

# The CHOOK BOOK



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Words appearing in the text in **bold** are in the glossary



## Glossary

**Albumen:** the clear substance surrounding the yolk of an egg. Also called the "white".

**Bacteria:** microscopic one-celled organisms found everywhere.

**Broiler chickens:** chickens used for meat.

**Carnivores:** animals that eat meat.

**Cells:** smallest unit of living matter; our bodies are made up of many different types of cells.

**Chalaza:** a twisted piece of albumen that connects the yolk to the inner shell membrane.

**Chick:** a new born chicken up to 8 weeks of age.

**Cloaca:** an opening in the chicken's body for reproduction and excretion of waste.

**Cockerel:** a young male bird aged between 8 and 18 weeks.

**Digestion:** process of absorbing food into the body.

**Domestication:** the training and use of animals by humans.

**Dual purpose:** chickens used for both egg and meat production.

**Extinct:** an animal or plant group that has died out. They are no longer found alive anywhere in the world.

**Fowl:** general term for domestic hens, roosters and chickens.

**Gizzard:** part of the chicken's stomach that breaks up food eaten by the chicken.

**Hen:** an adult female chicken.

**Herbivores:** animals that eat plants.

**Humane slaughter:** an animal is killed in such a manner that the animal does not suffer unreasonable or unnecessary pain or distress.

**Latin:** language of Ancient Rome and it's empire, language used for scientific names of animals and plants.

**Layer hens:** adult hens used to lay eggs for egg production.

**Maize:** cereal plant originally from North America and now grown worldwide for food.

**Manure:** dung or litter from an animal; can be used as fertiliser.

**Native:** plant or animal belonging naturally to a country.

**Nutrients:** found in foods that are good for our body.

**Nutrition:** the science of food and what it does to our bodies.

**Omnivores:** animals that eat both plants and meat.

**Ovary:** an organ that produces eggs.

**Oviduct:** a tube which eggs pass through on their way out of a hen's body.

**Poultry:** domesticated birds.

**Pullet:** a female chicken aged between 8 and 18 weeks.

**Rooster:** an adult male chicken

**Yolk:** yellow part of the egg that supplies food for the developing chick.



# Birds and People

Birds have been important to people for a long time and still are. People use the meat and eggs of birds for food. Bird feathers and skins can be used for bedding, clothing and jewellery. Some birds have been trained to carry messages between people over hundreds of kilometres. These birds are called "carrier pigeons".

## Domestication

**"Domestication"** is a word that means to train or adapt (an animal or plant) to live in a human environment and be of use to people. Domestic animals are animals that are not wild but are kept in houses as pets or on farms to produce food. Birds were first domesticated about 5000-8000 years ago. The first birds domesticated were the Greylag Goose, the Rock Dove and the Red Jungle Fowl. They are the ancestors of geese, racing pigeons and chickens.




Nicole Reggia: www.feathersite.com

Red Jungle Fowl Cockerel

In World War II, the United States Military had 54 000 military pigeons. Some of those pigeons were trained to fly at night, and carried important information about the enemy, like the location and movement of enemy fleets, troops and other targets for attack.



art by Diane Jacky  
www.dianejacky.com



In World War II, a military pigeon named "Scotch-Lass" was dropped with a secret agent in the Netherlands and carried 38 micro-photos to England even though she was wounded.



## Maori and Birds

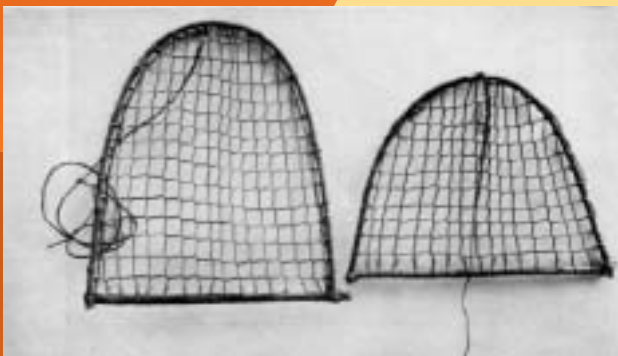
The Maori used to hunt birds for meat, feathers and eggs. Birds are believed to be the offspring of *Tane* – Lord of the Forest and Birds. The general name for birds in Maori is *manu*, and eggs are *hua*, or *hua manu* (fruit of the birds). The yolk of the egg is called *toua*.

In the past Maori used the feathers of many types of birds for cloaks. These cloaks were very precious to the Maori. Only women wove cloaks. They were made from *muka*—the soft fibres from flax leaves. Feathers were woven into the cloaks. Feathered cloaks were called *kahu huruhuru*. The *kahu huruhuru* were sometimes made with kiwi feathers. This type of cloak was called *kahu kiwi*. *Kahu huruhuru* are not made very often today, as hundreds of native birds would have to be killed to get enough feathers for one cloak. The native birds used for the cloaks are now protected from hunting by laws to make sure they do not become **extinct**.



Maureen Lander

**Kahu Kiwi**



**Korapa, traps for catching small birds**

Maori also hunted birds for food. They used traps, snares and spears. One bird that was hunted by the Maori for food was the moa. The moas were **native** birds of New Zealand that are now extinct. Moas were hunted to extinction about 200 to 300 years ago. The moas were huge birds. They were 3 metres tall and weighed up to 450 kilograms.



**Muta-kaka, bird-snaring perches**



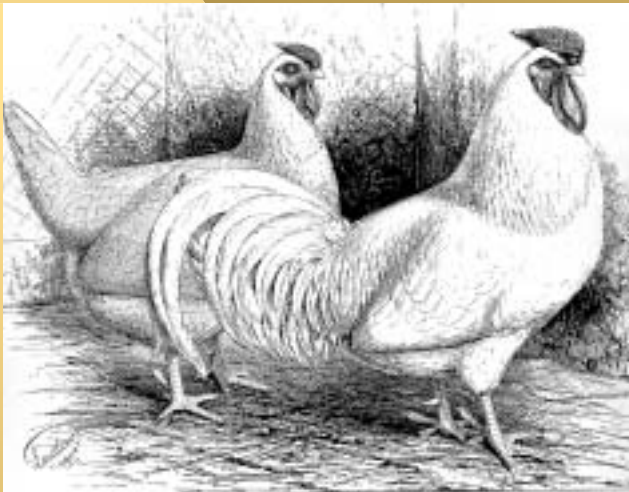
## Introduction of Chickens to New Zealand

In 1773, on his second voyage to New Zealand, Captain James Cook released **poultry** into the North and South Islands. Captain Cook visited Queen Charlotte Sound in 1774 and saw no sign of the poultry he had released. He released more poultry into the wild in 1774 and 1777. In 1814, missionaries in the Bay of Islands raised poultry. This is the first recorded farming of poultry in New Zealand.

In 1888, Mr Murphy, the Secretary of Canterbury Agricultural and Pastoral Association, wrote "that no homestead should be without a few **fowls**". "A dozen or fifteen well-selected and well-fed young fowls will supply eggs for a family of twelve persons throughout the year," wrote Mr Murphy.



Gray Dorkings and Shanghaes were popular breeds used by early settlers in New Zealand. Many breeds of chickens were introduced into New Zealand for use in farming. They included breeds from Britain, France, the Mediterranean region, Asia and America.



Dorkings — British Breed

Brahmas — Asian Breed



Captain Cook  
introduced  
chickens to New  
Zealand in 1773.



# Types of Birds

People who study animals give the animals **Latin** names. The Latin name for a domestic hen is *Gallus domesticus*. If animals have similar body parts they are grouped together. These groups of animals are given family names.

## Anseriformes

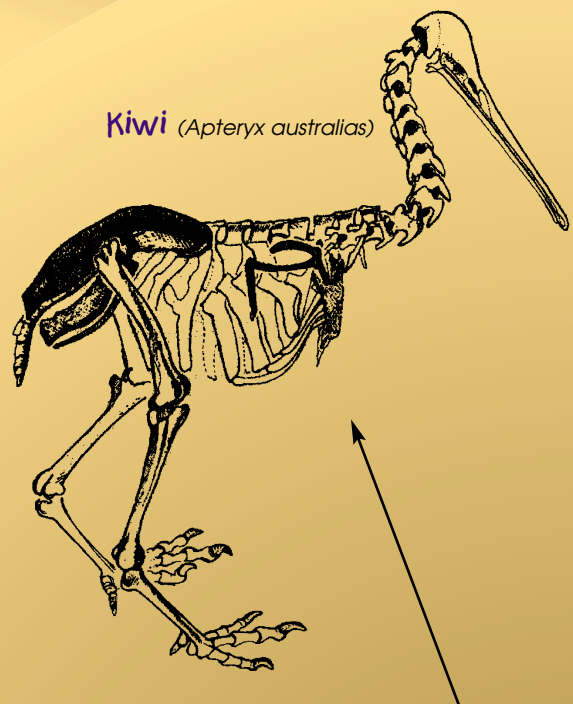
Ducks and geese have flat beaks and webbed feet. They are called *Anseriformes*. Geese are large birds. They are sometimes used as "watchdogs" in the farmyard as they make a lot of noise when upset. The Chinese began farming ducks about 4000 years ago. Duck meat is used in traditional Chinese cooking. The warm downy feathers of ducks and geese are used in pillows, sleeping bags and duvets. There are many wild ducks in New Zealand.

## Ratites

Ostriches, emu and kiwis are called *Ratites*. They have no keel on their breast bone for the attachment of flight muscles. This means that ratites can not fly. Birds that do not have a keel sometimes use their breast to butt opponents when fighting.



Non Ratite: keel on breast bone



Ratite: No keel on breast bone



Ostriches are native to Africa. They are the largest living bird in the world. Ostriches usually weigh between 70 to 150 kilograms and are 2.7 metres tall. How tall are you? Measure 2.7 metres on the wall see how tall ostriches are. The female ostrich has brown feathers, while the male has black and white feathers. Ostriches are fast runners. They have very strong legs and can keep running as fast as 80 kilometres per hour for 30 minutes. Ostriches usually have 50 eggs in their nest and both the male and female ostrich take turns in looking after the nest. The male ostrich looks after the nest at night and the female ostrich has her turn during the day.



Anna Marie Burke: www.feathersite.com

Ostrich chick

Chickens can run at 40km/hr while humans can only reach 36km/hr.



Human: 36km/hr



Hen: 40km/hr



Ostrich: 80km/hr

Emu are found in Australia. They are the second largest bird in the world. Emu can also run very fast. Emu have about 10 eggs in their nest. The eggs have a green shell. The male emu sits on the nest until the eggs have hatched. When ostriches and emu are frightened and can't run away, they defend themselves by kicking forward. The kicks can be so powerful they can break a person's leg.



David Nagle

Emu eggs in a nest

One day old emu chick



Katira: www.feathersite.com



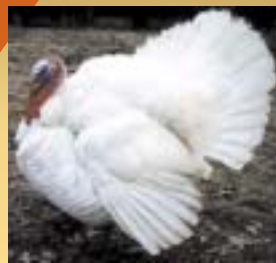
# Galliforms

Chickens, turkeys and pheasants are called *Galliforms*. The turkey came originally from the Americas. The Aztec people in Mexico first domesticated turkeys 500 years ago. Turkeys are a popular bird for farming. This is because they grow fast and produce a large amount of meat. Turkeys are well known for their traditional use as part of Christmas dinner.



Male turkeys are called 'toms' and females are 'hens'.

Pam Marshall: www.feathersite.com



K.C.: www.feathersite.com

Young turkeys are called 'poults'.

Pheasants were bred in China. They are medium to large sized birds with spurs on their legs. The males are very colourful while the females have dull feathers.



Male Pheasant

Red Jungle Fowl are the ancestors of all our domestic chickens. They were the first domesticated in Asia, where they are native. Evidence of chickens have been found in Egyptian tombs dating back to 2000 B.C. (before Christ).

Romans were the first people to start farming chickens. They fattened hens for eating and also ate their eggs. The Romans were the first to make artificial heating incubators using steam for hatching eggs and raising chicks.



A newly hatched bird is called a 'chick'. From 8 to 18 weeks of age a female chicken is called a 'pullet' and a male chicken is called a 'cockerel'. An adult female chicken is called a 'hen' and an adult male is a 'rooster'.



Chicks



Rooster



Find on a map of the world, the countries where each bird originated.



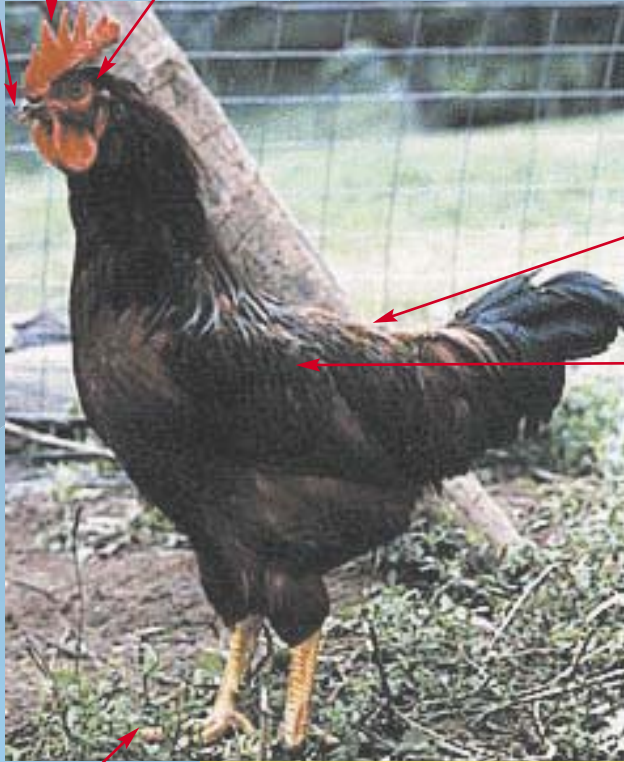
# What are Chickens Like?

Compare the features of a rooster and a kiwi.

Short beak for pecking

Comb

Good eyesight



Pam Marshall; www.feathersite.com

Three types of feathers

Chickens can fly

Long beak for probing

Can only see 60cm in the day

Claw-like toenails

Hair-like feathers

Kiwis can't fly



Tui De Roy

Claw-like toenails

Whiskers



There are about 8325 feathers on a chicken!



# Feathers

The body of a chicken is covered in feathers. Feathers help to keep the chicken warm. They also help the chicken to fly. Chickens have three types of feathers.



Flight Feathers: big outer feathers that help the bird to fly.

Contour Feathers: these feathers help with both flight and warmth.



Downy Feathers: small feathers underneath to help keep warm.

Some birds have different types of feathers. The kiwi has loose hair-like feathers. Kiwis can not fly.

In China, chicken feet are eaten on special occasions.



## Sight

Chickens have good eyesight. Look at the picture of the chicken. Where are the chicken's eyes on its head? Unlike us, chickens have their eyes on the side of their head. This gives chickens a wide angle of vision (300°). This is very important as it allows the chickens to see predators as they approach.

Kiwis cannot see very well, and hardly need to. They hunt for food at night and have developed a good sense of smell to find grubs, worms and insects to eat. They can see only 2 metres at night and 60 centimetres in the day.



## Finding Food

Chickens that live outside eat plants (like grass), insects and worms. To find food to eat, chickens scratch at the ground with their feet. On the end of each toe, the chicken has claw-like toenails to help find food in the dirt. Chickens use their beaks to peck at food in the ground.

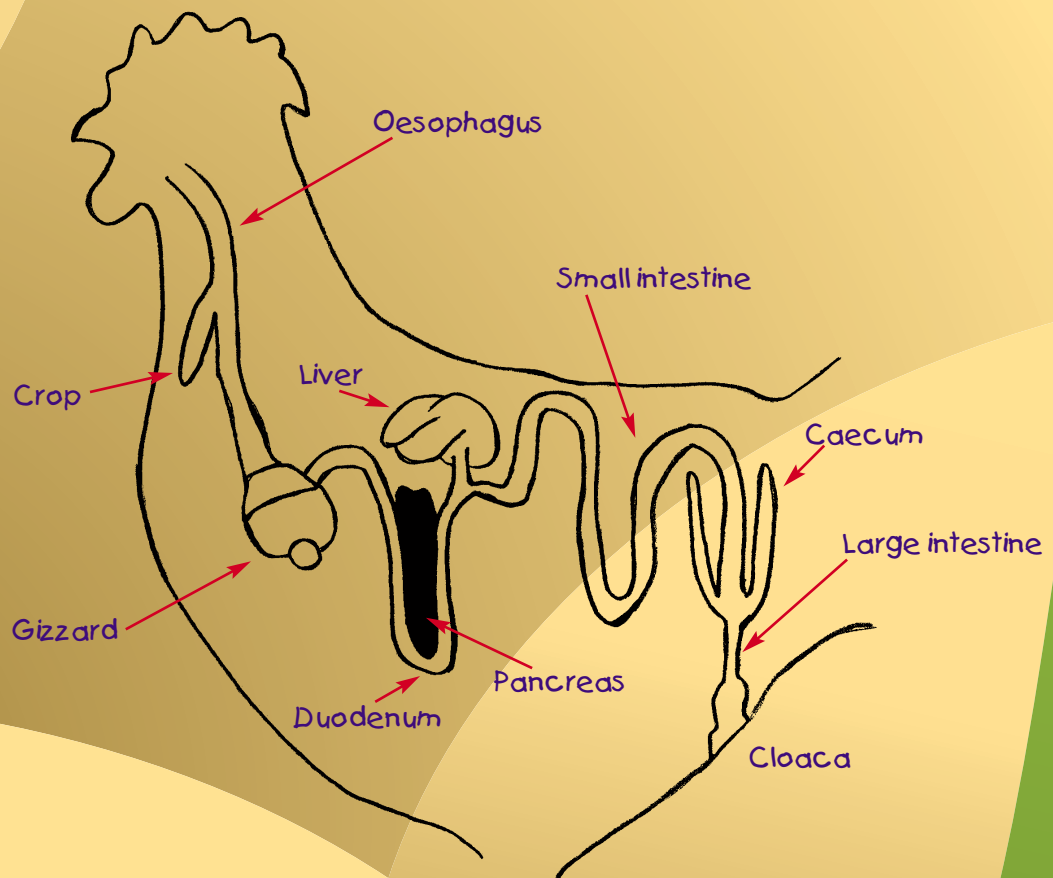
The kiwi uses its beak to probe into the soil for worms. Kiwis find worms by using their good sense of smell.



What do you think chickens would eat from the soil? Collect some dirt and look at it closely using a magnifying glass (or microscope). How many things can you find that you think a chicken would eat?



# Digestion



Chickens have no teeth. This means they cannot chew their food like us before they swallow it. The chicken's food is moistened with saliva in the mouth and swallowed whole. The food is ground up during **digestion** by the **gizzard**. The gizzard is part of the chicken's stomach. It breaks up food eaten by the chicken when it contracts. The gizzard contains grit eaten by the chicken that helps break up the food. The chicken absorbs the **nutrients** from the food it eats in the intestines and caecum. Waste, which consists of urine and faeces, is passed from the body at the cloaca.

Chicken waste or **manure** can be used as fertiliser for plants. It helps the plants to grow. If it is used fresh from the chicken, it is acidic and can burn plants. To stop the plants getting burnt, chicken manure is best used after it has been left for a while to rot down.



Fill two pots with soil. In one pot add chicken manure fertiliser to the soil. Plant some tomato plant seeds in two pots. Position the pots in the sun and water every day. Measure the growth of the plants over a few weeks. Graph the results. Compare the growth of the plants in the two pots.



## Development of Eggs

All female birds lay eggs. A female chicken is called a hen. What birds do you think laid the eggs below?



Hen egg



Kiwi egg

The chicken and the kiwi are birds of the same size. This suggests that their eggs would be the same size. True or false? False, kiwis have eggs six times as large as a chicken's egg. A kiwi's egg is 12 centimetres long and has a diameter of 8 centimetres. A large hen's egg is 7 centimetres long and a small hen's egg is 5.5 centimetres long.



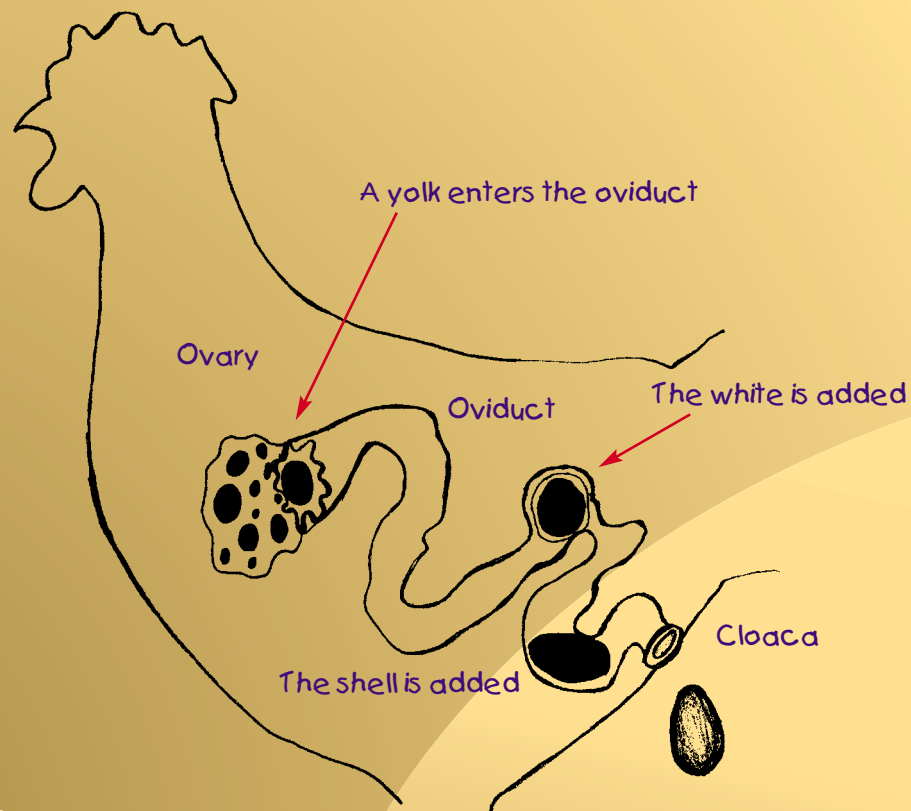
How many large hen's eggs does it take to equal the same weight as one kiwi's egg? A kiwi egg weighs 450 grams and a large hen egg weighs 80 grams. How many small hen's eggs does it take to equal the same weight as one kiwi's egg? A small hen egg weighs 50 grams.

The kiwi egg has a smooth white or greenish white shell. Chicken eggs can be brown or white shelled. What colour chickens do you think lay brown eggs? Chickens with brown feathers lay brown eggs. White eggs come from chickens with white feathers.

Egyptians, thousands of years ago, invented the first artificial incubators using the sun to warm the eggs, which could incubate up to 15 000 chicks at one time.



Most eggs are laid in the morning. Eggs develop inside the body of a hen



The middle of the egg is made first. The outer shell is made last. The yolk is formed in the hen's **ovary**. When a yolk becomes large enough, it moves out of the ovary and into a tube called the **oviduct**. As the yolk travels along the oviduct the two other basic parts of the egg form around it. The egg white or **albumen** surrounds the yolk first and then the hard shell is formed. After 24 hours (1 day) in the oviduct the egg is finished and ready to be laid. Eggs are laid blunt end first. The egg comes out of the hen's body through an opening called the **cloaca**.

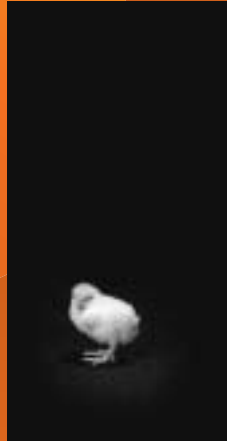
For an egg to grow into a chick it must go through an important step early on when the egg is still small, inside the hen. The tiny eggs inside the hen need fertilising by an adult male chicken, called a **rooster**. The rooster mates with the hen, fertilising the egg, which then develops into a chick. There are no roosters on egg farms. This means that the unfertilised eggs you buy in shops cannot grow into chicks.

A hen requires  
24 to 26 hours to  
produce an egg



## Why are Chickens Used for Farming?

There are more chickens farmed in the world than any other type of animal. This is because their meat and eggs are a very good source of protein and other food nutrients. Chickens also grow quickly. A baby chick weighs about 40 grams. By the age of 40 days the chicken will weigh 2000 grams (or 2 kilograms). This means that chickens are well suited for meat production.



40 gram chick



2000 gram broiler

M. Appleby, B. Hughes and H. Elson (1992)  
Poultry Production Systems: Behaviour,  
Management and Welfare, CABI Publishing

A chick increases its weight by 1960 grams by the time it is 40 days old (2000 grams – 40 grams = 1960 grams). The chick has increased its weight by 50 times (2000 grams ÷ 40 grams = 50).



The world's  
biggest chicken  
weighed 10  
kilograms and  
chased dogs.

## Types of Chickens Used in Farming

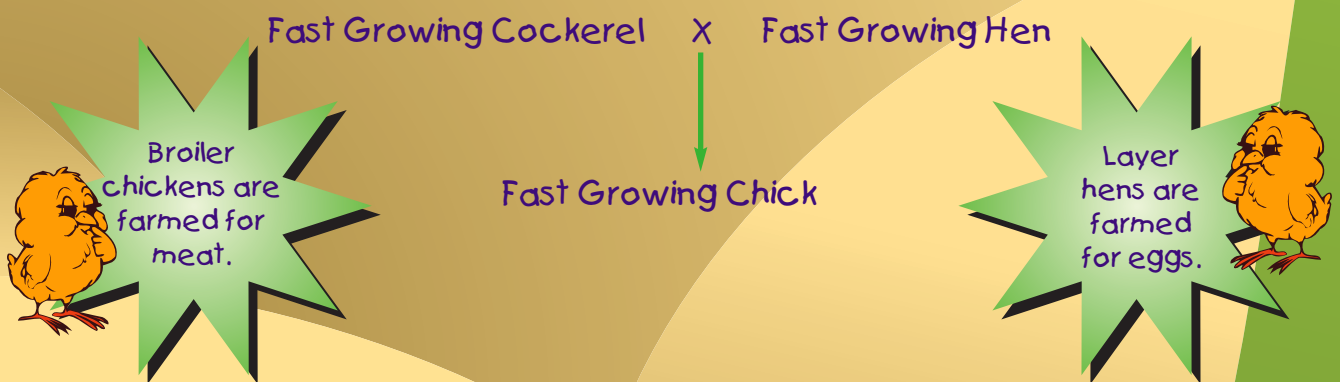
A long time ago, chickens were small birds. They grew slowly and produced very few eggs in a year. Today, chickens have been bred to either grow very fast or to lay a lot of eggs. The fast growing birds are used for meat. They are called **broiler chickens**. Broiler chickens produce a lot of meat. In the 1940's a chicken would have taken 20 weeks to grow to a size big enough to feed five people. Now, because of improved knowledge of bird nutrition, resulting in a balanced diet, and the improved breeds, it only takes 5-7 weeks. When broiler chickens reach this age they are sent to processing plants where they are **humanely slaughtered**.



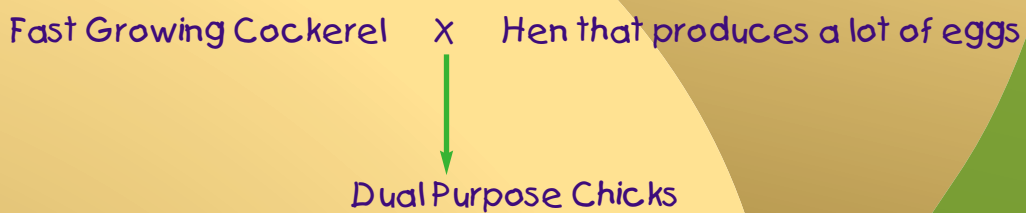
The carcasses are prepared and presented in the different ways that people want for cooking. For example, drumsticks, breasts or thighs, and whole chickens for roasts.

Chickens that lay a lot of eggs are called **layer hens**. One hen can produce about 300 eggs in one year. Layer hens are usually kept until they are 70 weeks of age. They are then sent for humane slaughter and their meat is used for making chicken soups, pies and pastes.

Breeding is done by choosing which rooster mates with which hen. By choosing parents which grow fast, fast growing chicks that are good meat producers will be born. This is the same with chickens that lay a lot of eggs.



If a fast growing male mates with a hen that produces a lot of eggs, the chicks are **dual purpose**. They do not grow as fast as their father or lay as many eggs as their mother. They are somewhere in between.



Examples of egg producing breeds of chickens are the Shaver Brown, Hyline White and Hyline Brown. The Cobb and Ross are meat producing breeds, and the Light Sussex is a dual purpose breed.



Sussex Rooster

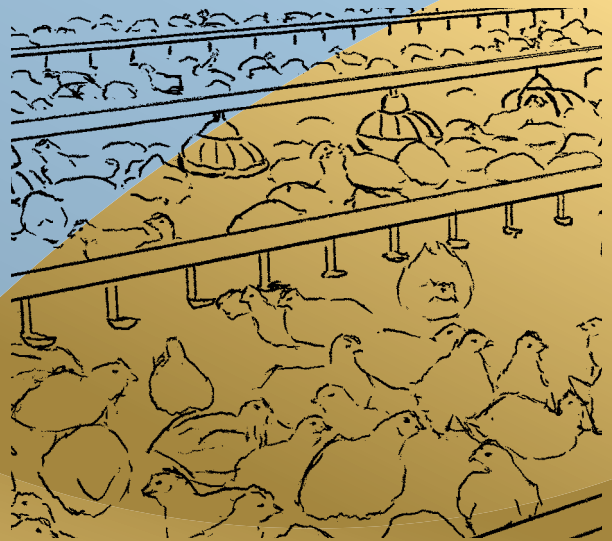


Shaver Brown Hen



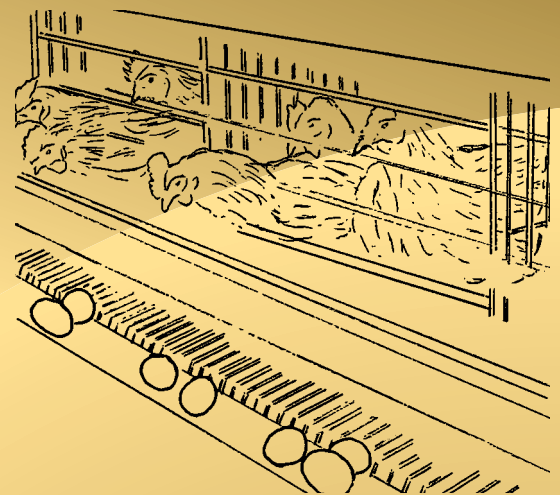
## Types of Farms

**Broilers** are kept indoors in sheds. The floor is covered with wood shavings. The shed is environmentally controlled to protect the birds from extremes in weather. When the birds are young chicks, lamps are hung from the ceiling to keep them warm. Fresh air is provided from fans in the wall. A balanced diet of feed and water is available at all times from feeders and drinkers.

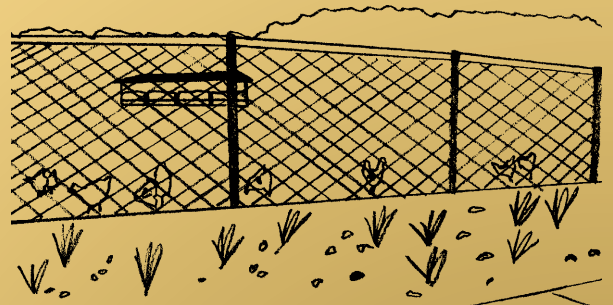


Layer hens kept in cages supply 95% of the eggs produced in New Zealand. Alternative system farms produce the remaining 5% of eggs. This includes 3½% free-range eggs and 1½% barn eggs.

**Layer hens** are usually kept in cages indoors in sheds. Hens were first put into cages for animal welfare benefits. The cages gave them protection from predators (hawks, stoats, ferrets and foxes). They also gave protection from diseases and parasites and prevented cannibalism in large flocks. The sheds make it easier to control the temperature in cold weather. They are given water and feed all the time. The floor of the cage slopes downwards towards the aisle in front of the cage. This allows the eggs to roll to the front of the cage after they have been laid.



A free-range farm would consist of a shed with 500 to 2000 birds. The floor of the shed is slatted and it is fitted with nest boxes and perches. The birds have access to outdoors through pop-holes in the walls. In a barn system, birds are kept in a large shed with a litter floor. There are perches for the birds to sit and sleep on. Nest boxes are provided for the hens to lay their eggs in.



# Animal Health and Welfare

People have different opinions on the way in which animals should be farmed. Good farmers look after their birds in a welfare-friendly manner. This means the farmer has to make sure that the birds have food and water, comfort and shelter, receive treatment for sickness quickly and have freedom to perform some of their normal behaviours. There are three reasons for looking after animals in a welfare-friendly manner: 1) so they do not suffer, 2) so they are not damaged, and 3) if we are unkind to animals, people may not respect us. New Zealand has laws to protect the welfare of all animals in our country.

## Temperature Control

It is important to make sure that the birds do not get too hot in summer or too cold on winter nights. How do you cool down when you are hot? When chickens are hot, they cool down by panting, drinking cold water and standing in the shade.



If you were an egg farmer and the hens in the cages were panting because it was too hot, what could you do to cool them down?

When it is cold, chickens look for the warmest place to huddle together. They squat on the floor, fluff up their feathers and eat more.



If you were a broiler farmer and the birds in the shed were getting too cold, what could you do to help them get warmer?

## Feeding

People need energy, protein, minerals and vitamins in their food. So do chickens. Cereals such as wheat provide energy. Protein is provided by feeds such as soya bean or by meat meal. Layer hens need extra minerals, such as calcium, because they lose calcium in the eggshells they produce.



Broiler chickens grow faster when fed chicken feeds that contain more energy and protein. So, the birds fed more energy and protein are larger:

These chickens are the same age, 6 weeks old. The one on the left will lay eggs when it matures. The broiler on the right is ready to be slaughtered for meat.



# Why are Chickens so Important to Us?

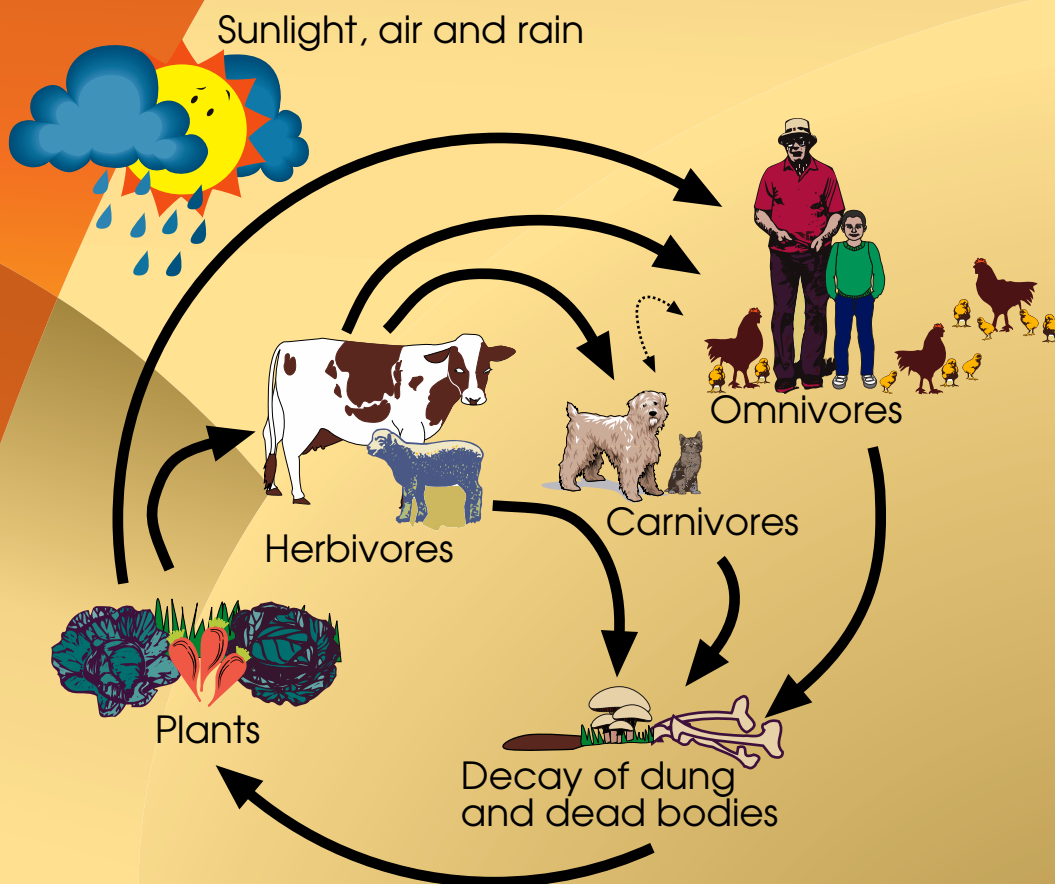
The most important thing chickens provide for people today are meat and eggs.

## The Food Chain: Nature at Work

In nature, different types of animals eat different things. "**Herbivores**" like cows and deer eat plants. "**Carnivores**" like tigers and dogs eat other animals. Some animals, called "**omnivores**", eat both plants and animals. People, monkeys, rats, bears, chickens and many other birds are omnivores. Animal dung, and the bodies of dead animals are food for insects, fungi and bacteria. They turn the bodies and dung back into soil, which plants use for food. Being an omnivore is handy in nature because these animals can survive by eating either plants or animals – which is good when one type of food is scarce.

The way that food cycles from plants through to animals and back to plants again, is called the "food chain", and it is the way nature continues to exist.

## The Food Chain



# Nutrition:

## What are the Best Things for People to Eat for Health?

The science of food and what it does for our bodies is called **nutrition**. To understand how food works in the body, we must look at what the food is made of. The types of things in foods that are good for us are called **nutrients**.

There are five types of nutrients in food. They are: 1) fats (and oils) 2) carbohydrates 3) proteins 4) minerals and 5) vitamins.

### 1. Fats and Oils

Our bodies are made up of millions of tiny **cells** that have different shapes and jobs. Fats and oils are used to help make up the walls of these cells. Our bodies also use fat to store energy to help us with activities that we do everyday. Our bodies use animal fat, like fat from a chicken, for energy.



### 2. Carbohydrates

Carbohydrates are the main source of energy for your body. Sugars are the most basic type of carbohydrate. There are many types of sugar. The white sugar on the table at home is one type of sugar. Another type comes from fruit and honey.



Starch is also a type of carbohydrate. Starch comes from bread, potatoes, rice and pasta. Plants make sugars and starches in their leaves from sunlight, air and water.

Another important carbohydrate is fibre. Cereals, fruit and vegetables are the best source of fibre.



### 3. Proteins

Proteins are the building blocks of our bodies. Skin, muscle, internal organs like the heart, liver and intestines are mostly made up of proteins. Even the hair on our bodies is made up of proteins. Chicken meat and eggs are very good protein sources.



Eggs are rich in protein, and it is more easily and quickly digested than other types of protein.

### 4. Vitamins



Vitamins help to keep our body healthy. Vitamins are found in fruits, vegetables, liver, eggs and meat. Even the sun gives you vitamin D that helps your bones and teeth to be healthy. Eggs contain vitamins A, B Complex, D, E and K.

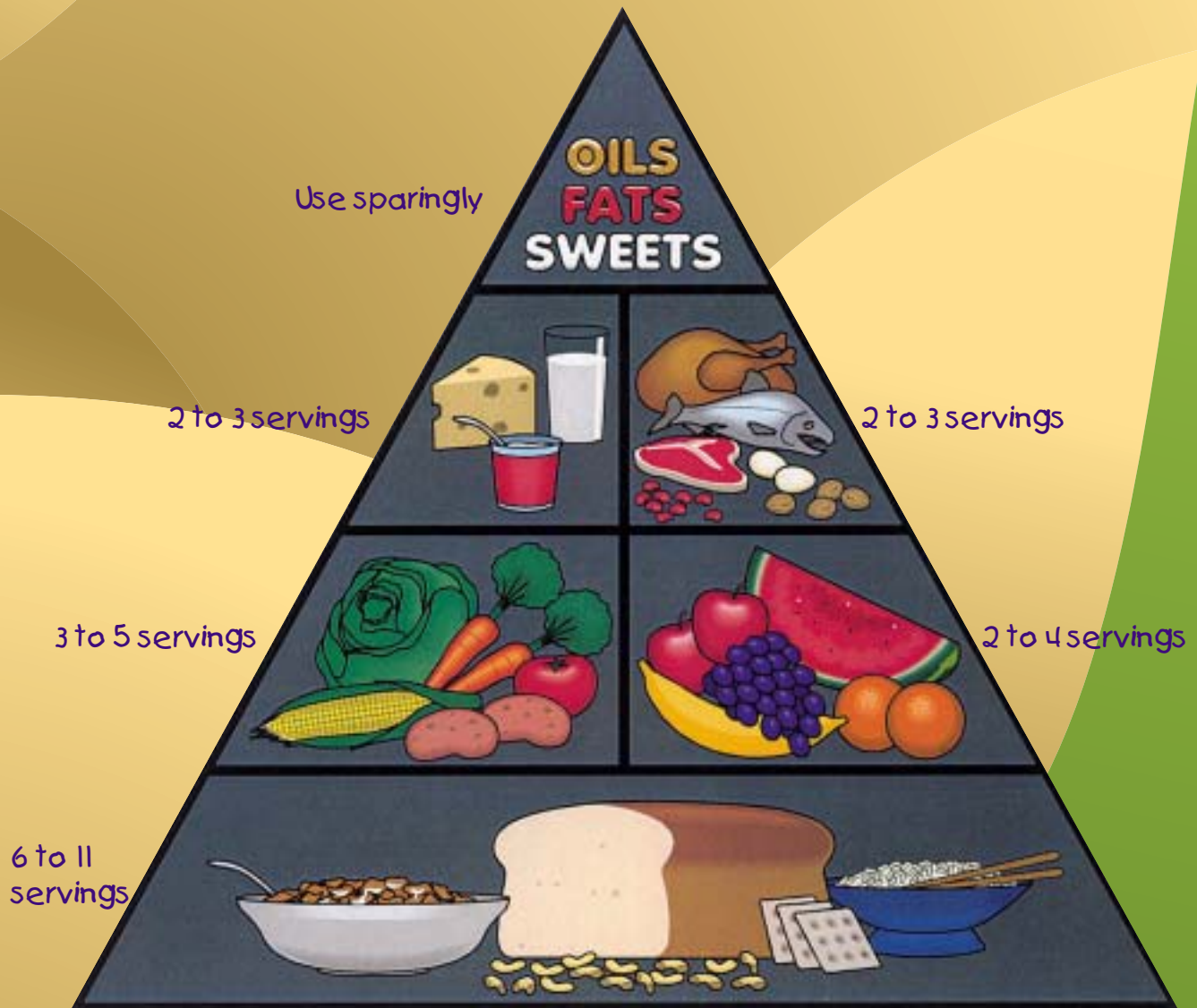
### 5. Minerals

Minerals are very important for a healthy body. Calcium is a mineral that is the main material used to build the bones of your skeleton and teeth. Another important mineral is iron. Iron helps to carry oxygen in your blood. The major minerals found in eggs are calcium, iron, sulphur, sodium, chlorine, potassium and magnesium.



# The Food Pyramid

The food pyramid shows you what types of food are the best to eat. It also tells you the amount of each type of food that your body needs so its gets a balanced diet. The number of servings indicated on the food pyramid are the servings required over the whole day.



Write a menu for one meal of the day in such a way that you receive a balanced diet.



# Eggs

The egg is almost a perfect food. It has a wide range of nutrients in it. Eggs contain no added salt, sugar, artificial flavourings or preservatives. Eggs are used in a lot of different foods. For example pavlova, cakes, biscuits, muffins, soups, noodles, pies, and meringues. On average each year, every person in New Zealand eats 203 eggs. In the year 2000, 68 million dozen eggs were produced in New Zealand.



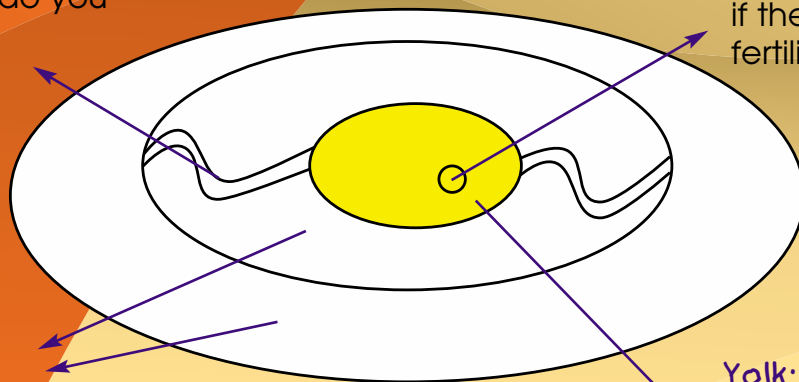
Crack open an egg onto a plate. Draw the different parts of the egg that you see.

## Chalazae:

Twisted, cord-like strands of egg white. What do you think they are for?

## Germinal disc:

All eggs have this spot. This is where the chick would begin to develop if the egg had been fertilised.



## Albumen (white):

2 layers. One is thick and jelly like, the other is thin.

## Yolk:

Yellow part of the egg. Major source of vitamins, minerals, fat and half of the protein of the egg.

The egg shell contains small air pores which allow air and gases to pass through. Eggs can absorb flavours and odours through these pores. The best way to store eggs is in their carton in the refrigerator. When eggs age (get old) their white becomes very runny. Fresh eggs can be stored for up to 5 weeks in the refrigerator.

The colour of the yolk depends upon the food the hen has eaten. If it has eaten grass, **maize**, carrots or pumpkin the yolk will be richer yellow.



Egg yolks are one of the few foods to naturally contain Vitamin D.

203 eggs



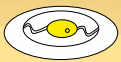
Occasionally, a hen will produce double yolked eggs. According to the Guinness Book of Records a Black Minorca hen in Lancashire, England laid the largest chicken egg. It had 5 yolks, was 16 centimetres long and had a diameter of 11 centimetres. Compare this egg with the size of a normal hen's egg.

## Here are some exercises that you can do to find out more about eggs.

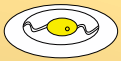


Is your egg raw or hard boiled?

How to find out without cracking the shell. Roll your egg gently along the floor or spin them. If they are hard boiled they will spin or roll easily. If the egg is raw, it will wobble. Why? The raw egg will wobble because the contents are liquid and move inside the shell when it is rolled.



How fresh is your egg? Float some eggs in a container of water. Some float and others sink. Older eggs float. Why? The size of the air sac increases as the egg shrinks inside the shell when it gets older.



List all of the things that you have eaten today that contain eggs.



Is an egg easier to crack at the end or the side? Carefully crack an egg by tapping it with scissors on the end; then try on the side. Which is easier? Why?

When an egg is cooked the white sets and the yolk will harden. This is caused by the firming of the protein in the egg. The egg yolk hardens at about 70°C, and the white at about 65°C.



How long does it take to soft boil an egg? Hard boil an egg? Boil eggs for different lengths of time. Write descriptions on how cooked (or uncooked) the eggs are. How do you like your eggs?



Some of the hard boiled eggs have a ring around the yolk. What colour is that ring? It is green and is due to an iron and sulphur compound that forms when eggs are overcooked or not cooled properly after cooking. It is harmless.

Decorated eggs have long been part of religious festivals all over the world, especially Easter.



# Chicken Meat

The muscles of an animal's body become meat. People also eat an animal's liver and kidneys (these are called edible offal). Poultry meat is the second most consumed meat in the world after pig meat. In the year 2000 on average each New Zealander ate 29 kilograms of poultry meat produced from 67.5 million chickens. Chicken meat is popular because it is highly nutritious, convenient and inexpensive. Chicken meat can be eaten in many different ways. For example, roast chicken, soup, nuggets, stir fries, casseroles, salad, sandwich fillings, and pies. It can be used to produce takeaways and fast food.



Each of these trolleys contains 29 kilograms of poultry meat



Annual consumption of different types of meat in New Zealand, 2000.

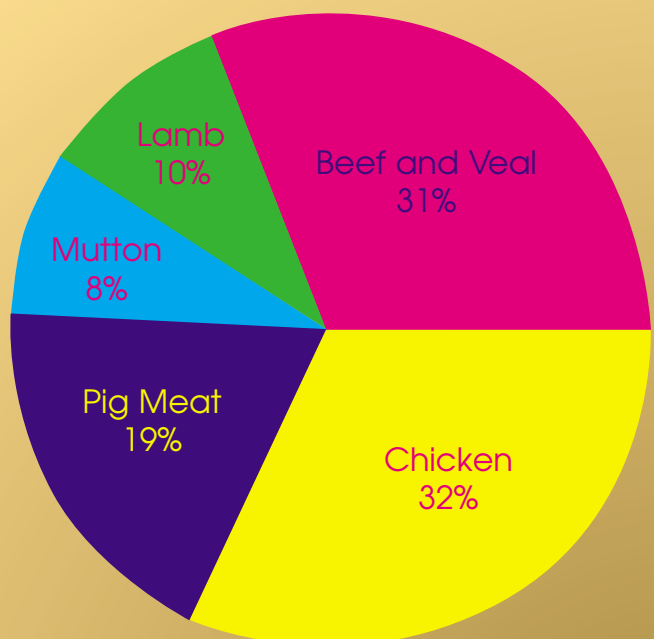
Chicken = 32%

Beef and Veal = 31%

Pig Meat = 19%

Lamb = 10%

Mutton = 8%



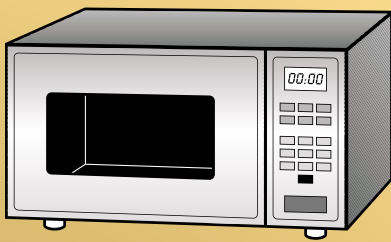


Chicken meat is a healthy and nutritious meat which provides a significant amount of protein. If you were following a healthy diet would you eat chicken with the skin on? Chicken breasts and drumsticks are very low in fat even with their skin on. Chicken thighs and wings have a higher fat content. Removing the skin before cooking can significantly reduce the fat content of a chicken thigh. Some people on low fat diets remove the skin from all chicken.



List ways that chicken can be cooked. What ways are the healthiest? Why?

As with any meat, fish or poultry, **bacteria** can be found on raw or undercooked chicken. Bacteria are **microscopic** one-celled organisms that are found everywhere. Some bacteria can cause food to go rotten and some can cause illness in humans. Bacteria on food that is eaten can cause illness.



Illness from bacteria on food can be controlled through clean food handling and proper cooking and refrigeration. Raw meat must be handled carefully. If raw meat or meat juices contact cooked foods or food that is eaten raw such as a salad, bacteria can be transferred. An example of this is chopping tomatoes for a salad on an unwashed cutting board that has been used for cutting up a raw chicken or other raw meat.



List some ways that you can stop the spread of bacteria in the kitchen.



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*"The Chook Book presents sound technical information for use by teachers committed to meeting their responsibility to present a balanced view on poultry farming to young children"*

Catherine Smith, Convenor of the Animals in Schools Education Trust.

(The aims of the Trust are to gain acceptance by school pupils of the obligation to have concern for the welfare of animals of all species and to obtain a balanced view of people's relationships with animals.)

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