LifeTek-TLE 8

Practical Skills for Home and Livelihood

EDITION 1

techFactorsInc
Making learning a great experience

Christina Richelle V. Cabael
AUTHOR

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FOREWORD

A livelihood is a necessity in life for adults anywhere in the world. While most people are content to earn a living as an employee, there are those who want to be self-reliant where their livelihood is concerned. Hence, the reason for the creation of the LifeTek-HELE and LifeTek-TLE courseware series by TechFactors Inc. (TFI)

TechFactors understands that it takes both knowledge and skill—applied knowledge—to be able to earn a living on one's own efforts. Without these, it won't be easy to make products or provide services for potential customers and clients. The LifeTek-HELE and LifeTek-TLE courseware teach livelihood education in a way that enhances both; adding information to knowledge that students may already know by way of discussion and using performance-based lessons to develop skills that students can employ later on in their work.

With the use of the Techfactors LifeTek-HELE and LifeTek-TLE courseware, livelihood educators would be able to focus on their ultimate goal for every Filipino student—to make them productive and contributing members of Filipino society.

About the Author

Christina Richelle V. Cabael

Christina Richelle Cabael is a resident of Tondo, Manila. She graduated with a bachelor's degree in Information Technology with specialization in Database Administration from Letran College. She was a student athlete and a student assistant during her collegiate years. Her work experience is mainly in the Information Technology industry where she has worked in multinational companies with business interests in e-commerce, credit card and insurance. Aside from her permanent work, she also engaged in part-time work as an article writer for an SEO company and as an ESL teacher.

About this Resource

The LifeTek-TLE 8 courseware teaches the skills needed for specific industries that can make students more proficient in these areas helping them acquire 21st century skills. This will enable the learners to be productive in daily aspects of life and work and improve their chances of succeeding in the future. Subjects include Home Economics, Agri-Fishery-Arts , and Industrial Arts.

Learning Outcomes

At the end of the course, the learners will be able to:

1. Acquire knowledge that provides opportunities to explore different livelihood fields.
2. Practice ways to acquiring 21st century skills.
3. Improve the chances of livelihood success by developing self-help habits.
4. Demonstrate the ability to produce products by providing learners a meaningful and productive learning experience.

HOW TO USE THIS RESOURCE

Learning Outcomes

Each lesson has its own set of learning goals. This informs the readers on what is expected to be learned by the end of the lesson.

Engage

This is a brief and fun activity that is related to the topic that can help in attracting the attention of the students.

Explore

This is an assessment tool that is administered before the discussion and is used to determine the student's prior knowledge on the subject matter.

Research

This is an activity for the student's additional knowledge and information before the lesson discussion.

Explain

This is where the main content of the lesson is found.

Exercise

This contains exercises after the discussion.

Summary

This is a synopsis of the lesson.

Lesson Output

This is an individual or group project to determine the student's practical mastery of the subject matter.

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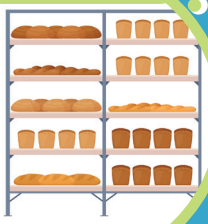


LESSON 1 Basic Sewing and Dressmaking

Learning Outcomes

At the end of the lesson, you are expected to be able to:

1. Define sewing and dressmaking.
2. Identify the tools and equipment used for dressmaking.
3. Apply measurements and calculations used for dressmaking.
4. Demonstrate basic sewing and dressmaking skills.

Engage

Watch this video to learn how to apply basic sewing skills to make your own stylish suit.

https://www.youtube.com/watch?v=vODG51-cuVg

Did you know that the abaca plant is native to the Philippines? According to historians, native Filipinos have been using abaca for clothing since before Spanish times. Yet, it was so popular as a source of material for making ropes, strings, and sacks in the 19th century that the Dutch took it with them to Indonesia where it was cultivated. The Americans also took interest and set up plantations in Central America. Ships and sailors took abaca cordage along in their journeys all over the world. The Philippines, in 2016, supplied 87.5% of the world's abaca needs.

Explore

1. This type of stitch is considered the most basic and is used to stitch something quickly.

   a) Running stitch
   b) Backstitch
   c) Catch stitch
   d) Slip stitch

2. The purpose of this stitch is to prevent the unraveling of the fabric.

   a) Whip stitch
   b) Backstitch
   c) Running stitch
   d) Overcast stitch

3. Which of the following is **NOT** a type of machine stitch?

a) Lockstitch
b) Zigzag stitch
c) Satin stitch
d) Buttonhole stitch

4. Which of the following is **NOT** a type of hand stitch?

a) Running stitch
b) Lockstitch
c) Slip stitch
d) Buttonhole stitch

5. Which of the following is **NOT** what a running stitch is used for?

a) Attaching fabrics
b) Gathering
c) Mending
d) Tucking

6. In dressmaking, what tool is used to get body measurements?

a) Meter tape
b) T-square
c) Measuring tape
d) Ruler

7. In sewing, what is the tool used to keep fabric in place while cutting or stitching?

a) Ruler
b) Pins
c) Needles
d) Scissors

8. There are two main types of sewing: hand sewing and _____ sewing.

a) Automatic
b) Machine
c) Digital
d) Optimal

9. This is a step in dressmaking, where the blueprint of the garment is created after the design is conceptualized.

a) Pattern making
b) Blueprint designing
c) Sketching
d) Garment making

10. It is a material that dressmakers use to create clothes and dresses. It has many varieties with wool, satin and silk being some of these.

a) Fabric
b) Thread
c) Hook
d) Machine

Research

Research the following:

1. Types of hand stitches.
2. Types of machine stitches.
3. Steps in dressmaking.
4. Tools and equipment for sewing and dressmaking.

Explain

Definition of terms

Sewing – to put together parts of a fabric or different fabrics by stitching. It is either done by hand or with a sewing machine.

Dressmaking – is the craft of constructing dresses or other garments for girls and women.

Dressmaker – a person whose profession is making women's clothes.

Tailor – a person whose profession is making men's clothes.

Fabric or **textile** is the primary material or medium for creating dresses and clothes. It comes in different textures, shades and patterns.

Thread is a piece of string, a thin length of fabric, that is used to connect, or stitch together, layers of fabrics, portions of a single fabric, or attach accessories to the main fabric. It is available in various colors and you can often find a color that will complement the fabric you are working on.

Sewing was a basic skill for young ladies back in the olden days. Common as it may seem nowadays, expertise in this craft requires hard work and dedication. Even today, a career in dressmaking is worth considering, as clothing is a basic commodity whose demand remains constant over time.

Whether you consider it as a hobby or a business, sewing is an essential skill one can learn and develop. As with any other skill, becoming an expert in this area requires an understanding and mastery of the fundamentals, first and foremost.

In this lesson, we will be tackling the following topics that will equip you with enough information to start your journey towards mastering this skill.

a. Dressmaking Tools
b. Types and Parts of Sewing Machine
c. Applying Measurements and Calculations

As a culminating activity, you will create a slideshow on how to make a customized apron.

Dressmaking Tools

In this section, you will find the basic tools utilized for sewing and dressmaking.

Cutting tools

Bent-handled dressmaker's shears are ideal for cutting pattern and fabric together. It is called as such because the shape of the blade allows the textile to lie flat on the cutting surface while it is being cut.

Trimming scissors are used for cutting fabric and pattern sheets.

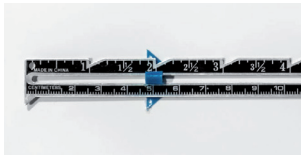
Rotary cutter and mat are an ensemble used to cut layer fabrics. The rotary cutter is the piece used to cut, while the mat is used to protect the table surface from scratches and other marks that might be made during cutting.

Measurement tools

Tape Measure: a long and flexible measurement tool used to get body measurements.

Ruler: a measuring and marking tool made out of wood, plastic or metal and is sometimes transparent. It is used to measure sizes and distance. It is also used to draw lines.

Sewing gauge: allows accurate measurements to be made for perfect symmetry and accurate placement of accessories such as buttons. It is also used to record small measurements.



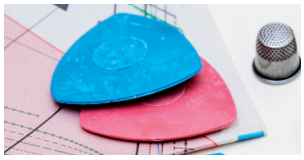
Yardstick: a measuring and marking tool commonly made out of wood or metal, which is used to measure items in yards, feet or inches. It is also used to mark lines for cutting fabrics.

French curve: a tool used to draw patterns for neck holes and armholes.

Marking tools

Dressmaker pencil: a marking tool used to draw lines and other details on fabrics.

Tailor's chalk: made from hardened soapstone or chalk. It is used to make temporary marks on fabrics. It comes in different colors.

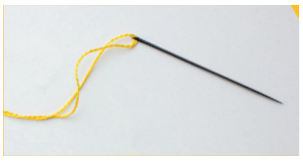


Tracing wheel: used to transfer patterns to fabric together with the dressmaker's carbon paper. Serrated tracing wheels are used for general fabrics, and smooth tracing wheels are used on delicate fabrics.

Dressmaker's carbon paper: used together with a tracing wheel to transfer patterns to fabric. It is placed on the reverse side of the fabric. It is important to select a color of dressmaker's carbon paper that is close to the color of the fabric.

Pinning and sewing tools

Pincushion: a cushy, round-shaped material where needles and pins are stuck into, to keep these from being misplaced as well as to avoid accidents.



Sewing needle: a small, slender, sharp-tipped metal tool, which has a hole, called an "eye," in the blunt end, and is inserted into fabric to make stitches.

Sewing needle threader: helps insert thread through the eye of the needle.

Thimble: a protective cup that is worn on the finger. It is used to help push needles into the fabric.

The Sewing Machine

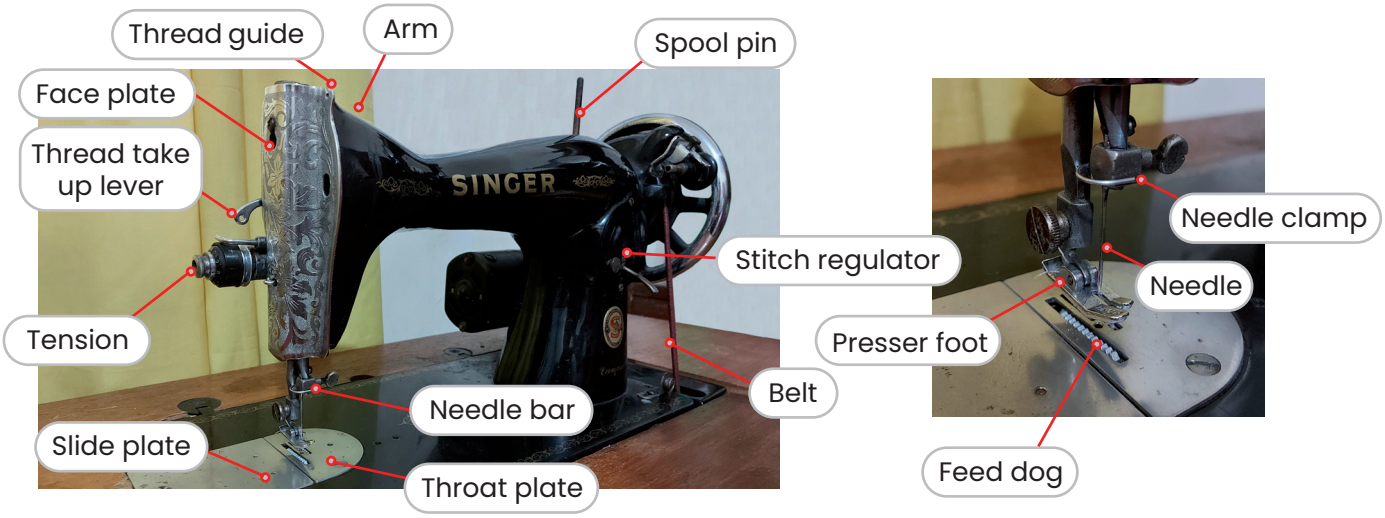
Sewing machine: a kind of equipment regularly used by dressmakers and tailors to make clothes more conveniently and more quickly. Generally speaking, the two types of sewing machine are: mechanical and electronic. Mechanical sewing machines are run by using a foot pedal, while electronic sewing machines are run by electricity.

Parts of a Sewing Machine

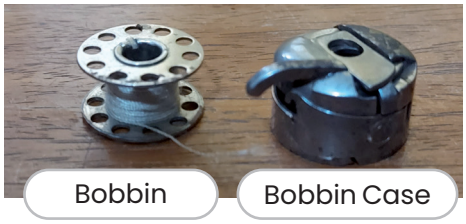
There are two major parts of a sewing machine: the upper part and the lower part. The upper part is comprised of the head, arm and bed, while the lower part has the cabinet and the stand as its parts.

Elements of the Upper Part of the Sewing Machine

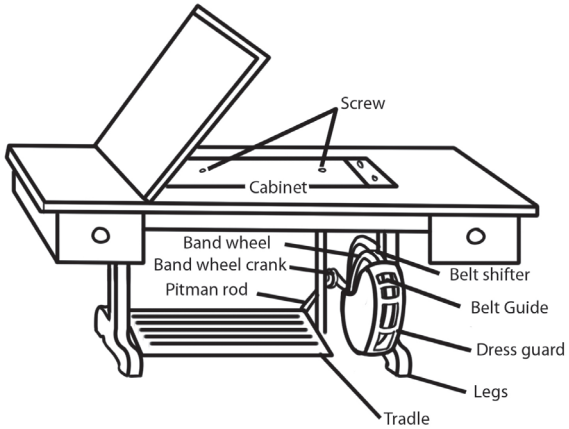
1. **Spool pin** is a metal part which protrudes from the top of the head. It holds the thread.
2. **Thread guide** is used to make sure the thread stays in place during sewing.
3. **Thread take up lever** is the part that goes up and down as sewing is done.
4. **Presser bar lifter** is a detachable device that controls the presser foot.
5. **Tension** is the part that loosens or tightens the stitches.



6. **Needle bar** is where the needle is secured.
7. **Needle clamp** secures the needle into position.
8. **Presser foot** presses the fabric flat on the surface while sewing is done.
9. **Needle** is the sewing tool for the thread.
10. **Bobbin winder** winds the thread around the bobbin.
11. **Stitch regulator** is a device attached to the sewing machine that regularly checks the speed at which stitching is done to ensure consistent, equal-length stitches.
12. **Balance wheel** is a round wheel that is used to manually start the mechanism of the sewing machine.
13. **Belt** is the connector between balance wheel and drive wheel.
14. **Stop motion screw** is the part of the machine that stops the movement of the machine's parts when it is loosened and which enables the machine's parts to move once tightened.
15. **Feed dog** is composed of thin, toothed metal bars that move, or feed, the fabric, in discrete steps, through the machine.
16. **Throat plate** is a rectangular piece of metal with holes for the sewing needle to pass through and slots for the feed dogs to operate.
17. **Slide plate** is a rectangular plate that covers the bobbin case and shuttle.
18. **Shuttle** holds thread and carries the lower thread through a loop on the upper thread, to make a lock stitch.
19. **Bobbin** is a device where the lower thread is wound.
20. **Bobbin case** is the container of the bobbin.



Elements of the Lower Part of the Sewing Machine



1. **Band wheel** is where the treadle belt runs around.
2. **Band wheel** crank sets the band wheel in motion.
3. **Pitman rod** connects the treadle to the band wheel crank.
4. **Belt guide** secures the belt into place.
5. **Belt Shifter** removes the belt from the wheel.
6. **Dress guard** protects the dress from the wheel.
7. **Treadle** is the part of a manual sewing machine that is pedaled to propel the band wheel, and thus to make the upper part of the sewing machine operate.
8. **Legs** support the entire machine itself.
9. **Cabinet** is a metal slate with hinges where the head of the sewing machine is locked in by screws.

Applying Measurement and Calculation

There two systems of measurement: the **metric system** and the **English system**. In the metric system, the most often used unit in sewing is the centimeter, while the unit most commonly used in sewing, in the English system, is the inch. Note that the double quote mark (") is understood to mean "inch," in measurement.

Getting Body Measurements

The three approaches in taking body measurements are: **Horizontal**, **Vertical** and **Circumferential** measurements. Horizontal measurements are done by taking measurements from left to right, while vertical measurements are taken from top to bottom. Lastly, circumferential measurements are those measured around a body.

Preparation:

a) Get your tape measure. It should be firm and have clear markings.
b) Get a pencil and notebook or a piece of paper to jot down measurements made.
c) Follow the procedures, which are based on the areas to be measured.

Area to Measure	Procedure
Neck	Circle the tape measure loosely around the base of the neck.
Shoulder Width	While facing the back of the person you're measuring, extend the tape measure from the corner of one shoulder to the corner of the other shoulder.
Bust	Loop the tape measure around the fullest part of the bust.

Waist	Loop the tape measure around the smallest part of the waist, which is naturally located below the rib cage and above the belly button.
Hip	Loop the tape measure around the widest part of the hips.
Sleeve	Start measurement at the corner of the shoulder, with the arm slightly angled, up to the area where you'd like the sleeve to end.
Center Front Length	Start measurement from the base of the neck until where you'd like the hem to end.

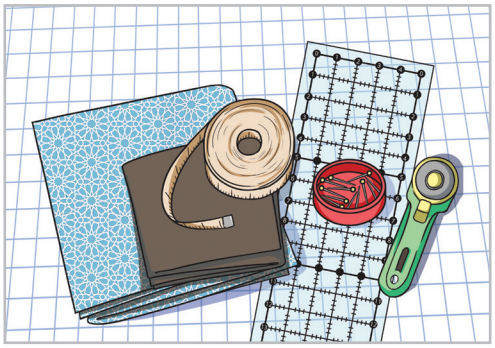
Safety Precautions when Sewing and Dressmaking

- There are sharp objects like pins, needles and scissors which are used when sewing and dressmaking. Therefore, you should avoid working under dim light.
- When working at night, make sure that you have enough lighting. This will also lessen the possibility of making mistakes in your work.
- Also, keep sharp objects in a sewing box, and your pins and needles stuck into a pin cushion, when unused. These objects, tiny as they may be, might cause serious physical injuries, especially if you have toddlers at home.

DIY Project: Make Your Own Apron

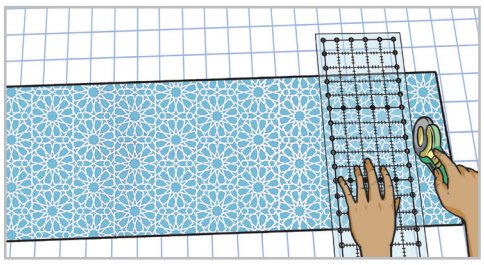
For this project, you will need the following materials and tools:

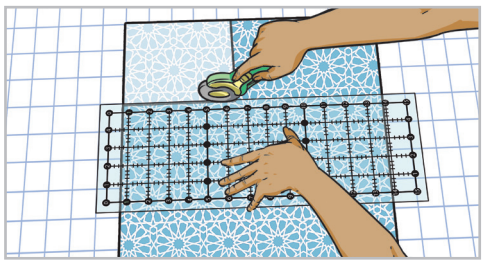
- 1 yard of fabric for the main part.
- ½ yard of fabric for accents. These can be of the same color as the main part, or have a different pattern that will complement the main part.
- Basic sewing supplies, including a rotary cutter and cutting mat.



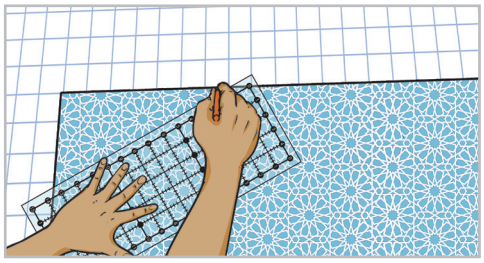
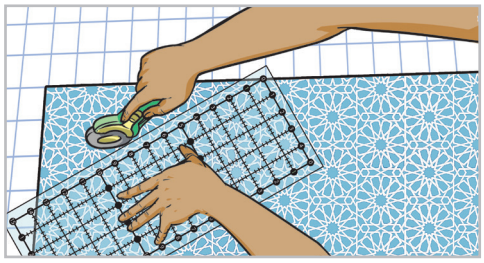
STEPS IN MAKING YOUR OWN APRON

1. Cut a 32" long by 26" wide length of fabric. You can adjust the length and width based on your own measurements, as you will be wearing the apron you will be making.

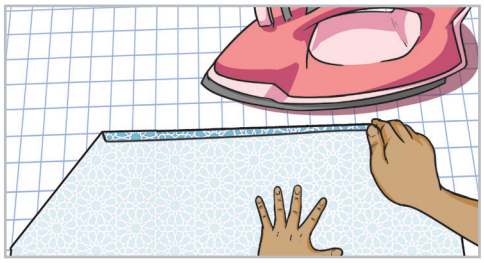
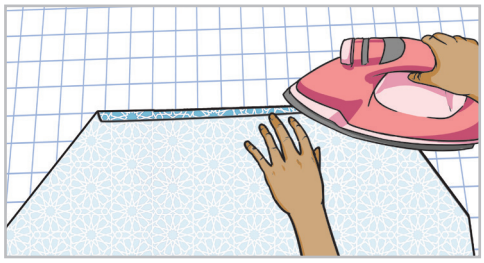




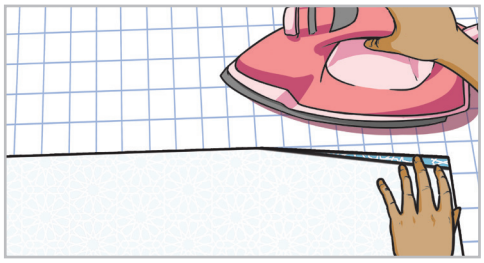
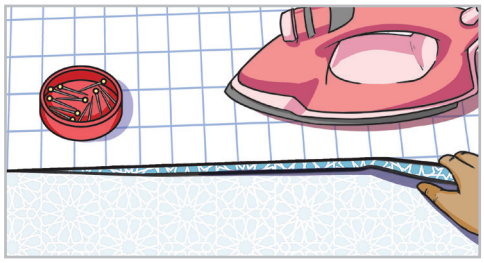
2. Fold the fabric in half. From the corner of the neckline to the center, measure 6.5” and mark it. Then, from the neckline down, measure 10.5” and mark it.

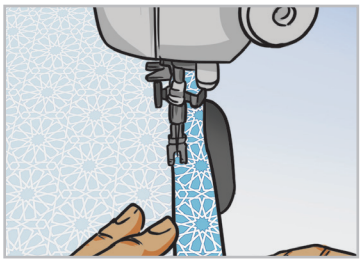
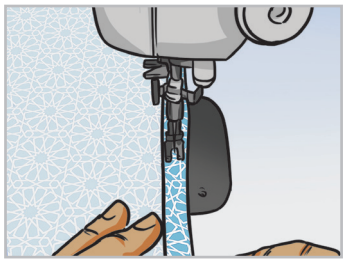
3. Connect the dots diagonally using a ruler. Cut through the line.

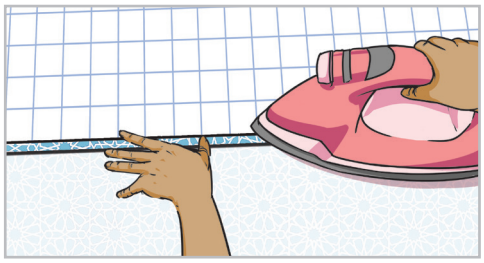
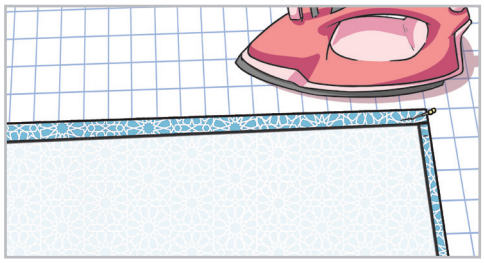
4. Fold ¼ and 1 inch subsequently of the top edge. Iron press.

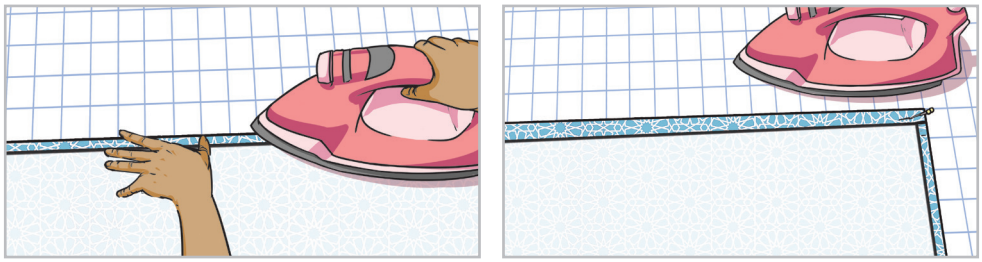
5. On both side edges, make a fold of ¼ inch twice, then iron press.

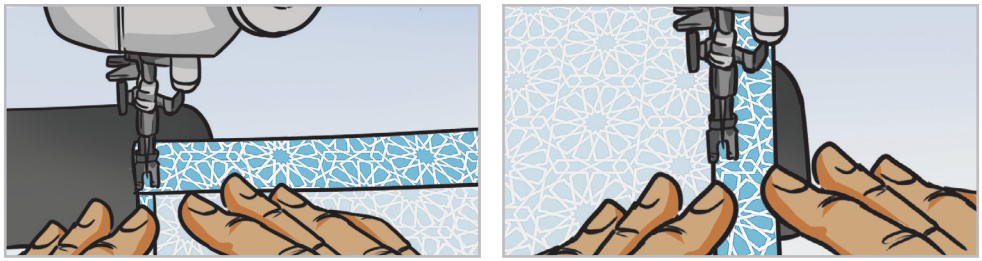
6. Sew the folds of the top and side edges.

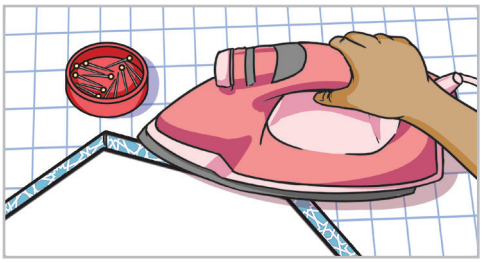
7. Make a ¼ inch fold on the bottom of the fabric. Then, fold again based on your desired apron length. After that, iron press, then clip or pin the folds.



8. Lay the fabric vertically in the feed dog and, starting off with the corner of the side, do a backstitch from the bottom to where the fold ends. Do the same on the other side. After that, turn the fabric horizontally and work on sewing the seam around 1/8" or ¼" from the top end of the fold. Sew another seam ¼" away from the first seam.

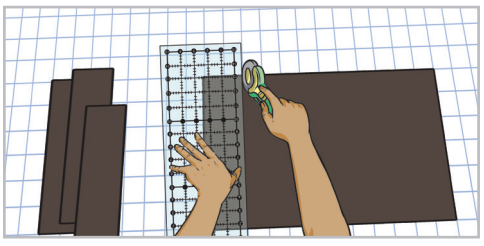


9. On the diagonal portion where the straps will be inserted, make a ¼ inch fold and iron press it. Then, make another fold with a 1-inch width then iron press it.

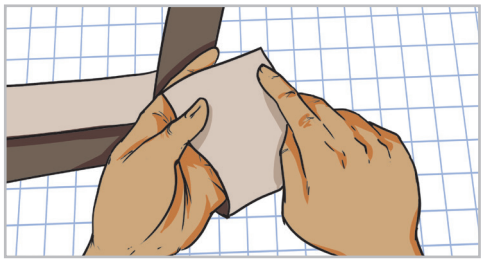
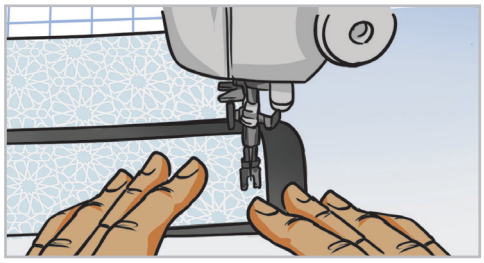


10. Sew a backstitch on the end of the fold with a sewing machine. Stitch near the edge of the fold to make sure that the strap will fit. Do the same for the other side.

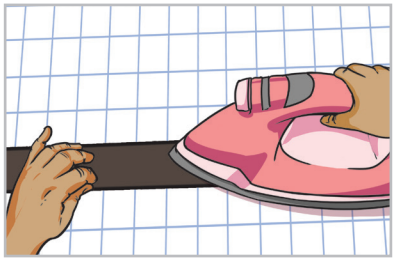
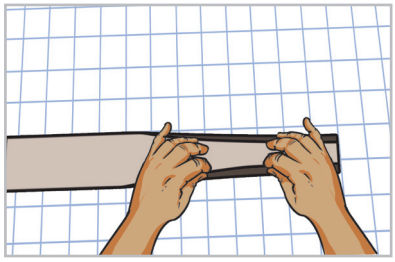
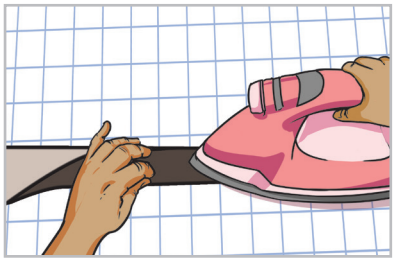
11. Bring out the fabric for the straps. Cut four strips, each with a width of 2.5".



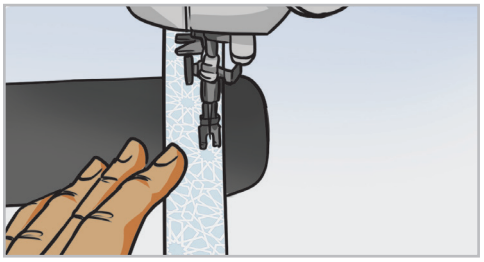
12. Working on the reverse side, join two pieces of fabric strips together by sewing on one end. Then do the same for the other pairs of fabric strips.

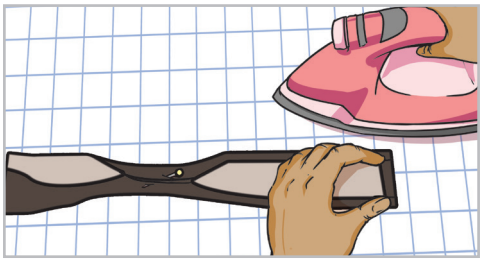
13. Fold one of the fabric strips in half and iron. Unfold. Then, fold 1/4 inch on the sides before folding again in half. Finally, iron and clip or pin the folds. Do the same for the other fabric strip.

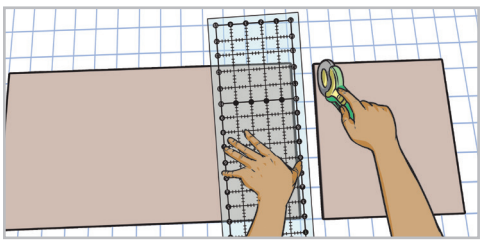
14. Fold ½" inch on the top and bottom corners as well. Iron press the fabric and clip or pin the folds. Do this again for the other strip.



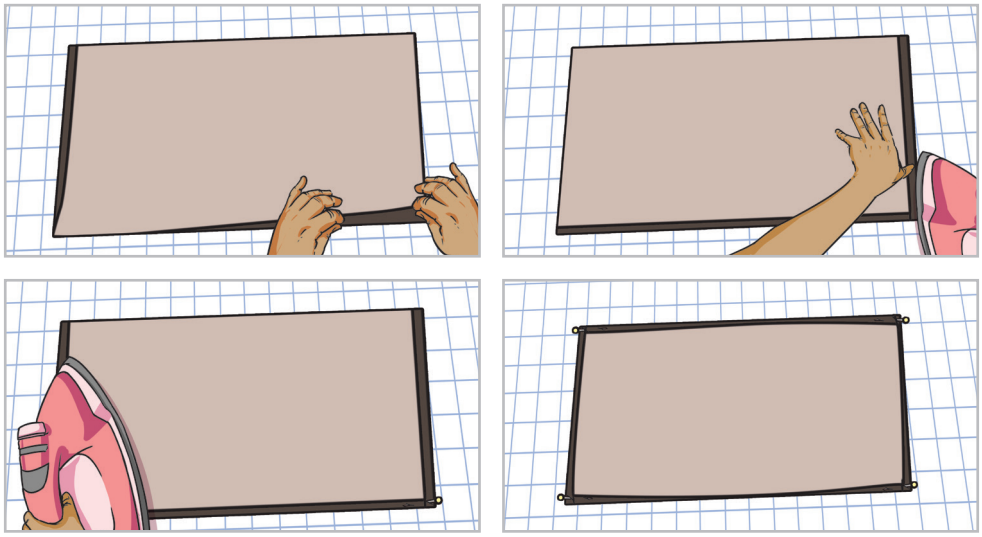
15. With a sewing machine, sew the folds on the top, bottom and sides of the fabric strips. Do this for both strips. Next, connect the ends of the two fabric strips together to make one long strip.



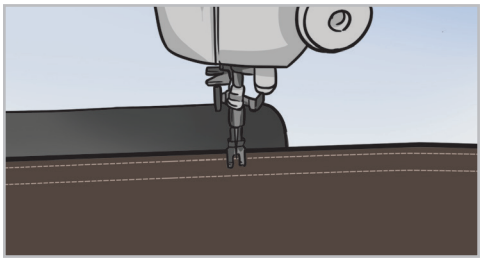
16. For each pocket, cut a piece of fabric that is 17" wide x 8" long



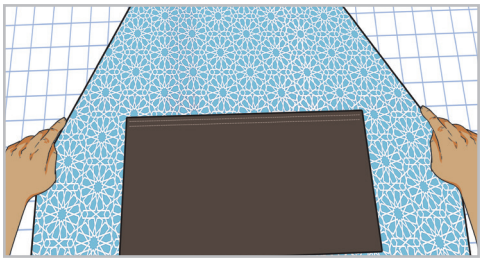
17. Starting from the bottom, sides and, lastly, the top part, make a fold ¼ inch wide. Iron press each fold. Lastly, and for the top edge only, iron press a ½ inch fold.



18. With the sewing machine, sew two seams on the top edge of the pocket fabric. Make these seams 1/8" down from the top of the fold and 1/8" from the bottom of the fold.

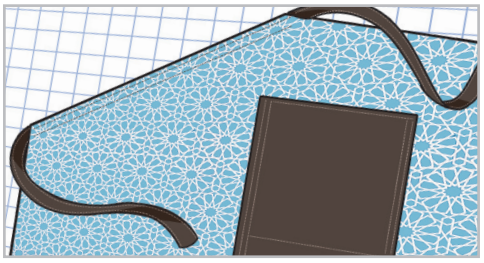


19. To add the front pocket to the main fabric, take out the main fabric and the pocket fabric. Place the front pocket, horizontally, at the center. The top of the pocket's fabric should be 11 ¾" away from the top of the fabric. Pin the pocket fabric to the main fabric.



20. Attach the front pocket to the main fabric by doing a backstitch on the sides and bottom of the front pocket. You can also divide the front pocket into two by sewing down the center of the front pocket.

21. The last step is to insert the strap into the strap casing. First, attach a safety pin to the top of the strap. Next, insert the strap into the hole on the lower end of either side of the strap casing, then push towards the hole on the neckline. Passing through the neck area, insert into the other side, starting from the top hole to the bottom hole.



In Business

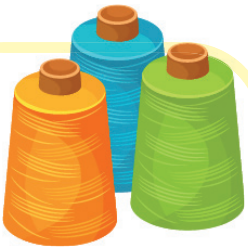
Clothing styles have continually changed, and the demand for clothes have not slowed. From casual to everyday business attire, something new comes out every week, or even every day. This represents a big opportunity for those who are willing to spend a lot of time and effort into creating a business.

One of the most famous Philippine brands is Bench. As of 2021, Bench has more than 700 stores nationwide. But before becoming the brand they have become, the company started off, in 1987, as a humble business that sold only men's apparel. Since then, the company has expanded to selling bags, slippers, sports apparel and lingerie.

Summary

Sewing machines are used to make sewing faster, but whether it is done by hand or with a machine, knowing how to use the various dressmaking tools is basic to sewing.

Exercises



Exercise 1

Directions: Choose the letter of the correct answer and place it on the blank provided before each number.

_____ 1. A person whose profession is making men's clothes.

a. Tailor
b. Seamstress
c. Fashion designer
d. Dressmaker

_____ 2. A person whose profession is making women's clothes.

a. Tailor
b. Seamstress
c. Fashion designer
d. Dressmaker

_____ 3. It is a piece of string that is used to connect, together, layers of fabrics, portions of a single fabric, and attach accessories to the main fabric.

a. Nylon cord
b. Thread
c. Staple wire
d. Bungee cord

_____ 4. It is the craft of constructing a dress or garment.

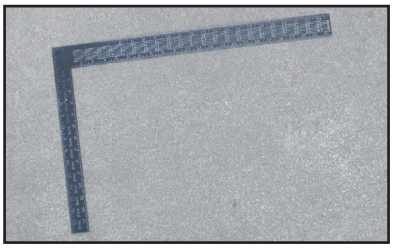
a. Stitching
b. Fashion designing
c. Pattern making
d. Dressmaking

_____ 5. This is the act of putting together parts of a fabric or different fabrics by stitching.

a. Sewing
b. Dressmaking
c. Attaching
d. Embroidering

Exercise 2

Directions: Identify the following tools and equipment:

 1. _____	 2. _____	 3. _____
 4. _____	 5. _____	

Lesson Output

Create a slideshow of your DIY apron project. The following objectives should be demonstrated in the slideshow:

a) Utilizing proper cutting tools.
b) Taking body measurements properly.
c) Utilizing basic stitches (e.g., backstitch).
d) Adherence to safety measures.
e) Final product comprising of body, strap, and pocket/s.

Rubrics

Criteria	5	4	3	2	1	Points
1. Content/ Functionality	All of the required objectives were met.	Only four of the required objectives were met.	Only three of the required objectives were met.	Only one or two of the required objectives were met.	None of the required objectives were met.	
2. Creativity	The student shows great creativity in making an apron, which had some features added to it as well as some other details which makes the apron more functional or attractive (e.g., small pockets which could specifically hold scissors and pens).	The student shows creativity in making an apron, which has some features added to it (e.g., more pockets, some frilly decorations).	The student shows creativity in making an apron, and the apron fulfills its basic function.	The student shows creativity in making an apron but the apron was not created properly.	The student did not give much creative effort in accomplishing the lesson output.	
3. Promptness	The project was completed two or more days ahead of the given deadline.	The project was completed one day ahead of the given deadline.	The project was completed by the given deadline.	The project was completed one to two days after the given deadline.	The project was completed three days after the given deadline.	
Total						

LESSON 2 Recycling

Learning Outcomes

At the end of the lesson, you are expected to be able to:

1. Define what recycling is.
2. Know how to produce a handicraft item from recycled materials.
3. Identify the kind of materials that can be recycled.
4. Create a handicraft product using recycled materials.

Engage

Learn about what's happening in an industrial recycling facility by watching the video in the given link entitled "Here's what happens to your recycling | One Small Step | NowThis" by NowThis Earth.

https://www.youtube.com/watch?v=LvAmAnBEC7w

A 2015 study showed that the Philippines is the third leading country that produces mismanaged plastic waste. (Mismanaged plastic waste refers to waste which is dumped directly into the environment.) The Philippines produces 6% of the world's mismanaged plastic waste, with China producing 28% and Indonesia producing 10%. The Pasig River alone accounts for 38,000 tons of plastic waste which is poured into the Pacific Ocean, every year.

Not surprisingly, finding ways to deal with plastic pollution is becoming a concern of governments around the world, including the Philippines, and one of the ways of doing so is by recycling.

Explore

True or False? Let's test your knowledge about recycling.

_____ 1. Recycling is the process of turning old items into new ones.

_____ 2. In internal recycling, old and discarded items are retrieved and turned into new products.

_____ 3. Food waste is biodegradable.

_____ 4. Paper is only recyclable but not decomposable.

_____ 5. Plastic is both recyclable and decomposable.

Research

Research how recycling helps the environment and give five examples of such recycling.

Explain

Definition of terms

Internal recycling is a type of recycling where the residual waste from manufacturing processes are reused or recycled. A copper tubing manufacturing company, for example, re-melts and recasts its copper tube trimmings to produce new copper tubes.

External recycling is a type of recycling where discarded or worn-out materials are retrieved and turned into new products. One classic example involves old newspapers recycled into new paper products.

Biodegradable waste recycling is a form of recycling which uses substances that decompose, such as food waste used for composting.

Non-biodegradable waste recycling is a form of recycling which uses waste that doesn't decompose, such as plastics and metals.

Waste disposal is one of the largest social and environmental concerns of the Philippines, as stated in the Trivia section. This problem is blamed on poor education and indifference, but this can be addressed when recycling programs are properly implemented.

Recycling is a basic but effective way to help attain environmental sustainability by alleviating pollution due to poor garbage disposal management. It can also generate jobs and business opportunities, in line with the Filipino saying, "*may pera sa basura.*"

Recycling

Recycling, simply put, is the process of turning old or unwanted items and materials into new ones. Recycling should be taught in school and be encouraged in communities, as it promotes responsible garbage disposal and helps in efforts to save the environment.

Waste Segregation

We sometimes see trash bins with different colors, with each color representing the type of garbage that should be thrown in each bin. The categorization of garbage differs from area to area, and also depends on the discretion of government units. There can be as few as three categories, namely: biodegradable, non-biodegradable and recyclable. Additional categories may be based on the type of material of discarded items.

No matter what the approach your community has, waste segregation should be practiced in every household as to ensure that recyclable items do not end up in landfills.

Advantages of Recycling

1. Decreases the amount of waste material which is dumped into the environment.
2. Helps conserve natural resources.
3. Promotes responsible waste disposal.
4. Encourages people to be resourceful.
5. Provides opportunities for businesses and jobs through handicraft and recycling programs.
6. Raises awareness about the environmentally detrimental effects of mishandled garbage, such as plastic pollution.
7. Encourages people, business owners and the government to make sustainable choices to save the environment.

Recyclable Materials

PAPER. What makes paper good is that it is both recyclable and compostable. This means that you have the option of putting paper in a compost pit or recycling it into a new item. Paper products such as newspapers, used notebooks, and magazines can be used to create such things as paper mâché products, book or notebook covers, origami art, and gift wrappers. Boxes are also paper products which can easily be recycled as storage for other items.

PLASTIC. There are as many different kinds of plastic as there are uses for it. A lightweight kind of plastic is used in packaging, while a heavier and more durable kind is used to make tables and chairs. It is the thousands of different kinds of plastic products which makes recycling a challenge, as one kind of plastic might need to be treated differently from another kind of plastic.

Since plastic is so widely used that it has become a daily necessity, learning how to recycle plastic will lessen our environmental problem. Fortunately, there are many things you can transform your discarded plastic into, such as pots for plants, decorative pieces, and containers (e.g., toothbrush holder).

GLASS. Glass is a common material used not only in construction but also in kitchenware such as plates, mugs, decanters and water jars. It is a preferred material due to its glossy appearance and higher resistance to heat compared to plastics. Since glass is brittle, you can break it with a hammer and then melt it into a cullet, which can then be used to create new glass items such as plate glass.

FABRIC SCRAPS. Every person in this world likely has clothes worn out from years of use. You can use these old clothes to create such things as rags, mats, and patchwork items.

METALS. Just as with plastics, there are different kinds of metals, the most common of which is the steel or tin used in food packaging cans. These cans can be recycled into candle holders, utensil holders, planters and containers for small items.

Handicraft

Handicraft is a skill that produces handmade items or artwork. The term also refers to the handworked item. One way to make your trash useful is to transform them into beautiful handmade items.

Examples of Recycled Crafts

Hanging pots made out of used plastic bottles.

Center table and seats made from discarded tires.

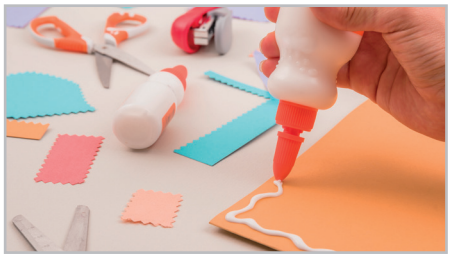
Paper mâché bowl.

Safety Precautions

1. Work in a well-lit area, especially when working with sharp or hot objects (like glue guns).
2. Make sure that all recycled items are clean before you use them.
3. Do not play around with the materials or tools you use to minimize the chances of accidents.

Recycle plastic cups into a decorative flower vase

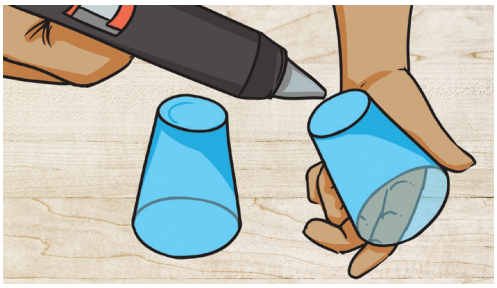
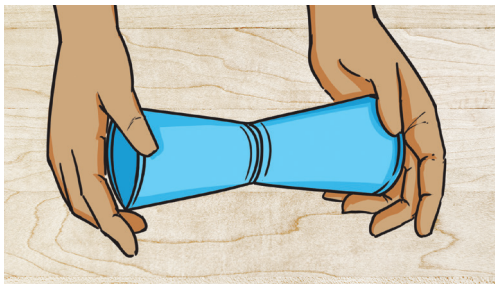
Things you'll need

 **Glue gun with glue stick**	 **2 plastic cups**
 **Jute rope**	 **Paintbrush**
 **White cement**	 **Glue**

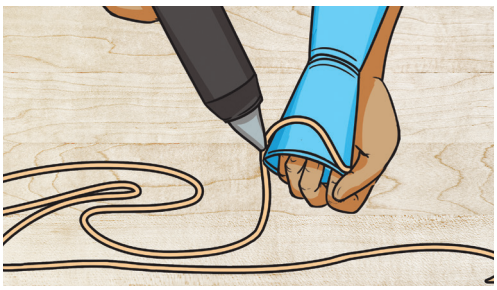
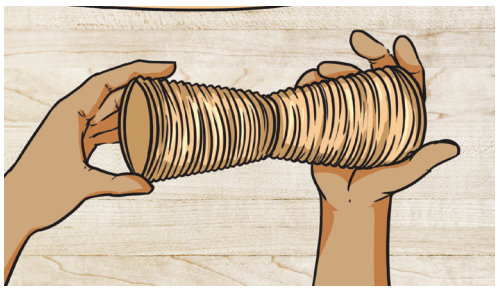
 **Acrylic**	 **Cotton buds**
 **Water**	

Steps

1. Glue the bottom of two plastic cups together using a glue gun.

2. Wrap jute rope around the combined plastic cups. Use the glue gun occasionally to make sure the rope stays in place.

3. Mix cement, glue, and water together.

4. Brush the cement mixture around the plastic cups. Let it dry.

5. Paint the cups with white acrylic paint.

6. As finishing touches, paint the cups with different colors and apply accent designs on these. Be creative.

In Business

Handicraft shops are common in tourist destinations selling souvenirs to tourists. It is also a way to exhibit the locals' ingenuity in using homegrown materials. Some of the more common handicraft items found in souvenir shops are keychains, refrigerator magnets, picture frames and woven bags.

Creativity and resources are the key ingredients to start off your handicraft shop. For the resources, any recyclable material that can be found at home will do. If you don't have enough of this, you can buy from junk shops or ask your neighbors to give you their recyclable scraps.

If you have the funds, then you can create more products from recycled items. Furniture made from recycled plastic, is one such product. Roads which use recycled plastic are another, with such roads already existing in India which are said to be resistant to wear and tear.

Summary

Garbage disposal is becoming a concern of most governments in the world. Recycling is one of the best ways that can help resolve this crisis and this can also be a great business opportunity. For a small-time business, a handicraft shop is a good option but if more financial resources are available, a bigger venture, such as furniture manufacturing, is a possibility.

Exercises

Exercise 1

Directions: Match column A with column B

COLUMN A	COLUMN B
_____ 1. It is a material that is both recyclable and compostible.	a. Plastic
_____ 2. It is a form of recycling for non-biodegradable waste.	b. Metal
_____ 3. One example is a copper tubing manufacturing company re-melting and recasting copper tubing trimmings to create copper tubes.	c. Paper
_____ 4. It is a type of recycling where discarded or worn-out materials are retrieved to turn these into new products.	d. Glass
_____ 5. It is a common material in kitchenware, such as plates, mugs, decanters and water jars, due to its appearance and higher resistance to heat compared to plastic.	e. Fabric scraps
_____ 6. This material has many uses. It is a material that is commonly used in food packaging.	f. Recycling
_____ 7. You can create rags, mats, turbans and eye patches using this material.	g. Internal recycling
_____ 8. This is the process of turning old items into new ones.	h. External recycling
_____ 9. This is a form of recycling where biodegradable waste is composted.	i. Biodegradable waste recycling
_____ 10. There are many types of this material, which is most commonly found in steel or tin cans used in food packaging.	j. Non-biodegradable waste recycling

Exercise 2

Directions: Identify the following tools and equipment:

1. Decreases the amount of waste material which is dumped into the _____.
2. Helps _____ natural resources.
3. Promotes responsible _____.
4. Encourages people to be _____.
5. Provides opportunities for business and jobs through _____ and recycling programs.
6. Raise awareness about the environmental detriments of mishandled garbage, such as plastic _____.
7. Encourages people, business owners and the government to make _____ choices to save the environment.

Lesson Output

Create your own handicraft item using any recyclable materials in your home. Take pictures of your product as you create it to make a slide presentation which includes a description in text and the final product.

Rubrics

Criteria	5	4	3	2	1	Points
1. Content/ Functionality	The student made a product from recycled materials, the process is documented in a slideshow with images, and text descriptions of the steps.	The student made a product from recycled materials, the process is documented in a slideshow with images, and text labels.	The student made a product from recycled materials. The process is documented in a slideshow with images, but the descriptions weren't clear.	The student made a product from recycled materials. The process is documented in a slideshow with images, but the descriptions weren't clear.	The student made a product from recycled materials but there is no useful documentation of the steps in the slideshow.	
2. Creativity	The student used recyclable materials for the project and demonstrated very high creativity with the final product.	The student used recyclable materials for the project and demonstrated high creativity with the final product.	The student used recyclable materials for the project and demonstrated a reasonable amount of creativity with the final product.	The student used recyclable materials for the project and demonstrated some creativity with the final product.	The student used recyclable materials for the project. The final output showed minimal creativity.	
3. Promptness	The project was completed more than 1 day ahead of the given deadline.	The project was completed 1 day ahead of the given deadline.	The project was completed by the given deadline.	The project was completed 1 day after the given deadline.	The project was completed more than 1 day after the given deadline.	
Total						

LESSON 3 Basic Baking

Learning Outcomes

At the end of the lesson, you are expected to be able to:

1. Define baking.
2. Identify basic baking tools, equipment, and paraphernalia.
3. Perform the baking methods and techniques for a basic recipe.

Did you know that the traditional way of cooking bibingka is by using a terracotta container, called *palayok* in Filipino, with a layer of banana leaves? The raw bibingka is placed inside and then baked with hot charcoal on a metal sheet that's placed over the opening of the pot. In olden days, the rice used for the bibingka is soaked in water overnight and fermented before cooking, which makes this manner of preparation a lot longer that how it is done today.

Engage

Category: Baking

Locate and encircle types of baked goods you could find in the following table.

C	U	P	C	A	K	E	G	A	B	O	S	S	T	Y	P	E	O	S	C
R	A	I	I	L	I	G	A	M	I	E	S	H	A	I	R	L	M	O	O
E	B	K	U	P	O	G	A	R	T	C	R	O	I	S	S	A	N	T	O
A	A	E	G	I	P	C	L	A	M	S	O	R	R	U	H	C	A	I	K
M	G	G	X	N	A	I	C	O	N	P	A	T	I	R	E	S	U	X	I
P	E	A	L	R	R	O	N	I	N	I	Z	B	A	G	U	E	T	T	E
U	L	R	O	E	F	U	D	G	E	B	A	R	U	I	G	H	U	S	S
F	I	N	I	F	F	U	M	A	S	T	R	E	C	L	A	I	R	U	E
F	B	I	S	C	U	I	T	A	L	E	N	A	L	L	S	T	A	R	T
C	R	O	S	A	N	T	P	A	T	T	Y	D	O	U	G	H	N	U	T

Explore

Choose the letter of the correct answer.

1. The step where you smoothen the butter and combine it with sugar.

   a. Creaming b. Kneading c. Folding d. Mixing

2. A type of icing that is a combination of fat (like butter) and sugar.

   a. Royal Icing b. Whipped cream c. Ganache d. Buttercream

3. A type of icing that is made by melting chocolate in heavy cream.

   a. Royal Icing b. Whipped cream c. Ganache d. Buttercream

4. Which of the following is a leavening agent?

   a. Flour b. Butter c. Egg d. Batter

5. It is a term used to describe an uncooked bread or cookie.

   a. Batter b. Dough c. Pastry d. Deli

6. Which is NOT an ingredient in baking cake?

   a. Yeast b. Baking Powder c. Oil d. Egg

7. What do you call a cake mixture?

   a. Batter b. Dough c. Pastry d. Deli

Research

1. Why is baking considered a science?
2. Important things to know in baking.

   a. Measurement
   b. Temperature
   c. Process

Explain

Definition of Terms

Baking

It is the method of cooking food via dry heat in an enclosed space. Breads and cakes are some examples of baked products.

Flour

Flour is a common ingredient in baking breads and cakes. It is a powder made from ground and milled cereal grains and other root crops. There are different types of flour sold in the market and they vary in gluten strength.

Gluten is the protein found in grains and it gives form and shape to the flour dough. It is important to use the right flour based on what you are baking in order to obtain a desirable result. Apart from gluten, few flour is also a source of protein.

The following are the common types of flour:

1. Bread flour – this type of flour contains the highest amount of protein at 12 % to 14%. It is used to give bagel a chewy texture.

2. All-purpose flour – this is the type of flour that is commonly used in most recipes. It contains a medium amount of protein at 10% to 11%.

3. Cake flour – this type of flour has the lowest amount of protein at only 7% to 9%. It is great for making cakes with a delicate texture.

4. Self-rising flour – this type of flour has salt and baking powder mixed in which makes it self-rising. It contains a medium amount of protein which is at 8.5 to 11%.

Sugar

It is a type of soluble carbohydrate that tastes sweet and is used as an ingredient in making breads and pastries. The use of sugar in baking is to not only add sweetness, but also to leaven and moisten baked goods. There are several types of sugar used in baking, but the most common ones are white sugar and brown sugar. Depending on the type of sugar you use, the outcome will be different. For example, when baking a cookie, using white sugar makes the product crisp while using brown sugar makes it chewy.

Egg

This ingredient has multiple uses in baking so it is a common ingredient in any recipe for cakes and breads.

It acts as an agent for emulsification, binding and leavening. It also adds flavor, texture and color to the baked goods. Another use of egg is for making royal icing which requires lots of egg whites and sugar.

Shortening

Shortening refers to any fat that is added to a flour mixture to make the baked goods tender. It is also used to counteract the amount of gluten matrices produced. The effect of more shortening in a recipe is that the outcome is denser or crunchier. Shortening also affects the taste of the baked products. Some of the common types of shortening are oil, butter, margarine, and lard.

Leavening agent

This refers to an ingredient that causes the dough or batter to rise. A leavening agent is activated by high heat. The common leavening agents used in baking are baking soda, baking powder, and yeast.

Baking is easy and enjoyable to do if you have the required tools and equipment. First and foremost would be an oven to bake with. As a hobby, baking can be very fulfilling as it is a creative endeavor and the products made are like works of art. Serving baked goodies can bring you closer to your friends and loved ones who can sample and appreciate your products. Wouldn't it be great for someone to tell you that you make delicious baked goods?

Basic Baking Tools

Bakeware

These are the containers that hold the batter or dough for cooking in the oven.

The following are a few basic bakeware.

- Loaf pan – used for making loaves of bread.

- Cake pan – can be square, rectangular or round and used mainly for baking cakes. In choosing what cake pan to use, you must know the size of the cake you are making.

- Muffin pan – mainly for muffin but can be used in making cupcakes as well. It is a tray with circular slots for the cupcake/muffin batter.

- Pie pan – a round pan that is around an inch deep for cooking pies.

Measurement tools

These are used for measuring dry and wet ingredients. Some of the basic measurement tools are as follows:

- Dry measuring cups – used to measure dry ingredients such as flour and sugar. It comes as a set of cups that measure ⅛, ¼, ⅓, ½, ⅔, ¾ of a cup and 1 whole cup.

- Liquid measuring cup – used to measure liquid ingredients such as water and milk. It can measure in milliliters, liters or cups.

- Measuring spoons – used to measure both dry and wet ingredients in small quantities. It comes as a set of spoons that can measure by the teaspoon and tablespoon.

- Kitchen weighing scale – used when the recipe requires exact measurement in grams or ounces.

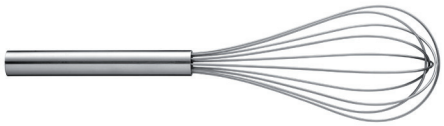
Mixing tools

These are the tools being used to mix together the ingredients when baking. Here are some of the basic mixing tools.

- Mixing bowl – It is made of aluminum or glass material that is round in shape. It is where you put the ingredients when mixing and combining them together.

- Spatula – It is used for mixing ingredients and folding the flour. There are 2 common types of spatula used in baking, wooden and silicone. The wooden type is better for breaking up or mashing ingredients such as butter while the silicone type is better for scraping.

- Whisk – It is used for mixing ingredients especially when heavy mixing is needed (e.g., making merengue)



- Handheld/Stand-in Mixer – It is an electronic device that comes with paddles for mixing ingredients. It is very helpful for baking businesses that requires fast production of baked goods.

Pastry Making tools

These are tools used specifically for pastry goods. Here are some of the examples

- Pastry blender – It is used to break up and mix solid fat, like butter or lard, into dry ingredients.

- Pastry roller – It is used to flatten or level the dough for cutting, molding or folding.

Oven

An oven is a cooking appliance, typically used in baking, characterized by an enclosed space for cooking food in dry heat. There is a wide range of ovens being sold commercially but not all may be applicable to the food you want to make. For personal baking purposes, a conventional oven is commonly used.

Safety Precautions

1. Check that all tools and equipment you will use are clean before using them.
2. Your work area should be clean and bright.
3. Wash eggs before cracking them open to avoid contamination of bad bacteria such as salmonella.
4. Use a potholder when placing and taking things out of the oven.
5. Clean all your tools and equipment after using them.
6. Pat your tools dry with a clean cloth, especially those that are made of steel, before storing them.
7. To prevent adding unwanted rotten eggs into your baking mix, it is best to crack each egg into a small separate container first so you can inspect it.

Banana Loaf Recipe

Ingredients:

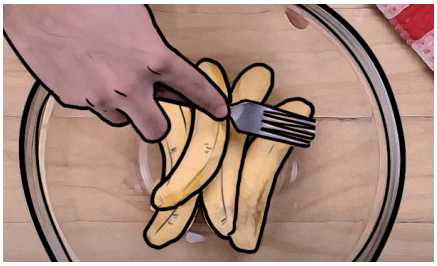
1 ½ cups all-purpose flour
1 tsp. baking powder
1 tsp. baking soda
½ tsp. salt
½ tsp. cinnamon
4 pcs. medium-sized ripe bananas (or overripe)
½ cup white sugar
½ cup packed brown sugar
½ cup oil
2 large eggs
2 tsp. vanilla
½ cup milk + 1 tbsp. vinegar
1 cup chocolate chips (optional)

Procedure:

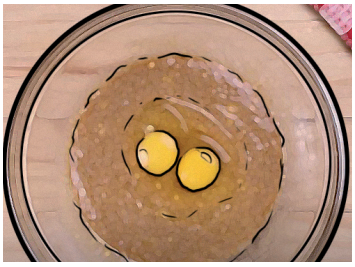
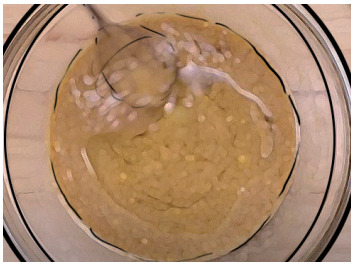
1. Preheat oven to 180 degrees Celsius for 30 minutes.

2. In a mixing bowl, sift flour, baking powder, baking soda, salt, and cinnamon together. Set aside.


3. Using a fork, mash ripened bananas and set them aside.

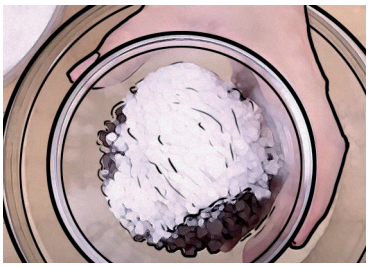



4. Add oil, white sugar, brown sugar, and eggs to the mashed bananas and whisk until well-combined.

5. Add the vanilla, then add the buttermilk mixture (milk + vinegar)

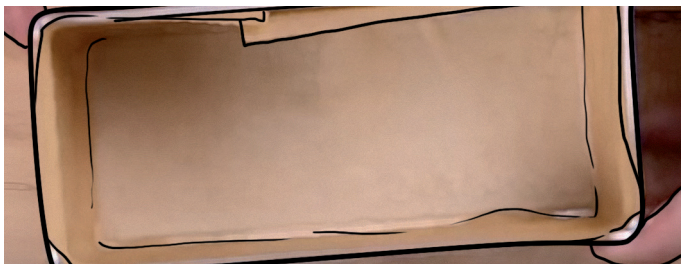

6. In a separate bowl, combine the flour mixture and the chocolate chips. This is to prevent them from sinking when combined with other ingredients later. Set aside.



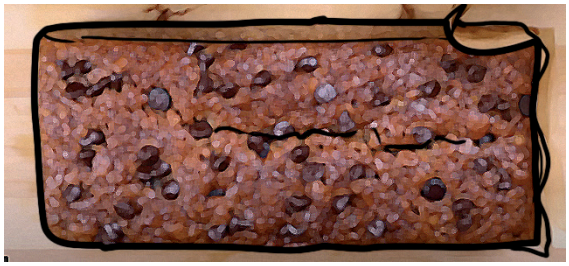
7. Using a spatula, fold in the flour mixture into the wet mixture.

8. Fold in the chocolate chips.

9. Prepare a standard loaf pan. Grease the inside or line it with baking paper to prevent the mixture from sticking to the pan.



10. Transfer the batter to the loaf pan and let it cook in the oven (preheated) for 45 minutes to 1 hour. After the 45-minute mark, check every 5 minutes to make sure it will not end up overbaked.



Note: To make sure that the inside of the cake is properly cooked, stick a toothpick in and then take it out. If the toothpick comes out clean, it means that the interior of the cake is cooked.

In Business

Baked goods are among the most sought out products online. Although people sometimes prefer to go to nearby bakeshops for different reasons, buying online and having it delivered to their doorstep is more convenient.

Having an online store means that you can reach a bigger market by how easily people living in other areas can contact and transact with you. It also means that you do not have to rent or build a store to sell your baked products. This means that your one-time and monthly expenses are reduced, but it does not mean that you will have less work to do. For instance, you might still have to actively connect with communities on social platforms so that you make your business known to people.

Summary

Baking is a satisfying activity that can connect you with other people. For beginners, it is good to learn about the materials, tools, and equipment used in baking. As it's regarded as a science, it would also be good to learn about the natural processes involved that lead to baked products. As a business, it has good potential for profit especially when selling products on online.

Exercises

Exercise 1

Directions: Identify the word being described in the sentence.

_____ 1. It is the protein found in grains and gives form and shape to the dough.

_____ 2. The type of flour with the highest amount of protein.

_____ 3. It refers to any fat that is added to a flour mixture in order to make the baked goods tender.

_____ 4. It acts as an emulsification, binding, and leavening agent.

_____ 5. It is the method of cooking food via dry heat in an enclosed space.

Exercise 2

Directions: Enumeration

1. Give 5 ingredients used in baking.
   a. _____
   b. _____
   c. _____
   d. _____
   e. _____
2. Give 3 tools used in measuring.
   a. _____
   b. _____
   c. _____

3. Give 4 tools used in mixing.

   a. _____

   b. _____

   c. _____

   d. _____

4. Give 2 tools used in pastry making.

   a. _____

   b. _____

Lesson Output

Make a slideshow presentation on baking a muffin (any flavor will do). It must show all the steps from preparation to cooking and must clearly state the materials, tools, and techniques in baking it.

Rubrics

Criteria	5	4	3	2	1	Points
1. Content/ Functionality	The slideshow is about baking a muffin, shows the steps in preparation and cooking, as well as specifies the materials, tools and techniques used.	The slideshow is about baking a muffin, shows the steps in preparation and cooking, as well as specifies the materials and tools but not the techniques used.	The slideshow is about baking a muffin, shows the steps in preparation and cooking, as well as specifies the materials but not the tools and techniques used.	The slideshow is about baking a muffin and shows the steps in preparation and cooking, but does not give details about the materials, tools, and techniques used.	The slide-show is about baking a muffin but is not clear on how it is prepared and cooked and also does not give details about the materials, tools, and techniques used.	
2. Creativity	The muffin has creative elements which makes it unique to the student. The slideshow makes creative use of images, text and other elements for an appealing presentation.	The muffin has creative elements which makes it unique to the student. The slideshow makes some creative use of images, text and other elements for an appealing presentation.	The muffin has creative elements which makes it unique to the student. The slideshow makes little creative use of images, text and other elements.	The muffin has little creative elements to make it unique to the student. The slideshow hardly makes creative use of images, text and other elements.	The muffin is not unique to the student and the slideshow does not make creative use of images, text and other ele-ments.	
3. Promptness	The project was completed and submitted more than 1 day ahead of the given deadline.	The project was completed and submitted a day ahead of the given deadline.	The project was completed and submitted on the given deadline.	The project was completed and submitted a day after the given deadline.	The project was completed and submitted more than 1 day after the given deadline.	
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LifeTek-TLE

Agriculture

Introduction to Food Processing - Marmalade Making

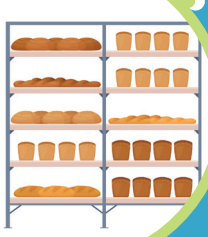
1

Safety - Marmalade Making

2

Foods Safety

3



LESSON 1 Introduction to Food Processing - Marmalade Making

Learning Outcomes

At the end of the lesson, you are expected to be able to:

1. Define food processing (marmalade making).
2. Identify the different steps in marmalade making.
3. Demonstrate making a marmalade.

Engage

Watch the video below to learn about Lacto-Fermentation.

https://www.youtube.com/watch?v=u80eGi6pTso

Trivia

In 1995, the Guinness Book of World Records hailed the Philippine mango, also known as Carabao mango or Manila mango, as the world's sweetest mango. It is one of our top exports and is widely consumed domestically. During the 1970s, a mango-based confectionary product, called dried mangoes, was developed in Cebu. It is one of the more famous local products patronized by tourists today.

Explore

How much do you know?

Identify the processed food product being described in each question. Choose your answer from the box below.

bacon	ice cream	yogurt	marmalade	corned beef	raisins
bread	cereal	bottled orange juice	pickle relish	dried mango	

_____ 1. Dried grape

_____ 2. Salt-cured pork

_____ 3. A type of baked dough

_____ 4. A soft, frozen food made with sweetened and flavored milk fat

_____ 5. Salt-cured brisket of beef

_____ 6. Fruit preserve made from the juice and peel of citrus fruits boiled with sugar and water

_____ 7. Type of coarse flour made of hulled oat grains that have been either milled or steel-cut

_____ 8. A food product produced by bacterial fermentation of milk

Research

Research about the advantages and disadvantages of food processing. Do you think that all processed foods are unhealthy? Why and why not?

Explain

Definition of Terms

Food Processing

It is described as the process of transforming raw or fresh foods into food products by means of fermenting, freezing, heat treatment, pickling, drying, curing, pasteurizing and many more.

Canning

This is the process of storing the food product in an air-tight container after heating it at a high temperature. This allows the product to have a long shelf life along with the preservatives added to it.

Fermentation

The etymology of the word fermentation is the Latin word “fervere” which means “to boil.” Ironically, fermentation doesn’t always require boiling. Fermentation is a food processing method wherein the glucose is broken down into alcohol and liquids. This chemical change allows the food to be stored for a longer period of time without spoiling.

Freezing

It is a food processing method wherein the food is stored at a freezing point in order to stop the growth of microorganisms and deter food spoilage.

Modified Atmosphere Packaging

It is a method of food preservation that involves altering the atmosphere around the food using appropriate packaging methods and materials.

Pasteurization

Pasteurization includes a two-step process performed on liquid substances, such as milk, to ensure its drinking safety. The first process is to mildly heat the liquid at less than 100° Celsius. The second process is to quickly put the liquid in a cold area with a temperature of 30° Celsius. By this process, the harmful bacteria is killed and shelf life is prolonged.

Smoking

Smoking is a food processing approach that involves exposing the food to smoke, such as one coming from wood, for cooking, flavoring and killing bacteria.

Additives

It is a method in food processing wherein food preservatives are added. Here are some of the reasons why food additives are added to food:

1. To maintain or improve safety or freshness
2. To maintain or improve nutritional value
3. To improve taste, texture and appearance

Fruit processing is the process of transforming raw fruit crops into new food products for consumption. Its key objective is to prolong shelf life.

Marmalade is a sweet spread made through boiling the peels, pulp and juice extracts of fruits combined with water and sugar. It is predominantly kept in air-tight jars. Sugar, which contributes to its sweet taste, is also the key preservative that prolongs its shelf life.

Safety Precautions

	Sanitize your work area before and after cooking.		Wash your hands before and after cooking.
	Rinse fruits before cutting or cooking.		Avoid touching hot surfaces directly. Use protective gear such as a pot holder.
	Be careful when using sharp objects. Stow immediately in a safe place after usage.		

Making Orange Marmalade

TOOLS		
juicer	sauce pan	ladle
		
muslin cloth	knife	sterilized jar
		

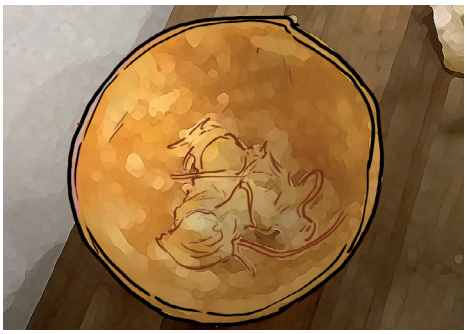
INGREDIENTS	
3 pcs big oranges	500g sugar
	
1 pc lemon extract	1¼ liters of water
	

STEPS

1. Cut oranges in half.

2. Extract the juice of the oranges using an extracting device or by hand using a cloth. Set aside the pulp and seeds.

3. Scrape the piths (the white and bitter part of the orange) from the peel and put them in a bowl or plate.



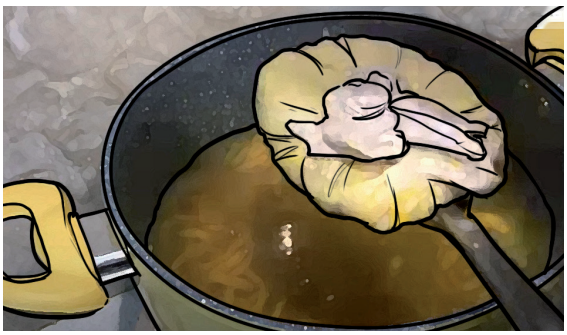
4. Cut the orange peels into thin julienne strips.

5. On a muslin cloth, put together the pulp and piths of the oranges. Tie the cloth to make a mini bag/pouch.

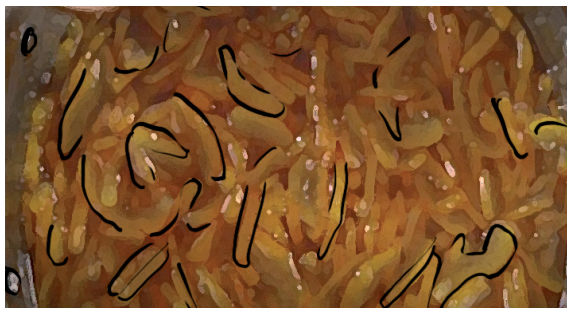
6. Put the water, orange juice, orange peel strips and lemon extract in a sauce pan. Then, add the muslin pouch with the pulp, piths and seeds. Mix well.

7. Bring the mixture to a boil. Turn down the heat to medium and cook for 30 minutes.

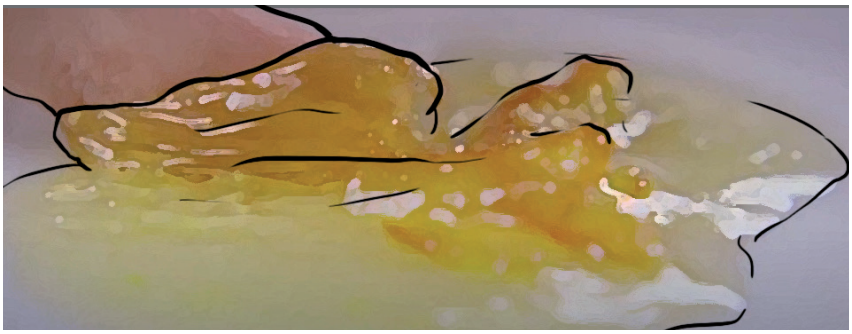
8. After 30 minutes, take out the muslin cloth and squeeze out the remaining liquid. (Use a wooden spoon or any kitchen tool to squeeze so as to avoid scalding yourself.)



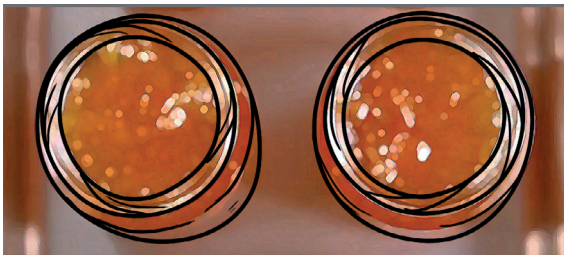
9. Add the sugar into the mixture and stir it well. Cook for 1 and ½ hours or until the mixture thickens. Stir occasionally to avoid burning the bottom.



10. To check if the marmalade has proper consistency, put about a teaspoon of mixture into a cold plate then chill it for 3 minutes. Take out the plate and check if the skin is crinkly with no loose liquid underneath it.



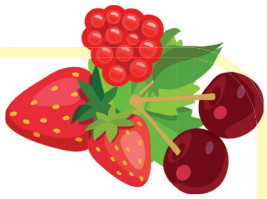
11. Transfer the marmalade to sterilized jars after 20 minutes of cooling down.



In Business

Processed foods offer convenience in an urban community where growing your own foods is impossible. The wide variety of processed foods available makes possible several business options that can be started at home for newbies. Some easy ideas are salting and drying fish, making jams and marmalades, and other foods that require baking skills.

Exercises



Exercise 1

Directions: Determine the procedure that describes the food processing method. Match column A with column B.

Column A	Column B
_____ 1. Canning	a. Freezing point
_____ 2. Fermentation	b. Exposing the food to smoke
_____ 3. Freezing	c. Chemical change
_____ 4. Modified Atmosphere Packaging	d. Air-tight container
_____ 5. Pasteurization	e. Altering atmosphere around the food
	f. Mildly heating the liquid then quickly putting it in cold temperature

Exercise 2

Enumeration

Give 3 reasons why food additives are added to the food:

1. _____
2. _____
3. _____

Multiple Choice

Which ingredient in marmalade acts as the preservative?

a. orange
b. water
c. sugar
d. lemon

Summary

There is a common belief that eating processed food is bad for the health. But if you look closely, a lot of the foods that we eat are already processed to some extent. In an urban environment where fresh foods are not always available, consumers gravitate towards processed food that they can eat directly or use as ingredients for dishes. Processed foods can also last longer. Additionally, without food processing, some raw ingredients like grains and bran would not be edible.

Lesson Output

Create a PowerPoint presentation detailing the steps on how to make your own homemade marmalade.

Rubrics

Criteria	5	4	3	2	1	Points
1. Content/ Functionality	Content is accurate and all required information is presented in a clear and logical manner. It includes other relevant and interesting details.	Content is accurate and most required information is presented in a logical manner, and is still easy to follow.	Content is accurate but some information is missing or not presented in a logical manner, making it difficult to follow.	Content is questionable. A significant amount of information is missing and not presented in a logical manner, making it difficult to follow.	Content is inaccurate. It includes little of the required information and there is no logic in the presentation, making it very difficult to follow.	
2. Creativity	The presentation reflects extensive use of creative tools to make the slides interesting. Images are appropriate and layout is pleasing to the eye.	The presentation reflects satisfactory use of creative tools to make the slides interesting. Images are appropriate but layout is cluttered.	The presentation reflects limited use of some creative tools to show acceptable understanding. Most images are appropriate.	The presentation does not use creative tools in a relevant manner and images are inappropriate.	The presentation does not use creative tools and no images are used.	
3. Promptness	The output was completed and submitted two or more days ahead of the given deadline.	The output was completed and submitted one day ahead of the given deadline.	The output was completed and submitted by the given deadline.	The output was completed and submitted one to two days after the given deadline.	The output was completed and submitted three days after the given deadline.	
Total						

LESSON 2 Safety - Marmalade Making

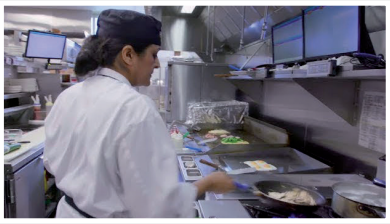
Learning Outcomes

At the end of the lesson, you are expected to be able to:

1. Describe the safety measures in serving marmalade.
2. Observe proper clothing when making marmalade.
3. Demonstrate how to jar marmalade.

Engage

Watch the video about Kitchen Safety



https://www.youtube.com/watch?v=VHGtPeH4tCg

Trivia

In 2019, 11 people in the provinces of Laguna and Quezon died, while several hundred others were hospitalized with symptoms of food poisoning after drinking *lambanog*, a local wine made from coconut sap. The cause was the high level of methanol, a form of alcohol, that should have been separated and removed during the distilling process. Improper distilling and food processing can lead to severe injuries and even death.

Explore

Identify the answers to the questions below.

_____ 1. It is a type of fungus that lives in a cold environment and survives at low moisture levels.

_____ 2. It is a type of fungus that lives in acidic and sugary solutions and low moisture environment; it is used in the fermentation of bread.

_____ 3. It is an organism that can only be seen through a microscope and it multiplies fast.

_____ 4. It is a compound that neutralizes pectin to prevent pectin chains from forming gel networks.

_____ 5. The amount of sugar that should be measured out depends on the content of this component which is naturally found in fruits and vegetables.

_____ 6. This ingredient in marmalade works as a preservative that, when added, causes dehydration of microorganisms which leads to microbial death.

_____ 7. This is the ideal material for containers to be used in storing finished jams, jellies, marmalades and preserves.

_____ 8. Sugar-concentrated products should be stored at this temperature range.

_____ 9. It is the first procedure in the packaging process of marmalade wherein jars are heated in a pot of boiling water for 10 minutes.

_____ 10. It is the type of jelly that contains slices of fruits or peels.

Research

Research about the different types of jars that are best for storing sugar-concentrated food as well as the tools you can use during the canning/jarring them.

Explain

Definition of Terms

Burn – an injury to the epidermis and dermis that can be caused by heat, cold, or due to electricity or radiation.

First degree burn – the type of burn that affects only the first layer of skin.

Second degree burn – the type of burn that affects both dermis and epidermis, or two layers of skin.

Third degree burn – the highest degree of burn that penetrates not only the dermis but a deeper part of your body such as tissues.

Safety – characterized as the state of being protected from risk, injury and hazards.

Boiling point – the boiling point equivalent to 100°C or 212°F. It is the point where water vapor forms after liquid is subjected to prolonged high heat.

Personal Protective Equipment – or "PPE" pertains to equipment worn in order to reduce the risk of injuries and other hazards that might occur in the work area/kitchen.

Glass jars – commonly used as marmalade containers after processing due to their perfect characteristic to prevent food spoilage and penetration of bacteria and other harmful microorganisms.

Food spoilage – pertains to the change in food which renders it unacceptable for consumption.

Food packaging – it includes procedures for containing the food product in appropriate vessels to prevent contamination, spoilage and damage. For commercially sold products, the packaging displays product information such as brand name, product name, manufacturing and expiration dates, and should also include ingredients.

There are 2 main topics that we will discuss in this section. First is how to protect yourself from injuries, and the other is how to protect your customers by ensuring food safety in the food you serve.

Burn

It is a common injury in the kitchen caused by touching hot and scalding objects. First degree burns can be treated by soaking your hands in cold water and applying topical medicines, after which you can immediately go back to work in the kitchen. The most serious kind is the third degree burn where flesh is already visible in the wound. If this happens, a person should proceed right away to hospital.

To avoid getting burns, wear personal protective clothing and avoid directly touching hot surfaces with your hands. Kitchen mitts should be worn right before you touch hot surfaces. Having almost your entire body covered will also give you extra protection should an accident happens. A long-sleeved blouse and pants give your skin cover against hot objects.

Safety Measures in Serving Marmalade

1. Use personal protective equipment (PPE) when making marmalade to avoid contamination.
2. Follow the handwashing protocols before, during, and after marmalade making (refer to WHO guidelines).
3. Clean and sanitize your work area/kitchen.
4. Clean and sanitize containers and equipment that will be used for making marmalade.
5. Always maintain the cleanliness and sanitation of your work area/kitchen.
6. Sterilize the glass jars before using.
7. Fill up the jars with marmalade while they are still hot.

8. Do not use jars that cooled down before having been able to fill them with marmalade. Re-sterilize if this happens.

9. Jarred marmalade mixture should be consumed 6 months after opening and within 1 to 2 years from manufacturing date if unopened.

Steps in Jarring Marmalade

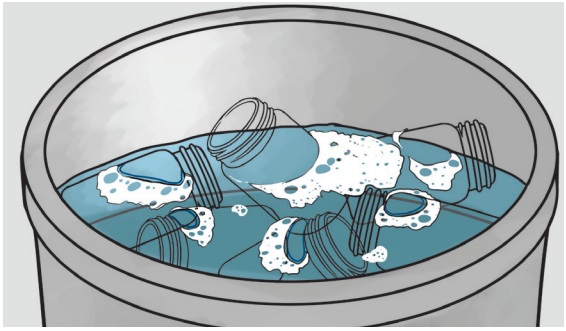
There are 3 major steps in the packaging process of marmalades and the same is applied to similar products like jellies, jams and preserves.

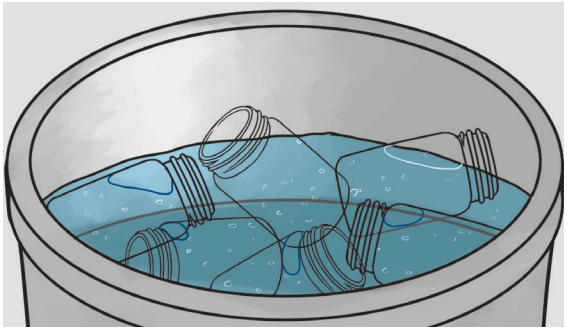
Sterilize!

1. Wash jars using hot soapy water and rinse using clean hot water.

2. Place the jars and lids in a pot filled with water enough for the jars to be submerged.

3. Bring the water to a rolling boil for 10 minutes. Take off the lids after 5 minutes as they might get destroyed.

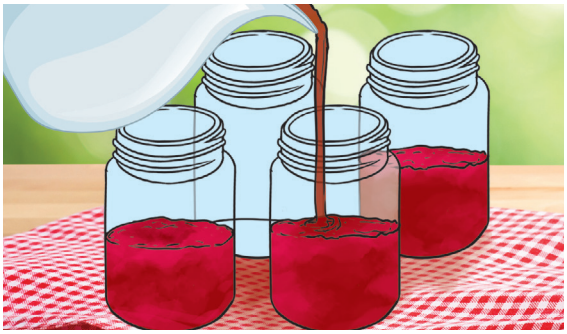


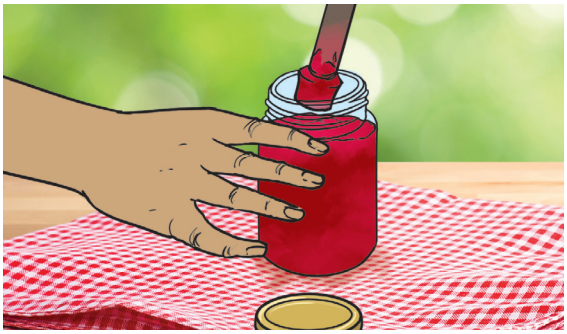


Pack!

1. Immediately fill the jars while they are hot, but leave some space between the lid and the contents of the jar

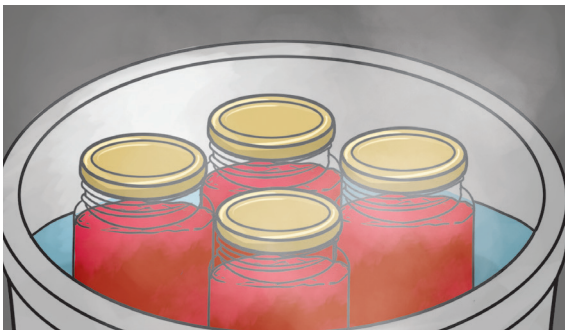
2. Seal the jars tightly.





Water bath!

1. Boil water in the water bath canner.
2. Place the sealed jars one by one using a jar lifter into the water bath canner.
3. Let pint-sized jars sit in boiling water for 10 minutes; for quart-sized jars, sit for 15 minutes.



Label!

Labelling is also an important process to be undertaken for products that will be commercially sold. The label conveys important product information such as brand name, product name, manufacturer's name, place of production, ingredients, manufacturing and expiration dates, and net weight or gross weight (refer to R.A No. 7394 on guidelines about food labelling).

In Business

Overall health and safety is essential in every business. This ensures that human lives are protected both internally (the workers and staff) and externally (the consumers). Business owners that do not abide with food safety and consumer laws can face legal sanctions and the worst consequences include losing the license to operate and facing criminal charges due to loss of life.

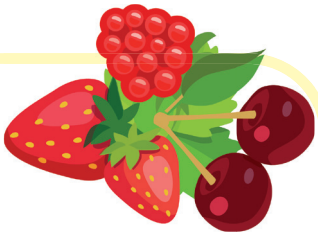
Summary

In this lesson, we have discussed the following:

- Proper clothing and protective measures to keep ourselves safe and prevent injuries during the marmalade making process.
- Safety measures to ensure the safety of marmalade making.
- Steps on how to package marmalade.

This information will give the student ample knowledge about food safety and personal safety management to prevent injuries and diseases.

Exercises



Exercise 1

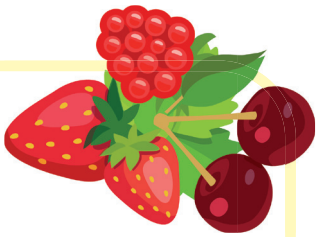
Directions: Match the description in the left column with the correct answers in the right column.

_____ 1.	It is the highest degree of burn that penetrates not only the dermis but a deeper part of your body such as tissues.	a. burn
_____ 2.	It includes procedures to contain the product in appropriate vessels to prevent contamination, spoilage and damage of the food.	b. first degree burn
_____ 3.	These are commonly used as marmalade containers after processing due to their perfect characteristic of preventing food spoilage and penetration of bacteria and other harmful microorganisms.	c. second degree burn
_____ 4.	It pertains to a process or change which renders food as unacceptable for consumption.	d. third degree burn
_____ 5.	It is the type of burn that affects only the first layer of skin.	e. food packaging
		f. food spoilage
		g. glass jars

Exercise 2

Directions: Fill in the blanks below with the correct word/s to complete the sentence.

1. Use _____ when making marmalade to avoid contamination.
2. Follow _____ protocols before, during and after marmalade making.
3. Clean and sanitize your _____.
4. Always maintain the _____ and sanitation of your work area/kitchen.
5. _____ the glass jars before using.



Exercise 3

Directions: Number the steps (1 to 5) in the correct order.

Jarring Marmalade

_____ 1. Place the jars and lids in a pot filled with water enough for the jars to be submerged.

_____ 2. Wash jars using hot soapy water and rinse using clean hot water.

_____ 3. Seal the jars tightly.

_____ 4. Bring to rolling boil for 10 minutes. Take off the lids after 5 minutes as they might get destroyed.

_____ 5. Immediately fill the jars while the jars are hot. Make sure to leave at least ¼ headspace.

Lesson Output

Create a photo slideshow presentation demonstrating the steps to jar/pack marmalade.

Rubrics

Criteria	5	4	3	2	1	Points
1. Content/ Functionality	Content is accurate and all required information is presented in a clear and logical manner. It includes other relevant and interesting details.	Content is accurate and most required information is presented in a logical manner, and is still easy to follow.	Content is accurate but some information is missing or not presented in a logical manner, making it difficult to follow.	Content is questionable. A significant amount of information is missing and not presented in a logical manner, making it difficult to follow.	Content is inaccurate. It includes little of the required information and there is no logic in the presentation, making it very difficult to follow.	
2. Creativity	The presentation reflects extensive use of creative tools to make the slides interesting. Images are appropriate and layout is pleasing to the eye.	The presentation reflects satisfactory use of creative tools to make the slides interesting. Images are appropriate but layout is cluttered.	The presentation reflects limited use of some creative tools to show acceptable understanding. Most images are appropriate.	The presentation does not use creative tools in a relevant manner and images are inappropriate.	The presentation does not use creative tools and no images are used.	
3. Promptness	The output was completed and submitted two or more days ahead of the given deadline.	The output was completed and submitted one day ahead of the given deadline	The output was completed and submitted by the given deadline.	The output was completed and submitted one to two days after the given deadline.	The output was completed and submitted three days after the given deadline.	
Total						

LESSON 3 Food Safety

Learning Outcomes

At the end of the lesson, you are expected to be able to:

1. Define food safety.
2. Identify food safety tools and equipment.
3. List the best practices in food safety nowadays.

Engage

Read the news below about the food poisoning incident that killed several children in 2005.

https://www.philstar.com/headlines/2005/03/15/270426/doh-bohol-poisoning-due-pesticide-not-cyanide

Trivia

Pagpag is the Filipino word referring to the leftover food from restaurants bound for landfills but intercepted by residents nearby to be consumed and even sold after re-cooking. It gained media attention both locally and internationally mainly out of concern for its possible health hazards and risks which can lead to acquiring foodborne illnesses.

Explore

Fill in the blanks.

1. Children below _____ years old have a high risk of acquiring foodborne diseases.
2. The temperature range between 5 °C and 60 °C is called the _____ .
3. _____ is the most common symptom of foodborne diseases.
4. _____ are tiny organisms that are not visible to the naked eye.
5. _____ is the term used to describe transmission of bacteria and other microorganisms from one object to another.
6. _____ have the lowest risk of acquiring foodborne diseases.
7. Soups and stews should reach _____ or a temperature of 70 °C.
8. The kitchen should always be kept clean and _____.
9. _____ foods such as meat, poultry and seafood should be separated from cooked food.
10. Food _____ is important to ensure that the foods we eat are free of food hazards and risks.

Research

Research about the following:

a) What does HACCP stands for?
b) What is HACCP's role in ensuring food safety?
c) What are the 7 steps/principles of HACCP?

.

Explain

Definition of Terms

Food safety – is comprised of actions and practices that must be applied in food preparation, handling, and storing to ensure that the foods we eat are free of health risks and hazards that will make us ill and unhealthy.

Foodborne disease – an illness that is caused by ingesting food contaminated with bacteria, viruses, parasites or chemical substances. Some examples of foodborne diseases are typhoid fever, cholera, amoebiasis, and viral hepatitis, which can lead to severe cases of kidney and liver failure, brain and neural disorders, reactive arthritis and death.

Foodborne infection – a type of foodborne disease caused by consuming food containing live bacteria, viruses, or parasites that then multiply and grow in the body.

Foodborne intoxication – also known as food poisoning, it is a type of foodborne disease caused by ingesting food containing toxins formed by bacteria in the food. The bacteria can be dead during the time of consumption.

Microorganisms – these are microscopic organisms that can grow anywhere and can be either good or bad. Good microorganisms, such as yeast and lactic acid, aid in food preservation, while bad microorganisms, also called pathogenic microorganisms, can make a person ill.

A single microorganism cannot be seen unless you use a microscope but it will be visible when it grows in large numbers (i.e. molds).

Food hazard – any object or matter that, when included in food, whether directly, indirectly or accidentally, can cause injury or health issues. There are 4 types: microbiological hazards, chemical hazards, physical hazards, and allergens.

- **Microbiological hazards** – these include bacteria, viruses, yeasts and molds
- **Chemical hazards** – chemical products that can cause harm, such as cleaning agents, pesticides, food additives, and chemicals used in agriculture
- **Physical hazards** – objects such as glass, packaging, jewelry, screws and pest droppings
- **Allergens** – substances that cause an allergic reaction. In food, common allergens are eggs, milk, nuts, and fish, among others.

Any country in the world faces problems with foodborne diseases regardless of its wealth status. It is the duty of the government to impose regulations and protocols for the maximum health safety of its populace. In 2001, the World Health Organization (WHO) introduced the Five Keys to Safer Food which entails measures that food handlers should follow to maintain the cleanliness and safety of food.

The full content of the guidelines can be referred to in WHO's "Five Keys to Safer Food Manual" which is available online. Meanwhile, the following list contains the summarized information applicable to students in this level.

KEY # 1: KEEP CLEAN

Why is it important?

Transmitting bacteria and other bad microorganisms from your hands and kitchen tools to the food is highly probable without you even noticing it. This is why personal hygiene and sanitation protocols should be strictly observed in your workplace as well as in your own kitchen.

Tips:

- ✓ Always keep the kitchen and equipment clean and regularly sanitized.
- ✓ Wash hands as often as possible before, during, and after food handling.
- ✓ Wash hands after using the toilet and after going to contaminated areas.
- ✓ Keep the food and area free from insects, pests, and other animals.
- ✓ Observe overall personal hygiene by keeping fingernails trimmed and wearing clean clothes to work.
- ✓ When necessary, use disposable hand gloves. Dispose right away after first use and do not reuse especially after touching contaminated surfaces and objects.

- ✓ Observe proper handwashing techniques:
  - Soak hands under running water.
  - Apply soap and rub hands together for at least 20 seconds.
  - Rinse hands using running water; and,
  - Dry hands using paper towel and/or hand dryer.

KEY # 2: SEPARATE RAW FROM COOKED FOOD

Why is it important?

Raw produce such as poultry, seafood and meat contain harmful microorganisms that can be transmitted to other food products. Therefore, keeping them in separate containers and avoiding the use of the same kitchen tools when handling raw produce and other food products at the same time, can help avoid cross-contamination.

Tips:

- ✓ Raw meats, poultry and seafood should be kept away from cooked food.
- ✓ Use a different set of utensils when preparing raw food such as chopping boards and knives.
- ✓ Food should be stored in clean containers with lids to avoid contact.

KEY # 3: COOK FOOD THOROUGHLY

Why is it important?

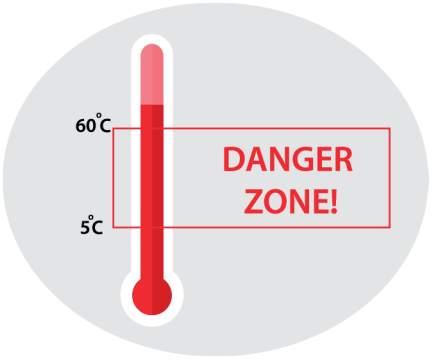
There is a study that cooking at a certain temperature will kill harmful bacteria, thus making the food safe to eat.

Tips:

- ✓ Meat, poultry, and seafood should be cooked thoroughly.
- ✓ Soups and stews should reach the boiling point of 70 °C.

- ✓ For meat and poultry produce, cook until the juices have a clear color and not pinkish or reddish. Stick a food thermometer into the meat to make sure it is cooked through.
- ✓ Food should be reheated thoroughly.

KEY # 4: KEEP FOOD AT SAFE TEMPERATURES



Why is it important?

In food safety, there is a temperature range called the Danger Zone which is between 5°C and 60°C. When food is kept in the said temperatures, bacterial growth rate increases.

Tips:

- ✓ Cooked food should not be kept at room temperature for more than 2 hours.
- ✓ Cooked and perishable food should be immediately refrigerated at a temperature below 5°C.
- ✓ Prior to serving, food should be cooked at above 60°C.
- ✓ Food should not be kept in the refrigerator for a long period of time.
- ✓ Food should not be thawed under room temperature, but rather in the refrigerator, or other cool area.

KEY # 5: USE SAFE WATER AND RAW MATERIALS

Why is it important?

Microorganisms can inhabit water so it is important to filter and treat water. The water we use in washing our raw ingredients should be safe and clean. Likewise, in choosing raw ingredients, scrutiny should be made on their cleanliness and safety.

Tips:

- ✓ Always use clean and safe water for cooking.
- ✓ Choose fresh and wholesome food.
- ✓ Use products that have been processed for safety (i.e., pasteurized milk).
- ✓ Wash raw produce such as fruits and vegetables before consuming.
- ✓ Refrain from eating or using expired foods.

HACCP stands for **Hazard Analysis and Critical Control Points** and it is the global standard in food safety. Aside from WHO, the Food and Drug Administration (FDA) also implements the HACCP principles for food safety in food businesses. It is a global standard that is followed by food companies worldwide. It is comprised of 7 proactive steps or principles that aim to evaluate, identify and control the food hazards. These are:

1. Conduct a hazard analysis
2. Determine critical control points
3. Establish critical limits
4. Establish monitoring procedures
5. Establish corrective actions
6. Establish verification procedures
7. Establish record-keeping and documentation procedures

Tools and Equipment for Ensuring Food Safety

Food safety is attainable with the help of some tools and equipment for cleaning, storage, and safeguarding temperature requirements.

Cleaning Agent

Regular sanitation in the kitchen area is of utmost importance in food safety. Cleaning includes washing utensils and equipment, and throwing away garbage. Sanitation requires soaking utensils

Food Thermometer

Cooking of raw food, especially meat, poultry, and seafood, needs to be thorough and at the right temperature to kill harmful microorganisms. A food thermometer is useful particularly in checking if the interior part of the meat and poultry is cooked at the right temperature.

Personal Protective Clothing/Equipment

Although it is enough to observe personal hygiene, using disposable hand gloves, hair restraints and face mask gives the food extra protection from contamination.

Refrigerator

Refrigerating or freezing food below 5°C is necessary to inhibit bacterial growth in food. Thawing of food in the refrigerator is also an option to avoid bacterial formation.

Food Containers

Keeping food in air-tight containers with covers will keep it safe from harmful microorganisms. It is also recommended to keep raw food separate from cooked food. By using food containers with lids, contact can be prevented.

In Business

Food business owners can be held liable if a customer gets sick as a result of consuming food from their food business. The legal compensation is equivalent to the damage or injury it has afflicted to the victim. And if that is not bad enough, the company may face shutdown. This is why it is a must to follow and implement strict protocols with regards to food safety and sanitation in your food business because there is nothing more important than a person's life.

Summary

When we take in food, it is broken down into molecules and supplies the nutrients and energy that we need to perform daily activities. If a single food hazard is included in the food that we consume, then we may fall ill or die. Therefore, we must ensure that the food we eat is safe and clean. When buying prepared food, always opt for restaurants that have a good reputation when it comes to cleanliness and sanitation. At home, always make sure to thoroughly wash the food before cooking, practice personal sanitation, and maintain clean surroundings. Additionally, follow guidelines on proper food preparation, handling, and storage.

Exercises

Exercise 1

Directions: Write **True** if the statement is correct or **False** if it is not.

_____ 1. Food Safety establishes guidelines and protocols to ensure that there is enough food for everyone.

_____ 2. The acronym HACCP stands for Hazard Analysis and Common Control Point.

_____ 3. Physical hazards include glass, hair, packaging, jewelry, screws, and pest droppings.

_____ 4. All microorganisms are bad for the health.

_____ 5. Allergens include eggs, milk, nuts, and fish.

_____ 6. Foodborne infection is a type of foodborne disease caused by consuming food that contains live bacteria, viruses or parasites that then multiply and grow in the body.

_____ 7. Foodborne intoxication is a type of foodborne disease caused by ingesting food containing toxins formed by bacteria in the food.

_____ 8. Food risk is any object or matter that, when included in food, whether directly, indirectly or accidentally, can cause injury or health issues.

_____ 9. A single microorganism is visible to the naked eye without the need to use a microscope.

_____ 10. Chemical hazards include bacteria, viruses, yeasts, and molds.

Exercise 2

Enumeration

1. Give the 5 keys to safer food according to WHO:

    a. _____

    b. _____

    c. _____

    d. _____

    e. _____

2. Give the 5 tools used for food safety discussed in this lesson:

    a. _____

    b. _____

    c. _____

    d. _____

    e. _____

Lesson Output

Create a 3- to 5-minute video presentation demonstrating different food safety practices.

Rubrics

Criteria	5	4	3	2	1	Points
1. Content/ Functionality	Content is accurate and all required information is presented in a clear and logical manner. It includes other relevant and interesting details.	Content is accurate and most required information is presented in a logical manner, and is still easy to follow.	Content is accurate but some information is missing or not presented in a logical manner, making it difficult to follow.	Content is questionable. A significant amount of information is missing and not presented in a logical manner, making it difficult to follow.	Content is inaccurate. It includes little of the required information and there is no logic in the presentation, making it very difficult to follow.	
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Total						

LifeTek-TLE

Industrial Arts

Basic Carpentry

Basic Plumbing (Tools)

Basic Masonry

LESSON 1 Basic Carpentry

Learning Outcomes

At the end of the lesson, you are expected to be able to:

1. Define what carpentry is.
2. Identify some of the different tools and equipment used in basic carpentry.
3. Identify some different carpentry methods.

Engage

Read the following article to learn about the growth of the Philippine furniture industry.

http://winner-tips.org/magazines/a-quick-look-at-the-growth-of-the-philippine-furniture-industry/

Trivia

The Jesuit House is the oldest house in the Philippines. It is located in Parian, Cebu, and while a plaque showing the year 1730 was found in it, it's likely that the house was built before then. It was owned by the religious order of the Jesuits, and is now a museum filled with antiques.

As the house was built before modern machinery and equipment were invented, it was built entirely by hand, using carpentry.

Photo by: Constantine Agustin
https://www.flickr.com/photos/biagkensiak/8911852254

Explore

Name the following carpentry tools and materials.

_____ 1. 

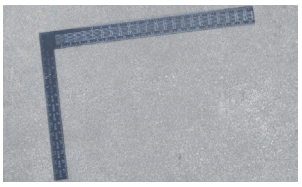
_____ 2. 

_____ 3. 

_____ 4. 

_____ 5. 

_____ 6. 

_____ 7. 

_____ 8. 

_____ 9. 

_____ 10. 

Research

Research the following:

- The difference between carpentry and woodworking.
- Different types of woodworking.

Explain

Definition of Terms

Carpentry is the skill or activity relating to building or making things out of wood, as well as repairing wooden items. This is used to build houses.

Tools are the implements used to perform a particular function.

Materials, in construction, are the substances, such as wood or metal, and items, such as fittings, which are used to construct or make something, such as a house or building.

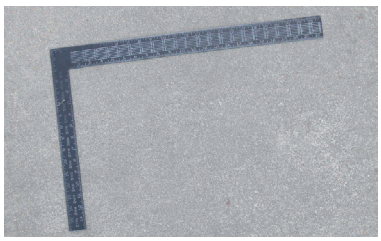
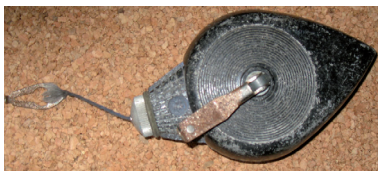
Lumber is wood that has been cut into planks and beams, and is usually used for buildings. It is also called "timber."

Log is a part of a fallen or cut tree.

Carpentry is often associated with strength and precision. It can also be considered dangerous, because a carpenter or woodworker may have to lift heavy objects, as well as deal with sharp tools and equipment. That said, the demand for carpentry is such that it is worth exploring and mastering.

Carpentry tools and equipment are things that a person must have before doing carpentry. These tools aid in measuring, lining, cutting, testing, and joining wood.

Tools and Equipment in Basic Carpentry

	**Flexible steel measuring tape** – a tool used to measure long distances
	**Carpenter's square** – also known as a steel square or a framing square; a measuring tool used in laying out rafters and stairs
	**Chalk line** – a marking tool used to draw straight lines which act as guides for cutting

	**Hand saw** – a hand tool with serrated edges used to cut wooden objects
	**Circular saw** – is an electrically powered cutting tool that is used to cut large and thick wood, as well as other materials (e.g., PVC pipes)
	**Jig saw** – an electrically powered tool used primarily to make curved cuts
	**Miter saw** – a power saw with a circular blade that is used to make angled cuts
	**Claw hammer** – tool whose blunt head side can be used to drive nails into wood, and a clawed head side used to pull nails out from wood
	**Screwdriver** – used to fasten screws. It comes in different sizes and has two types based on the configuration of the tip: flat or cross/Phillips.
	**Power drill** – used to drill holes into an object

	**Clamping tools** – used to hold objects when these are being cut or connected together.
	**Level bar** – a tool used to make sure that objects are properly leveled vertically or horizontally
	**Pliers** – tools used to bend wires and grip objects
	**Wrench** – used to tighten bolts

Basic Carpentry Methods

1. **Measuring & Marking**

- ➔ In carpentry, there is a saying that goes: "Measure twice, cut once." This means that it should ensure that the materials worked on are measured out properly before any cutting is done. Having some objects which are unevenly cut, or don't have the proper lengths needed, would mean wasted time and materials when the work is redone.
- ➔ Using clamps and other fastening tools is needed to provide stability.
- ➔ If you have objects that should be cut in the same length, you can stack and measure them together. For example, you can put different pieces of lumber on top of the other and measure these out at the same time.
- ➔ Use a sturdy and well-balanced table to keep work stable when marking or working on something.
- ➔ Use a chalk line to mark long, straight lines.

2. **Cutting**

- ➔ Cutting might be the most daunting task in carpentry, as a single mistake can ruin your work.
- ➔ Sawing is a very important skill in carpentry. Different types of saws are used for different needs, and what you use depends on the kind of cut you are trying to do.
- ➔ Safety should be practiced at all times. If you are new to carpentry, or if you're not sure how to do something or how to use a tool, ask an experienced carpenter or woodworker to avoid accidents or having to do work overs.
- ➔ Make sure that, when you work, the area around you is clear, so you can avoid accidents that involve hitting objects or people with a saw or hammer.

3. **Connecting the pieces**

➔ Carpentry can be thought of as working with a puzzle where you need to connect together different parts of a single object to create that object, such as a wooden chair or table.

➔ Nails, screws and bolts are metal pieces that are used to secure the different parts of an object in the places needed, or to connect an object to another piece or to a more stable structure.

➔ Hammer and drills are the tools used to drive nails, screws and bolts into objects.

4. **Sanding wood**

➔ Wooden surfaces need to be smoothened out prior to these being coated or stained, which is why sanding is important.

➔ Sandpaper comes in varying degrees of coarseness/fineness, depending on the kind of surface that is desired, so purchase the kind that suits your needs.

In Business

Carpentry is an industry that will never be gone as long as a demand for housing, or even wooden furniture, exists. Businesses which provide carpentry services can do so for a wide variety of purposes. Some businesses can focus on creating wooden furniture, while others can focus on building homes and other wooden structures. It all depends on the competencies available to the carpenters who are involved in the business.

Exercises

Exercise 1

Definition of Terms

Directions: Identify the words being described in the following sentences.

_____ 1. These are the implements used to perform a particular function.

_____ 2. This refers to wood that has already been cut into beams.

_____ 3. It is a part of a fallen or cut tree.

_____ 4. It is a collective word that refers to the substances and items used to build something.

_____ 5. It is the skill of making things out of wood.

Exercise 2

Carpentry Tools and Equipment

Multiple Choice. Identify what these tools are used for.

_____ 1. Circular saw

a. Measuring
b. Marking
c. Cutting
d. Sanding

_____ 2. Flexible steel measuring tape

a. Measuring
b. Marking
c. Cutting
d. Sanding

_____ 3. Chalk line

a. Measuring
b. Marking
c. Cutting
d. Sanding

_____ 4. Carpenter's square

a. Measuring
b. Marking
c. Cutting
d. Sanding

_____ 5. Miter saw

a. Measuring
b. Marking
c. Cutting
d. Sanding

Exercise 3

Basic Carpentry Methods

Directions: Answer if the following statements are true or false.

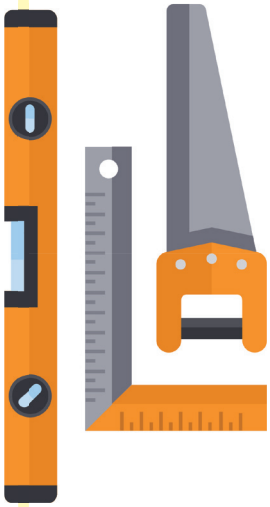
_____ 1. You can measure multiple items/objects at the same time.

_____ 2. Using clamps is recommended to provide stability when fastening wooden parts together.

_____ 3. A carpentry saying goes: "Measure once, cut twice."

_____ 4. It doesn't matter what kind of sandpaper you buy; any kind will do.

_____ 5. When you work, make sure the area around you is clear.



Summary

Carpentry is all about working with wood, and knowing the basic tools and methods used in carpentry, such as those in this lesson, are important when it comes to working well and safely.

Lesson Output

Create a slideshow presentation showing one object that can be built using carpentry. Provide a description and an image, as well as the tool (or tools) and method/s used to create that object.

Rubrics

Criteria	5	4	3	2	1	Points
1. Content/ Functionality	The presentation showed an object built through carpentry, pictures of its construction, ad a helpful description of each that includes the tool/s and methods used to create the object.	The presentation showed an object built through carpentry, pictures of its construction, and a helpful description of each that includes the tool/s used to create the object.	The presentation showed an object built through carpentry as well as labeled pictures of its construction.	The presentation showed an object built through carpentry and pictures of its construction.	The presentation showed an object built through carpentry but lacks pictures of its construction.	
2. Creativity	The student's presentation made use of unique audio, visual and text elements which made it both appealing and easy to understand.	The student's presentation made use of common audio, visual and text elements which made it both pleasing and fairly understandable.	The student's presentation made use of template audio, visual and text elements which made it both clear and understandable.	The student's output only used a slide template background; a few things were easy to understand.	The student's output only used a slide template background but lacked content.	
3. Promptness	The project was completed more than 1 day ahead of the given deadline.	The project was completed 1 day ahead of the given deadline.	The project was completed by the given deadline.	The project was completed 1 day after the given deadline.	The project was completed more than a day after the given deadline.	
Total						

LESSON 2 Basic Plumbing (Tools)

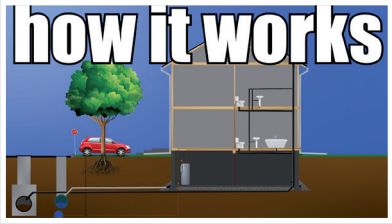
Learning Outcomes

At the end of the lesson, you are expected to be able to:

1. Define what plumbing is.
2. Identify different plumbing tools and equipment.
3. List some of the different plumbing systems in use today.

Engage

Watch this video entitled: "How Your Home Plumbing Works (From Start to Finish)"ustry.



https://www.youtube.com/watch?v=8jxRn-T_LCs

Trivia

According to a 2018 report made by the Philippine Statistics Authority (https://psa.gov.ph/content/2018-census-philippine-business-and-industry-construction-establishments), some 19% of all construction establishments do plumbing works – second only to the number of building construction establishments. This shows the importance of plumbing in everyday life.

Plumbing is a necessity of modern-day life. Good plumbing ensures that water contamination is minimized, thus helping us maintain our health.

Explore

Identify the following plumbing tools and materials.

_____ 1.

_____ 2.

_____ 3. 

_____ 4. 

_____ 5. 

_____ 6. 

_____ 7. 

_____ 8. 

_____ 9. 

_____ 10. 

Research

Research some different plumbing fixtures and accessories.

Explain

Definition of Terms

Plumbing – a network of pipes and other fixtures, designed to ensure the proper and safe distribution of water, as well as help manage liquid waste.

Plumber – an individual trained to install and repair plumbing.

Plumbing fixtures – devices that are part of, and connected to, a plumbing system, such as the toilet bowls and urinals in bathrooms, and sinks and piping in kitchens.

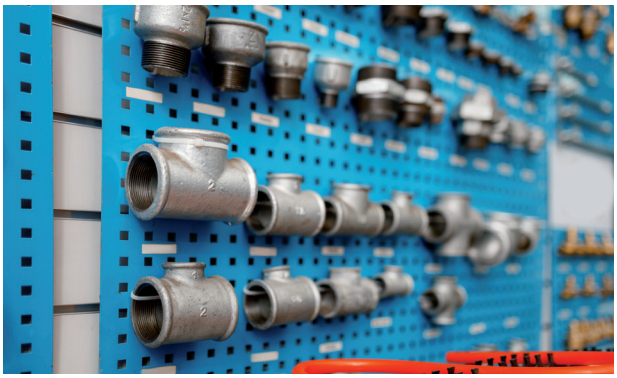
Drainage – a system used to deliver such unwanted liquids as liquid waste or unwanted water to places where these can be processed or stored.

Materials

A plumbing system consists of three main elements: pipes and fittings, drainage, and fixtures. Pipes are made of different materials, such as PVC, cast iron, and concrete.



Fittings, on the other hand, are used for joining pipes or tubes together.



Drainage systems consist of the various accessories needed to deliver unwanted liquid, such as waste and sub-surface water, to places where these can be disposed of or stored temporarily. Pipes and fittings are also used in drainage systems.

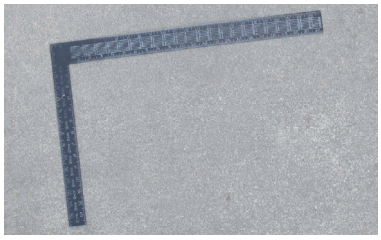
Plumbing fixtures are pieces of equipment which are fitted to a plumbing system. These are such things as sinks and toilet bowls.

Tools and Equipment

There are six main categories of plumbing tools. Each represents a relevant skill to fulfill plumbing works.

- **Measuring** – refers to tools used to measure lengths and objects during the planning and execution of work.
- **Levelling** – tools used to ensure horizontal, vertical and diagonal alignment of objects.
- **Cutting** – tools used to cut materials.
- **Holding** – tools used to grip an object, to keep these from moving during crucial work, like cutting or assembly.
- **Driving** – tools that are used to tighten, loosen or fasten screws, bolts and nuts.
- **Coring** – tools that are used to dig or poke a hole in concrete and other materials.

MEASURING



Framing Square

- ➔ known as “steel square.”
- ➔ used to make layouts and patterns

Combination Square

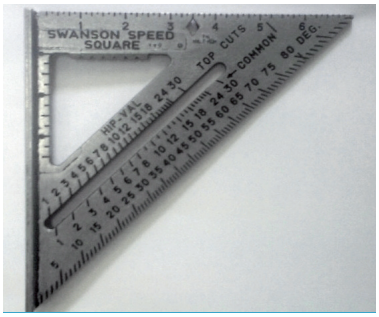
- ➔ composed of a main ruler and a moveable head
- ➔ used to ensure if objects are at right angles (90 degrees) to each other

Push-pull ruler

- ➔ handy and collapsible measurement tool
- ➔ measures the length of long objects, as well as distances between objects

Folding ruler

- ➔ can be folded for easy storage
- ➔ measures up to 6 or 8 feet in length



Speed Square

- ➔ used for marking out basic 45- and 90-degree angled cuts

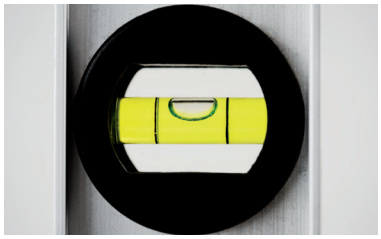
LEVELING

Plumb bob

- ➔ pointed weight connected to one end of a string
- ➔ used to create a vertical reference line

Torpedo level

- ➔ type of spirit level
- ➔ used in confined or tight spaces



Spirit level

- ➔ named for the solution (a mineral spirit) that is housed inside the instrument
- ➔ used to ensure straight horizontal lines

Plumber level

- ➔ used to measure or check angles

CUTTING

Hacksaw

- ➔ saw with a narrow, toothed blade which is attached to a frame
- ➔ mainly used to cut metal

Chisel

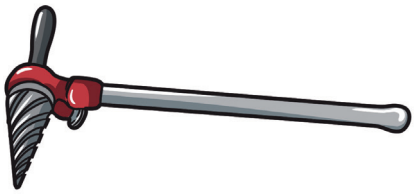
- ➔ commonly made with a wooden handle and a metal head
- ➔ used to carve wood or stone, and is occasionally used to cleave some other materials as well

Pipe cutter

➔ cuts large-diameter pipes

Tube cutter

➔ cuts pipes made of soft material, like plastic or aluminum



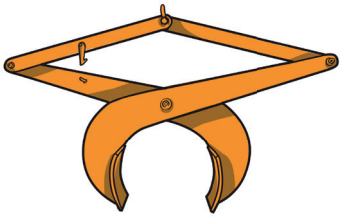
Pipe reamer

➔ clears out any burrs inside a pipe

HOLDING

Pipe wrench

➔ toothed tool used to loosen or tighten threaded pipes and fittings



Pipe tong

➔ lifts pipes and similar objects

Strap wrench

- ➔ grips a variety of objects
- ➔ strap is usually made of rubber

Spud wrench

- ➔ toothless tool used to tighten or loosen such fittings as bolts and nuts
- ➔ other sharp end is used to align holes

Open-end wrench

- ➔ type of wrench that is open at one or both ends.
- ➔ used to tighten or loosen nuts and bolts.

DRIVING

Hammer

- ➔ drives nails into objects
- ➔ used to chip concrete.
- ➔ comes in several types: claw hammer, sledgehammer and ball-peen hammer

Screw driver

- ➔ comes in a variety of sizes and metal heads
- ➔ used to drive screws into objects

Nut driver

- comes in a variety of sizes and metal heads
- used to tighten and loosen nuts

CORING

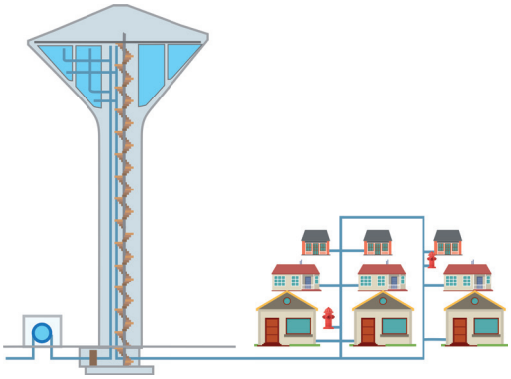
Electric drill

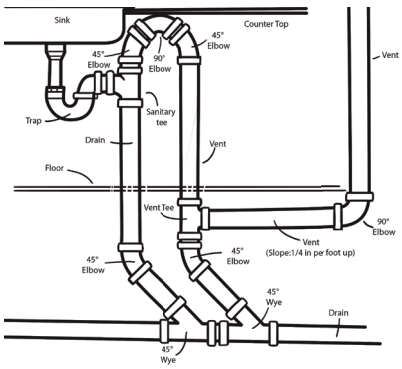
- used to drill holes into concrete
- different types are available for different purposes

Different Plumbing Systems

Water Supply and Distribution System

It is a network of pipes to supply and distribute water from a source, such as a dam, to various destinations, such as households and business establishments. It includes facilities for water treatment to provide potable water, as well as storage to ensure enough supply.



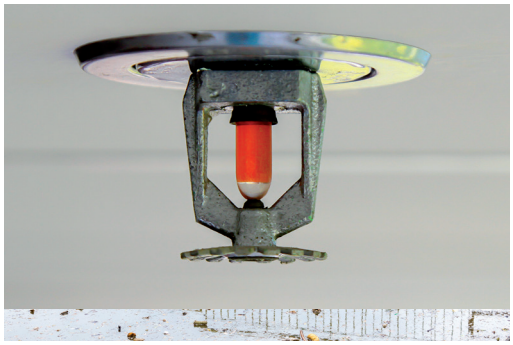


Sanitary, Waste and Vent System

This is the plumbing system used to get rid of, or segregate, sewage and gray water. (Graywater is relatively clean wastewater which comes from baths and sinks.) This is found in such areas in our home such as sinks, toilets and showers. This system uses air pressure that enters through vents.

Storm Drainage System

A storm drainage system prevents overflow due to the excessive amount of water that falls during a storm such as a typhoon which causes flooding. It is a system of structures and channels that diverts water from roads to rivers, ponds, and other reservoirs.



Condensate Waste and Drainage System

It is used in an air conditioning system to drain condensation moisture formed during the cooling process.

Kitchen Waste and Drainage System

This is the series of pipes found underneath the sink, where the gray water and organic waste debris pass through to where these can be stored or disposed of.

Fire Protection System

This system is designed to proactively prevent fires from breaking out. Some of the common fixtures used in fire protection systems are smoke detectors and sprinklers.

In Business

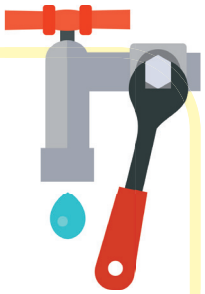
An increase in housing development creates a corresponding increase in demand for plumbing services. A business that offers plumbing services thus offers a great deal of opportunity, as it deals with a common need in the community.

Summary

There are different kinds of plumbing systems, and different kinds of tools used to build and maintain these.

Plumbing is so much a part of everyday life that knowing about it and the tools that go with it can be useful at home and in business.

Exercises



Exercise 1

Definition of terms and plumbing materials

Directions: Determine if the following statements are true or false.

_____ 1. Drainage is the process of eliminating surface or sub-surface water and solid waste.

_____ 2. Plumbers are untrained individuals who perform plumbing-related work such as installation and fixing.

_____ 3. Plumbing fixtures are apparatuses installed in kitchens and toilets, such as water closets and urinals.

_____ 4. Plumbing is the network of pipes and other fixtures that are used only for sewage and liquid waste disposal.

_____ 5. Pipe fittings are used to join pipes together.

Exercise 2

Tools, equipment and plumbing systems

Directions: Select the letter of the correct answer.

_____ 1. It is a type of ruler that can be folded and can measure up to 6 or 8 feet.

a. Push-pull ruler
b. Folding ruler
c. Protractor
d. Line level

_____ 2. It is a pointed weight connected to one end of a string.

a. Plumb bob
b. Plumbing bomb
c. Torpedo level
d. Chisel

_____ 3. It is a leveling tool used to check or measure angles.

a. Slope level
b. Protractor
c. Combination ruler
d. Plumber level

_____ 4. Its primary use is to remove burrs from piping.

a. Pipe reamer
b. Burr cutter
c. Hacksaw
d. Pipe burr cutter

_____ 5. It is used to loosen and tighten nuts.

a. Screwdriver
b. Pipe wrench
c. Nut driver
d. Hammer

_____ 6. It is used to drill holes through materials such as concrete.

a. Electric drill
b. Sledgehammer
c. Hacksaw
d. Wall holer

_____ 7. It is a network of pipes used to supply and distribute water from source to destination.

a. Vent system
b. Water supply and distribution system
c. Water filtration system
d. Drainage system

_____ 8. This system is intended to prevent water overflow and flooding during storms and typhoons.

a. Storm drainage system
b. Rainfall overflow system
c. Floodgates
d. Dam system

_____ 9. This system includes smoke detectors and sprinklers.

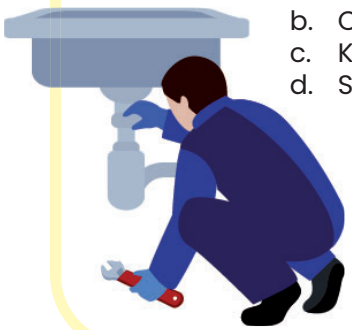
a. Electric drill
b. Sledgehammer
c. Hacksaw
d. Wall holer

_____ 10. It is the series of pipes found underneath the sink where gray water and organic waste debris pass through.

a. Kitchen waste and drainage system
b. Condensate waste and drainage system
c. Kitchen waste disposal system
d. Sanitary, waste and vent system

_____ 11. It is used in an air conditioning system to drain condensate moisture.

a. Kitchen waste and drainage system
b. Condensate waste and drainage system
c. Kitchen waste disposal system
d. Sanitary, waste and vent system



Lesson Output

To familiarize yourself with the different plumbing tools, create a slideshow with the following content:

- Identify one kind of plumbing tool from each of the 6 categories. You may include tools not discussed in this module.
- Provide an image and a description of each tool, including how it is used.

Rubrics

Criteria	5	4	3	2	1	Points
1. Content/ Functionality	The student presented six different tools. The presentation provided a description of each tool and how these are used. An image of each tool is provided.	The student presented five different tools. The presentation provided a description of each tool and how these are used. An image of each tool is also provided.	The student presented four different tools. The presentation provided a description of each tool and how these are used. Pictures of each tool are also provided.	The student presented only two or three different tools. The presentation provided a description of each tool and how these are used. An image of each tool is also provided.	The student presented only one tool. The presentation provided a description of the tool and how it is used. An image of each tool is also provided.	
2. Creativity	The student's output made use of unconventional media and materials which made it pleasing to look at.	The student's output used common media used creatively but still made the content easy to understand.	The student's output was artistic but not clear in delivery.	The student's output was plain yet only a few things were easy to understand.	The student did not attempt to be creative in any way in delivering the content of the project.	
3. Promptness	The project was completed more than 1 hour ahead of the given deadline.	The project was completed 15 minutes ahead of the given deadline.	The project was completed by the given deadline.	The project was completed more than 5 minutes after the given deadline.	The project was completed more than a day after the given deadline.	
Total						

LESSON 3 Basic Masonry

Learning Outcomes

At the end of the lesson, you are expected to be able to:

1. Define masonry.
2. Identify the different masonry tools and equipment.
3. List examples of old Philippine masonry work.

Engage

Watch and learn thru the following video on how people in Batanes build sustainable houses using stones.

https://www.youtube.com/watch?v=CeShwN5SNzM

Trivia

Did you know that the term *bahay na bato* refers to houses that were built during the Spanish colonial period? The first of these houses were made in the 16th century but these proved to be susceptible to earthquakes. Later, the basic design of the bahay kubo was integrated into the basic design of these houses, and thus was born the boxlike *bahay na bato* which has a foundation of brick and mortar and a top made of wood. The 19th century is considered as the peak of these stone houses in the Philippines when artistic styles were applied to the structures.

In Batanes, stone houses are called *Sinadumparan*, and are made of limestone, coral, and cogon grass for the roof. All the materials are found in the local environment.

Explore

Let's test how much you know about different terms associated with masonry.

Multiple choice. Encircle the letter of the correct answer.

_____ 1. Which of the following is an example of an aggregate?

a. Sand
b. Adobe
c. Water
d. Cement

_____ 2. It refers to structural material such as brick and tile which can be assembled.

a. Concrete Masonry Unit
b. Course
c. Wythe
d. Mortar

_____ 3. It refers to the building of a structure with the use of stones or bricks.

a. Carpentry
b. Architecture
c. Masonry
d. Construction

_____ 4. It refers to the horizontal projection in the building's wall.

a. Pillar
b. Cornice
c. Brick
d. Course

_____ 5. It is a brick used for building that is made out of earth and other organic materials.

a. Cement
b. Tiles
c. Concrete
d. Adobe

_____ 6. Which of the following is NOT a tool for cutting?

a. Power saw
b. Scaffolding
c. Chisel
d. Splitters

_____ 7. Which of the following is NOT a tool for levelling?

a. Spirit level
b. Chisel
c. Plumb bob
d. Mason's line

_____ 8. Which of the following is a binding material?

a. Mortar
b. Adobe
c. CMU
d. Sand

_____ 9. It is used for carrying several bricks from one place to another.

a. Scaffolding
b. Shovel
c. Brick tongs
d. Jointers

_____ 10. It pertains to the row of bricks or any concrete masonry units.

a. Cornice
b. Wall
c. Division
d. Course

Research

Research ancient Egyptian architecture and how masonry played a big part in it.

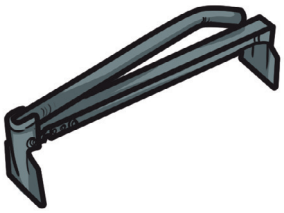
Explain

Definition of Terms

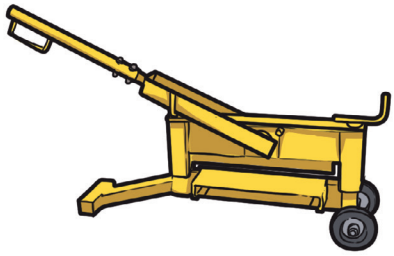
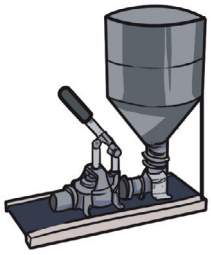
Term	Definition
Adobe	It is a brick used for building that is made of earth and other organic materials.
Aggregate	It is a material that is mixed with cement and gives stability and volume. Sand is an example of this.
Cement	It is a binding element mixed with other materials to create mortar and concrete which are building materials in construction.
Concrete	It is a binding material that is made of cement, sand, and gravel.
Concrete Masonry Unit	Abbreviated as CMU. It refers to the structural materials such as brick and tile which can be assembled.
Cornice	In old stone architectures, it is the horizontal projection in the building wall that accentuates the building as well as keeps rainwater off the building walls.
Course	It pertains to the row of bricks or some other concrete masonry unit.
Grout	It is a binding material made of a cement mixture that works as a filler for voids and spaces to achieve an even surface.
Masonry	It refers to the structure of a building made of stone or brick.
Mortar	It is a binding material used for bricks, blocks, and stones and is composed of cement, fine sand, and lime.

Tools and Equipment Used in Masonry

 **Masonry Hammers**	Hammers are part of a handyman's basic toolkit. Its common uses are: (1) to drive nails into wood or concrete, (2) to break a concrete object into pieces, (3) and to carve or cut materials like wood.
 **Masonry Chisels**	Masonry chisels are tools for cutting and scoring stones. It is also used for smoothening or cleaning the surface of the concrete.
 **Jointer**	Jointers are tools made of steel to finish mortar joints after they have hardened. The hardened mortars are scraped off to reveal indentations in between bricks giving a finished and polished look. The following are some types of jointer: • Convex • V-Jointer • Grapevine • Slicker • Rake Out
 **Brush**	A masonry brush is used to apply coats/paints into the concrete and also to dust off powder residues left during construction.

 **Brick Tongs**	Brick tongs are used for carrying several bricks from one place to another.
 **Masonry Trowel**	A masonry trowel looks like a shovel but much smaller and is designed to be used with one hand for mixing, spreading, leveling, and shaping mortar or concrete.
 **Shovel**	A shovel is used for digging, mixing cement, and moving loose material such as stones and dirt.
 **Mixing Tub**	A mixing tub is a container where you mix a liquid, such as water, and aggregates when making mortar.
 **Leveler/Spirit Level**	From the word itself, the core purpose of a leveler is to level objects and structures with respect to gravity and make sure that they are not askew.

 **Mason's Line**	A mason's line is an essential tool to ensure a straight wall. It is threadlike and it is secured taut from one end to the other to form a straight line that can serve as a guide for assembling.
 **Mason's Square**	A mason's square is an instrument used to ensure the squareness of corners which should be straight and form a right angle.
 **Chalk Line**	A chalk line is a marking tool used to draw straight lines.
 **Plumb Bob**	The plumb bob is a tool comprised of a string and pointed metal object that is used in finding a vertical reference.
 **Power Concrete Saw**	A power concrete saw is an equipment used to cut through wood, even concrete, with precision and efficiency. Miter saws, chainsaws and table saws are some of what we call power saws.

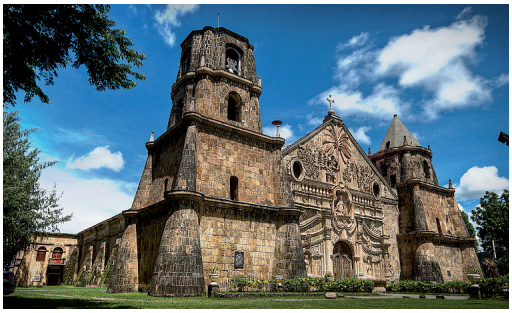
 **Splitter**	A splitter is a non-motorized instrument that is used to cut bricks and other masonry units. It uses hydraulic power.
 **Pumps and Vibrators**	Pumps and vibrators are efficient tools for transferring a large volume of binding materials such as grout, mortar, and concrete mixtures to an elevated place. The most common type we can see is the concrete pump which is typically used in large-scale commercial projects. The main purpose of this type of equipment is to save time.
 **Scaffolding**	Scaffolding are stable and sturdy support platforms used by masons and construction workers as a means to ascend and descend to and from elevated areas of the structure being built. There are 3 types of scaffolding: • Man Lift • Supported Scaffolding • Suspended Scaffolding

Examples of old Philippine masonry works

The vestiges of Spanish colonization of the Philippines in the 16th century are still visible in the baroque churches, old universities, and ancestral homes in different parts of the country. These structures signify an important time in the history of our country and also stand as a testament to how good craftsmanship techniques are and how the right materials can make structures last for centuries.

San Agustin church in Paoay, Ilocos Norte

San Agustin Church in Intramuros



Santo Tomas de Villanueva church in Miag-ao, Iloilo

Nuestra Señora De La Asuncion in Santa Maria, Ilocos Sur

House of Dakay in Ivana, Batanes

Spanish houses in Vigan, Ilocos Sur

Intramuros, Manila

In Business

Masonry plays an important part in the construction industry. That being said, a person who displays great skill in this area can land jobs easily and can go far in the masonry industry. Whether it is a commercial establishment or a residence, clients expect the structure to be solid, strong, and steadfast. This can be achieved if the right materials are used, skillful masonry works are applied, and equipment are properly utilized.

Summary

In this module, we have learned basic information about masonry. Sufficient knowledge and skill in masonry are necessary to build a strong and stable structure. There are also various tools that we should be familiar with in order to perform masonry duties well. The old Spanish structures made using stones and bricks that still exist in our country nowadays prove that masonry works are timeless.

Exercises

Exercise 1

Directions: Fill in the blanks with the correct word to complete the sentences.

1. Adobe is a brick used for building that is made out of earth and other _____ materials.

2. Aggregate is a material that is mixed with _____ to give it stability and volume.

3. Course pertains to the row of bricks or other concrete _____ unit.

4. Grout is a binding material made of a cement mixture that works as a _____ for voids and spaces to achieve an even surface.

5. Masonry refers to the structure of a building made of stone or _____.

Exercise 2

Directions: Encircle the letter of the correct answer.

1. This tool is used for digging, mixing cement, and moving loose materials such as stones and dirt.

    a. Shovel
    b. Trowel
    c. Jointers
    d. Chisel

2. This tool is laid out taut from one end to another for the mason to follow to ensure a straight wall

    a. Chalk line
    b. Mason's line
    c. Mason's square
    d. Leveler

3. Which of the following is NOT a cutting tool?

    a. Power saw
    b. Plumb bob
    c. Hammer
    d. Splitter

4. Which of the following is NOT a type of scaffolding?

    a. Man Lift
    b. Supported Scaffolding
    c. Suspended Scaffolding
    d. Elevated Scaffolding

5. It is a tool used to finish mortar joints after they have hardened.

    a. Jointers
    b. Chisel
    c. Hammer
    d. Splitters

Lesson Output

Create a slideshow that features 5 different old masonry work in the Philippines. Include labels and information such as the year built, and the location in the description of each of the structures.

Rubrics

Criteria	5	4	3	2	1	Points
1. Content/ Functionality	The student featured 5 examples of old masonry work in the Philippines and added labels and other information in the description.	The student featured 5 examples of old masonry work in the Philippines and added labels and some description.	The student featured 5 examples of old masonry work in the Philippines which are labeled.	The student featured less than 5 examples of old masonry work in the Philippines which are labeled.	The student featured less than 5 examples of old masonry work which aren't labeled.	
2. Creativity	The approach of the student used creative elements for the slideshow which effectively enhanced the delivered content.	The approach of the student used creative elements for the slideshow which effectively supported the delivered content.	The approach of the student used creative elements for the slideshow which fairly supported the delivered content.	The approach of the student used creative elements for the slideshow which somewhat took away from the delivered content.	The approach of the student used plain elements for the slideshow which did not make the delivered content appealing.	
3. Promptness	The project was completed more than 1 day ahead of the given deadline.	The project was completed 1 day ahead of the given deadline.	The project was completed by the given deadline.	The project was completed 1 day after the given deadline.	The project was completed more than a day after the given deadline.	
Total						