STEAM

CLIL

TECHNOLOGICAL FIELDS • UDA 2:
Food Technologies
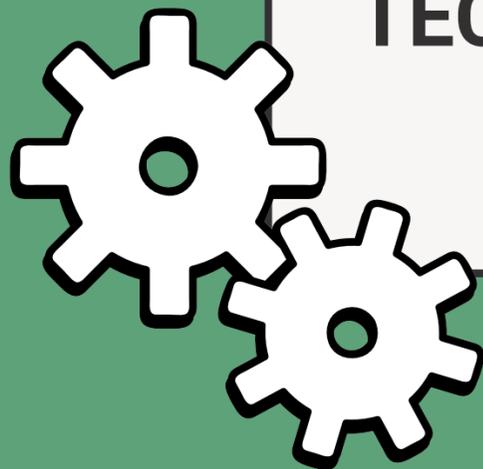
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1. CREATE YOUR OWN MAP

Have a look at the mind map below, then sketch your own version in your exercise book.
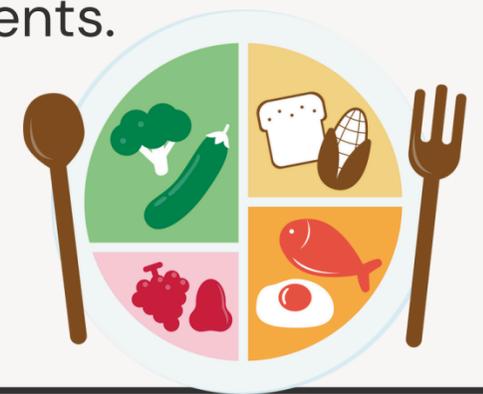
NUTRITION

The intake of food to meet the body's energy and nutrient needs.

DIET AND BALANCED DIET

A diet is the collection of foods and beverages typically consumed, whereas a balanced diet provides the body with the necessary energy and nutrients.

NUTRIENTS

Energy Function
- Carbohydrates
- Fats
- Proteins

Plastic Function
- Proteins
- Fats
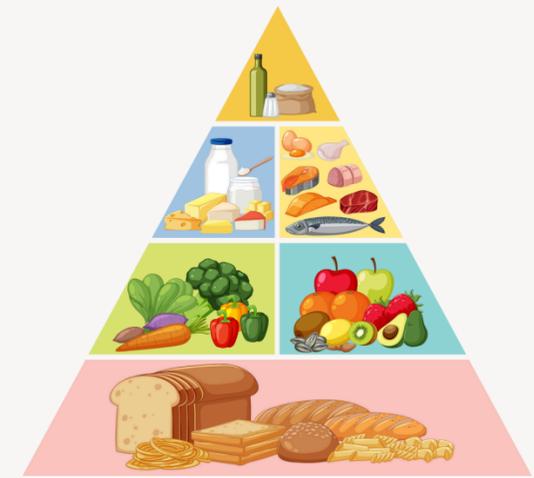- Minerals

Regulatory Function
- Water
- Minerals
- Vitamins

Protective Function
- Vitamins

FOOD CLASSIFICATION

- Primary or supplementary
- Of plant, animal, or mineral origin

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FOOD SUPPLY CHAIN

The stages a food product goes through from field to table:
- Agricultural production
- Processing
- Distribution
- Retail sale
- Consumption

FOOD PROCESSING

How to obtain finished, edible, and safe products:
- Primary processing
- Secondary processing
- Tertiary processing

AGENTS THAT CAUSE FOOD DETERIORATION

- Physical agents (oxygen, light, humidity)
- Microorganisms (bacteria, yeasts, moulds)

FOOD PRESERVATION

- Salting
- Smoking
- Drying
- Refrigeration
- Freezing
- Pasteurisation

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FOOD SAFETY

Ensuring that a food product will not cause harm to the consumer, verified through:
- Regulations
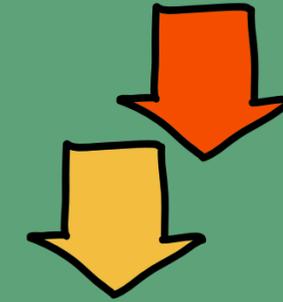- Traceability
- Health checks
- Labelling

FOOD SUSTAINABILITY

- Consumption of water and natural resources
- Energy waste
- Excessive use of plastic packaging
- Emissions
- Food waste
- Optimising resources
- Saving energy
- Protecting the environment
- Sustainable eating

2. CREATE YOUR OWN TEST

a. Indicate whether the following statements are true (T) or false (F).

1 Animal-derived foods are mainly rich in carbohydrates.

T F

1 Fats provide long-term energy.

T F

1 Vitamins have an energy function.

T F

1 The energy requirements of a pre-adolescent are lower than those of an adult.

T F

1 Tertiary processing preserves food in a form close to its natural state.

T F

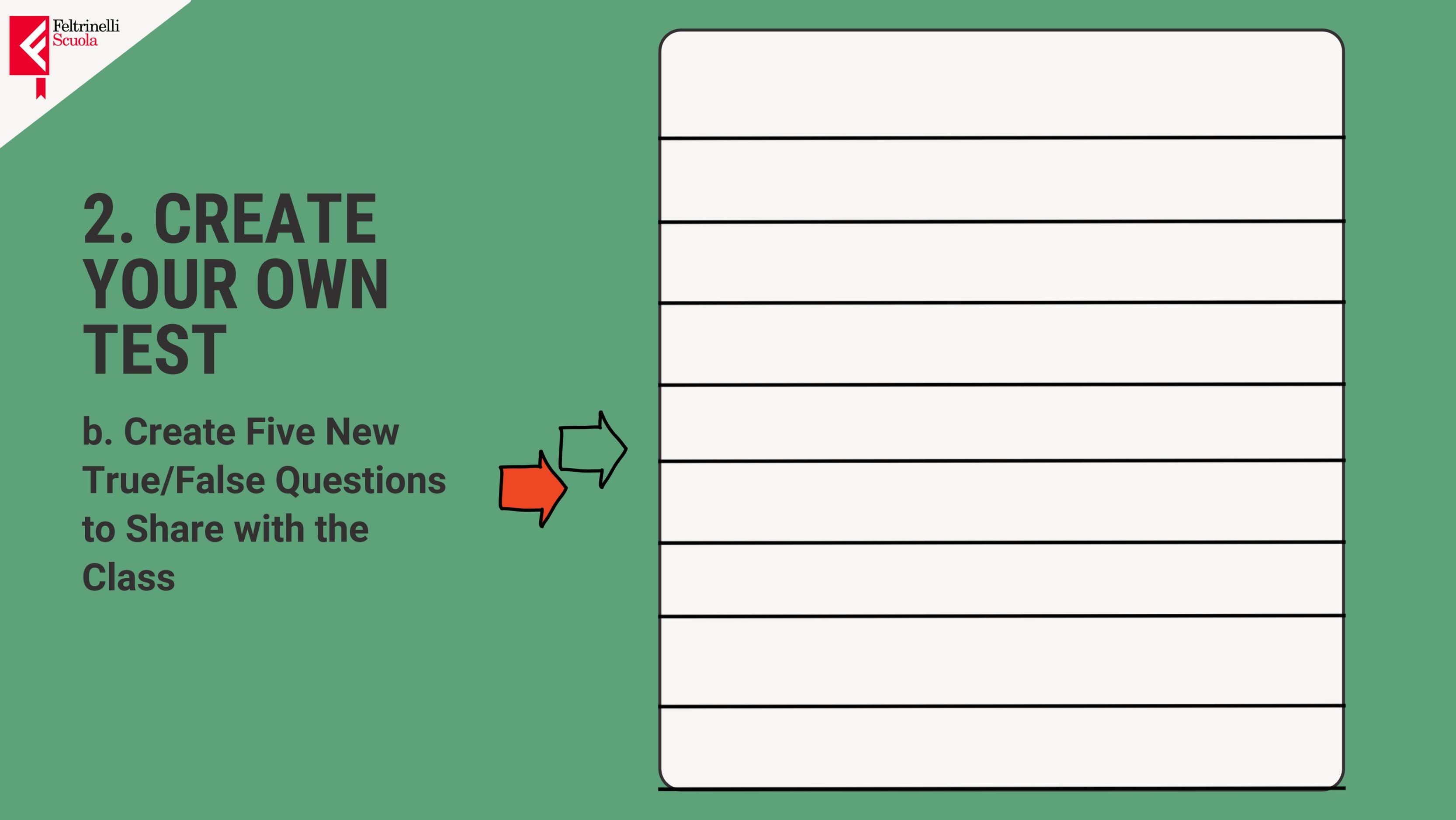**1** The food supply chain is the same and identical for all foods.

T F

1 Pasteurisation involves heating liquids to eliminate harmful bacteria.
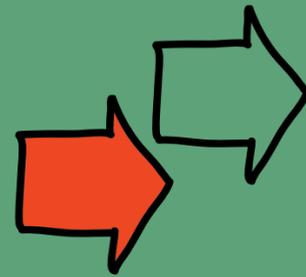
T F

1 Energy waste in refrigeration is one of the major environmental issues.

T F

2. CREATE YOUR OWN TEST

b. Create Five New True/False Questions to Share with the Class

3. ANALYSIS OF MEAT CONSUMPTION DATA IN ITALY

Compared to the rest of Europe, **Italy has a lower per capita consumption of meat**. The table shows **annual meat consumption from 2020 to 2023.**

Represent the data in the graph or chart you think is most appropriate. You can draw it on graph paper, millimetre paper, or use an Excel sheet.

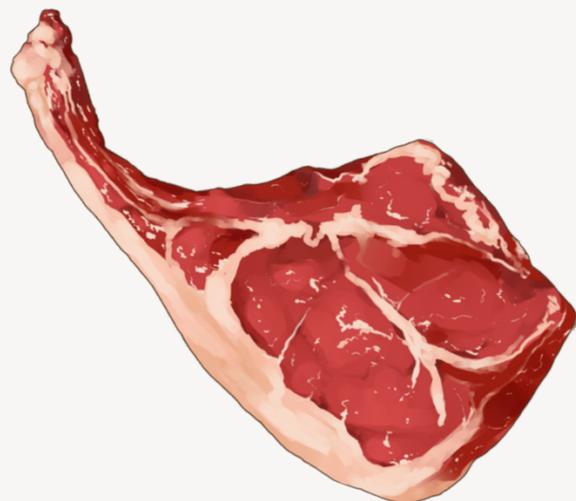| Type of Meat	2020 (kg per capita)	2021 (kg per capita)	2022 (kg per capita)	2023 (kg per capita)
Beef	17	16	16.3	15
Pork and Processed Meats	29	27.9	28.4	28.1
Poultry	19	20	20.5	21.4

SUMMARY

1

BEEF

A decline is observed, influenced by more sustainable dietary choices and health concerns.

2

PORK

A slight decrease in consumption is noted, reflecting a growing interest in lighter and healthier alternatives.
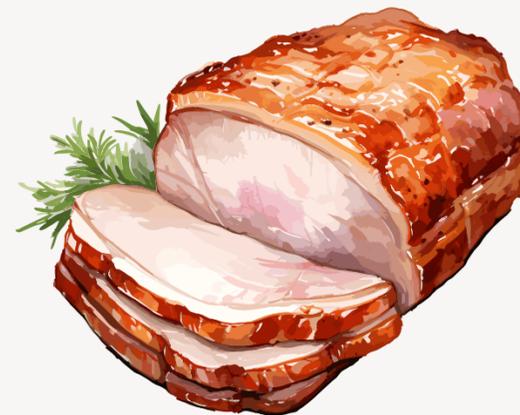
3

POULTRY

There is a slight increase, driven by the perception of poultry as a healthier and more versatile option.

4. FOOD CONSUMPTION SURVEY

In small groups, **create a brief questionnaire on daily food consumption, then administer it to at least 10 people.** Afterward, **analyse the data collected and represent it in a graph** (using graph paper, millimetre paper, or an Excel sheet). In class, compare the data from the different groups and relate it to national statistics.

According to national statistical surveys, the most commonly consumed foods in Italy are cereals and cereal-based products (99% of consumers): pasta (79%), bread (76%), and biscuits (57%) are the most popular products, followed by savoury baked goods other than bread and pizza (48%) and pizza (34%). 8% of cereals are wholegrain, and they are mostly consumed by the adult population. **Sweets are consumed by 77% of people. Cheese is eaten by 89% of people**, followed by milk (65%) and yoghurt (29%).

The most commonly consumed fruits are apples (36%), bananas (31%), pears (13%), and oranges (11%). Vegetables are consumed by 89% of people (with fresh tomatoes at 63%).

Processed meats (cold cuts and sausages) **are the most common at the table** (59% of consumers), more so than beef (48%), poultry (42%), and pork (12%). Fresh fish is consumed by 20%, while preserved fish and seafood (such as canned tuna) are consumed by 28%. Fresh or frozen shellfish are consumed by 11%. **The average daily consumption of eggs is 47%. Among young people, legumes are consumed by only 25%.**

5. ANALYSIS OF A FOOD LABEL

Being able to interpret food labels is essential for understanding their nutritional value.
Individually or in a small group, **collect the nutritional labels from various packaged foods and analyse their nutritional profile** (identify the content of fats, carbohydrates, proteins, vitamins, and minerals). **Then, create comparative tables to highlight the differences between the foods.** Finally, propose improvements for less healthy products and design an alternative label with an enhanced graphic design.
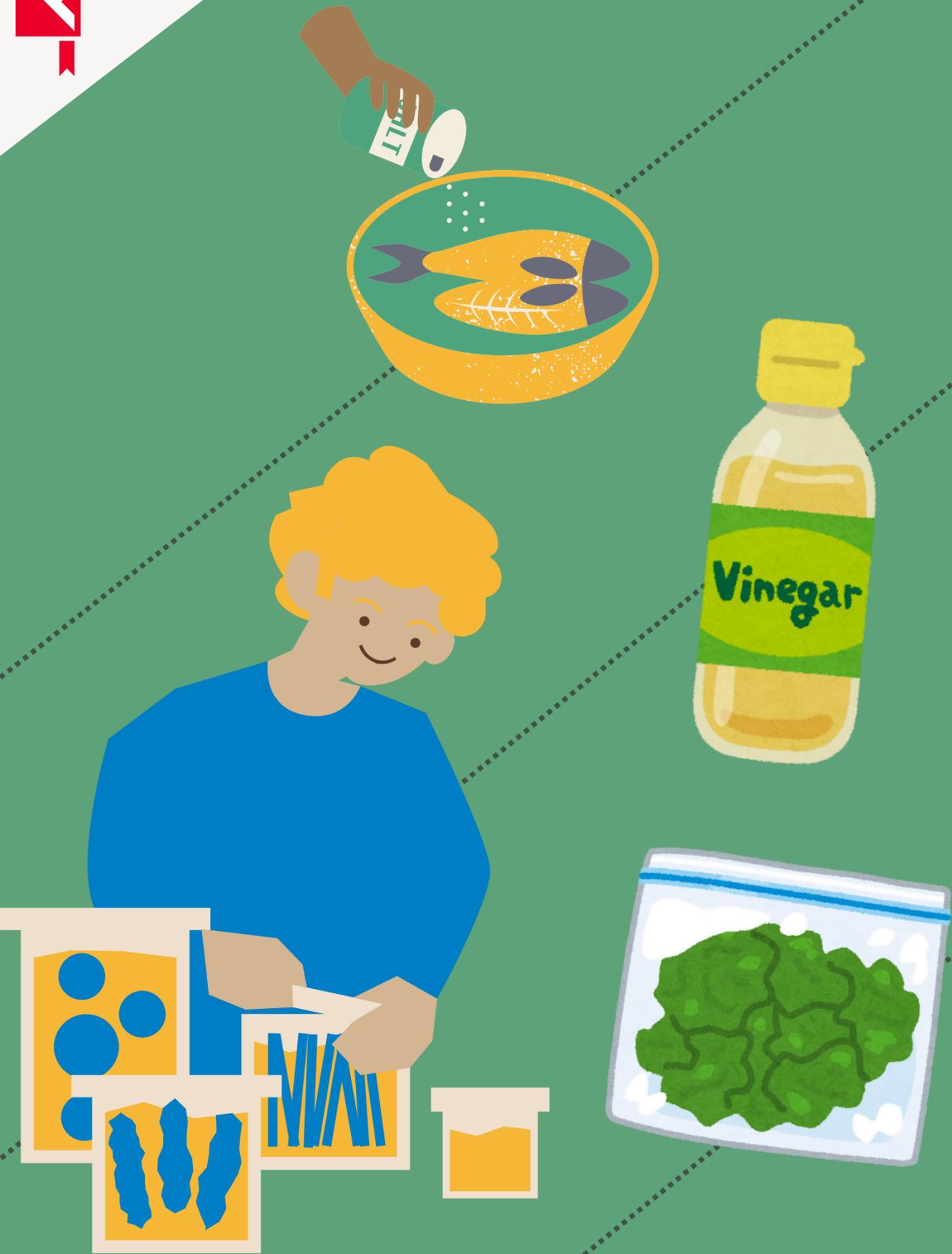
Nutrition Facts

Serving Size oz.
Serving Per Container

Amount Per Serving:

Calories	Calories From Fat

	% Daily value*
Total Fat	%
Saturated Fat	%
Trans Fat	
Cholesterol	%
Sodium	%
Total Carbohydrate	%
Dietary Fiber	%
Sugars	
Protein	
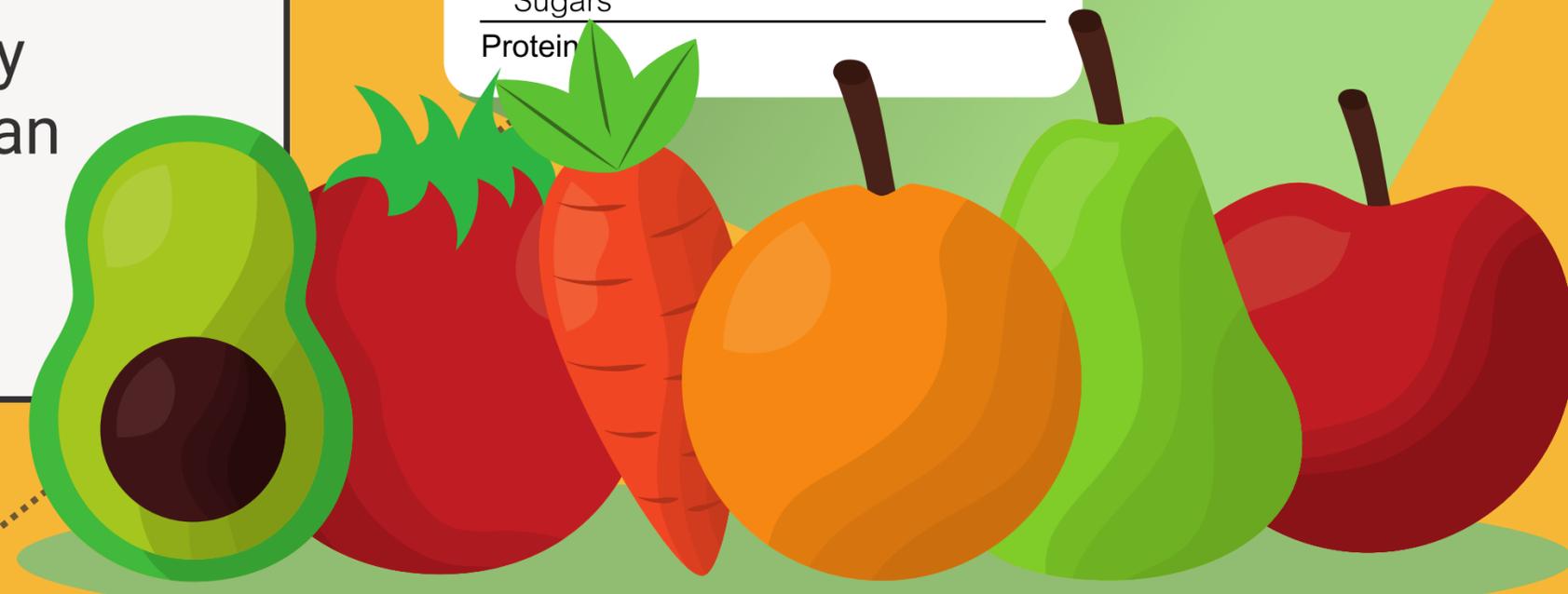
6.FOOD PRESERVATION USING DOMESTIC METHODS

In small groups, **conduct a simple experiment to understand how different preservation methods affect the shelf life of food.**
Take fresh fruit (apples, bananas)**, salt, sugar, vinegar, and plastic bags.**
Each group will take four pieces of fruit and preserve them in different ways: one immersed in salt, another in sugar, another in vinegar, and the last in a plastic bag. **Monitor which fruit deteriorates the quickest over the course of a week, and discuss the effectiveness of each method**, comparing the results of the different groups.

7.DOP, IGP, STG: WHAT DO THESE ABBREVIATIONS MEAN?

These abbreviations indicate that a product meets specific production standards and identifies quality food and beverages. While these labels are not formal food certification systems, they define certain characteristics of the product.
 In small groups, research the meaning of these abbreviations online and check if there are any others. Then, find some commercially available food products with one of these labels and take a photo of them using your smartphone.
 Create a brief multimedia presentation; in class, compare your results with those of the other groups.

8.ENVIRONMENTAL IMPACT OF FOOD

Visit the website **www.footprintcalculator.org** and find the ecological footprint of the foods you consume daily (meat, vegetables, local and imported products).

Then, **create a graph or a brief multimedia presentation to compare the environmental impact of different foods** and propose solutions for a more sustainable diet.

ORGANIC