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# Pastry and Bakery



# TOPIC 3:

# BREAD




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# LEARNING OUTCOMES

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01 Describe types of bread

02 Explain steps in bread production

03 Bread faults and causes



# LEARNING OUTLINES

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Brief introduction on lean dough, rich dough, laminated or rolled-in yeast dough products.



Steps in bread production which are: scaling ingredients, mixing, bulk fermentation, folding, scaling or portioning of dough, pre-shaping or rounding, benching, makeup and planning, proofing, baking, cooling, storing.

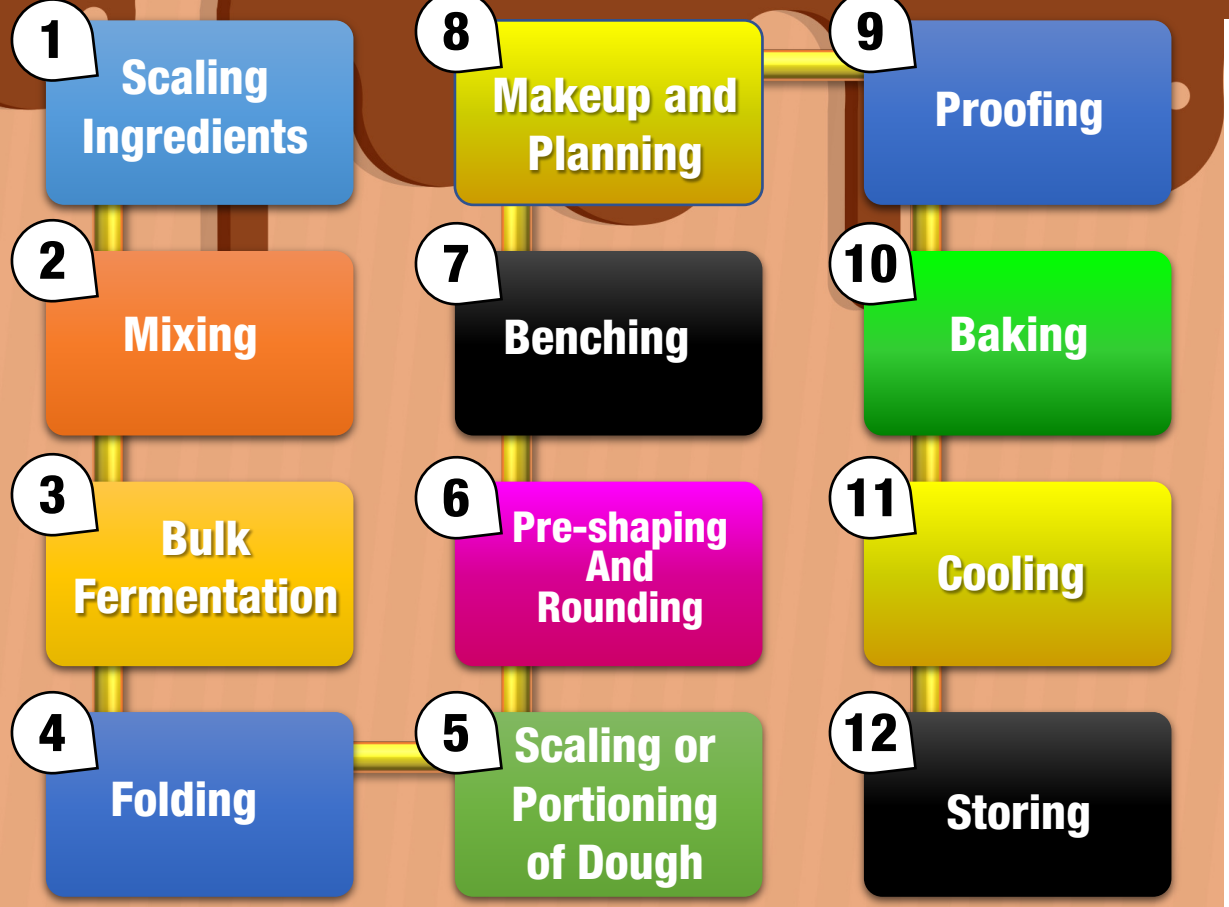



Bread faults involve the quality of bread in term of its shape, flavour, texture and crumb, as well as crust. Those faults are caused by factors related to ingredients and procedures.



# BREAD MAKING PRODUCTION

## 12 Steps




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Lean dough, rich dough, laminated or rolled-in yeast dough products are examples of common breads.

What makes them differ?

Lean dough is a bread dough with low fat and sugar content. Examples are french breads, other white or whole wheat breads or breads made with other grains.

On the other hand, rich dough has higher ratio of fat, sugar and sometimes eggs. To name a few, brioche, coffee cakes and tea rolls.

Laminated dough is a basic dough of flour, water and salt, folded around butter. Puff pastry is one of its example. Croissant is another example with added yeast and milk which make it richer and rise more .

Method for making lean and rich dough is similar. In the next slide, we are going to learn how to make them step by step.

Steps in lean and rich bread includes:
Scaling ingredients, mixing, bulk fermentation, folding, scaling or portioning of dough, pre-shaping, rounding, benching, makeup and planning, proofing, baking, cooling, storing

# STEP 1 SCALING INGREDIENTS










It is very important to know the best tools to measure bread ingredients. Dry ingredients can either be weighed using balance or measuring cups. And two common tools to measure liquid are measuring cup or measuring jar.

Be sure to use a spoon to scoop dry ingredients such as flour, sugar, into the measuring cup or spoon. Use a knife or other straight edged utensil to level the ingredients across the measuring cup or spoon.

Use the right balance for accurate measurement. Note the minimum and maximum weight for different types of balance.

You may use balance with reading weight of 0.1g to 3 kg or 0.1g to 500g if the recipe requires for ingredients lesser than 1g of weight.

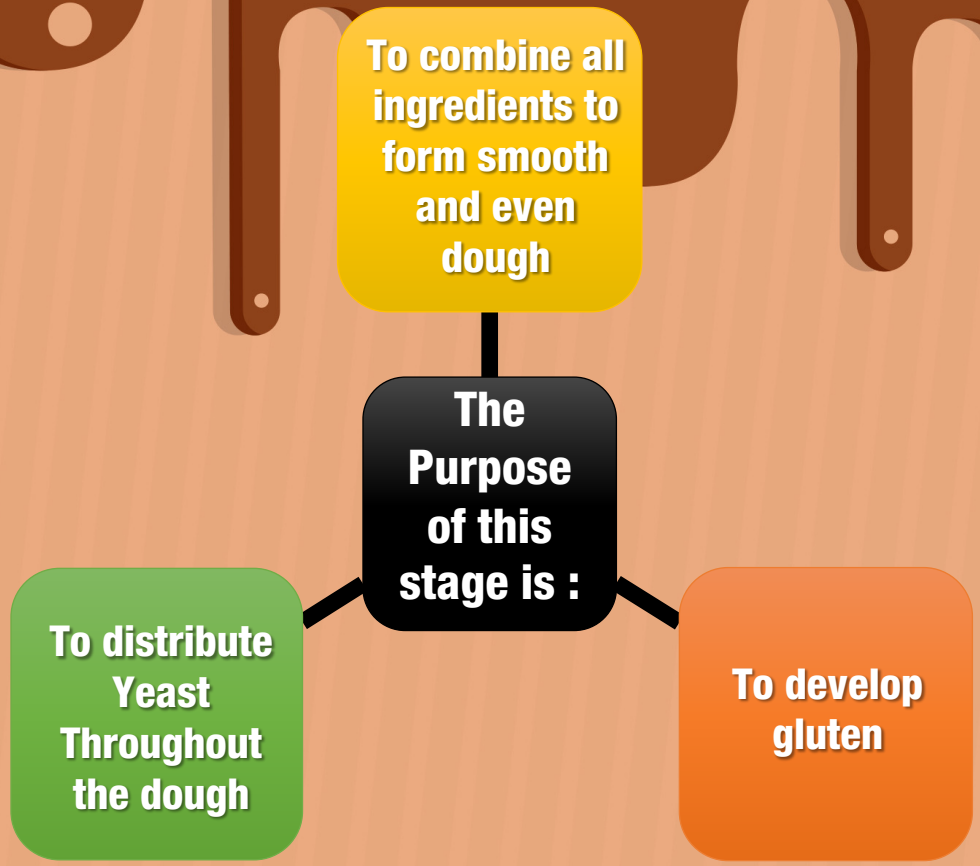
Ingredients with amount of 1g or more may be weighed using balance with the minimum and maximum range of 2g to 2kg or 1g to 7kg or 1g to 10kg.

STEP 2

# MIXING

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The purpose of this stage is :

- To combine all ingredients to form smooth and even dough
- To distribute yeast throughout the dough
- To develop gluten

Important note: if you use mixer for this process, use paddle attachment to mix all dry ingredients. Before adding liquids, be sure the change attachment with hook attachment.

Three phases involved during mixing process are:
**Pickup** : at this phase, flour and other dry ingredients started to hydrate and combine with wet ingredients such as water, milk or other liquids.
Next, b phase. All dry ingredients are now combined well with wet ingredients and started to form a dough that is still rough in texture.
In final phase or **development** phase, smooth dough started to form due to gluten has developed.

You may need to knead the dough to develop the gluten. This is how you knead the dough. Be careful not to stretch and break the gluten.
If you wonder when to stop mixing, here are the tips:
Dough should become smooth
Dough becomes elastic and resistance so it can easily be stretched. A test called windowpane test or gluten window. Take a bit of the dough. Stretch into a thin membrane using both hands. If the dough is easily stretched and thin window can be formed without breaking, the gluten in the dough is developed. You should then proceed to next step.

STEP 3

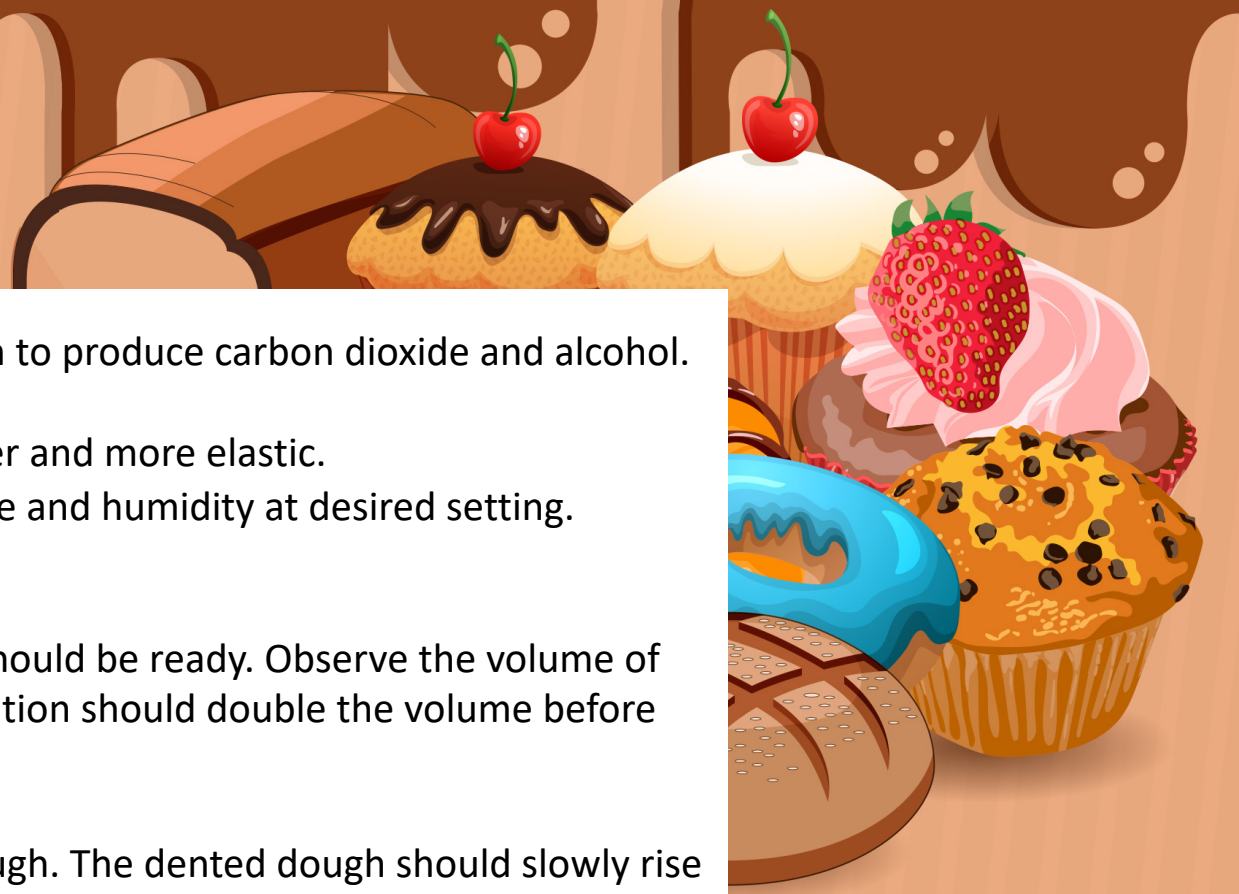
# BULK FERMENTATION

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**YEAST + SUGAR + STARCH = CO2 + ALCOHOL**



It is a process where yeast acts on the sugar and starch in the dough to produce carbon dioxide and alcohol.

During this process, gluten continue to develop to become smoother and more elastic.
You may ferment the dough using proofer with 35-37°C temperature and humidity at desired setting.
Or at an environment with temperature of 27°C and high humidity.

After at least 3 hours or up to 5 hours of fermentation, the dough should be ready. Observe the volume of the dough before and after fermentation. The dough after fermentation should double the volume before undergone fermentation.

Here how you should test your dough. Prick your finger into the dough. The dented dough should slowly rise indicating fermentation process is sufficient.

# STEP 4 PUNCHING AND FOLDING

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## The purpose of this step is :

01 To remove carbon dioxide gas

02 To redistribute yeast for development

03 To rest the gluten

04 To obtain even temperature throughout the dough



You may fold the dough on workbench or in the dough container depending on the size of the dough.

This is how you should do it:

**Step 1** - Turn the dough out on a surface dusted with enough flour so the dough does not stick to the surface.

**Step 2** - Grasp one of the sides of the dough (either on the right or the left) and fold it a third of the way over the rest of the dough.

**Step 3** – Finally, turn the dough over to ensure the seams are placed bottom. Lift and place into the container.

# STEP 5

# SCALING OR PORTIONING OF DOUGH

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Next, scaling. This step is important to ensure finished products have standardized weight. The weight should follow required weight in the recipe. For instance, weight for mini pizza dough is about 80g. You may need around 50g dough for soft roll.

What you need to do is to cut the dough into one or two pieces as close as possible to desired weight. Then, estimate the correct size, scale them and finally check and adjust the weight.





# STEP 6 PRE-SHAPING & ROUNDING

Pre-shaping or rounding is aimed to form the dough into smooth and uniform pieces before benching, so the dough can be easily form into finished shape.

Many bakers form the dough into round balls. Some bakers on the other hand prefer to pre-shape dough closer into final shape. For example cylinder shape which is later shaped into baguette.

Watch out this video for rounding technique. Make sure the dough with seam is placed at the bottom. Cup your hands around the dough and roll the dough in tight circle on the workbench to even out the shape.



# STEP 7-8 BENCHING, MAKEUP & PLANNING

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## Step 7

Benching is step to rest the dough for 10-20 minutes before shaping into final products. During this process, gluten is relaxed to allow easier formation of final shape.

## Step 8

After benching, dough is made up into ending shapes such as:

- French loaf
- Soft roll
- Plaited bread
- Mini pizza



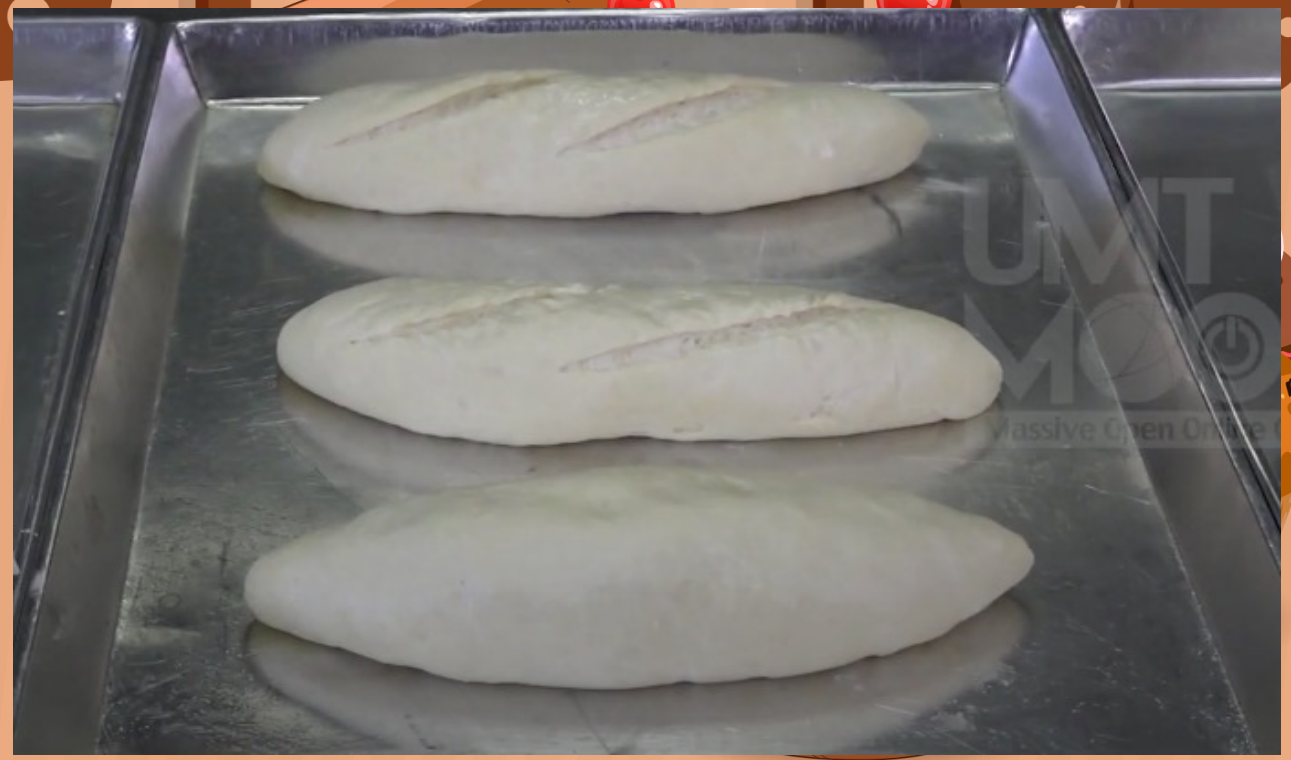


# STEP 9 PROOFING

Proofing is the continuation of yeast fermentation process intended to increase the volume of shaped dough.

Underproofing leads to poor volume and dense texture.

Overproofing produces bread with coarse texture and some loss of flavour.



STEP 10

# BAKING

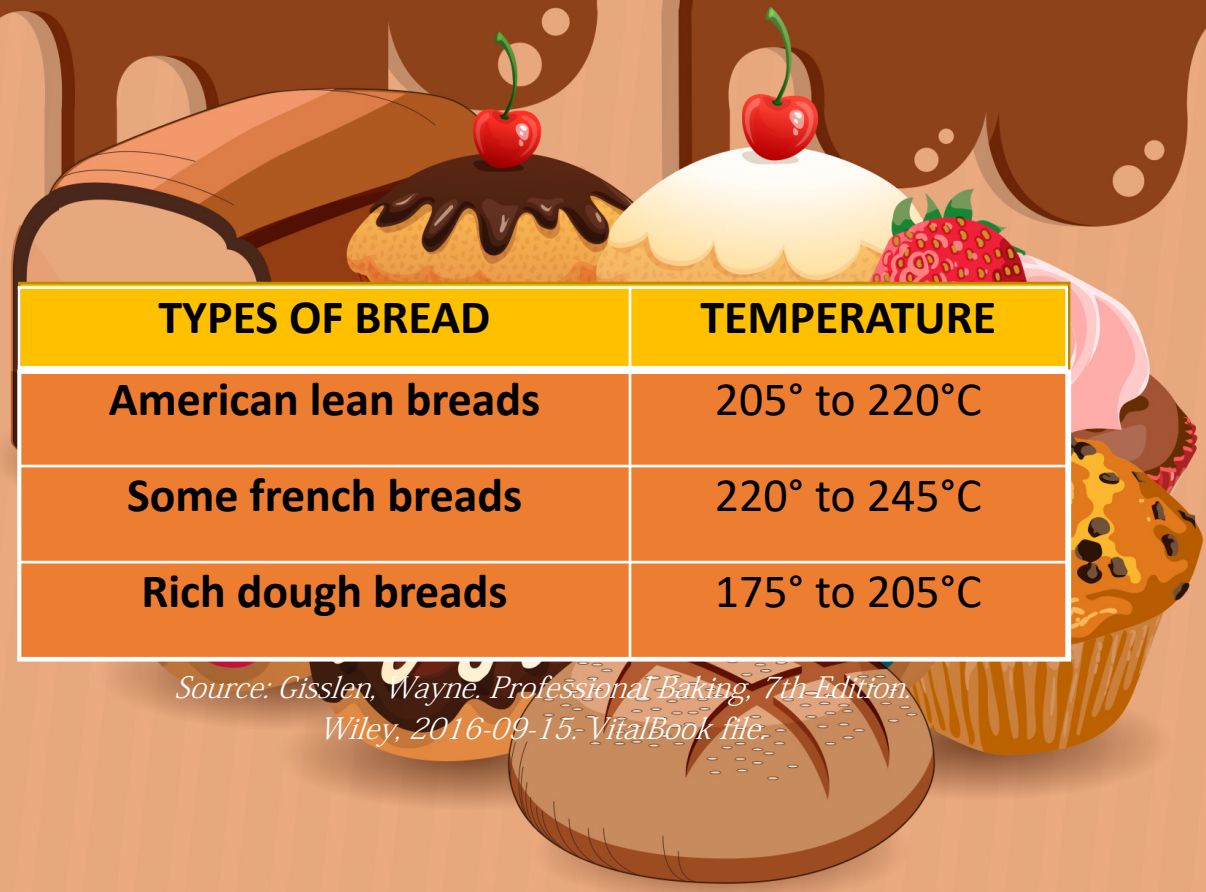
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## COAGULATION OF PROTEIN

## GELATINIZATION OF STARCH



| TYPES OF BREAD | TEMPERATURE |
|---|---|
| American lean breads | 205° to 220°C |
| Some french breads | 220° to 245°C |
| Rich dough breads | 175° to 205°C |

*Source: Gisslen, Wayne. Professional Baking, 7th Edition. Wiley, 2016-09-15. VitalBook file.*

# STEP 10 BAKING

Baking will coagulate protein and gelatinize starch in the dough. It is very crucial to preheat the oven before baking. This will affect the production and expansion of trapped gas produced by heat in the oven which may affect the volume of the bread.

The term oven spring or oven kick or sometimes called oven shoot is used for that condition.

More oven spring means you will get a light and airy interior of bread. Meanwhile, little oven spring indicates bread with a dense and compact crumb.

To bake, finishing such as application of washes and scoring need to be done to certain products.

For washes,
Water is used for french bread. It helps to prevent crust from drying quickly and becoming too thick.
Starch paste is used for rye bread. Also acts to retain moisture and at the same time makes the crust shine.
Egg wash contributes to shiny brown crust to most rich doughs and danish pastry.
For convenience purposes, commercial aerosol washes can be used to give shiny crust and as an agent to adhere toppings such as nuts or seeds on bread.

# STEP 10 BAKING

Scoring needs to be done for hard crusted bread dough to allow expansion. Proper scoring allowed the loaves to expand better in oven and achieved greater volume and have more open crumb structure.

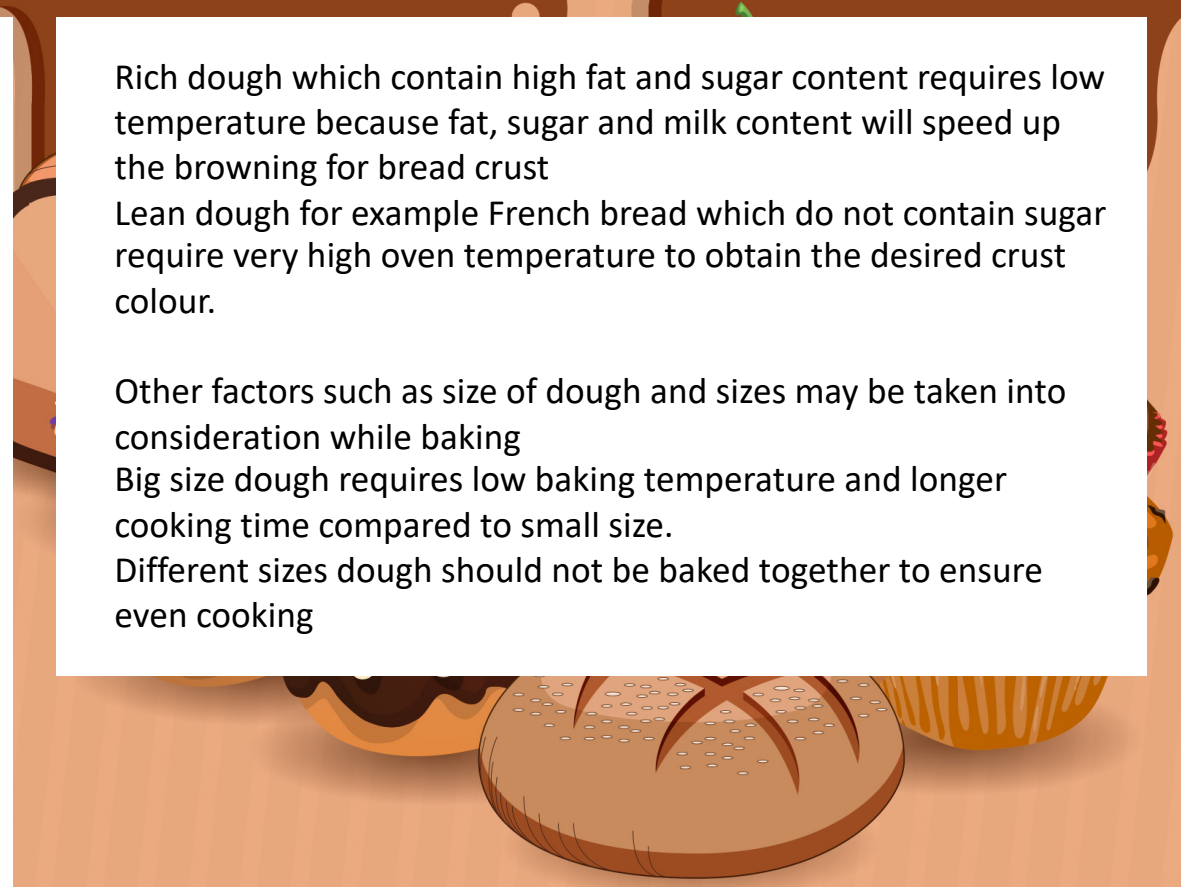
Baker's lame can be used to score. Or if you don't have it, paring knife will fit the purpose.

Different types of bread require certain baking temperature. REFER TO TABLE IN SLIDE.

Types of bread
Temperature
American lean breads
205° to 220°C
Some french breads
220° to 245°C
Rich dough breads
175° to 205°C
Source: Gisslen, Wayne. Professional Baking, 7th Edition. Wiley, 2016-09-15. VitalBook file.
Note that different bread types with different ratio of fat and sugar require different baking temperature and also time.

Rich dough which contain high fat and sugar content requires low temperature because fat, sugar and milk content will speed up the browning for bread crust
Lean dough for example French bread which do not contain sugar require very high oven temperature to obtain the desired crust colour.

Other factors such as size of dough and sizes may be taken into consideration while baking
Big size dough requires low baking temperature and longer cooking time compared to small size.
Different sizes dough should not be baked together to ensure even cooking



# STEP 11-12 COOLING & STORING

**Step 11**
Cooling

Breads must be cooled on cooling rack to let the excess moisture and alcohol created during fermentation escaped.

**Step 12**
Storing

Fresh breads which are to be served within 8 hours can be stored on racks
Wrap in moisture proof bag/cling wrap for longer storage.
French bread or other hard crusted bread should never be wrapped instead use porous bag or other packaging which allows moisture to escape.
Freezing bread could stop starch from recrystallizing and stale






# BREAD FAULTS AND CAUSES - SHAPE

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1. Improper shape of bread
2. Split or burst crust
3. Improper volume of bread size



# BREAD FAULTS AND CAUSES - SHAPE

**Now lets learn what are examples of bread faults and their causes.**

Bread faults involve the quality of bread in term of its shape, flavour, texture and crumb, as well as crust. Those faults are caused by factors related to ingredients and procedures.

**Bread faults – shape**
One common mistake in bread making is mistake regarding shape.

This include improper shape of bread, split or burst crust and improper volume of bread size.

Poor shape is caused by too much liquid, flour to weak, improper molding or makeup, improper fermentation or proofing and too much steam.

Split or burst bread crust happened due to overmixing, underfermented dough, improper molding, uneven heat in oven, oven too hot or insufficient steam.

Faults of bread volume can either be poor in volume or too much volume. Poor volume is the result of too much salt, too little yeast, too little liquid, weak flour is used, under or over mixing of dough or oven was too hot for baking. In contrast, too much volume in bread is caused by too little salt, too much yeast as well as too much dough scaled or the dough has been overproofed.









# BREAD FAULTS AND CAUSES - FLAVOUR

Bread flavour could also be affected if something goes wrong during bread making process.
Flat taste could be the result of too little salt used in the formulation. Other factors such as poor sanitation, under or overfermented dough and using spoil ingredients could lead to poor flavour. Be sure to **check for expiry date** on the packaging of ingredients to avoid using spoil ingredients.



# BREAD FAULTS AND CAUSES - TEXTURE & CRUMB

Too dense or close-grained : too much salt, too little liquid, too little yeast, under fermented, under proofed.

Too coarse or open : too much yeast, too much liquid, incorrect mixing time, improper fermentation, over proofed, pan too large.

Streaked crumb : improper mixing procedure, poor molding or makeup technique, too much flour used for dusting
Poor texture or crumbly : flour too weak, too little salt, fermentation too long or too short, over proofed, baking temperature too low.

Gray crumb : fermentation time or temperature too high.






# BREAD FAULTS AND CAUSES - CRUST

**Too dark**: too much sugar or milk, under fermented dough, oven temperature too high, baking time too long, insufficient steam at beginning of baking.

**Too pale**: too little sugar or milk, over fermented dough, over proofed, oven temperature too low, baking time too short, too much steam in oven.

**Too thick**: too little sugar or fat, improper fermentation, baked too long or at wrong temperature, too little steam
Blisters on crust: too much liquid, improper fermentation, improper shaping of load



# CONCLUSION

- Different types of breads such as rich and lean breads as well as laminated dough or puff pastry
- 12 steps in bread making :

  *Scaling ingredients, mixing, bulk fermentation, folding, scaling or portioning of dough, pre-shaping and rounding, benching, makeup and planning, proofing, baking, cooling, storing*
- Bread faults : improper shape, texture and crumb or crust or inappropriate flavour
- Causes : fail to use quality ingredients , inaccurate measurement and improper procedures



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# Thank You



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