Key staff member: NLS

Year 9 - Ice Cream

Previous targets: _____

Attitude to learning:

	Always	Usually	Occasionally	Rarely
Class work	1	2	3	4
Homework	1	2	3	4
Participation	1	2	3	4

Subject criteria:

Research	Ideas	Evaluation	Planning	Making	K&U

Target	Areas for Improvement	Target	Areas for Improvement
	Complete all set tasks		Annotate sketches/ideas
	Complete homework		Add colour to your sketches/ideas
	Read instructions carefully		Add more detail to your research/evaluations
	Focus on the presentation of your work		Label star diagrams & include a key
	Submit booklet on the due date		Add more detail to timeplans

Optional Comment/Target: _____

_____

Name: TG: Date:

Sha Tin College Design & Technology Year 9

CREDIT

CREDIT

CREDIT

CREDIT

Ice Cream

Table 1: World's Leading Producers and Consumers of Ice Cream

Country	**Production** (M hecto liters)	**Rank**	**Consumption** (per capita, in liters)	**Rank**
New Zealand	0.9	10	26.3	1
France	3.2	6	5.4	10
Denmark	0.5	12	9.2	8
Switzerland	1.0	9	14.4	5
United States	61.3	1	22.5	2
Italy	4.6	4	8.2	9
Germany	3.1	7	3.8	11
China	23.6	2	1.8	12
Australia	3.3	5	17.8	4
Canada	5.4	3	17.8	3
Finland	0.7	11	13.9	7
Sweden	1.3	8	14.2	6

1. List in rank order the THREE countries that produce the most ice cream.
   _____
   _____
   _____

2. List in rank order the THREE countries which consume the most ice cream.
   _____
   _____
   _____

3. Why do you think ice cream is a popular dessert?
   _____
   _____

The most popular ice cream in the USA is vanilla

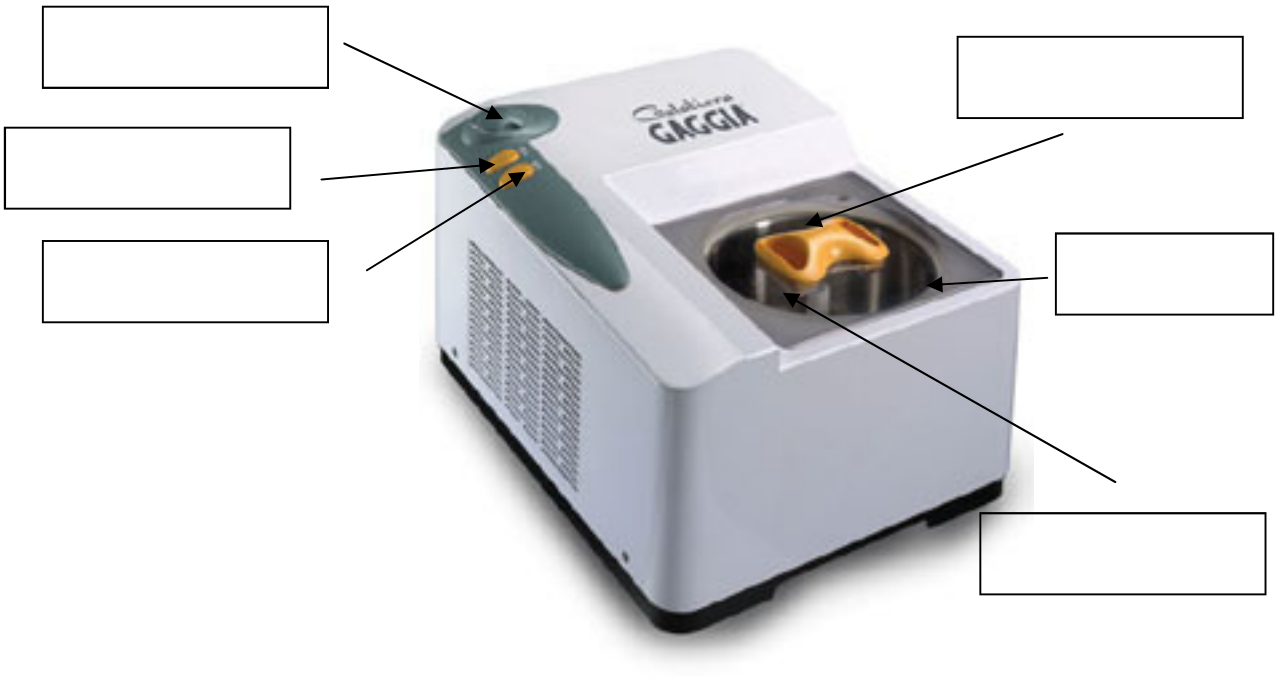
There are some unusual commercially available ice creams: smoked salmon sorbet, chilli ice

Did you know….?

Using the Ice Cream and Sorbet Machine

An ice cream maker is an example of CAM (computer aided manufacture). Sensors regulate the time and temperature of the ice cream.

Label the ice cream machine



Checklist		
1	Ensure the removable bowl and mixing blade are inserted into the machine	
2	Press the freeze switch five minutes before you want to start using the machine	
3	For ice cream - mix together the cream and sugar and other ingredients. Pour into the machine and set the timer for 30 minutes.	
4	For sorbet - in a saucepan over a VERY LOW heat melt the water and sugar until all the sugar dissolves. Cool the sugar syrup. Mix in the fruit. Pour into the machine and set the timer for 30 minutes	
5	After 30 minutes or once the machine has stopped, use the plastic spatula to scoop the ice cream into the plastic container and freeze until the sensory test.	
	IMPORTANT: do not leave the ice cream in the machine without the mixer rotating or it will freeze solidly in the bowl. When the ice cream becomes very thick the machine will stop preventing any damage to the motor.	

Computer Aided Manufacture

Small Scale Production and CAM

As you have already seen an ice cream machine is an example of computer aided manufacture. A bread-maker is another example of computer aided manufacture (CAM) on a small scale.

1. State TWO different ways in which CAM systems control a bread-maker.
   _____

2. What is an advantage of using CAM systems for small scale production of ice cream or bread.
   _____

Large Scale Production and CAM

CAM is very important in the large scale production of food. Computerised equipment carries out many processes such as weighing, mixing and depositing.

3. List THREE advantages of CAM to the food industry.
   _____
   _____
   _____
   _____

4. Which processes of ice cream manufacture can be controlled by computers?
   _____
   _____
   _____
   _____

Fruit Ice Cream and Sorbet

	Ice Cream	**Sorbet**
Basic Ingredients	200 ml cream 100g sugar 200g fruit	200ml water 100g sugar 200g fruit
Group A	200g fresh mango	200g fresh mango
Group B	200g cream strawberries	200g fresh strawberries
Group C	200g canned cherries	200g canned cherries
Group D	200g canned peaches	200g canned peaches
Group E	200g frozen strawberries	200g frozen strawberries

Notes about making ice cream:

Sensory Analysis - Ranking Tests

Taste the samples and rank them in order - 1 the best, 5 the least favourite

	Ice Cream	**Sorbet**
 =		
 =		
 =		
 =		
 =		

Results

Chilling and Freezing

Use pages 34 and 35 of 'Create! Food Technology' to answer the following questions.

1. What is meant by shelf life?

_____

2. Explain the term chilling. (Include temperatures in your answer)

_____
_____
_____
_____

3. Explain the term freezing. (Include temperatures in your answer)

_____
_____
_____
_____

4. Why does frozen food have a longer shelf life than chilled food?

_____
_____
_____
_____

5. Complete the chart below:

Examples of chilled food	Examples of frozen food
1	1
2	2
3	3
4	4
5	5

6. Why do you think chilled and frozen foods are increasingly popular?

_____
_____
_____
_____

Systems

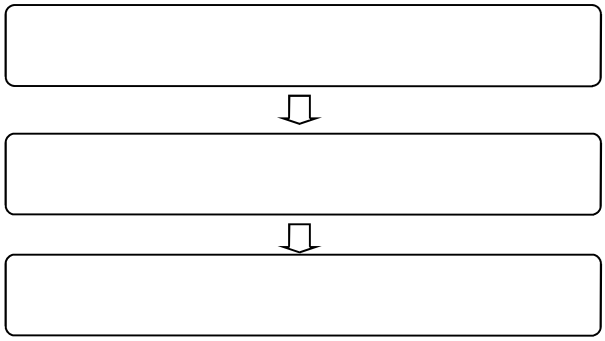
What is a system?

A system is a series of things which are connected together. In a computer system a number of units (keyboard, monitor, hard drive) are connected to work together. Systems can be a sequence of events. A school timetable is a system. It connects different groups of students and teachers in rooms at certain times of the day. A recipe is a system too. It shows how ingredients and equipment are used to make a food product. Everything has to be in the right place at the right time.

A system has three parts: input, process and output. Read page 60 of 'Create! Food Technology' and complete the chart.

Input	
Process	
Output	

Flowcharts



A flowchart is a way of drawing a simple system. It shows someone where to start, what to do next and so on. Production plans often take the form of flowcharts. They show a sequence of events in making a final food product.

Task:

Design a system diagram for making ice cream. Show the input, process and out-put. Use the next page to draw your diagram.

System Diagram for Ice Cream

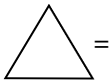
Chocolate and Coffee Ice Cream

	Ice Cream
Basic Ingredients	200 ml cream 100g sugar
Group A (x2)	100g white chocolate
Group B (x2)	100g milk chocolate
Group C (x2)	100g chocolate chips
Group D (x2)	Mocha : 75g milk chocolate + 1 tablespoon strong coffee
Group E (x2)	1 tablespoon strong coffee

Draw and label a diagram to show how chocolate is melted.

Notes about making ice cream:

Sensory Analysis - Ranking Tests

	Ice Cream
 =	
 =	
 =	
 =	
 =	

Results

Design Specification

Target group:	
Main ingredients	
Flavouring ingredients	
Storage:	
Price:	
Portion size:	
Safety issues:	
Manufacturing issues:	
Packaging:	
Any other:	

Ice Cream / Sorbet Design Idea

Work in pairs to develop an idea for an ice cream based on the taste test results.

Quantity	Ingredient

Equipment list

Time	Method

Ice Cream / Sorbet Sensory Testing

Design a chart to sensory test the classes sorbets and ice creams.
There are ____ to test.

Evaluation Of Ice Cream / Sorbet Design

Bread

Design Brief

In Hong Kong there is increasing interest in bread products other than standard white sliced loaves. There are more varieties of bread available for consumers to purchase than ever before. Your brief is design and make an original bread based product for sale in supermarkets.

Design Specification

- Target group:
- Main ingredients:
- Number of portions:
- Price range:
- Sensory characteristics:
- Special claims:
- Storage instructions:
- Packaging:
- Shelf life

Design Idea 1	Evaluation
Design Idea 2	Evaluation
Design Idea 3	Evaluation

Food product:	**BREAD (week 1)**
Ingredients:	250g bread making flour ½ sachet of easy - blend yeast ½ teasp. salt 170 ml water or milk extra flour for kneading **IDEAS** ADDITIONAL INGREDIENTS TO FLAVOUR THE DOUGH: 25g sugar 50g cheese ½ teasp. herbs ¼ teasp. cinnamon 50g dried fruit
Equipment:	wooden spoon, measuring jug, large mixing bowl, table knife, freezer bag and label
Preparation:	1 Wash hands and put on apron 2 Collect ingredients 3 Collect equipment
Method **LESSON 1**	1 Place the flour, salt and yeast in a large mixing bowl. (If using an ingredient to flavour the dough, add it now). 2 Carefully measure the water or milk into a measuring jug. Stir the water / milk into the flour using a table knife. 3 Knead the dough on a lightly floured surface for 10 minutes. The dough should be soft and elasticated. 4 Place in a plastic freezer bag and label with your name and T. group.

Food product:	**BREAD (week 2)**
Ingredients: **Choose either a sweet or savoury filling**	Extra flour for kneading **Ideas** ADDITIONAL INGREDIENTS FOR SWEET STYLE BREAD: 25g sugar 75g dried fruit ½ apple grated 25g butter ½ teaspoon cinnamon **or** mixed spice **Ideas** ADDITIONAL INGREDIENTS FOR SAVOURY BREAD: 25g butter 75g grated cheese 1 slice of ham 2 slices of cooked bacon 1 canned tomato 2 cloves of garlic crushed ½ teaspoon mixed herbs
Equipment:	plastic bag, baking tray or foil container. (Other equipment depending on the design).
Preparation:	1 Wash hands and put on apron 2 Collect ingredients 3 Collect equipment 4 Pre-heat the oven to 180 °C.
Method **LESSON 2**	1 Grease the baking tray 2 Knead the dough. 3 How will you add the additional ingredients? (See 'Help' page) 4 Cover the bread with a plastic bag or plastic lid and leave in a warm place to rise until doubled in size 5 Remove the plastic bag and bake for: rolls / pockets / smaller shapes - 12 to 15 minutes, loaves / larger shapes - 20 to 25 minutes. 6 TEST TO FIND OUT IF THE BREAD IS COOKED: golden brown, sounds hollow when the base is tapped.

How will you add the additional ingredients?	
Swirls	• Roll out the dough on a floured board until it is 25 cm x 25 cm (picture 1) • Melt the margarine in a saucepan and brush over the dough. • Sprinkle over the other ingredients: either the sugar, dried fruit or spices OR cheese, garlic and herbs (picture 2) • Brush the far edge of the bread dough with water and roll up (picture 3) Cut this into nine slices and place in your tray (picture 4).
Pockets	• Divide the dough into the number of pockets you wish to make e.g. 4. • Roll the dough into round shapes. • Place your filling in the centre of the dough. (Do not over fill). • Brush the edges with water. • Bring the sides together and 'scrunch' to seal in the filling. • Turn upside down on an oiled tray.
Plaits	• Each plait requires three sausage shaped strips. Plait from each alternate side, into the middle.
Flowers	• Knead the dough into bread roll shapes. • Cut six times around the dough and make a hole in the centre with the pointed end of the of the scissors.
Flat Bread	• Roll the bread into a flat shape. • Brush the bread with olive oil or melted margarine. • Sprinkle over ingredients such as cheese herbs and garlic.

Time-plan for Bread (Week 2)	
Product name:	
Quantity	**Ingredient**
Equipment:	
Cooking time and temperature:	
Time	**Method**

Functions of Bread Ingredients

The flavour, shape, texture and ingredients of bread can be altered to make an endless variety of new ideas. To help you design a bread product it is helpful to understand the functions of ingredients used in bread making.

Flour

- Provides mass or bulk
- The protein called gluten in flour helps the structure of baked goods
- Whole wheat or multigrain flour adds fibre, colour and texture

Fat

- Using a small amount of fat (margarine, oil, butter) can improve the crumb texture of the bread
- Fat also increases the shelf life of bread - it does not stale as quickly

Liquid

- Liquid hydrates the gluten (protein) to make a strong structure
- The liquid can be water or milk or a combination of both
- Brushing a liquid on the uncooked dough will help it brown during cooking
- Warm liquid will help activate the yeast

Yeast

- Yeast is a raising agent which produces carbon dioxide
- The carbon dioxide will give bread a spongy or aerated texture
- To activate yeast it requires warmth, food, liquid and time

Other ingredients and additives

- Sugar adds sweetness to bread mixes
- Seeds and grains add a variety of textures and flavours
- Ascorbic acid speeds up the action of the yeast
- Soya flour acts as a bleaching agent
- Preservatives extend the shelf life of bread

Functions of Bread Ingredients (Continued)

Look at the example bread labels. Write down the ingredients in the left hand column. Tick the appropriate columns to explain the function of each ingredient.

Ingredients on the bread label	Bulking ingredient	Structure / texture	Colour	Flavour / taste	Moisture	Extend shelf life

Bread Evaluation

1 Evaluate your bread product against the specifications you listed.

- Use a simple checklist to show if it did or did not meet your specifications.
- Fill in your specifications on the table.

Design Specification	Yes	No
Target group:		
Main Ingredients:		
Number of Portions:		
Price Range:		
Sensory Characteristics:		
Special Claims:		
Storage Instructions:		
Packaging:		
Shelf life:		

2. In the space below state how you could modify your product to meet any specifications that were not met.

_____

_____

_____

_____

_____

3. Assess the sensory characteristics of your bread product.

Bread Product	Sensory Vocabulary Assessment
Taste	
Texture	
Appearance	