W1177A
1-2 YEARS IN PROJECT

Poultry
Beginner Project Area Guide

Authored By:
Kandace W. Ailshie, Graduate Assistant, Tennessee 4-H Youth Development
Melissa Shelton, Extension Agent, UT Extension
Lynne Middleton, State 4-H Curriculum Specialist, University of Tennessee Extension

Reviewed for Pedagogy:
Lynne Middleton, State 4-H Curriculum Specialist, University of Tennessee Extension
Jennifer K. Richards, PhD, State Extension Curriculum Specialist & Agricultural Leadership, Education & Communications Department, University of Tennessee

Activity 1
What's That Mean?

Project Outcome

- Define the following terms: pullet, hen, cockerel, rooster, drake, tom, broiler, roaster, breeder, layer

Does your family operate a commercial poultry farm with thousands of birds? Or do you have a small flock in the backyard? Or are you just interested in learning about different chickens? Regardless of the size of your flock, it is important to understand the basic terminology related to chickens, ducks, and turkeys.

Search through terms and definitions listed at the University of Kentucky Animal Science Poultry Website. Then match the terms with the definitions below. By doing this, you will gain an understanding of the terminology used within the poultry industry to define bird age within each species.

Terminology	Definition	Write the letter
a. Drake	1. Domesticated birds kept for eggs, meat, and feathers	
b. Pullet	2. A young rooster	
c. Tom	3. A young domestic bird raised for meat	
d. Broiler	4. Mature male chicken less than one year of age	
e. Roaster	5. A meat chicken, processed between 7-12 weeks in age	
f. Duckling	6. An adult male duck	
g. Poultry	7. A female chicken or turkey over one year of age	
h. Layer	8. A male turkey	
i. Rooster	9. Baby duck	
j. Hen	10. Bird raised to produce eggs	
k. Cockerel	11. Female chicken less than one year of age	

ANSWER KEY

Terminology	Definition	Answer
a. Drake	1. Domesticated birds kept for eggs, meat, and feathers	G
b. Pullet	2. A young rooster	K
c. Tom	3. A young domestic bird raised for meat	E
d. Broiler	4. Mature male chicken less than one year of age	F
e. Roaster	5. A meat chicken, processed between 7-12 weeks in age	D
f. Duckling	6. An adult male duck	A
g. Poultry	7. A female chicken or turkey over one year of age	J
h. Layer	8. A male turkey	C
i. Rooster	9. Baby duck	F
j. Hen	10. Bird raised to produce eggs	H
k. Cockerel	11. Immature chicken; female chicken less than five months old	B

It's now time to utilize what you just learned. Based on the terminology you matched in the previous activity, write a paragraph (3-5 sentences) describing terms involved in poultry production. One part should consist of what you already know about the poultry industry, and the second should discuss what you hope to learn about poultry while completing this project. Use at least eight of the terms you matched previously.

When you have finished Activity 1, set three goals of what you want to learn in this project.

1. _____

_____

2. _____

_____

3. _____

_____

Now, make an appointment with your 4-H agent to begin talking about how you can use these goals to begin working on an e-portfolio in the Poultry project.

Activity 2
What's the Purpose?

Project Outcome

- Differentiate between meat and layer breeds of chickens and ducks and provide examples of each
- Compare and contrasts two breeds of turkeys and two breeds of geese

The poultry industry consists mainly of three different species: chickens, ducks and turkeys. For each of the breeds below, write a short description including the species they belong to, major physical characteristics and main product they are raised to produce. You will be able to find information on all these breeds at https://poultry.ces.ncsu.edu/backyard-flocks-eggs/breeds/

KHAKI CAMPBELL:_____

_____

RHODE ISLAND RED: _____

_____

BROAD BREASTED WHITES: _____

_____

CORNISH CROSS: _____

_____

STANDARD BRONZE: _____

_____

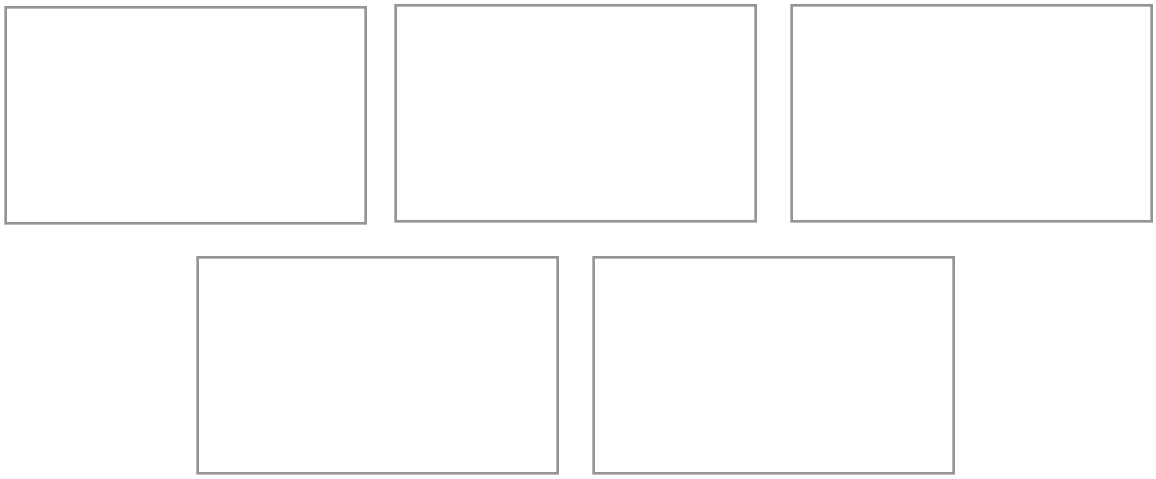
PEKIN: _____

_____

List 3 breeds of broiler, layer, and breeder birds below.

Broiler:	**Layer:**	**Breeder:**
1.	1.	1.
2.	2.	2.
3.	3.	3.

Identify 5 poultry products that are NOT meat or eggs.



Now let's see how you did. Below is a description of each breed including which species they belong to, physical characteristics, and the main reasons they are producers.

Khaki Campbell – Member of the duck species weighing between 3-5 pounds known for their egg laying abilities in backyard flocks. Common coloration is dark head with a khaki-colored body.

Rhode Island Red – Considered a dual-purpose chicken breed. These birds are among the most popular in backyard flocks. Regardless of the name, their feathers actually have brown and black feathers.

Standard Bronze – A brown and white medium-sized turkey. These birds are raised for their meat, but often times they are kept as pets and are known for their color schemes.

Pekin – The most popular breed of duck in North America. They are known for their efficiency and quick growth, making them an ideal meat bird. Physical characteristics include a completely white body with a yellow beak and feet.

Broad Breasted White – Breed of turkey widely used for meat production due to their abilityto gain weight quickly. Average weight for these birds is 38-40 lbs. Distinguishable by their completely white coloration and their red and blue heads.

Cornish Cross - A fast growing member of the chicken species. Mainly used for their meat, males grow to 12 lbs in 6 weeks and females get to 8 lbs.

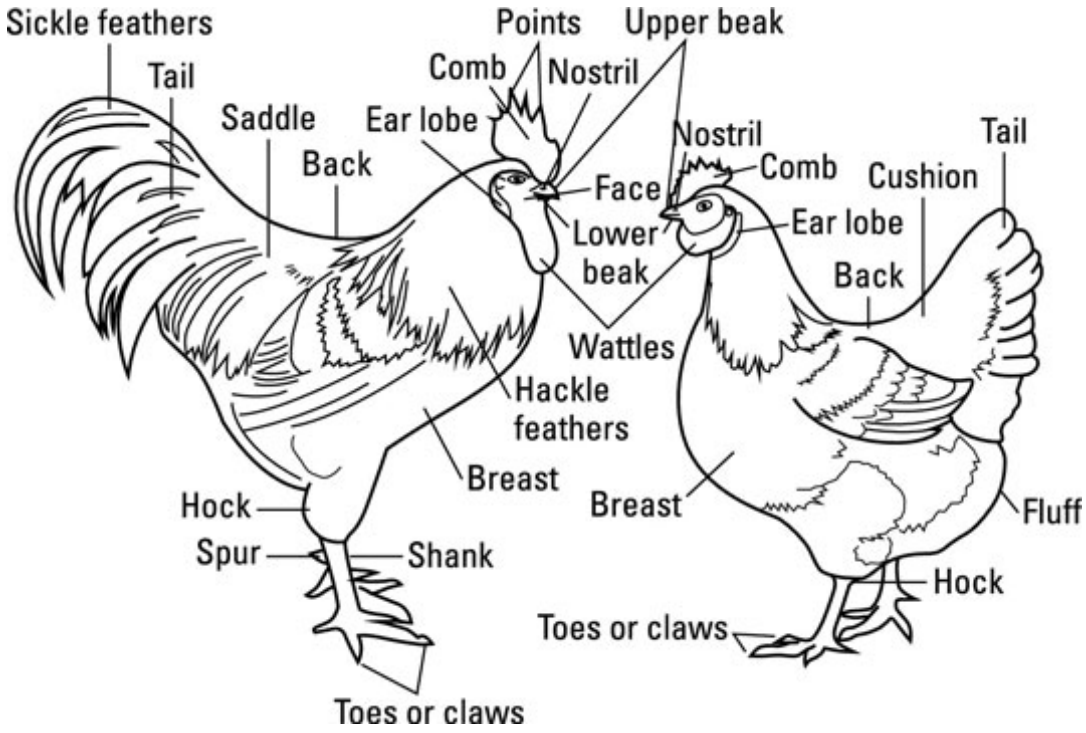
Reference:
https://poultry.ces.ncsu.edu/backyard-flocks-eggs/breeds/

Activity 3
Skeleton Skill-A-Thon

Project Outcome

- Label the external anatomy parts: comb, wattle, beak, ears, ear lobes, hackle feathers, tail feathers, breast, back, abdomen, shank, hock joint, claw, toes, spur
- Distinguish between male and female live birds
- Identify anatomical structures of skeletal system and body parts

Humans have mostly the same body parts regardless of whether the person is male or female. But many other species do not. The body parts of a hen are different from the body parts of a rooster.



Name two body parts that are found only on the hen:

_____, _____

Name four body parts that are found only on the rooster:

_____, _____, _____, _____

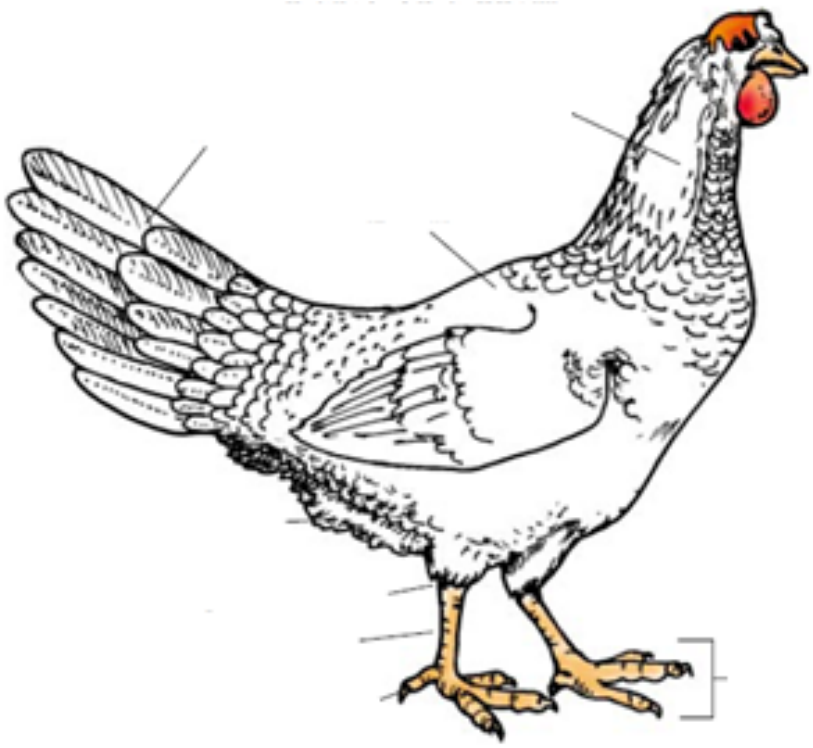
Answers:
Two body parts found on a hen: Fluff and Cushion
Three body parts found on the rooster: Spur, Sickle Feathers, Points, Saddle

Common ways to distinguish between male and female chickens:

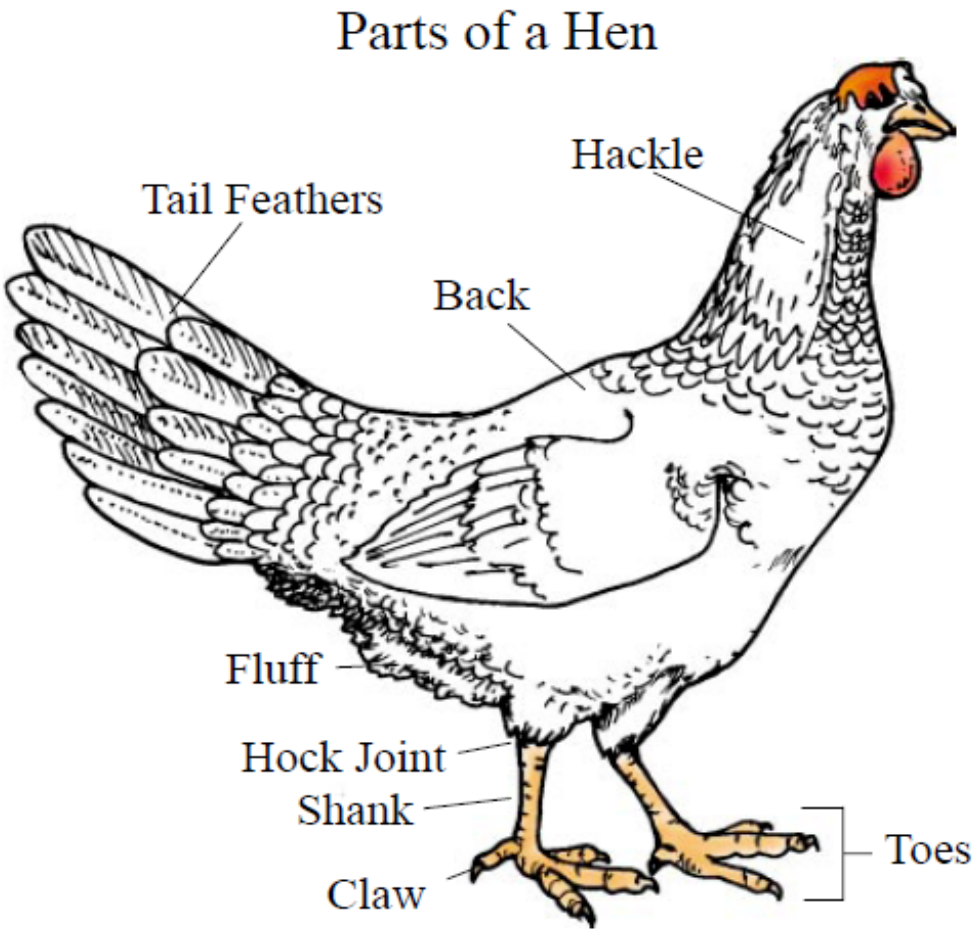
Male (Rooster)	**Female (Hen)**
Pointed feathers around back, neck, and tail	Round feathers around back, neck, and tail
Full, plump comb	Short, small comb
Large wattle	Small Wattle
Long spurs	No spur

Now label the parts of the hen using the following words:

Back	Hackle	Toes	Claw	Shank
Hock Joint	Tail Feathers	Fluff		



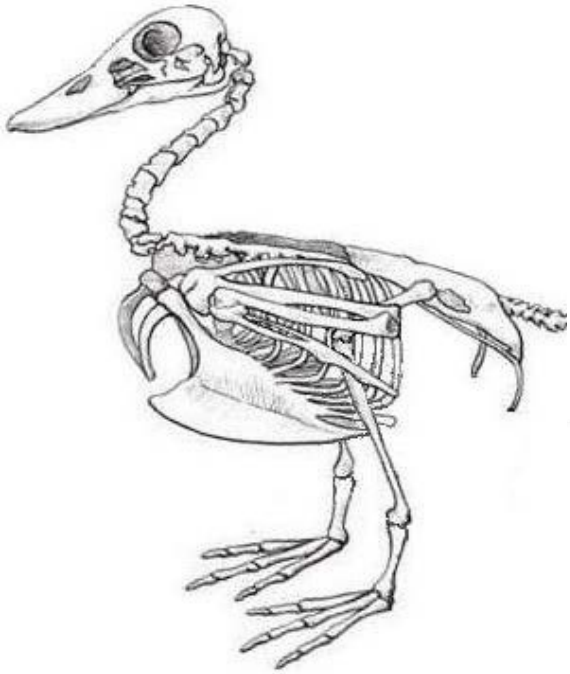
ANSWER KEY:


Parts of a Hen
Hackle
Tail Feathers
Back
Fluff
Hock Joint
Shank
Toes
Claw

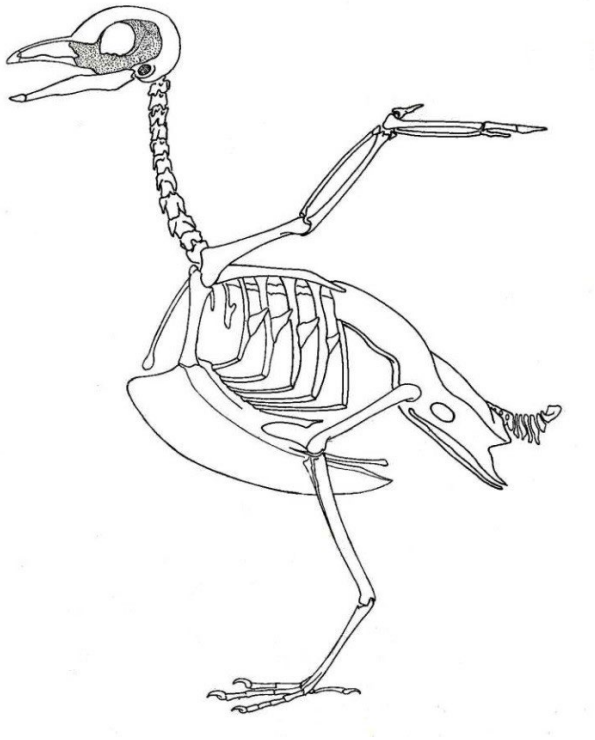
In activity 2, you identified the differences among bird species and breeds. Now let's change the focus to the similarities all bird species share – their bone structure and anatomy. Visit this website to learn more about the structures of ducks and chickens: Avian Skeleton. Then, from the work bank below, identify the body structures on the bird species and properly label them.

WORD BANK

Sternum	Ilium	Scapula	Phalanges	Ulna	Radius
Humerus	Femur	Mandible	Carpus	Tibia	Coracoid
Ischium	Vertebrae	Clavicle	Ribs	Metatarsus	Skull



DUCK



CHICKEN

Reference:
https://ohio4h.org/sites/ohio4h/files/imce/animal_science/Poultry/How%20can%20I%20distinguish%20male%20and%20female%20chickens_%20-%20eXtension.pdf

http://www.biology-resources.com/drawing-bird-skeleton.html

http://www.taxidermy.net/forum/index.php?topic=299289.0

Activity 4
The Reproductive Parts

Project Outcome:
- Learn and define the following terms: ovulation, ovary, oviduct, clutch
- List differences and similarities between male and female reproductive tracts

Now that we have learned and identified skeletal parts of a chicken, let's talk about reproduction and how chickens reproduce to give us baby chickens.

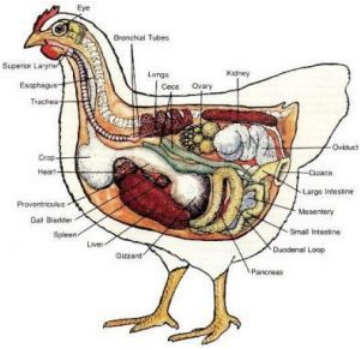
A clutch is a group of eggs laid by a hen on consecutive days.

The reproductive system of a chicken hen is made up of two parts: the ovary and the oviduct.

The ova (yolks) develop in the ovary. When an ovum (singular of ova – meaning the yolk) has matured, it is released from the ovary into the oviduct. This release of the ovum is ovulation.

OVARY
The ovary is a cluster of developing ova and is located midway between the neck and the tail of the bird and attached at the back.

OVIDUCT
When ovulation occurs, the ovum (yolk) enters the oviduct. The oviduct is a twisted tube that is 25 to 27 inches long when fully developed and is divided into five major sections. These sections are the infundibulum, magnum, isthmus, shell gland, and vagina.



Male and female poultry reproductive tracts have some similarities, yet differences. Both tracts have gonads, which is what make reproductive cells. Male gonads are referred to as testes, while female gonads are known as ovaries.

Between 16 and 24 weeks, poultry becomes sexually mature. Once sexual maturity is reached, reproduction can begin. A rooster continues to produce new sperm while it is sexually mature. A female chicken, on the other hand, hatches with the total number of ova it will ever have; meaning it will grow no new ova.

Reference:

https://poultry.extension.org/articles/poultry-anatomy/avian-reproductive-female/

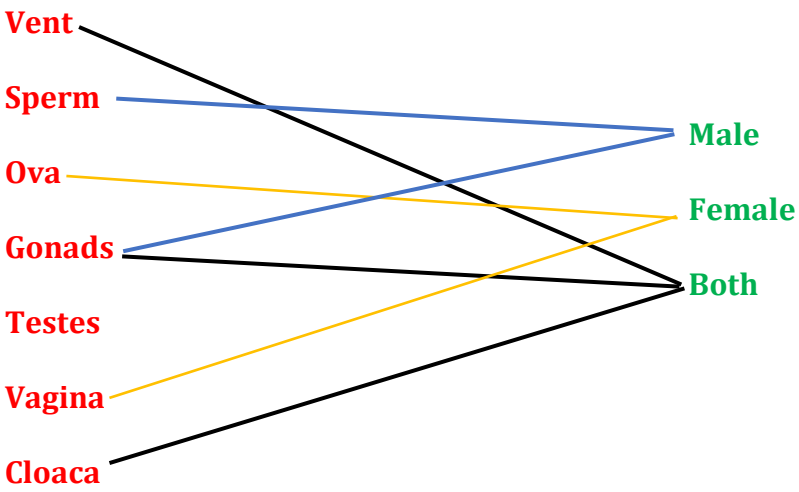
Now that we have learned about poultry reproduction tracts, let's determine if these terms relate to a male, female, or both.

Draw a line from the red word to the green word it matches.

Vent	
Sperm	**Male**
Ova	**Female**
Gonads	**Both**
Testes	
Vagina	
Cloaca	

Check your answers on the next page.

ANSWER KEY:


Vent
Sperm
Ova
Gonads
Testes
Vagina
Cloaca
Male
Female
Both

Activity 5
Means Behind the Meats

- Identify and distinguish between the major parts of a poultry carcass: breast, thigh, drumstick, and wing
- Differentiate between muscle, bone, and fat on a poultry carcass

You identified 18 skeletal structures found on all birds. Now it is time to apply your knowledge through another activity. Broiler birds are raised for their meat, so in this activity, identify the commercial cuts of meat and the skeletal structures included in each cut. Use the word bank on the previous page (not every structure will be used).

Cut:_____

Skeletal Structures:

_____

_____

_____

_____

_____

Cut:_____

Skeletal Structures:

_____

_____

_____

_____

_____

Cut:_____

Skeletal Structures:

_____

_____

_____

_____

_____

Cut:_____

Skeletal Structures:

_____

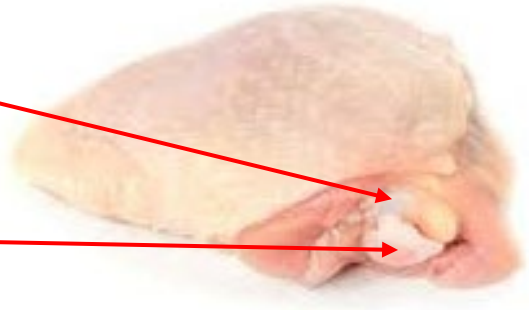
_____

_____

_____

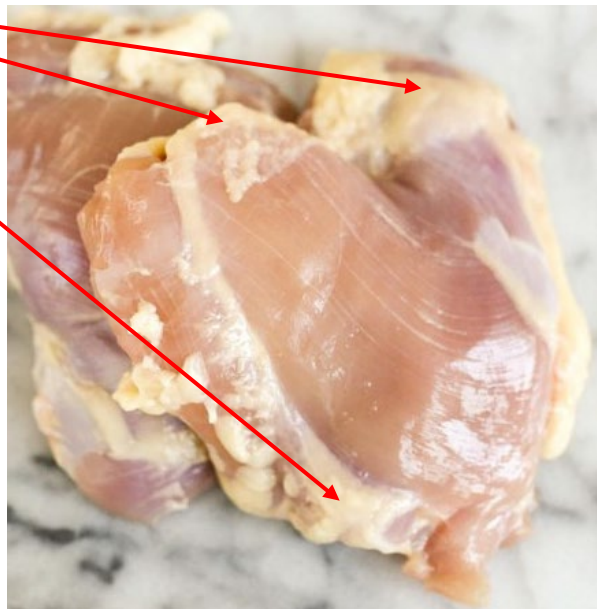
_____

Let us identify the muscle in this piece of chicken.
The muscle is not as hard as bone but it may still be harder to cut through.



Let us identify the bone in the chicken thigh.
The bone is hard and cannot be easily cut.
The easiest bone to see in cuts of chicken meat
are in the drumstick.

Let us identify the fat in this piece of chicken.
All the creamy colored substance is fat, and
as you prepare it, you may want to trim the fat
off before cooking.



Activity 6
Parts of the Egg

Project Outcome

- Label components of the egg including shell, outer shell membrane, inner shell membrane, albumen, air cell, and yolk

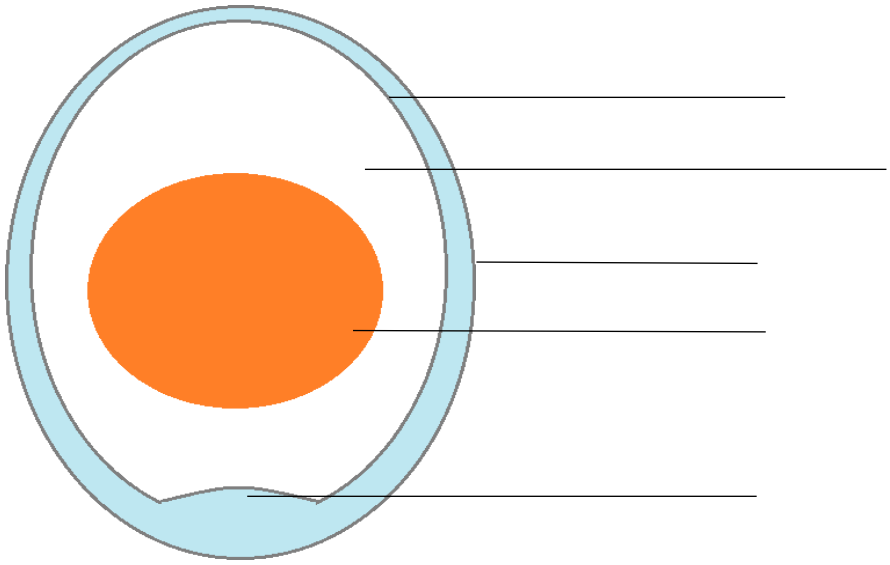
In this activity, you will learn the basics of poultry reproduction. This will include the anatomy of an egg, the length of time it takes a hen to lay an egg, and the incubation and hatching process.

In this activity, you will learn the basics of poultry reproduction. This will include the anatomy of an egg, the length of time it takes a hen to lay an egg, and the incubation/hatching process.

In the following activity, match the egg anatomy in the diagram to the terms provide.

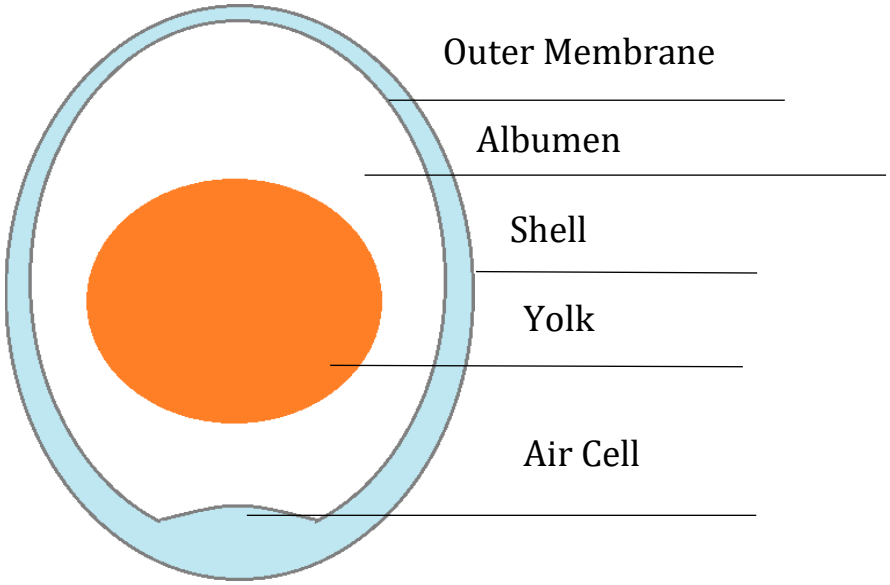
WORD BANK

Albumen Shell Yolk Air Cell Outer Membrane



Reference:
https://i2.wp.com/lh3.googleusercontent.com/-_7UD5_UyCfE/TYrL9N8Eg4I/AAAAAAAAA7Q/WcRQxLCXFTk/s1600/egg_cross_section.png

ANSWER KEY



Utilizing the website below, explain the purpose of each part of the egg and why each is important. The Virginia Tech Virtual Hatching Project is a great website that explains what each part of the egg does.

Albumen: _____

_____

Shell: _____

_____

Yolk: _____

_____

Air Cell: _____

_____

Outer Membrane: _____

_____

If you have ever observed layer chickens, have you noticed how often they lay eggs or how long it takes for a chick to hatch?

In the activity below, fill in the blanks about egg development and the hatching process. Use the following video to learn more about incubation and egg development at these links:
https://www.youtube.com/watch?v=QtU4M3lhCTk
http://www.incredibleegg.org/eggcyclopedia/f/formation/

A chick can lay an egg every_____hours. The egg laying process starts with

_____, which takes place 15 minutes after the previous egg was laid. Once

the egg is laid, it takes_____days for the egg to actually hatch. Eggs must be

placed in an_____during this time to help control the _____

and the humidity during the developmental process.

WORD BANK

ovulation	21	temperature	incubator	24

Reference:

Formation. (n.d.). Retrieved November 25, 2017, from http://www.incredibleegg.org/eggcyclopedia/f/formation/

From egg to chick [Video File]. Retrieved from https://www.youtube.com/watch?v=QtU4M3lhCTk

Activity 7
Management Practices

Project Outcome

- Describe why the following management practices are done and identify the equipment used in poultry production: toe trimming, beak trimming, dubbing

Many management practices are needed for your flock to keep them healthy and safe. Three common management practices are:

1. Toe Trimming
2. Beak Trimming
3. Dubbing

It is important to use proper equipment and instructions in all management practices. Improper use of practice could result in serious injury or death of your flock.

Toe Trimming is the amputation of the ends of a bird's toes to eliminate the toenails. Toe Trimming is done to reduce poultry scratching themselves or others in the flock. Toe trimming causes minimal to no pain for the birds. *Toe trimming is a practice typically only performed on turkeys on the day they are hatched.*

The Process: Before trimming, the birds' feet should be clean. Soaking them in warm water not only cleans the nails but also softens them to make trimming easier. Pet nail clippers can be used to trim the nails. Simply trim about 1/8 inch at once until desired length. Be careful not to cut the nail too short, which can cause the toe to bleed.

Beak Trimming is done to prevent pecking within the flock. When a bird's beak is trimmed, usually 1/3 of the beak is removed and made dull so that the flock cannot pick at others. Beak trimming causes minimal pain to the bird and is a common practice in all types of poultry. *Beak trimming is a practice typically only used for laying pullets and is performed on the day of hatching. The most common practiced used for beak trimming is by laser.*

The Process:
Mechanical: Uses a simple blade or scissor device, such as secateurs, to trim the beak.
Hot-blade: Uses a heated blade to trim the beak.
Electric: Uses an electric current to damage the beak so that the tip falls off.
Infrared: Used an infrared light to damage the beak so that the tip falls off.

The adverse effects of beak trimming of chicks of egg-laying strains at 1 to 10 days of age are offset by the benefits of reducing cannibalism (the chickens eating other chickens).

Beak trimming of younger birds appears to eliminate the long-term chronic pain that can occur in the stump of the beak of an older bird whose beak is trimmed.

Management Practice Activity

Based on what you just learned, list some of the equipment needed to perform each management practice safely:

Toe Trimming _____

Beak Trimming _____

Reference:

https://www.cacklehatchery.com/how-to-trim-a-chickens-toenails/

https://poultry.extension.org/articles/poultry-behavior/toe-trimming-of-turkeys/

https://www.asi.k-state.edu/extension/poultry/frequently-asked-questions/management-practices.html

Activity 8
What Poultry Needs to Thrive

Project Outcome

- Define the following terms: feedstuff, concentrate, protein, energy, fat, vitamin, mineral
- Identify the following feedstuffs from samples: ground corn, soybean meal, fish meal, meat and bone meal, ground limestone

Poultry can convert feed quickly and efficiently. Due to the high rate of productivity, poultry have high nutritional needs. In this activity, you will learn the basics of poultry nutrition and feeding. These nutrients are essential to development of eggs, flesh, bones, and feathers.

Six Essential Nutrients

Water – Water is involved in every aspect of metabolism in poultry. It aids in body temperature regulation, food digestion, and elimination of body wastes. Water needs to be fresh, cool, clear, odorless and tasteless. Water is consumed at nearly double the rate of feed.

Carbohydrates – Main source of energy and largest portion of a poultry diet. Typically eaten in the form of a starch, sugar, cellulose, or other non-starch compounds. Important sources of carbohydrates include corn, wheat, barley, and other grains.

Fats – Fats are the most calorie heavy nutrient by weight. Fats are either saturated or unsaturated. Saturated fats can be found in animal fats, and unsaturated fats are found in vegetable oils. Adding these fats into feed makes the feed more palatable and likely to be eaten.

Proteins – Once eaten, proteins are broken down by the body into amino acids, which are then utilized by the body to help construct body tissues in muscles, nerves, cartilage, skin and eggs. The main source of protein in a poultry diet are plant proteins, fishmeal and meat, and bone meal.

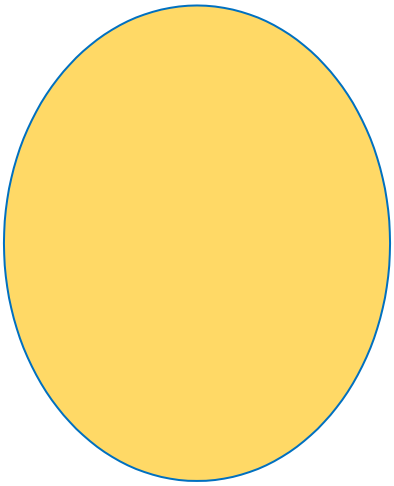
Minerals – The major role of minerals is to aid in bone formation, but they are also important for blood cell formation and clotting as well as muscle function. Minerals are identified as either micro- or macro-minerals.

Vitamins – Organic compounds that are required in small amounts. Even with small requirements, vitamins are essential for normal bodily function. Vitamins can be divided into two categories: those that are fat soluble and those that are water soluble.

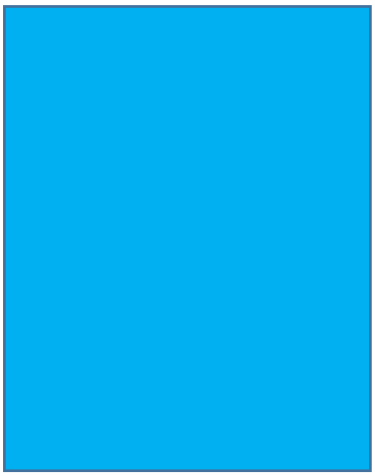
Visit the website from University of Georgia Extension and read about the different feeds for poultry and how each of them should be used. Determine which nutrient category (excluding water) each food item belongs to:

Corn	Poultry fat	Corn oil	Soybean meal	Canola Meal	Bone meal
Tallow	Wheat	Iodine	Barley	Fishmeal	Canola oil
Soy oil	Vitamin C	Vitamin D	Selenium	Vitamin K	Vitamin A
Iron	Copper	Lard	Vitamin B	Zinc	Manganese

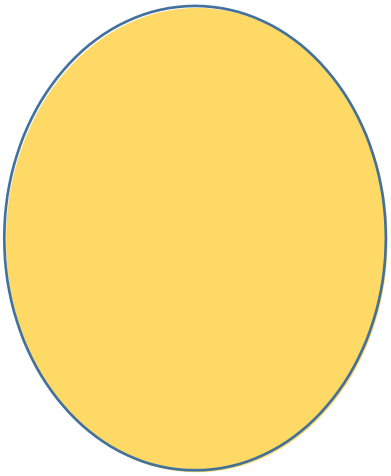
Water Soluble Vitamins



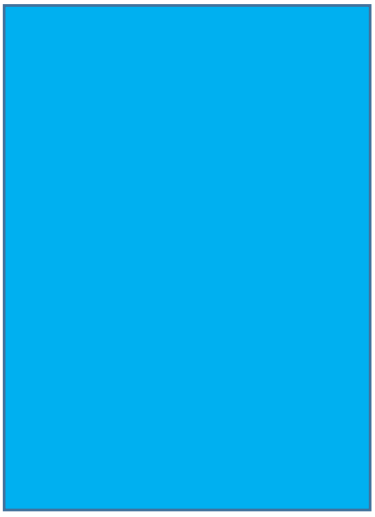
Proteins



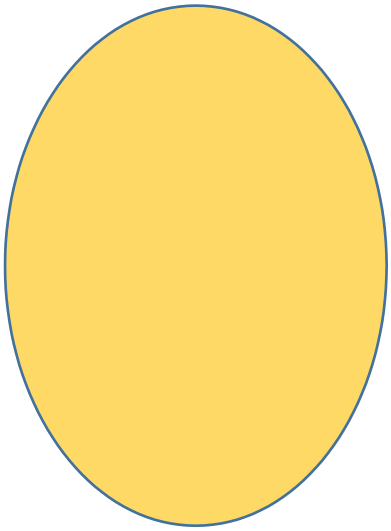
Fat Soluble Vitamins



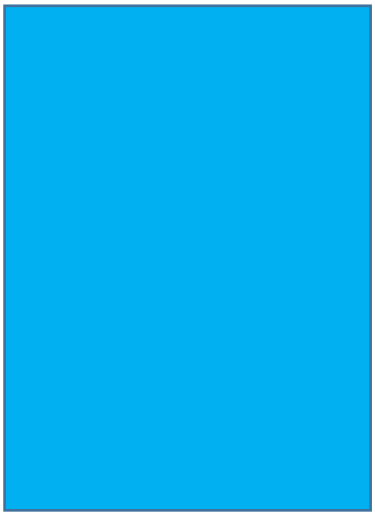
Fats



Minerals



Carbohydrates



Reference:

Klasing, K. (n.d.). Nutritional Requirements of Poultry - Poultry. Retrieved November 9, 2017, from http://www.merckvetmanual.com/poultry/nutrition-and-management-poultry/nutritional-requirements-of-poultry

Activity 9
Young Flock Care

From the time baby chicks are hatched until 12 weeks old, they are very fragile, delicate and require special care. Special care requirements include housing, feed, waterers, and feeders.

Examples:

Waterer (just add a jar)

Feeder (just add a jar)

Alternative feeder tray

The temperature for the first six weeks of a chick's life is crucial. Housing chicks at the wrong temperature could cause them to become sick or even die. This chart is a reminder of the temperatures your chicks need to be kept at in order to thrive and survive.

AGE OF CHICKS	TEMPERATURE REQUIREMENT
1 day to 1 week	95*F
1 week to 2 weeks	90*F
2 weeks to 3 weeks	85*F
3 week to 4 weeks	80*F
4 week to 5 weeks	75*F
5 week to 6 weeks	70*F

Based on the table above, read each scenario and identify if the chicks are: too warm, too cold, or too drafty.

1. You are feeding your chicks before school and hear them chirping loudly as you approach their brooder. You find them huddled close together under the heat lamp. Your chicks are too _____.

2. Your mom left the window open while you were gone. Wind is blowing over your chicks' housing. You hear them chirping loudly, but they're only on the left side of the brooder. The condition for the chicks is too _____.

3. Temperatures are in the 80-degree range during the day, but still in the 50's at night. Your chicks are 5 weeks old. You come home from school to feed your flock and find them scattered all over the brooder. The chicks seem to be having a hard time standing up and they are barely walk. Your chicks are too _____.

Check your answers in the box to the right.

ANSWER KEY:
1. Cold 2. Drafty 3. Hot

Poultry, at any age, always need clean water. Young chicks need special waterers to make sure they can safely access their water and not drown. When chicks are first hatched and their first day of life, their water should be 8% sugar. The sugar in the water will help them gain energy. For young chicks, it is important to remember they can drown in 1/8 inch of water, so adding marbles to their waterer may help them not to drown.

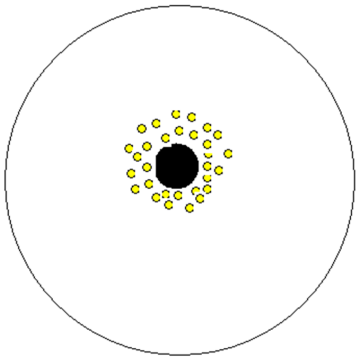
As chicks grow, so do their needs. You can add bigger feeders as they continue growing and especially when they move to their outdoor coop.

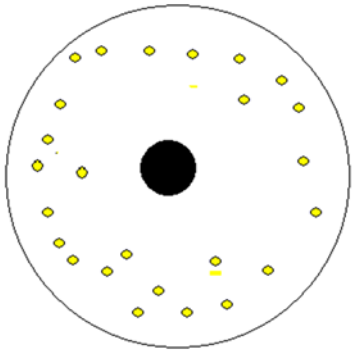
Chicks cannot tell you what they want or need. When chicks are too hot or too cold, there are visual signs to look for if you are observant.

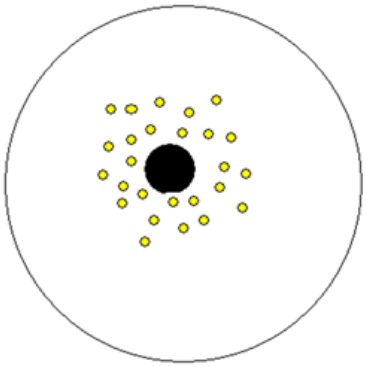
The next few visuals show how chicks may react to improper temperatures. Assuming the black spot in the middle of the chicks' habitat is their heat lamp, what do you think the chicks are feeling?

One is just right, one is too cold, and one is too hot.

Write your answer in the blank underneath each picture.

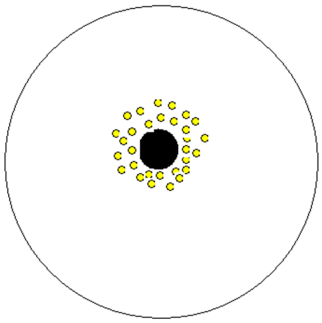




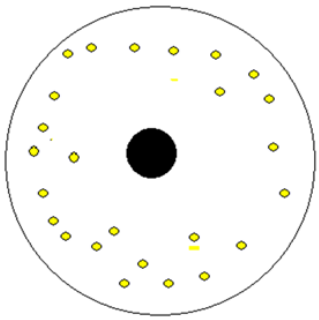


_____ _____ _____

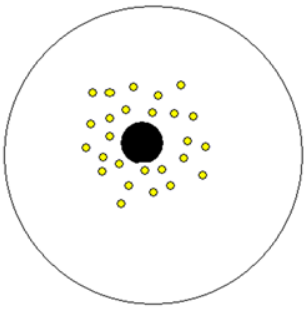
ANSWER KEY:



The chicks are cold here. If your chicks are huddled up around the heat lamp, they are trying to get warm.



The chicks are hot here. If your chicks are scattered, , this means they are likely too warm. Chicks will act sleepy or drowsy if they are too warm.



The chicks are just right here. They are spread out and comfortable here. They will contentedly be chirping.

Activity 10
Sick Versus Healthy Bird

Project Outcome
- Describe normal vs. sick behaviors in poultry
- Understand major diseases threatening the poultry industry
- Identify symptoms of sick bird
- Define the following terms: vaccine, booster, antibiotic, probiotic, bacteria, virus, parasite, withdrawal time, biosecurity
- Identify the major parts of a drug label

In this activity, you will learn the differences between a healthy bird and a sick bird. We will begin by creating an overview of the vital parameters for poultry species, diseases that are threatening to the poultry industry, symptoms of those disease, and vaccinations to combat an outbreak of those diseases.

One of the best ways to monitor farm animal health is by monitoring vitals. This chart gives a basic breakdown of body temperature, heart rate, respiration rate:

	Body Temperature	**Average Heart Rate**	**Respiration Rate**
Chickens	105-109 ° F	275 beats/minute	12-36 breaths/minute
Ducks	107.5 ° F	240 beats/minute	30-95 breaths/minute
Turkeys	107 ° F	193 beats/minute	28-49 breaths/minute

Another way farmers identify whether their flock is healthy or beginning to get sick is by observing their mannerisms, temperament, and behavior. A healthy bird will act differently than an unhealthy one. Below you will find a chart explaining the differences.

Healthy Birds
- Standing within the flock
- Being playful and interacting with other chickens
- Regular eating and drinking
- Sunbathing and preening
- Upright stature

Unhealthy Birds
- Drooping wings
- Changes in personality, more aggressive or submissive
- Overall inactivity
- Loss of appetite
- Overall inactivity, increase in sleep

Below is a list of common diseases that affect the poultry industry from backyard flocks to commercial ones. Utilizing the Merck Veterinary Manual, research each one of the diseases and give a brief description of the disease including symptoms, outcomes, and whether it is contagious or not.

AVIAN INFLUENZA _____

_____

FOWL POX _____

_____

ASPERGILLOSIS _____

_____

NEWCASTLE DISEASE _____

_____

FOWL CHOLERA _____

_____

COCCIDIOSIS _____

_____

AVIAN TUBERCULOSIS _____

_____

Important Terms to Know for the Wellness of Your Flock

Using a reputable search engine (any website ending in .org, .gov, or .edu), find the definitions to each of the following terms. The first two terms – vaccine and booster – have already been done for you.

- Vaccine – an immunization to protect an animal from a certain illness or disease

- Booster – a follow-up shot that is given to protect an animal after a certain time period has passed from the original vaccine

- Antibiotic –

- Probiotic –

- Bacteria –

- Virus –

- Parasite –

- Withdrawal time –

- Biosecurity –

Identifying the Major Parts of a Drug Label

Medication labels are extremely important to understand, from knowing whether what is in the container properly fits to what you need to give your animal, to knowing how much to give them, and for how long. Above is a medication label. You should be able to answer the questions.

1. What is the name of the medicine?
2. What is the active ingredient in this drug?
3. How should you store this medicine?
4. How much of this medicine should be mixed in with water?
5. Are there any side effects or warnings to be aware of?

ANSWER KEY

1. What is the name of the medicine?
   Big Ole Bird Poultry Probiotic

2. What is the active ingredient in this drug?
   Activated carbon with indigenous microbiology and organic acids

3. How should you store this medicine?
   No refrigeration is necessary. Store on a shelf.

4. How much of this medicine should be mixed in with water?
   1 teaspoon per gallon

5. Are there any side effects or warnings to be aware of?
   Do not apply with any disinfectants, vinegar, iodine, peroxide, or acidifiers as this will kill the beneficial bacteria.

Activity 11
Traits and Genes

Project Outcome

- Describe the difference between a dominant trait and a recessive trait
- Describe the difference between homozygous and heterozygous

Key Terms:

DNA (short for deoxyribonucleic acid)—The material containing the genetic instructions used in the development and function of an organism. DNA is arranged in double helix–shaped strands.

Gene—A segment of DNA that carries a blueprint for the function of a cell and, ultimately, a particular characteristic of an organism.

Chromosome—A structure containing a complete strand of DNA. Chromosomes function in the transmission of hereditary material from one generation to the next. Chromosomes typically come in pairs, with one set donated from the mother and one from the father. Humans have 23 pairs of chromosomes. Chickens have 39 pairs.

Genotype—The genetic makeup of an organism.

Phenotype—The observable physical or biochemical characteristics of an organism resulting from its genotype. Examples of aspects of a chicken's phenotype include body shape, feather color, eye color, comb type, and so on.

Both **genes** and **chromosome**s come in pairs. Each parent contributes one gene in each of the pair of genes. The makeup in the gene pair determines the **phenotype** for a specific trait. When the genes are the same, the genetic state is referred to as **homozygous.** When the genes are different, the genetic state is referred to as **heterozygous.**

Dominant Factor is when a gene can express itself in the homozygous state or the heterozygous state while **recessive factor** is when gene can only express itself only in the homozygous state.

Here is a chart that shows some traits poultry may have based on dominant or recessive traits:

Dominant Trait	Recessive Trait
Rose Comb	Single Comb
White Skin	Yellow Skin
Dominant White	Color
Colored Feathers	Recessive White
Pea Comb	Single Comb
Feathered Shanks	Clean Shanks
Black Feathers	Red Feathers

References:
https://poultry.extension.org/articles/poultry-anatomy/poultry-genetics-an-introduction/
http://www2.hawaii.edu/~buckley/Ansci445/compdom.html

Name that Trait

1. My chicken has green feathers, so it has _____ traits.

2. The rooster in my flock has yellow skin. He has _____ traits.

3. My favorite hen has feathered shanks. Her traits are_____.

4. Identify what trait is associated with each comb shown below.

Single Comb

_____

Rose Comb

_____

Pea Comb

_____

Answers:
1). Dominant 2). Recessive 3). Dominant 4). Recessive 5). Dominant 6). Dominant

Activity 12
Record-Keeping

Project Outcome

- Understand the importance of proper record-keeping and how it relates to all areas of production

Keeping accurate records for your flock, regardless of how small or large it is, is important for several reasons. Records should be kept for financial reasons but also for the health and safety of your flock.

Records you should keep include:

- Expenses
- Income
- Vet/vaccine records
- Inventory of equipment

When you first begin your project, you will be purchasing equipment talked about on page 25. This is a good time to start your inventory record. Below is a what your inventory record sheet may look like:

Date	Equipment Purchased	Quantity	Total
3/1/2023	Chick Feeder	2@ 7.99	$15.98
3/1/2023	Heat Lamp	$15.99	$15.99
3/1/2023	Waterer	$14.88	$14.88
3/1/2023	Chick Starter	$25.00	$25.00

Use the sheets on the next two pages to document what equipment you purchased for this year's project.

Date	Equipment Purchased	Quantity	Total

Date	Equipment Purchased	Quantity	Total

Feed Expenses

When keeping records, it is important to keep track of how much feed you purchase for your flock. As your chicks grow, you will see an increase in the amount of feed you will purchase.

Feed Type	Starter					
Month	Pounds	Cost	Pounds	Cost	Total Pounds	Total Cost
March	25	16.99	25	16.99	50	33.98
April						
May						
June						
July						
August	50	32.38	50	32.38	100	64.76
September						
October						

Use this chart for your project this year to keep track of your feed expenses.

Feed Type						
Month	Pounds	Cost	Pounds	Cost	Total Pounds	Total Cost
March						
April						
May						
June						
July						
August						
September						
October						

Congratulations!

You have completed the Beginner Poultry Project Area Guide!

By completing this project book, you have learned about the basics of raising chickens or ducks. Continue to seek opportunities to apply what you have learned to your project work so far and learn new things along the way.

Make sure to upload any charts or activities you have finished to your digital 4-H portfolio.

Other opportunities of knowledge growth include:

- Livestock Judging
- Poultry Judging
- Poultry Skillathon Opportunities
- UT Youth Livestock Judging Camp
- Attend 4-H Academic Conference in Poultry if in appropriate grade
- (6^{th}-8^{th} grade)
- Tour other poultry operations in your area and talk to the owner/manager to learn how they manage their poultry flock

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