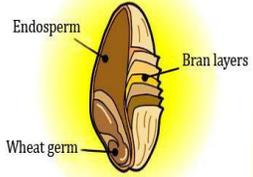
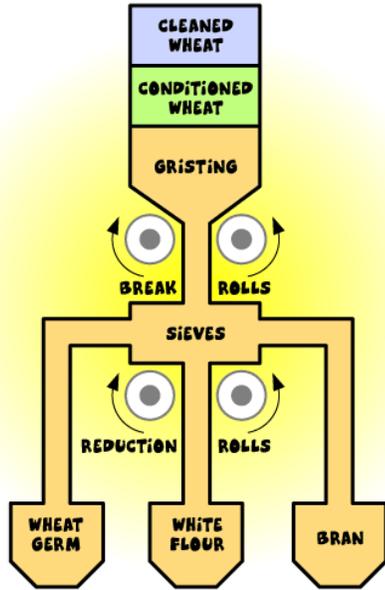


# Year 8 Cooking and Nutrition – Food science

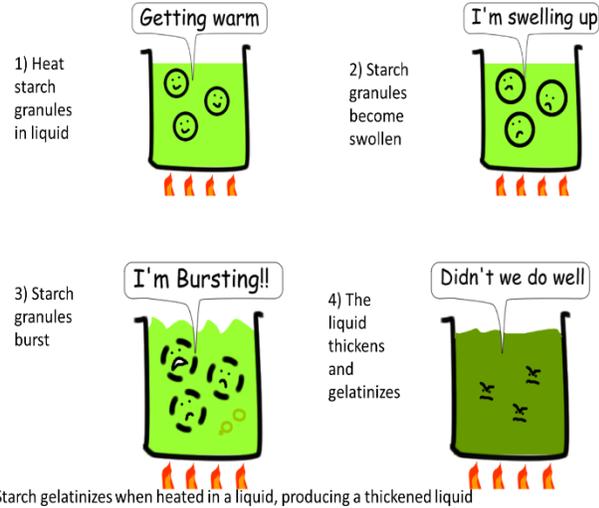
## Wheat to flour



The grains are then sieved and ground to separate the **endosperm** (the white flour) from the **bran** layers (outside case of the grain) and the **wheat germ** (part that grows a new plant).



## Gelatinisation



## Gluten formation

### Science bit...

Bread's structural support is from a skeleton of 'denatured protein' called **gluten** that allows trapped gas! When kneading 2 proteins in the flour called **gliadin** and **glutenin** come together to form **gluten**



## Fish



Oily—sardines, tuna, mackerel, sardines and trout  
White—cod, haddock, coley, whiting (can be flat or round)  
Shell—can be crustaceans like crab and lobster or molluscs like scallops, cockles and muscles.

Fish is made up of fibres and connective tissues. The fibres are short and connective tissue finer making the flesh delicate and tender so short cooking time

Fresh fish should have bright eyes, mild scent and firm flesh. It should also be moist.

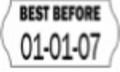
## KEY WORDS

## DEFINITION

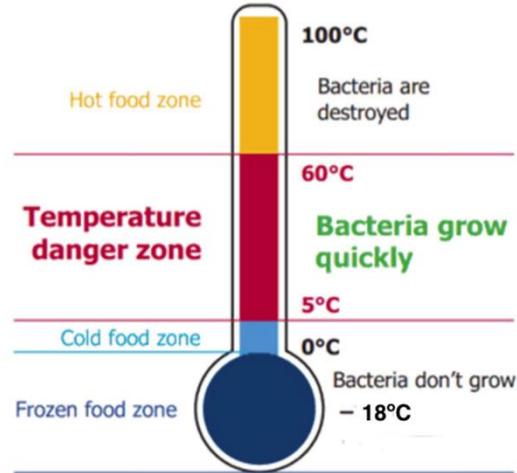
Risk assessment	This is a process where hazards in food preparation are identified before cooking then controls are put in place to reduce or prevent the hazard.
Hazard	This is anything in food preparation that could cause harm. This harm could be giving someone food poisoning or someone getting hurt during food preparation.
High risk food	A high risk food is one which has the best conditions for the growth of pathogenic bacteria so is usually high in moisture and protein, for example, chicken or prawns.
Gelatinisation	This is the process of using starch to thicken a liquid like milk or gravy. The starch grains burst open at 80°C and absorb the liquid making the sauce thicken. The thickness of the sauce depends on the amount of flour to liquid.
Yeast Production	Yeast is a micro-organism which is used in bread making to cause it to rise. It uses moisture, food and warmth to cause the yeast to multiply and produce carbon dioxide.
Time plan	This is a detailed plan of how to make a dish in a given amount of time. It includes the stages of making and also the hygiene and safety points needed.
Gluten formation	Strong plain flour used for bread making contains two proteins gliadin and glutenin which when water is added to the flour makes gluten. Gluten forms an elastic dough which stretches during cooking.
Primary processing	Foods are processed straight from harvest or slaughter to make them edible or ready to use in other products, Eg. Wheat grain into flour.
Secondary processing	When primary processed foods are used on their own or mixed with other foods, e.g. flour turned into bread or pasta

# Year 8 Cooking and Nutrition – Food Safety

## Food Packaging Date Marks

Date Mark	Description	Food Examples
<p><b>Use By</b></p> 	A safety date. Used on high risk foods that usually need to be stored in the fridge. If you eat the food after this date you risk food poisoning.	<p>Meat Fish Seafood Cheese Milk Cream</p> 
<p><b>Best Before</b></p> 	A quality date. Food can still be eaten after but the quality will be reduced. E.g. cereals or biscuits will not be as crunchy.	<p>Bread Cereals Sugar Flour Pasta</p> 

## Key temperatures



## EFFECTIVE CHILLED STORAGE

# Refrigerator RULES

### HAZARDS:

- Multiplication of bacteria
- Cross-contamination

### CONTROLS:

- Below 5°C
- High-risk food above raw food
- All food covered
- Stock rotation
- No open cans
- Don't overload
- Colour coding

### DAILY CHECKS:

- Temperature (throughout the day)
- Satisfactory storage
- Date codes
- Condition of food
- Cleanliness



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Improving Food Safety

## Temperature Probe



Cooked food needs to reach **75°C.**

**HIGH RISK FOOD CAUSES most food poisoning cases**

## High Risk Foods

**High Risk Foods** have a short shelf life. You can't keep them for long, or the **bacteria** might multiply to dangerous levels and cause **food poisoning**.



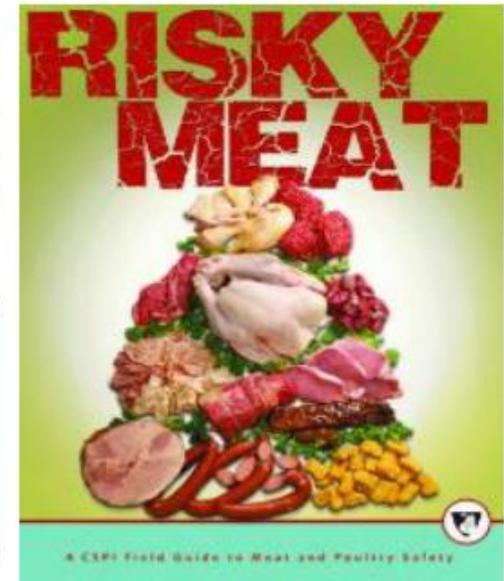
## High Risk Foods

Meat  
Poultry  
Fish  
Seafood  
Shellfish



Cooked Rice

Eggs  
Dairy Foods  
Gravies  
Sauces  
Stocks



A CSPI Field Guide to Meat and Poultry Safety

# Year 8 Cooking and Nutrition – Food Choice

The government recommends **8 top tips for healthy eating**. Following these guidelines you will give you a **balanced diet**, which leads to **good health**.

**eatwell 8 TIPS for HEALTHY EATING**

- 1 Base your meals on starchy foods
- 2 Eat lots of fruit and veg
- 3 Eat more fish – including a portion of oily fish each week
- 4 Cut down on saturated fat and sugar
- 5 Eat less salt – no more than 6g a day for adults
- 6 Get active and try to be a healthy weight
- 7 Drink plenty of water
- 8 Don't skip breakfast

## Healthy Food Swaps



Changing just a few eating habits can make a big difference to your diet and is the healthiest way to lose weight. Eat less fat, salt, sugars, processed foods and high calorie foods. Swap them for something healthier, such as more fruit and vegetables (5 a day).

Find out more: [www.nhs.uk/change4life/food-facts](http://www.nhs.uk/change4life/food-facts)



## Fibre

Dietary fibre is a type of carbohydrate found exclusively in plants. Unlike other types of carbohydrate, it is not absorbed in the small intestine to provide energy

**Dietary fibre helps to:**  
 reduce your risk of heart disease, diabetes and some cancers;  
 help weight control;  
 bulk up stools and make waste move through the digestive tract more quickly;  
 prevent constipation;  
 improve gut health.

Dietary fibre is found in plant foods, such as: wholegrain cereals and cereal products; oats; beans; lentils; fruit and vegetables; nuts and seeds

## Raising Agents

**Biological** – Yeast, used in bread making.



## Dietary needs

What happens at this life stage?	Which nutrients are particularly important?	What would be their best eating habits and lifestyle choices?
The body grows rapidly at certain times and develops from a child into an adult.	Protein Vitamins A, B group, C, D, E Carbohydrate (starch and fibre; limit free sugars) Fats – especially unsaturated and omega 3 fatty acids Minerals – all	<b>Encourage teenagers to:</b> <ul style="list-style-type: none"> <li>follow the Eatwell Guide</li> <li>eat regular, balanced meals, especially breakfast</li> <li>eat plenty of fresh foods</li> <li>regularly eat oily fish and/or seeds (e.g. pumpkin seeds)</li> <li>drink plenty of water</li> <li>take regular exercise to strengthen muscles, maintain a healthy weight and oxygenate the body</li> <li>always eat breakfast.</li> </ul> <b>Discourage teenagers from:</b> <ul style="list-style-type: none"> <li>eating lots of energy dense ready meals, snacks and fast foods</li> <li>eating lots of sugar and salt</li> <li>skipping meals.</li> </ul>
This is an important stage when minerals are taken into the bones and teeth so that the skeleton reaches peak bone mass when they are adults.	Calcium and vitamin D	<b>Encourage teenagers to:</b> <ul style="list-style-type: none"> <li>include plenty of calcium-rich foods in the diet (see page 31)</li> <li>spend time outdoors in the sunshine and take regular, load-bearing exercise to stimulate the bones to take up minerals.</li> </ul> <b>Discourage teenagers from:</b> <ul style="list-style-type: none"> <li>drinking lots of sugary, fizzy (carbonated) drinks which may affect how many minerals are taken into the bones.</li> </ul>
Girls start to menstruate (have periods) which may mean they do not have enough iron and become anaemic.	Iron and vitamin C	<b>Encourage teenage girls to:</b> <ul style="list-style-type: none"> <li>eat plenty of fresh fruit and vegetables and iron-rich foods (see page 32)</li> <li>eat regular, well-balanced meals.</li> </ul>
Staying up late and pressures of school may lead to lack of energy, poor concentration and tiredness.	Vitamin B group Iron and vitamin C	<b>Encourage teenagers to:</b> <ul style="list-style-type: none"> <li>eat a balanced breakfast every day including wholegrain cereals to release energy (glucose) slowly into the bloodstream and help concentration</li> <li>eat regular, well-balanced meals</li> <li>allow enough time for the body to rest and sleep.</li> </ul>

## Food choice

**Food choices:** a variety of factors influence what we choose to eat.



<https://www.youtube.com/watch?v=D6eor1wkNFY>  
<https://www.youtube.com/watch?v=bowUbKANVY>

**Nutritional needs and health:** some people have special dietary needs based on their age, lifestyle or allergies.



<https://www.youtube.com/watch?v=k5YSJq4iQtI>

## Design Influences

### Fashion, Trends, Taste and Style

All consumer products are subject to fashion, trends, taste and style. Popular colours, shapes, patterns and forms can all be identified through the analysis of existing products. Some materials are more fashionable than others for different products. Market research is an important factor in understanding trends and taste. Designers also need to be aware that trends can change quickly.



### Marketing and Branding

A product's success is partly due to how it is introduced to its target market group. If a consumer is made to feel that they need a product and it will somehow help them, or improve their lives, they are more likely to consider buying it. Some of the best-designed products have not been branded or marketed properly and therefore people are not aware of their existence!



### The Impact on Usability

As products evolve, with the use of better manufacturing techniques and new technology, usability is enhanced. This impacts different products in different ways. For devices like mobile phones, the usability of modern smart phones is enhanced beyond measure with the introduction of the internet, app software and Wi-Fi connectivity.



### Materials, Components and Processes

Through product analysis, a designer can determine which materials are effective or necessary for a particular need. The function of a product is determined by the components used and a designer can evaluate the performance of the product by looking at these. Through careful consideration, it is possible to understand the manufacturing processes used to create parts of a product and to assemble it.



## Health and Safety

When moving on to practical work for your projects. You should also know the different categories of safety symbols used through the various D&T rooms and be able to work out the meaning of different safety symbols. The use of PPE (Personal Protective Equipment) is also one important way of staying safe when undertaking certain work.



For example, what might this student be doing wrong when operating the Pillar Drill? Should they be wearing anything more to protect them?

## Design Thinking and Communication

### User-Centered Design

Good design carefully considers the end user and the experience they will have with any product. A designer will seek to understand and involve the target user in all stages of the design process through exploration, creation, evaluation etc.

#### Exploration:

- creating mood-board to explore the user's lifestyle;
- conducting questionnaires and surveys;
- studying the design situation from the user's point of view.

#### Creation:

- gaining the user's views on iterative models and drawings.

#### Evaluation:

- carrying out user trials and evaluating the finished prototype;
- the designer conducting an evaluation of the user's experience with the product.

### Sketch Modelling

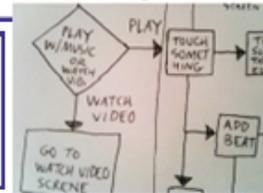
Sketch modelling can help a designer develop a design through looking at it in three dimensions. Different types of sketch model include:

- clay models;
- toiles (paper models of clothing);
- paper models;
- blue styrofoam models;
- CAD models;
- card models.



### Flow Charts

In design engineering, a flowchart can help explore the function and operation of a product. A designer can use the blocks to identify possible components that could be used in the system.



### Computer Aided Design

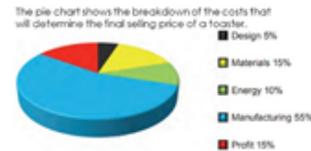
In various forms, CAD allows designers to develop complex, high quality design drawings that can either be in 2D or even 3D formats. The drawings can be easily edited and worked on by multiple users before being sent to a printer, laser cutter or embroidery machine for example. CAD packages include 2D Design, Photoshop or Publisher.



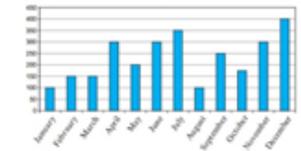
## Maths in D&T

Data which is collected is often presented in graphical form. This could be anything from a pie chart to a bar chart. The data is often colour coded with added percentages to easily demonstrate the collected information.

In exams this is often tested for your understanding of being able to read and answer questions relating to the collected data in the form of a context.



The graph below shows the sales of an electronic device.



Remember we measure in (mm) NOT (cm) to convert add a 0. E.g. 10cm = 100mm 2.5cm = 25mm

There is plenty of Maths in D&T:

- Measuring
- Scale
- Proportions
- Shapes

To name but a few.

by multiplying half the value of the base by its height.

AREA = 1/2 X BASE X HEIGHT

$$\text{AREA} = \frac{40 \times 50}{2}$$

$$\text{AREA} = \frac{2000}{2}$$

$$\text{AREA} = 1000\text{mm}^2$$

AREA = 1/2 X Base X Height