high heat for as long as recommended. The time begins when the pot is covered. (Steaming will take about 1 1/2 times longer than boiling.)
5. Transfer to an ice bath immediately.
6. As soon as they're cool, drain the fruit or vegetable and set aside to use in a recipe or to process for canning, drying, or freezing.

Microwave Method

- Place vegetables or fruit in a single layer in a microwave-safe dish.
- Add 1/4 to 1/2 cup water to the dish.
- Cover and microwave on high for half of the recommended time, uncover and stir, and finish cooking.
- Stir again and immediately transfer to an ice bath.
- As soon as they're cool, drain the fruit or vegetable and set aside to use in a recipe or to process for canning, drying, or freezing.

Blanching Times	
Vegetable	Blanching Time in Minutes
Artichoke Hearts	7
Asparagus	2 to 4 depending on thickness
Beans (Green, Snap, or Wax)	3
Beans (Lima, Butter, or Pinto)	2 to 4 depending on size
Broccoli (flowerets)	3
Brussels Sprouts	3 to 5 depending on size
Cabbage	1 1/2 for shredded, 3 for wedges
Carrots	2 for diced, 5 for small
Cauliflower (flowerets)	3
Celery	3
Corn on the Cob	7 to 11 depending on size
Eggplant	4
Greens	2 (3 for collards)
Kohlrabi	1 for cubed, 3 for whole
Mushrooms (steamed)	3 to 5 depending on sliced or whole and size
Okra	3 to 4 depending on size
Onions (blanch until center is warm)	3 to 7 depending on size
Peas (in the pod)	2 to 3
Peas (shelled)	1 1/2 to 2 1/2
Peppers	3 for strips, 5 for halves
Potatoes	3 to 5
Rutabagas	3
Soybeans (green)	5
Squash (chayote)	2
Squash (summer)	3
Turnips or Parsnips (cubes)	2
Fruits for Peeling	
Blanching Time in Seconds	
Apples	30
Peaches	30
Pears	30 to 60
Tomatoes	30

Parboiling in Nutrient Preservation



Parboiling is a method of partially cooking food in boiling water. When a recipe calls for parboiling, it is referring to the partial boiling of an ingredient just until it is soft but not cooked through. Parboiling is different from blanching in that after parboiling, you rinse the food under cold water, to stop it from cooking, then cook it further when other ingredients are ready, or you store it for later use. By contrast, blanching does not require a cold rinse or bath.

How to Parboil

1. Parboiling is a simple process. With a few easy steps.
2. First, fill a pot with enough water to cover the ingredient you intend to parboil.
3. Bring the water to a boil while you prepare the ingredient. The recipe may call for slices or cubes, or you may be parboiling the whole ingredient.
4. When the water starts boiling, place the food item in the water to cook. The length of cooking time will depend on the food item and the method of cooking you will be using later.
5. Follow the recipe's instructions for cooking time and desired texture. When you've reached the level of softness required, drain the boiled water, and immediately run cold water over the food to stop the cooking process and help the food item maintain its color and texture. Alternatively, you can shock the food in an ice-bath to stop the cooking even faster.
6. Set the food aside until you are ready to use it.

Uses for Parboiling

Most recipes call for parboiling to ensure that the ingredients that take longer to cook will be soft or completely done when a recipe calls for a lot of ingredients. For example, parboiling reduces the total cooking time for many potato preparations. Parboiling potatoes make it easier to achieve crispy edges with fully-cooked, fluffy interiors than if you started with raw potatoes. Also, parboiling washes away some of the simple sugars in a potato, which gives the potato a golden crust rather than a darker brown one.

Another instance where you might use parboiling is with a vegetable stir-fry that includes carrots. Carrots would likely not be cooked completely if you simply stir-fry them along with the other ingredients. When you parboil the carrots ahead of time, before tossing them into the stir-fry with the other ingredients, this normally hard vegetable is far more likely to be cooked through and tender after you finish cooking the dish.

Additionally, you can use parboiling to cook rice. Rice that has just been harvested is generally soaked in water and then parboiled, which helps crack the hard hulls. Parboiled rice is easier to process by hand and also has better nutritional value, as the process of parboiling drives nutrients like thiamin from the bran to the endosperm. Parboiled rice also cooks more quickly and is less likely to spoil than raw rice.

3Rs in nutrient conservation during cooking

R- reduce the amount of water used in cooking

R- reducing the cooking time

R- reducing the surface area of food

To achieve this the following needs to be done

1. Use as little water as possible when poaching or boiling.
2. Consume the liquid left in the pan after cooking vegetables.

3. Add back juices from meat that drip into the pan.
4. Don't peel vegetables until after cooking them. Better yet, don't peel at all to maximize their fiber and nutrient density.
5. Cook vegetables in smaller amounts of water to reduce the loss of vitamin C and B vitamins.
6. Try to eat any cooked vegetables within a day or two, as their vitamin C content may continue to decline when the cooked food is exposed to air.
7. Cut food after — rather than before — cooking, if possible. When food is cooked whole, less of it is exposed to heat and water.

Role of food enrichment, fortification and supplementation of nutrients in nutrition

Food fortification - food fortification or enrichment as the addition of micronutrients to foods, whether or not they are normally contained in the food, for the purposes of preventing or correcting a demonstrated deficiency.

Difference between food fortification and supplementation

<i>Food Fortification</i>	<i>Food Supplementation</i>
"The process whereby nutrients are added to foods to maintain or improve the quality of the diet of a group, a community or a population."	Food supplementation refers to supplementing/providing concentrated sources of nutrients (i.e. mineral and vitamins) or other substances that is meant to supplement nutrients in the diet
Fortification refers to the addition of vitamins or minerals to the foods in order to increase its nutritional quality	Supplementation refers to supplementing specific vitamins, minerals or other nutrients to the people in order to address their nutritional deficiency
Fortified foods usually contain added vitamins, minerals or both	Supplementation usually include specific supplement at a time
It is the addition of micro-nutrients to the food	It involves direct micro-nutrient supplementation to the targeted person
Food fortification is <i>targeted for large proportion of population</i>	Supplementation is <i>targeted for small/selective proportion of population</i>
Food fortification is <i>done to prevent nutritional deficiency or improve the nutritional status of the people</i>	Food supplementation are <i>intended to correct nutritional deficiencies</i>
Food fortification is a food-based strategy	Supplementation is non-food-based strategy
<i>It is done for medium to long term</i>	<i>It is done for short to medium term</i>
It is given to the population with mild or moderate risk of nutritional deficiency	It is given to the population with high risk of nutritional deficiency
Food fortification is <i>usually done in staple foods</i> so that it will be regularly consumed by the people	Food supplementation does not require staple food as it is given directly to the targeted audience
Fortification is considered as a long-term intervention measure	Supplementation is considered as a short-term intervention measure

It is a regular and continuous process for a long period of time	Supplementation is either one-time or periodic or involves regular intake of supplements for a limited period of time
It primarily improves the nutritional value of the food	It does not involve the process of improving nutritional value of the food as it given directly to the targeted beneficiaries.
It does not have immediate impact on the nutritional status or functional outcome of the person	It has immediate impact on the nutritional status or functional outcome of the person
The purpose of food fortification is to fortify the normal diet with low dose of additional nutrients	The purpose of food supplementation is to supplement the normal diet with concentrated sources of nutrients or other substances
<i>Fortification does not include highly concentrated form of nutrient/s</i>	<i>Supplementation includes highly concentrated form of nutrient/s</i>
<i>Some common examples of food fortification are:</i> iodine fortification in salt, iron fortification in wheat, Vitamin A in flour,	<i>Some common examples of food supplementation are:</i> vitamin A supplementation to children of 6-59 months, iron supplementation to pregnant and lactating women, zinc in management of diarrhea etc.
The <i>cost of fortified food is low</i>	The <i>cost of supplementation is relatively high</i>
Foods selected for fortification should be those foods which are consumed by the majority of population	Food supplementation does not necessitate consumption by majority of population
Food fortification does not require any behavioral modification or compliance of fortified foods	Food supplementation requires behavioral modification or compliance
Overdose of nutrients is unlikely	Higher chances of overdose of nutrients, if taken in more than recommended quantity

Food enrichment

food fortification and food enrichment have different meanings: fortification is reserved for the addition of micronutrients to a food that does not contain those compounds naturally, whereas enrichment is applicable when the natural contents of some micronutrients normally available in the food are intentionally increased.

Roles of food enrichment, fortification and supplementation

- ***Provides solution to macro-nutrient malnutrition*** - food fortification or enrichment means the addition of one or more essential nutrients to a food (whether or not it is normally contained in the food) for the purpose of preventing or correcting a demonstrated deficiency of one or more nutrients in the population or specific population groups. Food fortification is also permitted when it is necessary to restore nutrients lost during processing, handling, or storage or to maintain the nutritional equivalence of substitute foods (e.g., nondairy milk beverages).
- It increases food quality

- ***Helps in improving nutritional status of the people.*** - These techniques are used to mitigate ‘hidden hunger’ i.e. micro-nutrient deficiency in the people/beneficiaries. Both of these techniques have their own advantages and limitations in different contexts.

- ***It reduces the cost of food***

- Frequent intake of fortified foods help the body to store some essential nutrients and help in preventing deficiency diseases.
- Growing children require certain essential micro nutrients for their growth and development. Adequate quantities of micro nutrients are necessary for the pregnant women or lactating women. To increase the vitamins and certain minerals in the breast milk, fortification is the best way. This also reduces the need for extra supplementation in infants and post partum mothers.
- Fortification is a cost effective process. Cost of fortification is found to be less than one per cent of the original value of the food.
- Fortified foods contains almost nearer value of nutrients, when compared with original whole foods.

Effects of heat on various vegetables during cooking

Vegetables are cooked using the following methods:

- Frying
- Steaming
- Stewing
- Boiling

Reasons for which vegetables are cooked

To soften the product

To improve the flavor.

To increase the digestibility.

To preserve the vegetables.

Effects of heat on vegetables

Cooking is the application of heat to food to make it safer to eat, digestible and more palatable. Cooking also changes the ***appearance of the food***. Heat breaks down the cellulose and the starches present, changes and blend flavor within the food, and also destroy bacteria to make food digestible.

CARBOHYDRATES: Caramelization and Gelatinization. Both sugar and starch are carbohydrates. Caramelization is browning of sugars and Vegetables get softened by the gelatinization of the starch.

VEGETABLE FIBERS: Fibbers are a group of complex substances that give structure and firmness to plant. they cannot be digested. Heat breaks down the fibers. Alkali makes fiber softer but make them mushy and lose essential vitamins.

MINERALS, VITAMINS, PIGMENTS AND FLAVOUR COMPONENTS: Minerals dissolve in water during cooking. Vitamins and pigments may also be destroyed by prolonged cooking. Pigment and flavor may also determine whether the food is appetizing enough to eat or not.

PROTEIN: When heat is applied to the protein they become firm or they start to coagulate with heat. Proteins become tough and dry when exposed to high heat.

Suggestive cooking for different vegetables

Boiling: This is the most common method of cooking vegetables. For green vegetables such as peas, french beans, etc. The vegetables are put in boiling water and cooked for the minimum time possible and refresh to avoid overcooking. Green vegetables while boiling should not be covered; otherwise, their color will be changed to olive green. Root vegetables should be placed in cold water and the pot should be covered by a lid, the water is brought to boiling point then simmer till the vegetables are cooked.

Steaming: vegetables are cut into even size after washing and placed in the steamer for cooking. This method helps in the maximum preservation of the nutrients and good for peas, beans, cauliflower, cabbage, etc.

Braising: vegetables after blanching are laid on aromatic to be braised such as cabbage, onion, etc.

Baking: vegetables baked in a baking oven suitable for potatoes, tomatoes, pimentos, etc

Roasting: some vegetables can be roasted. They are placed in a hot pan containing oil and condiments suitable for potatoes, onions, and parsnips, etc.

Shallow frying: it is applicable for mushrooms, onions, pepper, tomatoes, etc.

Deep frying: vegetables such as potatoes, brinjals and onions can be deep-fried but a loss of vitamins takes place in this method of cooking.

Grilling: small potatoes can be grilled to give color.

Stewing: vegetables such as marrows, peas, etc. Can be stewed.

How to Retain the color of Green Vegetables

- Cook them uncovered to allow the vegetables volatile acid to escape. when the vegetables are cooked with a cover, the plants natural acid is leeched into the cooking liquid and is trapped there creating an acidic cooking medium. This combined with the heat present and destroys the pigment.
- Cook them quickly until just “Al Dente” (***cooked so as to be still firm when bitten.***), Extended exposure to heat will destroy the color.
- Steam Green vegetables whenever possible, this shorten the cooking time, allows for less acid build-up and retain more color.

The various components of vegetables are:

Carbohydrates: carbohydrates are present in the form of starch, sugar, cellulose & pectin substances. Starch is the chief nutrients of roots & tubers & the content of sugar is highest in beetroot, carrots & turnips. Cellulose is a source of roughage and becomes coarse & tough with age.

Minerals and vitamins: the vegetable also contains minerals and vitamins.

CLASSIFICATION OF VEGETABLES

Cabbage family: Consist of vegetables used for their head, leaves or flowers also known as BRASSICA. E.g. Cabbage, Brussels Sprouts, Cauliflower, Kohlrabi, Broccoli etc

Stalk vegetable: Stalk vegetables are plant stems that are high in cellulose. E.g. Asparagus, Celery, Bok Choy etc.

Leafy vegetables: Leafy vegetables are plant grown specifically for their edible leaves. E.g. Spinach, Kale, Sorrel etc.

Salad greens: Endive, Lettuce

Seeds, edible pods and young shoots: This is a broad category of vegetables it includes Peas, Snow peas, All types of beans, Bean sprout, Corn etc.

Vegetable fruits: Botanically vegetable fruit are considered fruits; however, they are used in the kitchen as vegetables. E.g. Cucumber, Okra, Eggplant, Tomatoes, Pepper, Squash etc.

Bulbs: Bulbs are stems holding A food reserve in the fleshy, overlapping which give shape to the vegetable. E.g. Onion, Scallion, Green onion, Shallots, Garlic etc.

Fungi: Mushrooms are not actually vegetables. They are an edible fungus. There are over 38,000 kinds of mushrooms. Three quarter of these are edible. E.g. Mushroom, Morel, Truffles etc.

Tubers: These are formed from underground stems, which extend from the root of the plant. E.g. Jerusalem Artichoke, Carrot, Potatoes, Raddish, Turnips etc.

Importance of conservation of Nutrients during food handling, preparation and cooking

Loss of nutrients in vegetables begin from preparation onward and is greater during the cooking process

1. When fruits and vegetables are peeled the vitamins present under the skin may be lost.
2. Nutrients are also lost when the edible leaves of carrot beetroot and outer layer of cabbage are discarded.
3. Vitamin B complex and Vitamin C are water soluble and are lost when the water in which vegetables are cooked is discarded. Sodium, potassium and chlorine are also lost when cooking water is discarded.
4. Vitamin C is lost by oxidation due to exposure of air.
5. During dehydration ascorbic acid and carotene are lost.
6. Addition of soda results in heavy loss of B - Vitamins during cooking.

Nutrient conservation helps in the following:

- It gives the food more variety. E.g. if one is not available the other may be available.
- It extends food's shelf-life. Vegetables can be preserved for lengthy periods of time using various ways.
- It cuts down on food waste. Excess foods that would have been wasted otherwise are processed and preserved, adding to existing supply and reducing food waste.
- It helps to reduce dietary deficiencies. Preserved foods nutrients help to add variety to the diet. For example, due to arid soil conditions in several Middle Eastern nations, no vegetables are grown. This shortfall is compensated for by importing fresh and preserved fruits and vegetables.

b. Small kitchen tools and Equipment

Kitchen Tools and Utensils			
			
Cup	Garlic crusher	Egg slicer	Blender
			
Potato masher	Cutting board	Measuring cup	Oven gloves

These include:

- knives,
- potatoes peelers,
- whisks and potatoe mashers,
- surface cooking utensils e.g saucepans, sufuria, oven cooking dishes like casseroles and baking pans,
- small electrical appliances e.g sandwich makers, coffee makers, toasters, food mixers, and blenders

Choice of small kitchen equipment

should be suitable size and shape

Care of small kitchen equipment

1. washing in warm soapy water,
2. rinsing well,
3. drying with non-fluffy cloth,

NB:- Avoid living water on cutlery to keep off silver water marks

Knives

1. choose according to function.
2. Should be ones with high carbon stainless steel material for blades,
3. firmly fixed handle,
4. handle made of wood, plastic, hard rubber or metal,
5. should be ones that don't rust,
6. should be desirable.

Uses of knives:

for general cutting, chopping, and peeling.

Care of knives:-

1. should be cleared separately in warm soapy water,
2. rinsing well,
3. drying well,
4. storing properly,
5. avoid exposing blades to too much heat, why: they loose shape
6. cutting affected areas.
7. sharpening if necessary.

Choice of Glass

1. should be attractive,
2. well moulded and smooth,
3. should stand some degree of temperature,
4. durable.

Uses of Glass

for kitchen items, e.g drinking glasses, water jugs, measuring jugs, plates and bowls, cups and saucers, casserole, mixing casserole, mixing bowls, ornamental, e.g flower vessel.

Care of Glass

1. avoid dropping/banging/subjecting to any pressure,
2. not exposing to too much heat,
3. not sticking them together,

4. washing them separately in warm water,
5. rinsing well,
6. drying on a racks that's cleared,
7. don't use abrasive to avoid scratching glass.

Earthenware (China)

- should have a smooth and attractive finish,
- should be appropriate in weight and size,
- to be plain and simple in design
- easy to clean.

Enamel earthenware

avoid already scratched equipment and one with attractive colours and designs.

Uses of enamel

- spraying on metals and baking them at high temperature,
- used for interior and exterior finishes of plates, serving bowls, freezers etc

Care of enamel

- avoid banging and knocking because they chip and rust,
- wash in warm soapy water,
- rinse and dry well,
- mild abrasives to remove stains.

Plastics

Choosing plastics

- durable,
- should be ones that can withstand heat e.g sunlight.
- should be smooth, firm and able to retain shape,
- odourless,
- should be ones that peel and become discoloured with use.

uses of plastics

for basins, buckets, plates, cups, jugs, mixing bowls, cutlery etc.

Care of plastics

- use warm soapy water to wash,
- should be rinsed and dried well under a shade,
- avoid abrasives to be avoided when cleaning,
- avoid exposing to dry heat, they will be spoilt,
- discolorations should be removed by a good bleach.

Cooking pots and pans:-

- are from metals e.g aluminum, stainless steel with copper alloys and iron coated with enamel,
- pots made of clay/cast iron,
- are in a variety of sizes and shapes,

choice of pots and pans

- should be ones that can balance well on the cooker,
- a thick base and walls for even distribution of heat,
- should have a well fitting lid,
- should have a smooth finish,
- to be well moulded and no cracks.

Use of pans and pots,

surface cooking,

care of pots and pans

- to be washed according to type e.g aluminum ones in hot camp,
- a mild abrasive to be used,
- use steelwool for stubborn stains,
- sieve improvised cleaning materials in order to prevent surface scratchings.
- rinsing should be done well,
- drying and storing appropriately.

Enamel pot or pan

- clean in warm soapy water,
- avoid harsh abrasives,
- drying to be done well and same to storms.

Clay pot

- plain hot water to be used not soapy because it leaves an unpleasant smell as a result of the porosity of the material.
- to be rinsed properly and dried before storage.

Baking tins and trays

Choice of tins and trays

- aluminium most preferred why? They don't rust.
- Choose on different sizes and shape,
- Durable,
- should have dark finishes and strong because they absorb heat,

use of tins and trays

- for baking

care of tins and trays

- Scrap off foods while hot,
- Soaking in hot soapy water,
- Rinsing well, drying well and storing,
- Rub with oil to prevent rusting.

Wooden utensils

- Choice of Wooden utensils
- to suit intended use,
- those from plain wood are the best,
- shouldn't have any unpleasant smell

Use of Wooden utensils

- chopping board,
- spoons,
- rolling pins.

Care of Wooden utensils

- food to be scrapped off with a knife back,
- scrabble along the grain,
- use warm soapy water,
- rinsing and drying with a cloth wrung from cold water,
- drying in an airy place,
- don't soak because it can crack,
- avoid burning or charming kitchen equipment.
- avoid tenting,
- avoid soaking and store in dry place.

SAFETY PRECAUTIONS WHEN HANDLING KITCHEN EQUIPMENT

1. avoid buying family equipment because can cause accidents e.g shock,
2. the dealer should demonstrate on the use of buying appliance if possible,
3. equipment to be used for the right purpose and manufacturer's instructions to be followed,
4. serving of the equipment especially electrical ones,
5. clean, dry and store them depending on type, use and material,
6. check on leaking gas because it can cause poisoning and fires,
7. avoid handling them with wet hands,
8. all equipments that aren't in use to be stored away in order to avoid overcrowding the kitchen,
9. gas taps to be switched off when not in use,
10. children not to be left in the kitchen alone,
11. clean and sharp knives to be used because dirty and blunt they can cause cuts,
12. pressure cookers to be handled with great care, they can cause scalding.

IMPROVISED KITCHEN EQUIPMENT

1. perforated tins as graters but avoid ones which had contained poisons,
2. Plates/grease proof paper – use banana leaves that can be planted stitched/tied together,
3. Charcoal cookers used if there is not fridge,
4. Sufuria with tight fitting lid where there are no steamers,
5. kitchen floor mops/dusters from old sheets blankets/khanga pieces,
6. wires for fork/skewers,
7. plastic containers for mugs salt/pepper shakers/floor dredgers,
8. a stand constructed for draining utensils,
9. large sufuria with sand inside and as with charcoal fire,
10. a debe for an oven that uses firewood/charcoal.
11. smooth glass bottle for a rolling pin,
12. hard stone for a knife sharpener.



Making small kitchen Utensils (re-use or recycle)

c. Cooking food

Cooking methods are divided into three categories:

- Dry-heat method,
- Moist-heat method,
- Combination cooking method.

Dry-Heat Method:

Dry-heat method consists:

- **Grilling** - Grilling is a fast, dry method of cooking that uses the intense heat radiated by an electrical element, gas flame, or glowing charcoal. The heat sources can be either above or below the food or both.

Advantages

- Grilling is a quick, easy method of cooking
- There is little loss of nutrients and less fat is used.
- Grilled food is tasty and easy to digest

Disadvantages

- Grilled foods cannot be successfully reheated and are difficult to keep warm without drying and toughening. They need to be served straight away.
- Only tender cuts of meat, which are generally more expensive, can be used. However other foods such as vegetables, kebabs are suitable for grilling.
- ***Roasting*** - The term roasting is given to three different techniques of cooking. In all cases, the term refers to a dry method of cooking involving either the addition of fat/oil or the use of foods with high-fat content.
- ***Baking*** - Baking is a dry method of cooking in an oven. The texture, surface, volume of baked goods are modified by steam. This is produced by the food as it cooks or can be injected into the oven if required.

Suitable foods and cooking procedures

The process of baking is usually associated with flour products; egg and milk dishes; fruit; vegetables and fish. The baking of meat usually involves fat and is therefore classified as roasting illustrates the application of the three methods to different foods and shows the cooking procedures for the main groups of baked foods.

Advantages

- Flavour and texture are improved.
- Variety of dishes can be made
- Uniform and bulk cooking can be achieved e.g. bun and bread.

Disadvantages

- Special equipment and skill are required.

Safety Rules

- Care is needed in moving heavily loaded trays, into and out of ovens to prevent burns and scalds from the hot and steamy oven atmosphere.
- The food-handler should take care when removing baked items from trays/bins/molds.
- Safe practice should be observed in operational procedure, clothing, and footwear.
- ***Frying*** - Frying is a quick method of cooking food in hot oil or fat but requires care and attention to produce satisfactory results. Frying gives food a good flavor and color.

Methods of Frying

Four different methods of frying are shallow-frying, deep-frying, sauteing, stir-frying, and meuniere. Read each method one by one below.

- ***Shallow-Frying***

This is a dry method of cooking. Foods to be shallowly fried are cooked in a small amount of fat or oil the level of fat can be anywhere from halfway up the side of food.

- ***Deep-Frying***

Deep frying involves the complete immersion of food in hot fat or oil. It is not in contact with any surface of the frying vessel.

- ***Sauteing***

Sauteing is tossing the food in the pan during cooking so that it cooks and browns on all sides. The name comes from the French for ‘to jump’. Sometimes the food is described as sauteed even if it is too big to be tossed in the pan (Sauteed Chicken) this simply means it has been turned so that it is browned all over.

- ***Stir-fry***

A traditional method of Chinese cookery used for fast frying vegetables and thin strips of meat in a specially designed utensil termed a wok. The base of the wok is rounded with high sides so that only a small amount of food is in contact with the heat and therefore, stirring is the only action needed to control browning.

- ***Meuniere***

This term means ‘in the style of a miller’s wife’. It describes a method of cooking that applies mainly to fish. Fish cooked in this way is seasoned, lightly floured (Presumably the connection with the miller) and shallow fried in butter or oil. The fish is sprinkled with lemon juice, garnished with a slice of lemon and finished with beurre noisette and chopped parsley.

Advantages

- Taste is improved, along with the texture.
- Increases the calorific value.
- The fastest method of cooking.
- In shallow fat frying, the amount of oil consumption can be controlled.

Disadvantages

- Sometimes the food may become oily or soggy with too much absorption of oil.
- More attention is required while cooking and care should be taken to avoid accidents.
- The food becomes very expensive.
- Fried food takes a long time to digest.

- Repeated use of heated oils may produce harmful substances and reduce the smoking point.

Safety Rules

- All operators must be trained not only to use the equipment but also in a fire drill procedure.
- The correct level of the frying medium should be used.
- The fryer must not be overloaded as this may cause hot oil/fat overflow.
- Drain wet foods and then dry with absorbent paper. This prevents splatters of hot fat reaching the skin of the food handler.
- Pans must be moved carefully on the stovetop to prevent splattering and burns.
- **Broiling** - The cooking process known as broiling consists in exposing directly to the source of heat the food that is to be cooked; that is, in cooking it over or before a clear bed of coals or a gas flame.

The aim of broiling is to retain the juices of food and develop flavor.

As it is a quick method, foods that are not tender, as, for example, tough meats, should not be broiled, because broiling does not help to render their fibers more tender. In applying this cooking process, which is particularly suitable for tender portions of meat and for young fowl, the food should be exposed to intense heat at first in order to sear all surfaces quickly\ and thus retain the juices.

Moist-Heat Cooking Method

The moist-heat method consists of:

- **Boiling** - Boiling is a moist method of cooking in which foods are immersed in a liquid that is either at or brought to the boiling point. This liquid may be water stock, milk or court bouillon.

Techniques Associated With Boiling

Simmering - This is gentle heat treatment which causes small bubbles to rise slowly from the liquid. The food remains whole, with a better texture and more and. The water does not evaporate so quickly and less vigilance is required to maintain the correct level of a liquid.

Parboiling - Parboiling is the boiling of food until it is only partially cooked. The food is placed in boiling water for a short time from 1 to 5 minutes, or until the outside becomes soft. The cooking process is then completed using another method. Potatoes, for example, maybe parboiled to reduce roasting time and to help brown them and give a crisper texture.

Blanching - Blanching does involve placing food in boiling water. Food is plunged into boiling water for 1 to 2 minutes depending on the size of the food and then removed. It is then immediately refreshed in cold water.

Advantages of boiling

- **Time:** In terms of time, boiling can be lightning fast, or very slow. Blanching vegetables can take very little time. Pasta and potatoes can take 10-15 minutes, somewhere in the middle. And tough meats or poultry can be given long, slow cooking to make nutritious stock and tender proteins.

- **Taste:** Boiled food retains its natural flavor, without the addition of fats or oils in sautéing or frying. Boiling also makes flavors more concentrated by reducing sauces.
- **Texture:** No one could eat a meal of raw potatoes, dried beans, or uncooked quinoa. Boiling makes grains, beans and starchy vegetables palatable and edible by breaking them down and making them soft.
- **Nutrition:** Boiling is the best way to make delicious and highly nutritious stocks out of meat and vegetables. However, many water-soluble vitamins can leach out into the cooking liquid during the boiling process. If you drain away your boiling liquid, you may be throwing away a lot of nutrients, too. One way to prevent this is to serve the cooking liquid as part of the dish to maintain the nutritional value of what you're cooking. Soups and stews use this to their advantage.

Disadvantages

- Flavour and some color may be lost from the food into liquid.
- Loss of nutrients (especially water-soluble vitamins) may be high.

Foods to Boil

- **Eggs:** Hard- and soft-boiled eggs require different stovetop boiling times. Generally speaking, aim for 5 minutes for a soft yolk, and 6-7 for a hard-cooked egg. For more details, see my other egg cooking techniques, including one in the Instant Pot.
- **Pasta:** Every pasta is different, but the goal is to boil until the pasta is al dente, or “to the tooth.” Ideally, the pasta should still provide some resistance instead of being completely soft all the way through.
- **Potatoes and root vegetables:** Depending on the density and size of the potato or root vegetable, this can vary. It is considered cooked when the tip of a sharp knife can be inserted easily into the vegetable without too much resistance.
- **Blanching vegetables:** No more than a few moments for green vegetables like broccoli, green beans, and spinach.
- **Grains:** Every grain has its own unique cooking time, so read the instructions carefully. Spelt, farro, quinoa, millet, wheat berries all cook up beautifully with boiling.
- **Rice:** If you don't use a rice cooker, boiling rice is the next best way to cook it. Brown, wild, and black varieties all take much longer than any of the white rices, so plan accordingly and read the instructions on the label of each carefully. Some rice requires exact measurements of water for an accurate rice-to-water ratio, while others can be boiled freely in water and then drained.

Ways to Make Water Boil Faster

The old adage of “a watched pot never boils” seems true if you've ever waited an eternity for a large stock pot of water to heat up. If you're wondering what you can do to speed up the process, there's some science that suggests that adding a water-soluble substance like salt or sugar to the liquid can lower the boiling temperature somewhat and make that water boil faster. If that doesn't appeal to you, put the lid on your pot and that should help.

Safety Rules

- The boiling utensil should be matched with the quantity of food to be cooked. If not enough space is available water will spill as it boils.
- The food handler should take care when placing foods into or removing items from, boiling liquids.

- When reducing liquids adequate ventilation should be available to remove steam from the atmosphere. Condensation can cause slippery floors and dampness on electrical appliances.
- Blanching
- Parboiling
- **Poaching** - Poaching is a moist method of cooking in which food is placed in liquid which is brought to and maintained at, a temperature just under boiling-point (650 to 900°C). The cooking liquid may be water, milk, stock, wine, or court bouillon

Method of Poaching

- Heat the liquid to the boiling point, then reduce the temperature that there is no movement.
- Gently lower the food into the cooking liquid (The exception is when cooking whole large fish, as it is placed in the cold liquid and drought up to temperature)
- Allow the food to remain in the liquid until cooked.
- Remove the food and reserve the liquid if it is used for a sauce.

Advantages

- The application of heat is gentle, so foods with delicate texture may be cooked without breaking up.
- Poached foods are easily digested
- No fat needs to be added to cook the food advantage for people who want to reduce the amount of fat in their diet.

Disadvantages

- Poaching is not particularly suitable for large pieces of food
- There are some flavor and nutrient loss from the food in the cooking liquid.
- There is little development in color and flavor.

Safety Rules

- Equipment should be matched to the quantity of food to prevent spillages.
- Care should be taken in handling dishes that brought to the temperature on the top of the stove and then transferred to the oven.
- Steaming
- Pressure cooking
- Simmering

Combination Cooking Method

Combination cooking method consists:

- Braising

- Stewing
- Pot roasting

Importance of varied methods of cooking



Learners to check on this and discuss

**Project
1**

Learners to plan, prepare and cook presentable suitable foods using appropriate methods

**Project
2**

Learners to improvise any of the following Equipments

- Improvise a steamer*
- Improvise oven*
- Improvise roasting grill*

CONSUMER EDUCATION



a. Buying goods and services

Factors to that influence consumers purchasing decision on goods and services needed at household level (factors to consider)

1. Economic Factor

The most important and first on this list is the Economic Factor. This one is the main foundation of any purchasing decision. The reason is simple people can't buy what they can't afford. The need of a product also doesn't play a role here, but the most important thing is affordability.

2. Functional Factor

The factor is totally about needs, backed by a logic that what makes sense and also fits in the best interest of the customer. This one factor also plays a very important role in the buying decision.

3. Marketing Mix Factors

There are 4 components in the marketing mix, i.e. product, pricing, promotion and place of distribution and each of these components have a direct or indirect impact on the buying process of the consumers. The consumers consider various things like the characteristics of the product, price charged, availability of the product at the required location and much more.

4. Personal Factors

The personal factors include age, occupation, lifestyle, social and economic status and the gender of the consumer. These factors can individually or collectively affect the buying decisions of the consumers.

Factors That Influence The Buying Decision, Contact Discovery, Influencing Customers Buying Decisions,

5. Psychological Factor

When it comes to the psychological factors there are 4 important things affecting the consumer buying behaviour, i.e. perception, motivation, learning, beliefs and attitudes.

6. Social Factors

Social factors include reference groups, family, and social status. These factors too affect the buying behaviour of the consumer. These factors in turn reflect an endless and vigorous inflow through which people learn different values of consumption.

7. Cultural Factors

Cultural factors have a subtle influence on a consumer's purchasing decision process. Since each individual lives in a complex social and cultural environment, the kinds of products or services they intend to use can be directly or indirectly be influenced by the overall cultural context in which they live and grow. These Cultural factors include race and religion, tradition, caste and moral values.

Consumer behaviour can indicate different things like how individuals or groups choose to buy, use and dispose goods or services, to satisfy their needs and desires. Hence it is important to understand that the consumer behaviour is affected by several factors.

Methods of buying various household goods and services

- Cash
- Credit
- Mobile money
- Barter trade
- Bank transfers
- Online methods like PayPal

Sales outlets for various household goods and services

- Market
- Grocery
- Supermarket
- Shopping mall
- Online shops
- E-commerce stores

Ways of saving income when buying household goods and services

- Comparing prices from various stores or outlets
- Buying what is affordable but serves the purpose
- Buying quality and durable products.
- Using payment methods that does not incur other costs
- Doing budgeting prior to purchasing
- Keeping proper account of your purchases for future reference
- Purchasing only priorities. Avoid impulse buying.

Challenges experienced when buying goods and services for household use

- Use of technology impairs other consumers who may lack technological knowhow. For example, online shopping.
- Risk management during purchases as also another factor during buying – for example purchasing something that in the end causes harm to your family.
- Lack of product in the market. The product is not available at the time of purchase.
- Inadequate information about the product or service to be purchased
- Issues with deliveries - Another purchasing problem is late, incomplete, or damaged deliveries.
- Limited resources to make the proper purchase always makes us buy low quality goods.
- Communication problem
- Impulse buying which leads to excessive use of money.

Mitigation measures to challenges experienced when buying goods and services for household use

- Buy only that which you have budgeted for.
- Avail resources necessary to make purchase. In most instances save to purchase better quality goods.
- Gather proper information about the product or service you wish to purchase prior to purchasing
- Only go to market where you know you will get the product or service you wish for.
- Be aware to take risks when making purchases.
- Embrace technology in most instances to avoid incurring extra costs like travelling to the market even though its good because it makes you check from variety.

Importance of consumer education in acquisition of goods and services

1. Consumer education helps a person in making proper purchase. It enables the consumer in making right selection.
2. Consumer education familiarizes the consumer with the problems which he faces while making purchases. This education inculcates the logical viewpoint in him.
3. Consumer education provides the consumer full information of marketing conditions like various sources of purchasing a particular commodity, from where to get cheap and best goods, the shops providing additional facilities, and to latest products. All these information enables him in taking right decision regarding shopping.
4. Consumer education familiarizes the consumer with various standards of standardization and their markings.
5. One of the most important uses of consumer education is that it familiarizes the consumer about the various acts enacted by the Government from time to time. Consumer education helps the consumer in getting maximum satisfaction by proper utilization of his money and leads a better living standard

TEXTILE AND CLOTHING

a. Natural fibers

Textile fibres are used for a wide range of applications such as covering, warmth, personal adornment and even to display personal wealth.

Fibre name	Source	Composition
Vegetable		
Cotton	Cotton boll	Cellulose
Kapok	Kapok tree	Cellulose
Linen	Flax stalk	Cellulose
Jute	Jute stalk	Cellulose
Hemp	Hemp or Abaca	Cellulose
Ramie	Rhea and China	Cellulose
Sisal	Agave leaf	Cellulose
Coir	Coconut husk	Cellulose
Pina	Pineapple leaf	Cellulose
Animal		
Wool	Sheep	Protein
Silk	Silkworms	Protein

Hair	Hair bearing animals	Protein
Mineral		
Asbestos	Varities of rock	Silicate of Magnesium and Calcium

They are classified in three categories

1. Plant fibers

- *Cotton*

Cotton, the natural fibre most widely used in apparel, grows in a boll around the seeds of cotton plants. A single fibre is an elongated cell that is a flat, twisted, hollow, ribbon-like structure.



Characteristics

- Fair to good strength
- Very little elasticity
- Less resilient and prone to wrinkling
- Comfortable and soft feel
- Good absorbency
- Conducts heat well
- Damaged by insects, mildew, rot and moths
- Weakened by extended sunlight exposure

- *Linen*

Linen, one of the most expensive natural fibres, is made from the flax plant. It is labour-intensive to produce, hence produced in small quantities. However linen fabric is valued for its exceptional coolness and freshness in hot weather.



Characteristics

- Strongest vegetable fibre
- Poor elasticity, hence wrinkles easily
- Relatively smooth, becomes softer when washed
- Highly absorbent
- Good conductor of heat and feels cool
- Lustrous
- More brittle, constant creasing in the sharp folds, tends to break
- Damaged by mildew, perspiration and bleach
- Resistant to moths and carpet beetles

Applications

- Apparel - suits, dresses, skirts, shirts etc.
- Home and commercial furnishing items – table cloths, dish towels, bed sheets, wallpaper / wall coverings, window treatments etc.
- Industrial products - luggage, canvas etc.
- Used as blend with cotton

2. Animal fibers

- **Wool**

Wool fibre grows from the skin of sheep and is a relatively coarse and crimped fibre with scales on its surface. It is composed of protein. The fibre appearance varies depending on the breed of the sheep. Finer, softer and warmer fibres tend to be with more and smoother scales. Thicker, less warm fibres have fewer and rougher scales. Normally, the better wool fibres with finer scales are duller in appearance than the poorer quality fibres which have fewer scales.



Characteristics

- Crimped in appearance
- Elastic
- Hygroscopic, readily absorbs moisture
- Ignites at a higher temperature than cotton
- Lower rate of flame spread, heat release and combustion heat
- Resistant to static electricity

Applications

- Clothing – jackets, suits, trousers, sweaters, hats etc.
- Blankets, carpets, felt and upholstery
- Horse rugs, saddle cloths

- Silk

Silk is a fine, continuous strand unwound from the cocoon of a moth caterpillar known as the silkworm. It is composed of protein. It is very shiny due to the triangular prism-like structure of the silk fibre, which allows silk cloth to refract incoming light at different angles.



Characteristics

- Lustrous, smooth and soft texture and not slippery
- Lightweight, strong, but can lose up to 20% of its strength when wet
- Elasticity is moderate to poor. If elongated, it remains stretched
- Can be weakened if exposed to too much sunlight
- May be affected by insects, especially if left dirty
- Can regain up to 11% of its moisture

Applications

- Shirts, ties, blouses, formal dresses, high-fashion clothes
- Lingerie, pyjamas, robes, dress suits and sun dresses
- Many furnishing applications
- Upholstery, wall coverings, and wall hangings

3. Mineral fibers

- Glass

Although glass is a hard and inflexible material, it can be made into a fine, translucent textile fibre that has an appearance and feel of silk.

Natural minerals such as silica sand, limestone, soda ash, borax, boric acid, feldspar and fluorspar have been fused under very high temperatures into glass which is processed into a fibre.

Characteristics

- Inert
- Highly flame resistant
- Applications
- Heat resistant industrial applications

Textile Fibre identification Parameters

Fibrous materials should possess certain properties to become a suitable textile raw material.

Properties which are essential for acceptance as a suitable raw material may be classified as ‘primary properties’. The other properties which add specific desirable character or aesthetics to the end product and its use may be classified as ‘secondary properties’.

Primary Properties

1. Length
2. Tenacity (strength)
3. Flexibility
4. Cohesion
5. Uniformity of properties

Secondary Properties

1. Physical shape
2. Specific gravity (influence weight, cover etc.)
3. Moisture regain and absorption (comfort, static electricity etc.)
4. Elastic character
5. Thermo plasticity (softening point and heat - set character)
6. Dyeability
7. Resistance to solvents, corrosive chemicals, micro-organisms and environmental conditions
8. Flammability
9. Lustre

Physical Properties of natural textile fibres

Cotton

Property	Characteristics
Microscopic appearance	Flat, twisted and ribbon-like
Length	Staple fibre, length ranges from 1 to 5.5 cm
Colour	Creamy white in natural form, unless treated
Lustre	Medium, unless treated for lustre
Strength	Fair
Elasticity	Low
Resilience	Low
Moisture absorption	Excellent
Heat	Will withstand moderate heat / Decomposes after prolonged exposure to temperatures of 150°C / 320°F or over
Flammability	Burns readily

Linen

Property	Characteristics
Microscopic appearance	Cross-section is made up of irregular polygonal shapes
Length	Long staple, 25 to 120 cms
Colour	Off white
Lustre	High
Strength	Good
Elasticity	Low
Resilience	Little
Moisture absorption	Good
Heat	Will withstand moderate heat
Flammability	Scorches and flames readily

Wool

Property	Characteristics
Microscopic appearance	Crimped
Length	Staple fibre, up to 40 cms
Colour	Generally creamy white, some breeds of sheep produce natural colours such as black, brown, silver, and random mixes.
Lustre	High
Strength	High
Elasticity	Good
Resilience	High
Moisture absorption	Tends to repel initially, but good absorption.
Heat	Becomes harsh at 100°C / 212°F, decomposes at slightly higher temperatures.
Flammability	Scorches at 204°C / 400°F, will char

Silk

Property	Characteristics
Microscopic appearance	Triangular prism-like structure
Length	Continuous filament
Colour	Usually off white, and also shades of pale beige, brown, and grey
Lustre	Excellent
Strength	Good
Elasticity	High
Resilience	High
Moisture absorption	Good
Heat	Sensitive and gets decomposed
Flammability	Burns at 165°C / 330°F

Importance of Natural fibres in clothing and household articles

1. Natural Fibers Feel Good

Never underestimate the power of comfort. The vast majority of modern clothes are made from synthetics like polyester. But synthetics are not your best option when the temps heat up.

2. They Hold Up Over Time

One thing you will notice immediately with fast fashion is how quickly it falls apart. A single wash can do a cheap t-shirt in. Unraveling hemlines, pilling, shrinking, and losing their shape are all standard ‘planned obsolescence’ when it comes to disposable fashion.



3. Natural Fibers Treat Your Body Right

Besides feeling good, you want to actually be healthy. Many, if not most, people are concerned with environmental toxins. We purify our drinking water, eat organic food, and buy hypoallergenic skincare products.

Natural fibers like cotton, silk, linen, and cashmere generally need much less processing to turn them into fabric. They're naturally hypoallergenic, making them perfect for everyone from infants to the elderly.

4. They Protect Your Fellow Human Beings

The fast fashion industry takes unfair advantage of its workers. Slave labor is still a common practice in developing nations, and the fashion industry is one of the biggest exploiters.

Low wages are a big part of the reason you can buy a t-shirt for just a few dollars. One little-considered risk comes in the form of dyes – and it isn't just the workers whose lives are at risk.

Thousands of toxic chemicals are used to dye apparel. Besides those who must handle the poisonous dyes directly, much of the waste is dumped into local waterways.



5. Natural Fibers Are More Sustainable

As noted above, most synthetic textiles are derived from petroleum, a limited resource that is also, unfortunately, the top environmental polluter.

The fashion industry is right behind the oil industry, not least because of the petroleum that goes into creating fashion. About 70 million barrels of oil are used each year by the apparel industry.

Clothing consumption has risen dramatically since the turn of the century. People buy twice as many clothes as they did 20 years ago and are tossing out them just as quickly.

Shopping for high-quality items made from natural materials, be that clothing, shoes or a multi-use sustainable tote bag, that will last for years is a much more sustainable approach.

Recycling synthetics is difficult and only a tiny percentage of synthetic fabrics are reused. The vast majority ends up in the trash.



Unlike synthetics, natural fibers are both renewable and sustainable. They also do not pollute the environment the way synthetics do.

6. They Save You Money in the Long Run

Unlike those 150/= synthetic t-shirts you find for sale on every street corner, apparel made from natural fibers holds up over many washes and wears.

Slow fashion apparel is also designed in classic shapes that will remain in style, season after season. Properly cared for, clothing made from cotton, wool, silk, and other natural fibers can last for years, even decades. Investing in natural fabrics saves you money in the long run.

If the feel-good reasons aren't enough, here is a recap of all the reasons to choose natural fibers over synthetics:

- Better for your health
- Last longer
- Better for the environment
- Less waste

- Better for workers
- Less pollution
- Biodegradable

b. Sewing Machine



Types of sewing machine

They include:

- **Treadle** - A treadle sewing machine is a sewing machine that is powered by a foot pedal that is pushed back and forth by the operator.



- Hand driven



- Motor driven



- Electric sewing machine – use electricity



Factors to consider when buying different types of sewing machines

- Cost** - As a general rule of thumb, always go for what you can afford.
- Space** – is there enough space that would allow the usage the sewing machine.
- Uses** - A caveat here is to avoid being blinded by the numbers alone but the types of stitches available. Primarily, you need a machine that comes with both the straight and zigzag stitches. Others that could come in handy for more advanced tasks include blind hem stitch, buttonhole stitch, and sketch or knit stitch.
- Ease of use** – the sewing machine should be friendly and easy to set up and use. Do not purchase a complicated sewing machine
- Spare parts** – before purchasing a sewing machine, a question to ask is whether the sewing machine has spare parts that can be easily purchased upon spoilage or destruction. Do not purchase a sewing machine that the spare parts are rare to acquire.
- Brand (manufacturer)** - When it comes to sewing machines, brand really matters. You reckon that not all machines are made equal and this includes differences in the type and quality of parts used during assembling.

Some of the most respected manufacturers of good sewing machines today include Singer, Husqvarna, and Bernina among others. These are brands that have stood the test of time and are popular for their consistency in providing the market with high-quality machines.

- Running of the machine** - If you're already an expert and want to move your sewing to the next level, it's important to consider going for a machine with more advanced features as follows:

Needle threader

This feature can either be automatic or semi-automatic depending on the level of the machine.

Walking foot

Also known as dual feed foot, this part is key in making sewing smooth and particularly when dealing with multiple layers of seam.

Free arm

With this part, you can sew bags, sleeves, and any other circular projects much easily.

Knee lifter

A while ago, knee lifters were only available on high-end machines; however, this feature can now be found on most modestly priced machines. It enables you to stitch on curves and sharp corners.

Adjustable speed control

Just like the name suggests, you can adjust how fast or slow you sew using this function. It's common in computerized machines.

Others features to look out for include:

- Needle up/down
- Needle position adjustment
- Motor power/size
- Feed dog up/down

Functions of various parts of a sewing machine



Needle & Clamp - Among our sewing machine images and parts, we had to bring the needle and clamp. There's not much to explain about this. It contains the needle that stitches and the clamp that secures it on the machine.



Take-up Lever

This part is typically located over the needle, close to the thread holder or spool pin. Its purpose is to regulate the thread tension to ensure it feeds properly into the needle.

Spool Pin or Holder

The part that holds the sewing thread is called a spool pin or holder. It can be horizontal or vertical, depending on the machine design. Sometimes, it can be used to control how the thread feeds into the machine.



Bobbin & Case



A bobbin and its case are two critical sewing machine parts name with picture.

The bobbin case usually goes just under the needle plate. And the bobbin goes inside the case. Together, they hold and feed the thread that goes below, which helps to create the loop for every stitch.

Bobbin Winder

When the bobbin runs out of the thread or loosens up, the bobbin winder helps to get it out or adjust it. This part can be located on the bottom part or right side of the machine.



Presser Foot

This part goes below the needle. It is what presses the fabric into the feed-dog. It flattens the material to ensure the needle goes smoothly through it. The name comes from its shape that looks like a foot.



Presser Foot Lever

When you want to adjust the presser foot, you use the lever to disengage it from its place. This will also disengage the tension discs from the operation.



Presser Dial

Some sewing machines have a presser dial. This part lets you adjust the amount of pressure you want to exert over the fabric with the presser foot. It helps to work with fabrics of different thicknesses by adjusting the pressure depending on how thick they are.



Feed Dog

As you should know, the function of sewing machine is to make stitches on a straight line. For that, the mechanism needs to move the fabric every time the needle makes a stitch. That's what the feed dog is for.

This part has some teeth-like components that hook into the fabric and move it away from the plate so the machine can keep on stitching.



Throat Plate

The throat plate is what goes on top of the bobbin and the feed dog. It is called a “throat” plate because it contains a hole where the needle goes through to reach the bobbin. Also, it has slots where the feed dog teeth are located.



Slide Plate

Located beside the throat plate, the slide plate is what allows access to the bobbin. Because it has a sliding mechanism, it enables easy access and ensures the user can maintain and adjust the machine as needed.



Face Plate & Casing

This part conceals the internal mechanism of the sewing machine. You can say it is the metal cover that gives the sewing machine its form while protecting its internal components.

Foot Pedal

The foot pedal is located under the sewing machine. In modern models, this part usually connects to the machine via a small cable. But in older models, it was connected via a slightly more complicated mechanism.

Either way, the focus of this part is to adjust the speed at which the machine sews. The harder the user pushes the pedal, the faster the sewing machine will sew.



Modern Foot Pedal



Old Foot Pedal

Reverse Lever

When it comes to securing stitches, the user needs to put the machine in reverse. This will make the needle and feed-dog move backward, stitching towards the other side. This part is usually located on the front face of the machine for easy access.

Pattern Selector

This part is common on modern machines. It allows the user to change the type of stitching pattern for the job.

Stitching can go from zig-zag to straight, overlocking, and so on. These patterns depend on the machine type. It is typically located on the right side or body of the machine.

Hand Wheel

If you've ever seen someone using a sewing machine, you know what this handwheel looks like.

This part connects directly to the needle mechanism. And it helps to lower it or lifting it from the sewing area as needed.

Whether it is adjusting the needle position over the fabric or disengaging from the sewing area – this handwheel is an essential part of every machine.



Stitch Length Adjustment

As much as you can adjust the pattern, you can also change the stitching length. Most machines have a length limit of about 4 inches. But it can vary depending on the model.

This part is usually located close to the feed-dog mechanism (the section below the needle plate). And it helps to adjust how much fabric is fed before the needle comes back to make another stitch.



Tension Discs



One of the most common industrial sewing machine parts is the tension disc. You may also find it on domestic models.

The whole purpose of tension discs is to control how much pressure the needle applies to the fabric. This part usually has numbers that tell how much tension it is using. The higher the number, the more tension it will produce on the material.

Using the tension discs will by adjust the position, the thread flow, the thread passage, and even how smoothly the needle goes up and down.

Sewing Light

For people who like to work in dark areas, the sewing light helps them have more visibility. It is typically located close to the needle.

Thread Cutter

Cutting thread is a constant while using a sewing machine. That's why they need a thread cutter. It looks like small crevice or knife-like piece, usually close to the needle. The whole purpose of this piece is to prevent tangles and speed up the sewing process.

Preparing a sewing machine for straight stitching

This involves:

- Upper and lower threading
- Winding the bobbin
- Threading the bobbin case
- Fixing (inserting) the needle
- Testing the stitch and machine tension
- Powering on in case of an electric sewing machine.

Causes of machine fault during straight stitching

- Needle thread breakage
- Bobbin or looper thread breakage
- Thread fusing when the machine stops
- Skipped stitches
- Imbalanced / variable stitching
- Staggered stitching
- Variable stitch density
- Seam pucker

The causes and solutions for each of the above problems are discussed in the following sections.

Needle Thread Breakage

Cause	Remedy
Misaligned off winding from thread package.	Ensure that the overhead guide is directly above cop stand pin, at 2½ times the height of the thread package. Use a foam pad to prevent package tilting.
Trapping at package base.	Reduce the thread stand height to prevent vibration and spillage. Use a foam pad to prevent trapping after spillage.
Thread trapped at thread guide.	Can occur after thread breaks. Rethread correctly.
Snarling before tension disc.	Increase the wraps on pre-tension thread guides and reduce disc tension. Ensure discs are smooth.

Excessive tension.	Use a stronger thread or adjust tension.
Broken check spring.	Replace and adjust.
Sharp edges on throat plate, hook point, needle guard, bobbin case, needle groove or eye.	Polish rough edges and replace if necessary. Replace the needle being used with a higher quality needle.
Thread fraying at needle.	Use finer thread or coarser needle, as appropriate.
Excessive needle heat; groove or eye blocked with melted fabric.	Improve the fabric finish. Change to a better needle, style and finish. Apply needle lubricant via thread. Use a needle cooler.
Hook overheating.	Ensure adequate oil supply. Check the needle to hook clearance.
Poor quality thread.	Change to a correctly finished thread of better quality.

Bobbin or Looper Thread Breakage

Cause	Remedy
Badly wound thread on the bobbin.	Adjust bobbin winder alignment. Use pre-wound bobbins.
Tension too tight or bobbin over-running.	Adjust bobbin case tension. Insert a washer or a spring to prevent over-running.
Sharp edges on bobbin case or spring or looper eyelet.	Polish edges and correct surfaces.
Bobbin case not fitting correctly.	Check the size/type of bobbin for flange distortion.

Thread Fusing when the Machine Stops

Cause	Remedy
Poorly finished or incorrect thread.	Use better quality thread.
Densely woven fabric that is poorly or harshly finished.	Improve fabric finish. Change to more suitable needles. Apply needle coolants.
Damaged or overheated needle after thread breakage.	Change the needle.

Skipped-Stitches

Cause	Remedy
Hook, looper or needle failing to enter thread loops at the correct time.	Check machine clearances and timings. Check if the needle is inserted and aligned correctly. Use a needle with a deeper scarf.
Thread loop failure caused by incorrect needle size / style for thread size / type.	Change needle size / style.
Thread loop failure due to incorrect setting of thread control mechanism causing thread loop starvation.	Reset to standard and check loop formation with a strobe.
Flagging of fabric due to poor presser foot control or too large a throat plate hole.	Re-adjust the presser foot pressure. Change the throat plate to match the needle.
Needle deflections or bent needle.	Use a reinforced needle, reset the needle guard and replace the needle.
Incorrect sewing tension in the needle or under threads.	Re-adjust the tensions.
Poor thread loop formation.	Check with a strobe. Change to superior spun polyester or filament based corespun threads.

Imbalanced / Variable Stitching

Cause	Remedy
Incorrect sewing tensions.	Check for snarling, adjust thread tensions.
Incorrect threading.	Rethread machine.
Needle thread snagging on bobbin case or positioning finger.	Polish bobbin case surfaces. Reset positioning finger and opening finger.
Variable tension due to poor thread lubrication.	Switch to superior quality threads.

Staggered Stitching

Cause	Remedy
Needle vibration or deflection.	Increase needle size or change to a reinforced or tapered needle.
Incorrect or blunt needle point.	Change the needle.
Incorrect needle-to-thread size relationship.	Change needle or thread size as appropriate.
Feed dog sway.	Tighten the feed dog.
Poor fabric control, presser foot bounce.	Reset the presser foot. Change the feed mechanism.

Variable Stitch Density

Cause	Remedy
Poor fabric feed control.	Increase the presser foot pressure. Change to a more positive feed mechanism.

Seam Pucker

Cause	Remedy
Variable differential fabric feed.	Improve the fabric feed mechanism. Replace worn out feed dogs. Reduce the maximum sewing speed.
High thread tension.	Keep the bobbin tension as low as possible and set the needle thread tension accordingly.
Incorrect thread balance.	Ensure proper balance between the top and bottom thread.
Improper thread type.	Use threads with controlled elongation. Properly maintain tension guides.

How to care for a sewing Machine

TIPS TO TAKE CARE YOUR SEWING MACHINE

-  Keep Your Machine covered
-  Change your needles regularly
-  Use of Air to Remove Lint
-  Annual Service of the Machine
-  Oiling of the Machine
-  Wipe Down After Every Use
-  Clean a Single Part at a Time

c. SEAMS

A seam is a method of binding two or more pieces of fabric together, usually using thread to form stitches.

Seam allowance – What is seam allowance?

A seam allowance is the area between the fabric edges and the line of stitches. Seam allowances can range from $1/4"$ wide to as much as several inches. Most patterns call for a specific seam allowance.

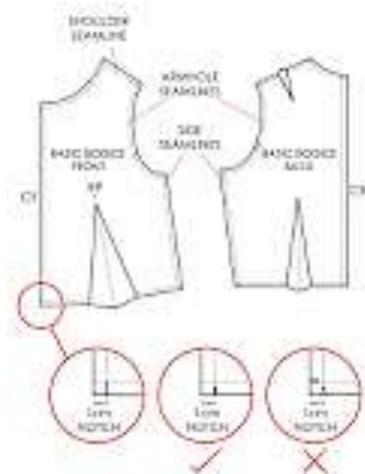


Seam turning – What is a seam turning?



A turned-and-stitched seam finish **provides an elevated, clean look on the inside of the garment**. While fairly simple in its construction, it does take a few extra steps to complete. The end result provides a professional look that hides the fabric raw edges with a topstitched fold.

Seam line – What is seam line in pattern making?



The join or stitching line where one fabric meets the other is called a seam, and although seams can now be sewn by hand or sewing machine and finished in different ways, the basic

principle remains the same – two pieces of fabric are laid on top of each other and a needle and thread goes back and forth along a line, ...

Uses of seams

Seams are an essential element to every garment and fabric accessory, as they join the material together to create the item.

- Seams are used for hems and to finish necklines and edges.
- Seams add shape through elements like darts, which are used to shape hips, waists, and bustlines.
- Seams are used to gather fabric and create pleats. Learn more about pleats in our comprehensive guide to pleat types here.
- Different types of seams can be used to create a different look for a garment and to finish and hide the fabric edges for aesthetic and practical purposes.

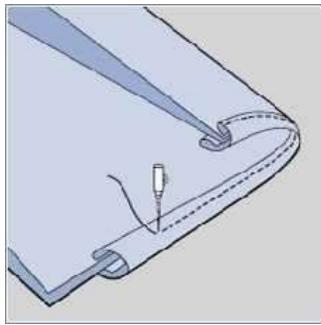
Different Types of Seams

There are several different types of seams, each with its own characteristics.

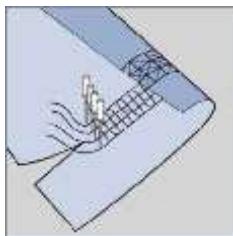
1. **Plain seam.** A plain seam is the simplest type of seam and can be used on almost any item. A plain seam is defined as any seam that attaches two pieces of fabric together with the wrong sides facing. The wrong side is the side of the fabric that doesn't face outward when the garment or item is completed. The stitch length or type of stitch doesn't matter, as long as it is one stitch line and it attaches two pieces of fabric.
2. **Double-stitched seam.** This type of seam is just like a plain seam except there are two lines of stitching attaching the fabric for extra strength.
3. **French seam.** A French seam should only be used on delicate, lightweight fabric, like chiffon or organza, as the seam uses a lot of material and can get bulky with heavier fabrics. Since the edges of the fabric do not show with this technique, a French seam is also great for garments where you want to hide the seams, like an unlined jacket.

Method

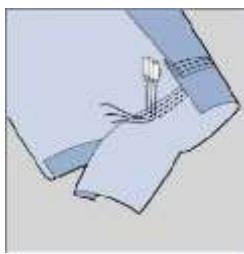
1. Cut the material and place wrong side together
 2. Pick and tack through fitting line.
 3. Machine stitch outside the fitting line
 4. Press turning open and trim the raw edges.
 5. Turn the seam to the right side of the materials facing each other.
 6. Push the seam up with thumb and fore fingers of both hands and stitch.
 7. Remove tacking, press stitches, and press seam.
-
4. **Bound seam.** A bound seam looks like a French seam on the right side of the fabric. There are no visible stitches on the right side of the fabric, and on the opposite side, the fabric edges are neatly enclosed.



5. **Flat-felled seam.** A flat-felled seam is an extremely strong closed seam that is often used for items like jeans. It covers the fabric's raw edges well and keeps the seam flat. Like the french seam, it is a double-stitched, closed seam.



6. **Welt seam.** A welt seam is also frequently used for jeans, as it is very strong, but it is less bulky than the flat-felled seam because it is not enclosed and the raw edge of the fabric is visible.
7. **Lapped seam.** A lapped seam is typically used with fabrics that don't fray, such as leather and fleece. For a lapped seam, the right side of the fabric faces up and the pieces overlap, instead of right or wrong sides together.



Run and fell

This is a strong seam. The seam is flat and the easiest seam among the seam to launder.

Method

1. Cut the material and place together with the right and side facing matching balance marks.
2. Machine stitch along fitting line
3. Remove task and press
4. Tread seam allowances of one edge longer than the other
5. Fold the longer edge over the lesser edge, press fold edge after tacking
6. Hem neatly either by hand or machine
7. Remove task and press.

Seam Finishing Techniques

In open seams, where the seam allowance is exposed, the raw edges need to be finished to prevent fraying. Here are ways to finish your open seams.

1. **Pinking shears.** Pinking shears are serrated scissors that create a zigzag edge. Trimming a seam allowance with pinking shears can prevent fraying.
2. **Bias tape.** Bias tape is a narrow strip of fabric that can be folded over an exposed seam to secure and hide the edges. This is often used for unlined garments and bags, and for the edge of quilts.
3. **Serger.** A serger is a special type of sewing machine that cuts the raw edges of the seam and creates overlocked stitches around the edge as it is sewn. This is a very professional way to finish a seam, and serged seams are found on most store-bought clothing.
4. **Zigzag stitch.** Zigzag stitching along the raw edge of the seam will secure the edges and prevent fraying.

seam quality can be measured based on the following parameters:

- Seam size – It is measured with seam depth, seam length and seam width.
- Seam slippage strength – It is the amount of force required to pull out a total of $\frac{1}{4}$ " of the opposing sets of yarns perpendicular to the seam line.
- Seam strength – It is the force required to break open the seam either by breaking the thread or by breaking the sewn material.

Factors to consider when choosing a seam

The type of seam to be used on a garment will depend on various factors. They are:

1. **Texture and durability of the fabric:** When working with a heavy fabric, one should avoid bulky seams like French seam. Delicate fabrics like georgette and chiffon can be finished with French seams.
2. **Design and use of the garment:** When making a boy's sports shirt, a strong seam like flat fell seam should be used.
3. **Shape of the seam:** Seams may be straight or curved. Straight seams may be in vertical, horizontal or slanting direction on the dress. When joining curved edges, plain seam will give a better finish than French seam.
4. **Location of the seam in the garment:** Seams in areas of the garment which may get stretched during body movement will have to be made more durable than others. A French seam is ideal for making the side seams but not for attaching a sleeve to the armhole.
5. **Current fashion:** The trend that is present at that time of the season has to be considered while selecting the seams

Qualities/characteristics of a well-made seam

- Its Strongly stitched.
- Its Accurately stitched.
- Its Neatly stitched.
- Its Matched where they meet each other.
- It has Appropriate width.

- Its Equal in all parts of garment.
- It's Well pressed and flat.

Open Seam vs Plain Seam: What is the Difference?

Plain seam: a simple seam that has been stitched and pushed to one side.



Open seam: a simple seam that has been stitched and then pressed open.



What Is An Open Seam Used For?

- *Side seams on skirts*
- *Side seams on trousers / pants*
- *Side seam down underarm and side seam of shirt*
- *Tailoring*

What Is A Plain Seam Used For?

- Attaching facings to waistbands and necklines so that the seam can be ‘under stitched’ which helps the facing lay neatly on the wrong side
- Attaching collars to collar stands or necklines
- Attaching sleeves to armholes
- Attaching cuffs to sleeves

What Do I Need To Sew An Open Seam?

- Sewing machine / sewing needle
- Fabric scissors
- Fabric
- Pins
- Thread
- Seam gauge (not essential)
- Iron
- Press cloth

How To Sew An Open Seam In Five Steps

1. Finish the raw edges of your two pieces of fabric.-
Your first step is to decide how you want the raw edges of your fabric to be finished. This is the part we read above called ‘Seam Finishing’.



2. Place the right sides of the fabric pieces together.
3. Sew a stitch line with chosen seam allowance amount down the length of the fabric pieces.

4. Press the seam with a steam iron to 'set the stitches'.
5. Press the seam 'open' – one seam allowance to one side, and one seam allowance to the other!

Methods of Neating

Pinking shears

A 'pinned' seam is neatened with pinking shears. A great advantage is that it's very flat and non-bulky. It's not very durable and I would hesitate to use it on garments that need frequent washing.

You can sew a line of straight stitching 6mm ($\frac{1}{4}$ in) from the edge to minimize fraying as shown here. You might see this style of pinned seam allowance on vintage clothing.



Overcasting

This technique is called the overcast method because the tail is held in by fabric stitches "cast" over the tail yarn, the same way an embroidered overcast stitch holds in the floss laid under it. Specifically, the standing yarn is knitted by reaching first "over" then "under" the tail yarn.

Overlocking

Overlocking (or serging) is fast, neat and durable. If you have an overlocker you can use it for almost everything.



Zigzag

If you don't own an overlocker, zigzag gives you a reasonably durable finish and it's quick to do. Set the zigzag to a wide width and medium length and let one edge of the zigzag sit along the edge of the seam allowance.



Bind the edges

Bound seam allowances are a very classy finish for unlined jackets, capes and coats, or anywhere where a flash of the inside might be seen. The edges can be bound with a matching or contrast-colour binding. It does add bulk and rigidity to the seam allowance, and will imprint through to the right side if you're too heavy with the iron.



Importance of Neating

1. It can improve the inside appearance of unlined capes, coats and jackets – how lovely it looks to see the inside of a jacket draped over a chair, with beautifully finished seams!
2. If the fabric is rough or hairy, covering the raw edges makes it more comfortable next to the skin.
3. On transparent fabrics – it makes the seams less noticeable and neater-looking on the right side.

Importance of Seams

-creates a garment of fitting body size

- it gives the clothe appearance

-

CARING FOR THE FAMILY

a. Household cleaning agents

Types of household cleaning agents

1. Water

- Soft
- Hard
- Warm and cold

2. Soap and soapless detergent

- Toilet soap
- Non-toilet soaps

Forms of soap and soapless detergents

Soap detergents

- Bar soap
- Homemade bar soap

Soap less detergents

- Foam
- Powder
- Liquid
- Paste

Basic ingredients and substances added during soap making process

Ingredients

- Wood ash
- Water
- Salt
- Fats and oils

Substances

- Brightening agents
- Builders
- Leather stabilizers
- Foaming agents
- Whitening agents
- Dirt suspending agents

Qualities of effective cleaning agent

- ***Able to clean and remove clinically relevant soils.*** One detergent can be used for all cleaning issues, and its powerful cleaning action reduces the need for manual scrubbing.
- ***Nonabrasive.*** Less damage means fewer replacements and reduced cost.
- ***Compatible with the materials being cleaned (and the cleaning equipment).*** There is less damage to medical devices, and the department can use one detergent for all needs.
- ***Leather easily with water.***
- ***Free-rinsing.*** This translates into greater patient safety.
- ***Biodegradable.*** Environmental friendliness is more important than ever.
- ***Nontoxic. It should be gentle on hands***
- ***Have appealing fragrance.***
- ***Able to provide adequate use and shelf life.*** This allows for better warehouse management, lowers the cost of purchases and results in less waste due to product expiration.
- ***Able to rapidly dissolve and disperse soils.*** Better product performance shortens cleaning time, saves money on energy and decreases the need to reclean.
- ***Cost-effective.*** The financial bottom line is important to every department of a hospital and surgical center.

Soap-making safety equipment

- You'll also need safety equipment, such as:
- safety goggles
- rubber or latex gloves
- oven mitt
- long-sleeved shirt
- apron
- well-ventilated work area

Basic ingredients

To make bar soap with coconut and olive oils, you'll need:

- 576 grammes coconut oil
- 283 grammes. olive oil
- 255 grammes. distilled water (or any clean clear water)
- 135 grammes. 100 percent pure lye - Bar soap is made through a chemical process known as saponification (sapo is Latin for soap): A lye solution is combined with oil or fat to cause a chemical reaction. This reaction breaks down the fats or oils into fatty acid chains and the lye mixture is neutralized in the process.

Lye is the form of **both sodium hydroxide and potassium hydroxide is used in making soap.** **Potassium hydroxide** soaps are softer and more easily dissolved in water than sodium hydroxide soaps.

- 20 to 40 drops of essential oils, if desired
- colorants (optional)
- dried herbs or flowers (optional)

procedure

1. Measure your ingredients and put on your safety gear.
2. Set the slow cooker to low.
3. Add the coconut oil to the slow cooker. As it melts, prepare the lye solution. Slowly add the lye to the water. (Do not add water to lye — this is unsafe.)
4. With a spatula, carefully stir the solution as you add the lye. It'll become hot and release fumes, which is OK.
5. Set aside the lye solution. Let cool for 15 to 20 minutes.
6. Check the oils. If the coconut oil has completely melted, add the olive oil. Stir well.
7. Check the temperature of the oils using the candy thermometer. Once the oils have reached 120 to 130°F (49 to 54°C), place the immersion blender on the side of the slow cooker.
8. Gently pour in the lye to avoid splashing. Stir slowly.
9. Set the blender to low. Stir the mixture, moving in circles. Keep the blender immersed to avoid air bubbles.
10. Continue blending and stirring for 10 to 15 minutes, or until the soap has reached trace. This is when the oils and lye solution have thickened and look like pudding.
11. Cover the slow cooker. Cook on low for 50 minutes. If the mixture bubbles, stir it gently.
12. Turn off the slow cooker. Let cool until the mixture drops below 180°F (82°C). Add essential oils and colorants, if using. Mix well.
13. Pour the mixture into the soap mold. Smooth the top with a spatula. Tap the mold onto your work surface to eliminate air bubbles. Top with dried herbs, if using.

Soap finishing steps

1. Generally, here's what the final steps involve:
2. After pouring the soap into the mold, let it sit for 24 hours.
3. Once cool, carefully remove the soap from the mold.
4. Cut into bars with a soap cutter or knife. If you used single soap molds, simply pop them out.
5. You can use your soap at this point, but you may want to let it dry for another week. This will improve its hardness and quality.

Ways of improving homemade soap

- Use of perfumes
- Use of dyes
- Use of antiseptic or glycerin
- Adding some salt to make it more hardened.

b. Special treatment in Laundry work

laundry work means and include the washing, mangleing, drying, bleaching, dry cleaning and ironing of any clothing or clothes.

Various special treatments in household laundry work

- disinfecting
- fixing colour
- starching
- blueing
- valeting
- dry cleaning
- spotting and sponging
- fabric conditioning
- ***Spotting*** - used by dry-cleaners/launderers to remove stains on clothing, textiles, home furnishings etc, using a combination of chemical, vacuum, steam or high-pressure water sprays.
- ***Sponging*** - involves cleaning the surface of the fabric with a clean cloth. The cloth is used to dab the dirt from the fabric. This method is used when you would rather not immerse the fabric in water.
- ***Starching*** - The use of starch adds body to fabrics, creates soil resistance, easier soil removal, and makes ironing easier. As a natural product, starch works best on 100 percent cotton, cotton blends, and linen to provide crispness.
- Home dry cleaning

Reasons for carrying out special treatment in laundry work

- It helps to prevent cloth damage
- It helps in retaining cloth colour
- It helps in maintaining fabric quality
- It helps in preventing infections.
- It helps in avoiding a lot of cloth scratching while washing.
- It makes washing clothes easier
- It helps in fixing the color
- It helps on disinfecting the cloth

Requirements for special treatment in household laundry work

- Spotting liquids
- Sponging solutions

- Laundry starches
- Grease solvent
- Grease absorbent
- Water
- Washing utensils like basin and brush

Learners to carry out procedures on various special treatments by using their books

Procedure for making a homemade starch for use in household laundry work



- An empty spray bottle
- 1/4 cup lukewarm tap water
- 2 cups boiling water
- 2 tablespoons cornstarch*
- Essential oil for fragrance, such as lemongrass, lavender or thyme (optional)

Combine the ingredients

Whisk the cornstarch into the tap water, doing your best to avoid any lumps. Add the 2 cups boiling water and 1-2 drops of essential oil, if you're using it.



Pour & shake

Pour the mixture into the bottle carefully, and then reattach the nozzle. Shake it up, making sure that all the starch has completely dissolved. (If it hasn't, all is not lost: just filter it out with a strainer or coffee filter.) Once your starch has cooled enough to handle, spray it generously on your fabric and press as desired. If you desire more or less stiffness in your fabric, you can alter the recipe to suit your needs.



Safety precautions to be observed when carrying our various special treatments

- Wearing protective equipment's
- Washing hands regularly
- Ensure surfaces are dry and not watery to avoid falls
- Chemical disinfection should be used with a lot of care.
- Always check for objects inside clothing's that can cause injury
- Ensure you carry out special treatment in open place or laundry room