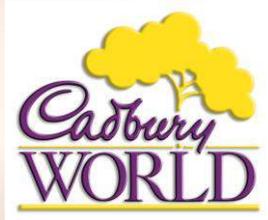


STUDY TOUR BOOKLET



Presents....

Curriculum linked research and activities.

Opportunities to achieve key skills through a visit to the chocolate experience.

This booklet is suitable for:

GCSE Technology (Food and Design)

Applied GCSE in Manufacturing (Double Award)

BTEC First Diploma/Certificate in Manufacturing

The topics included in this booklet are:

Food manufacturing: Preparing, Processing and Assembling

Materials and Components

Production Planning

Product Development

Packaging and Labelling

Quality

Technology

Costing

Health and Safety

Design and Packaging

Hello!

Welcome to the chocolate experience. If you are studying GCSE or BTEC technology or manufacturing, you will find plenty of information that will help you with your studies and assignments. By learning about the production process at Cadbury, you are studying a dynamic world.

This booklet looks at the processing of a food product including:

Product Specification, Production and Planning.

Ingredients and their functions.

Inspection, Testing and Monitoring.

Preparation, Processing and Assembly of Materials and Components.

Quality, Health & Safety, Machinery, New Technology and Packaging.

The Use of ICT

Make sure you remember to write down your research in this booklet. If you think you may have lost your way, use the chart below. Have a great time!!

START 

CHOCOLATE AND COCOA IN EUROPE

THE CADBURY STORY

FROM BEAN TO LIQUID CHOCOLATE

CHOOSE A BRAND

PACKAGING PLANT

CADABRA RIDE

FINISH 

4D CHOCOLATE ADVENTURE

BOURNVILLE EXPERIENCE

PURPLE PLANET

ADVERTISING AVENUE

CHOCOLATE MAKING





HEALTH AND SAFETY CHECKLIST

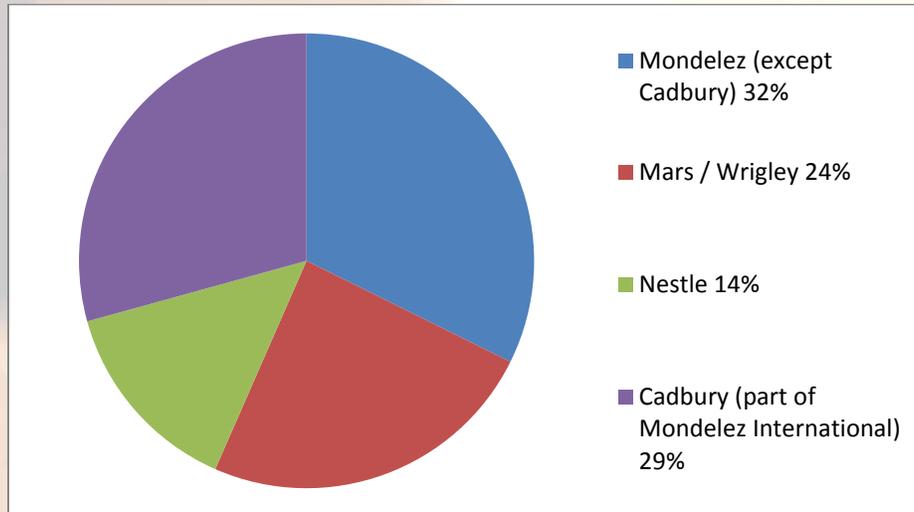


Please complete this as you go on your tour, making notes about the health and safety issues that you find. You may find it easier to give a grade for each section (1 -10 with 1 = low) or you may wish to make extra notes. Extra space is provided below.

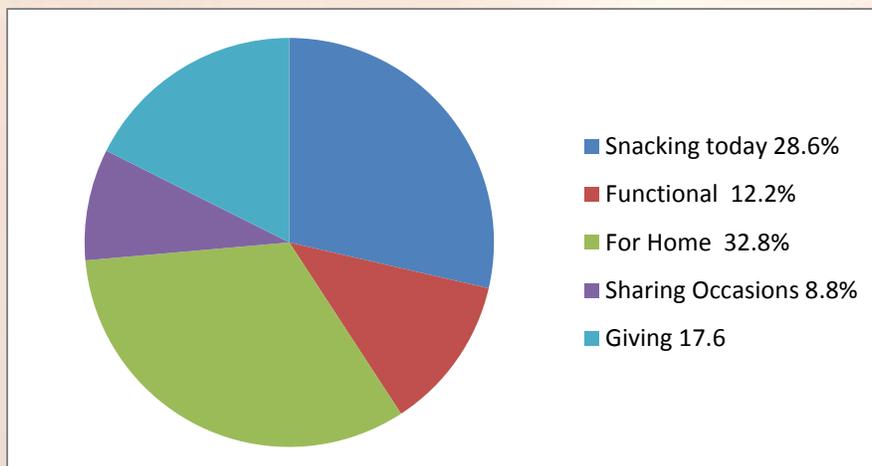
	Display Areas	Packaging Plant	Chocolate Making	Shop	Restaurant	Children's Play Area	Toilet Facilities
Hygiene & Cleanliness							
Emergency Procedures							
Signage (emergency exits)							
Protective clothing							
Maintenance (equipment, facilities)							
Special needs facilities							
Sufficient litter bins							

MARKETING

Market leadership is gained by being able to meet customer requirements effectively. Cadbury's brands are famous worldwide. In 2013 AC Nielsen estimated that the total confectionery market in the UK was worth £4.8 billion. Below shows the breakdown of the market share by each of the major manufacturers of confectionery. Confectionery refers to sugar and chocolate products.



Mondelez International (owners of Cadbury, see next page for details) has identified five fundamental areas where consumers have different needs. These are: Snacking Today, For Home, Sharing Occasions and Giving (inc. Seasonal). Below is a breakdown of how the UK's confectionery market is broken down into these categories.



Unleashing a Global Snacking Powerhouse

Mondelēz International, Inc. (NASDAQ: MDLZ) is one of the world's largest snacks companies, with global net revenues of \$35 billion in 2012.

Launched on Oct. 1, 2012, following the spin-off of our North American grocery operations to shareholders, Mondelēz International is a new company in name and strategy. Yet we carry forward the values of our legacy organization and the rich heritage of our iconic brands.

Creating Delicious Moments of Joy

Our dream is to create delicious moments of joy in everything we do. Our 110,000 employees support this dream by manufacturing and marketing delicious food and beverage products for consumers in 165 countries around the world.

We are the world's pre-eminent maker of snacks, with leading market shares in every category and every region of the world in which we compete. Mondelēz International holds the No. 1 position globally in Biscuits, Chocolate, Candy and Powdered Beverages as well as the No. 2 position in Gum and Coffee.

About three-quarters of our annual revenue is generated in the fast-growing Biscuits, Chocolate and Gum & Candy categories, and more than 40 percent of our sales come from high-growth developing markets.

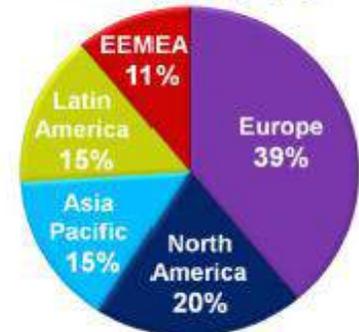
A Portfolio of the World's Favorite Brands



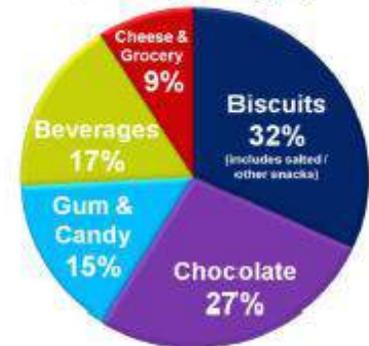
Our portfolio features nine billion-dollar brands: Cadbury, Cadbury Dairy Milk and Milka chocolate, Jacobs coffee, LU, Nabisco and Oreo biscuits, Tang powdered beverages and Trident gum.

In addition, our portfolio includes another 52 brands which each generate annual revenues of more than \$100 million.

Sales by Geography



Sales by Category



Notes

Let Trail Begin

Write your research in the spaces provided. If you need more room – extra space is provided in the back of the booklet.

THE AZTEC JUNGLE



We all love chocolate! But where does it come from?

Materials are divided into:

Major components such as cereals, sugar, starches, fats, water, protein, vegetables and fruit.

Minor components include emulsifiers, carotins, preservatives, acids, flavours and processing aids.

Do you think that more or less minor components are used to make chocolate now?

Why do you think this is?

CHOCOLATE IN EUROPE

In this area you will find out how the chocolate drink was brought to Europe by adventurers that went into the “New World” and obtained the secret recipe for chocolate.

What major component did the Spanish add to the drink?

THE CADBURY STORY



Now sit down and discover the heritage of the Cadbury business in the themed auditorium.

Identify how the recipe for chocolate changed by the time John Cadbury started production in his Bridge Street factory. What new ingredients are being used?

What equipment did John Cadbury use when he was experimenting with cocoa at his Bull street grocery business?

George Cadbury brought a press to England in 1866. This was a major technical advance in chocolate production.

What was it called?

What did the press do?

How did this change drinking chocolate?

What is the popular bar that has lasted the test of time?

How much milk goes into it?

How did Cadbury achieve its deliciously smooth taste?

The launch of this chocolate bar increased the size of the chocolate bar market rapidly. Production escalated and methods had to change. A milk-condensing factory was built and other plants soon followed. By 1964, the condensing of fresh milk and drying of the milk chocolate crumb was a fully continuous process.



MAKING CHOCOLATE

Operations are the processes that Cadbury rely on to satisfy its customers. Being productive means using resources efficiently in order to maximize added value in the production process.

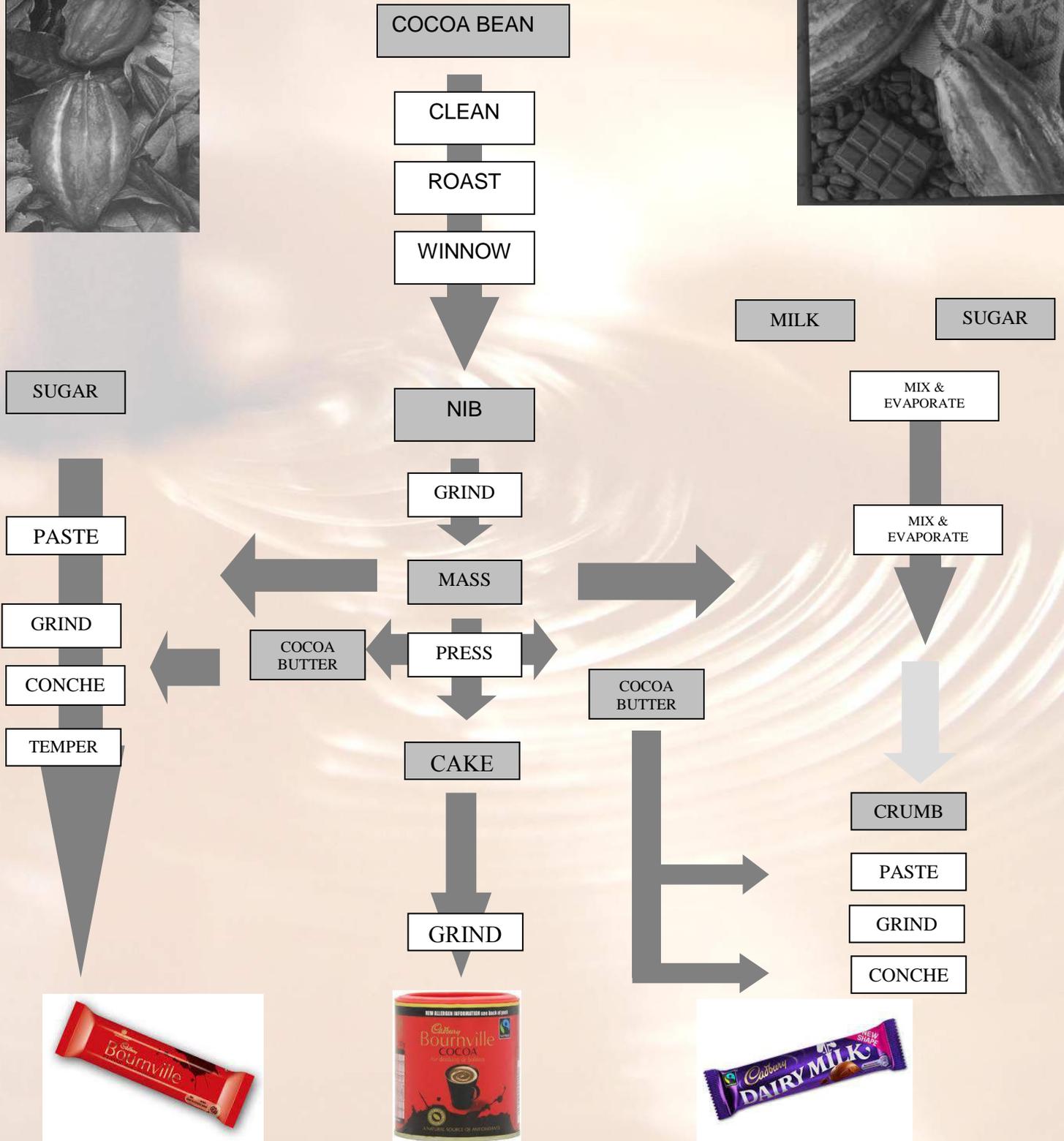
What resources do Cadbury need for production? Complete the following table:

Buildings/Land	
Equipment/Machinery	
People	
Materials	

Where do Cadbury's raw materials come from? Complete the table below:

Raw Materials	Country of Origin

Chocolate Production



In this section, you are learning about many production techniques and different stages of production.

Complete the following table with a definition for each term.

Process	Description
Roast	
Winnow	
Nib	
Grind	
Mass	
Press	
Cake	
Paste	
Conche	
Temper	

Give examples of how Cadbury may use the following methods of production. (You may not see all methods until the end of the tour). Consider factors such as market size, product type and innovation.

Job	
Batch	
Line/Flow	

Which methods are Cadbury most likely to use and when?

To plan the manufacture of a product, you need to know about the key stages of production.

Using the diagram on page 11, give an example for each stage.

Stage	Production Process
Prepared	
Processed	
Assembled	
Finished	
Packaged	

Different machinery is needed throughout the production process.

Identify some types of machinery and the stage within the production process it is used.

Machinery	Stages of Production

What is a manufacturing schedule?



HEALTH AND SAFETY



Machinery must be prepared including cleaning and set up.

Think of some health and safety checks Cadbury would need to carry out.

As you continue on your tour, list any health and safety procedures and systems that you see. This could be as simple as a 'stop' button, first aid equipment or personal safety clothing. This can either be on video, in pictures, in the chocolate making area or in the packaging plant

Procedure/System	Where did you see it?

PRODUCTION AND BRANDED



Choose a brand:

What factory is it made in?

Do a quick sketch to show the production process:

The brand would have been manufactured to meet a product specification.

What is this?

What do the staff have to wear?

What automated machinery can you see? (E.g. is a flow wrap machine used? Or an enrober?)

Primary foods are those that remain in their original form e.g. corn.

Secondary foods are those that have been processed e.g. flour.

For your chosen brand, identify the major components, minor components, primary and secondary foods that would be used.

My chosen brand is:

Major Components	
Minor Components	
Primary Foods	
Secondary Foods	

The major and minor components you have identified will have different functions. These include:

- Emulsification
- Prevent oxidation
- Adding texture
- Adding vitamins
- Changing appearance
- Adding flavor or colour
- Stabilising
- Melting properties
- Increasing volume
- Increasing shelf life

Using this list and the table on the previous page (page 17), identify the functions of some of the components you have already identified.

Component	Function

Describe the nutritional contents of the brand.

What are the functions of the nutrients you have identified?

Nutrient	Function

COSTS

You need to identify the cost of production for your chosen brand. Cadbury have to work out the total cost of manufacture for a product. There are two types of cost: **direct and indirect**.

Direct includes labour, raw materials, components, packaging and energy used, e.g. to work machinery.

Indirect costs can be called overheads e.g. administration, marketing or accommodation.

Give examples of the costs involved in the manufacture of your chosen brand.

Direct Costs	Indirect Costs

PACKAGING PLANT



Describe the machinery you see. How is technology used to make the production process more efficient and to aid quality control? (ICT -CAM)

What materials are used in the packaging that you can see?

What functions should packaging perform?

What protective clothing is being worn?

QUALITY CHECKS

What quality checks exist? List, product matching and testing food products and the testing techniques that Cadbury will use e.g sensory analysis processing.

List all the things Cadbury will need to test for:

Can you think of any indicators that Cadbury may use?

Did you see any evidence of hygiene rules to minimise the growth of bacteria as you walked through the preparation areas?

What is meant as shelf life? What does the date stamp say?

How many bars are wrapped per minute?

CHOCOLATE MAKING AREA



What method of production is being demonstrated here?

Hazard analysis and critical control points (HACCP's) are the most important areas of the production line, where safety precautions must be taken to protect products from contamination.

Write down any inspection points, testing procedures or monitoring systems that you see as you go through the demonstration area. What other methods are used to ensure that food is not contaminated?

Which law protects consumers from unsafe products?

What production processes are being used?

Describe the products that are being made today and the materials they contain.

What finishing processes are being used? (E.g. icing)

What does scaling up mean? Give examples.

ADVERTISING AVENUE



Cadbury is well known for its memorable advertising campaign – producers of “The Nations Favourite” chocolate.

There are many ways in which Cadbury promote their organisation.

These include:

Advertising Point of Sale Branding Packaging Competitions

Public Relations Sponsorship

How do Cadbury use nutrition and raw ingredients to make their products more appealing?

THE CADBURY WORLD RETAIL SHOP



Cadbury World offers their visitors 'The World's Biggest Chocolate Shop'

Choose a chocolate bar:

Do a quick sketch of the packaging front and back view.

Front view

Back view

Under the Food Labelling Regulations 1996, certain information must be shown.

Complete these questions for your chocolate bar:

Name of product:

Name & address of manufacturer:

Best before date:

Ingredients:

Weight:

Percentage of milk solids:

Does the wrapper include a Cadbury quality clause? If yes, then write it down:

Look carefully at the packaging. Write down the type and quantity of some materials used to make your chocolate bar in the table below.

Major Components	Minor Components	Primary Foods	Secondary Foods	Nutrients

Do you think your chocolate bar could be considered as a healthy and wholesome food?

What technology is being used? (E.g. bar codes, payment methods).

**We hope you have enjoyed your visit to
Cadbury World!**

NOTES