

2023 Poultry Skillathon Study Guide

For fancy, you will also need to study breeds of birds and learn about feed.

Junior (age 9-12)	Intermediate (age13-15)	<u>Senior (age 16-18)</u>
☐ Where is the fluff?	☐ Where is the preen	☐ What is dubbing?
-the soft feathers	gland?	-procedure of
around the vent,	-near the base of tail	removing the comb &
cloaca, under tail		wattles; helps prevent
	☐ What does OPA	damage from freezing
☐ How many primary	stand for?	& fighting
flight feathers are	-Ohio Poultry	
there?	Association	☐ What does APA
-10		stand for?
	☐ What & where is the	-American Poultry
☐ How many	keel?	Association
secondary flight	-flexible wedge of	
feathers are there?	cartilage at tip of	☐ What is the purpose
-10	breastbone	of the gizzard?
		-mechanical stomach
☐ How many tail	☐ Where is the vent?	of the bird; helps grind
feathers are there?	-small opening on	food
-10-12	fluffy butt where eggs	
	& excrement (poop)	Name a parasite that
☐ What should the	come out	attacks feathers &
brooder temperature		how to treat.
be set on 1st?	☐ Where do you check	-Lice. Dust or spray,
-95 degrees	for lice?	sanitize
	-near base of feathers	
☐ What is the	& around vent	☐ What is the most
incubation period?		important nutrient?
-Chickens -20-21 days	☐ What does NPIP	-Water
- Turkeys- 28 days	stand for?	
<i>-Ducks-</i> 28 days	-National Poultry	Name a young
-Geese- 28-35 days	Improvement Plan	turkey.
		-poult
☐ What is the keel?		
- <u>flexible wedge of</u>		☐ Name a male turkey.
<u>cartilage</u> at tip of		-Tom
breastbone		_
		☐ Name a female
		turkey.
		-Hen

Showmanship Tasks to Demonstrate

Novice (1st year)

- Parts of the head
- Display the wing
- Primary flight feathers
- Secondary flight feathers
- Display the tail
- Parts of the leg (toe & hock)
- Incubation period
- Brooder temperature
- Name a disease
- Find the back
- Find the saddle
- Show the wing bar or bow

Junior (age 9-12)

- Any questions from novice list
- Where is the fluff
- Name an internal parasite & how to treat it
- Dew claw
- Display the feet
- What does NPIP stand for
- # of primary flight feathers
- # of secondary flight feathers
- Where is the keel

Intermediate (age 13-15)

- Any questions from novice & junior
- Find the preen gland
- Where do you check for lice & how to treat it
- Find the vent
- Show main tail feathers
- What does OPA stand for

Senior (age 16-18)

- Questions from previous lists
- What is dubbing
- Name a parasite that attacks feathers & how to treat
- Who administers NPIP in Ohio
- Describe artificial insemination in poultry
- Most important nutrient
- What does APA stand for
- Name 3 popular meat ducks
- Name of young turkey, male, female

Advanced (any winner from each class)

- Any questions from all classes
- Purpose of the gizzard
- Where sex feathers are on a chicken
- Name a breed with a speculum
- Purpose of the snood
- Only breed with double spurs
- Name 3 breeds named after states
- Two ways to sex chickens
- Three ways to sex a duck

Showmanship Task Answers...

Incubation	nariad
писиранон	DEHOU
modeanon	20:10

Chickens 20-21 days Turkeys 28 days Ducks 28 days Geese 28-35 days (breed dependent)

Brooder temperature - 95 degrees

NPIP-National Poultry Improvement Plan

<u>Primary flight feathers</u>-10 <u>Secondary flight feathers</u>-10 <u>Tail feathers</u>- 10-12

<u>Keel</u>-Flexible wedge of cartilage at tip of breastbone

Preen gland (uropygial)-near base of tail

<u>Lice</u>-check near base of feathers & around vent

<u>Vent location</u>-small opening on fluffy butt where eggs & excrement come Out

OPA-Ohio Poultry Association

<u>Dubbing</u>-Procedure of removing the comb & wattles; helps prevent damage from freezing & fighting

NPIP—administered by the Ohio Poultry
Association

Most important nutrient-water

APA – American Poultry Association

<u>Purpose of gizzard</u> – the mechanical stomach of the bird; grinds food

Sex feather on a chicken-wings; females longer varying in size, males are all same length

Breed with a speculum-Mallards &
Green Winged Teal; an iridescent
patch of feathers

Purpose of a snood-to attract a mate

Breed with double spurs-Sumatra

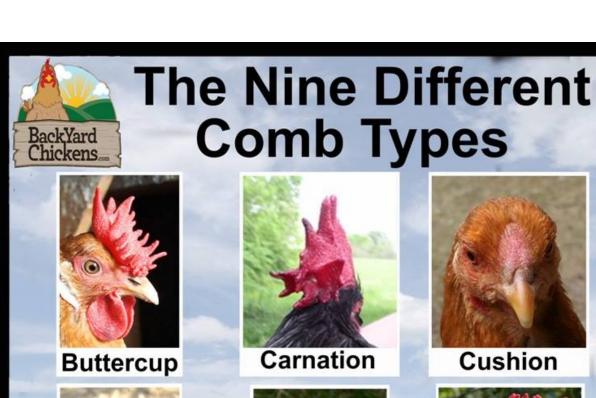
Breeds named after states – Jersey Giant, New Hampshire, Delaware, Rhode Island Red

2 ways to sex a chicken-feathers & vent

3 popular meat duck breeds-Pekin, Rouen, Muscovy

3 ways to sex a duck-feathers, vent, voice

<u>Terms for young turkey, male, female</u> – Poult, tom, hen













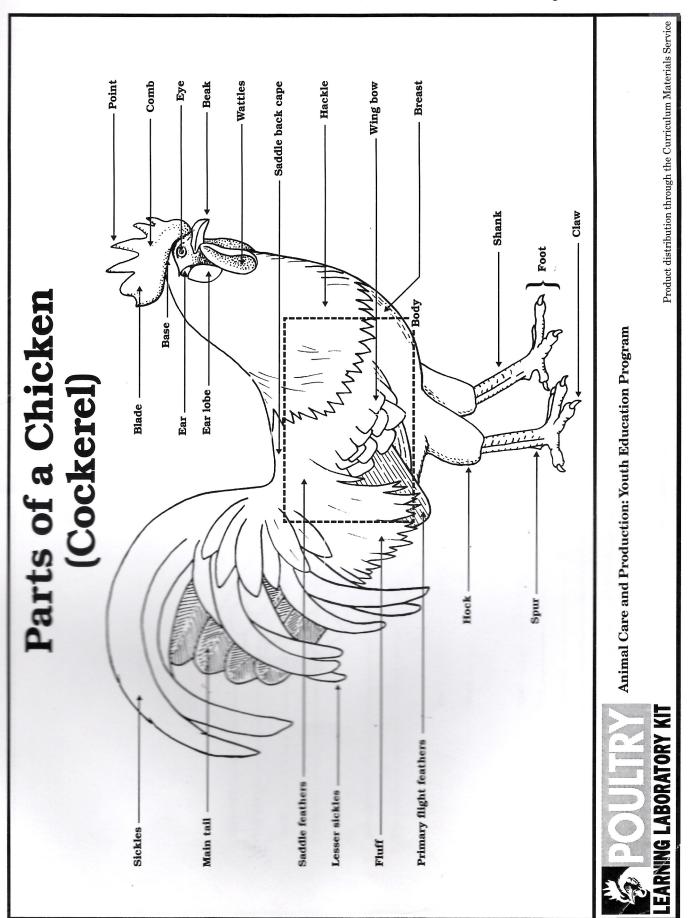




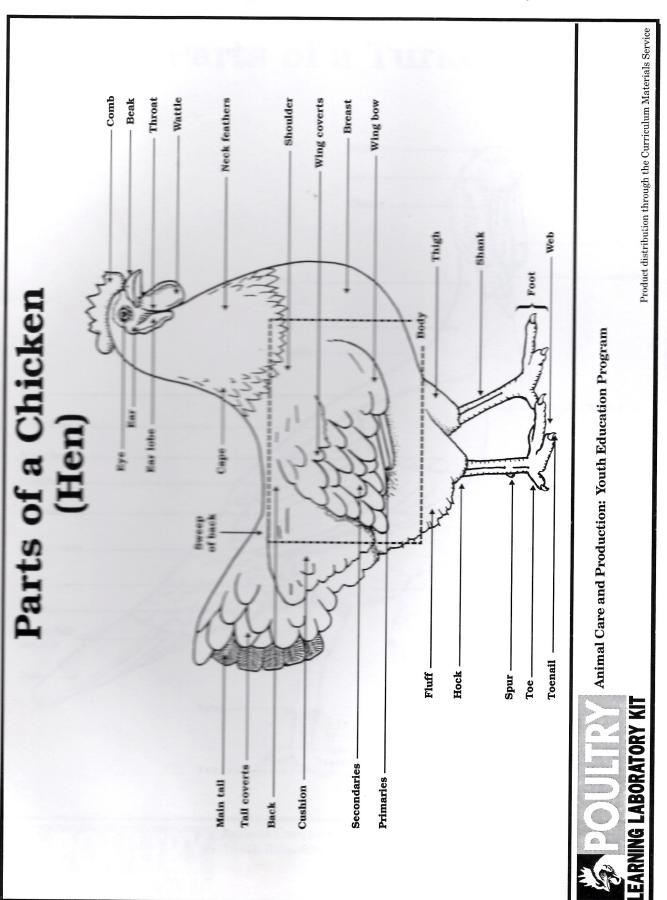


www.BackYardChickens.com

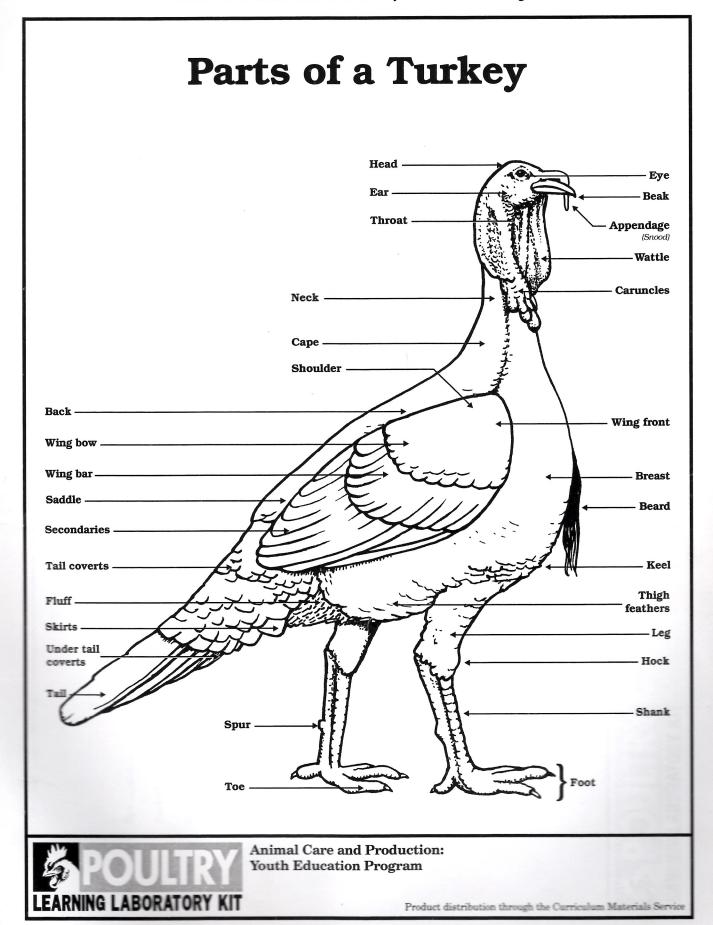
Use this poster in conjunction with Anatomy: Match Part with Location situation/task statement and Parts of a Chicken (Cockerel) identification tags.



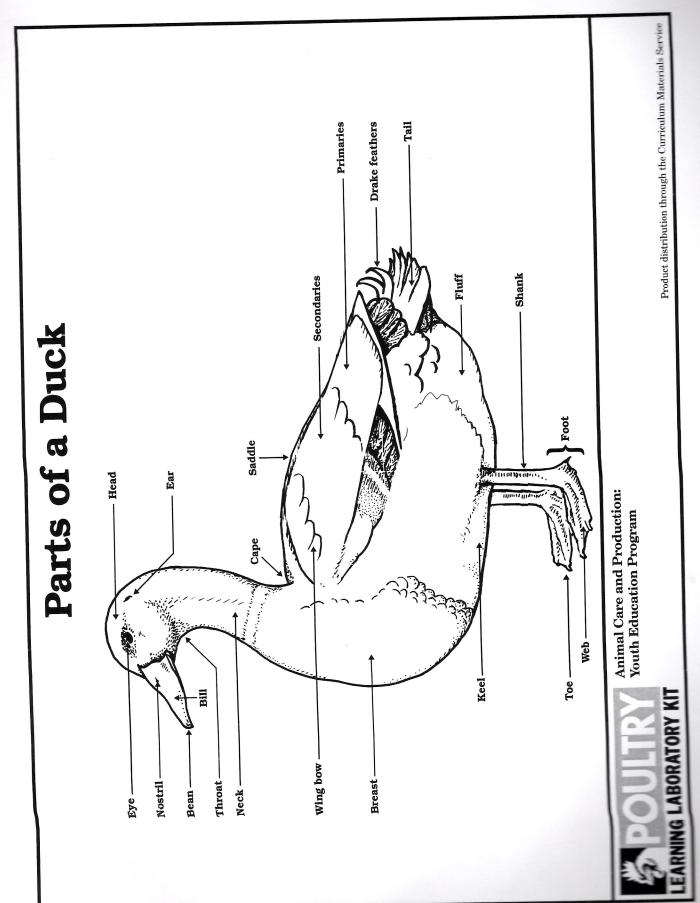
Use this poster in conjunction with **Anatomy: Match Part with Location** situation/task statement and **Parts of a Chicken (Hen)** identification tags.



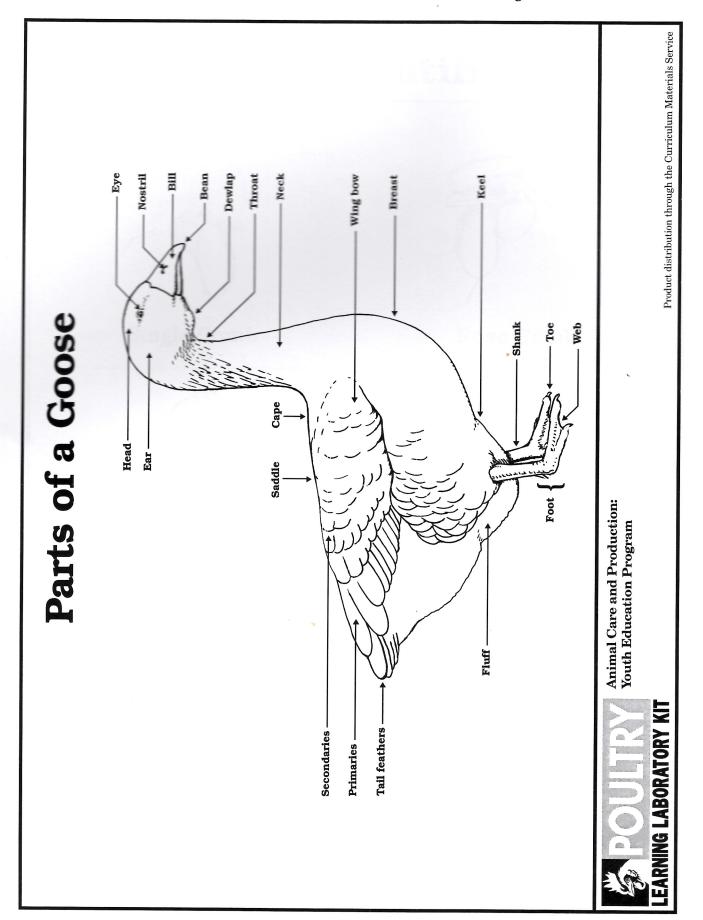
Use this poster in conjunction with **Anatomy: Match Part with Location** situation/task statement and **Parts of a Turkey** identification tags.



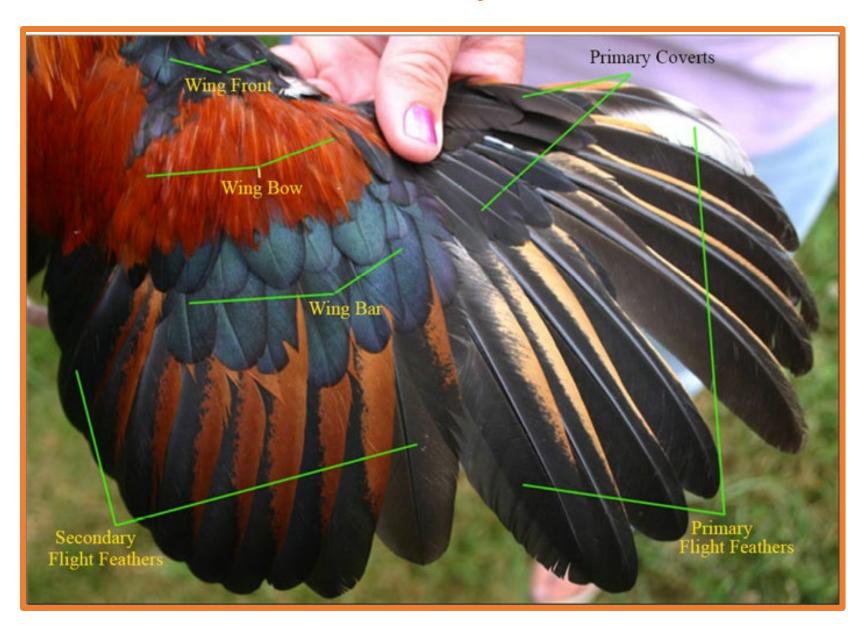
Use this poster in conjunction with Anatomy: Match Part with Location situation/task statement and Parts of a Duck identification tags.



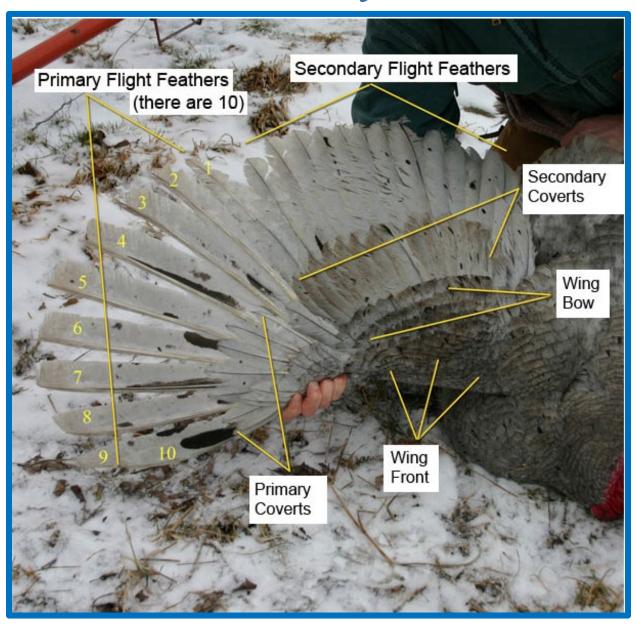
Use this poster in conjunction with **Anatomy: Match Part with Location** situation/task statement and **Parts of a Goose** identification tags.



Chicken Wing Parts



Turkey Wing Parts



Poultry Diseases / Parasites

DISEASE	<u>Symptoms</u>	<u>Transmission</u>	<u>Treatment</u>
Avian Influenza (all poultry)	usually no symptoms, (sometimes respiratory problems); sudden death	viral; transmission from wild birds (esp water fowl), bird droppings, bird to bird	eradication (to prevent, practice strict biosecurity measures)
Blackhead (all poultry)	protozoan parasites in worms; birds eat infected worms or soil that contains it		sanitation, medication
Blue Comb or Turkey Coronavirus (turkeys)	low appetite, lethargy, diarrhea, death	Viral; bird droppings	eradication (to prevent, keep birds warm/dry
Bumblefoot (all poultry)	hot swollen footpads, black or brown scabs on bottom of foot	bacterial; enters the foot through a cut or scrape in skin then walking on dirty wet bedding	sanitation, medication
Botulism (all poultry)			clean/disinfect water & food bowls regularly, remove rotten food, feed only clean, dry food
Coccidiosis (all poultry)	pale droopy birds, diarrhea, huddling, foul odor	protozoan parasites; contact with droppings	sanitation, medication
Duck Virus Enteritis or Duck Plague (ducks)	diarrhea, thirst, hemmorrhages throughout body, death	bird to bird, contaminated water/food, infected litter	vaccination
Duck Virus Hepatitis (ducks)	sudden death	Viral; bird droppings or in brooder, affects ducks 2 days - 4 wks of age	vaccination (to prevent, strict sanitation and practice biosecurity measures)
Fowl Cholera (all poultry)	swollen wattles, darkening of head & unfeathered parts, difficulty breathing, lethargy, sudden death	bacterial; bird droppings and contiminated bedding, feed, water	eradication of infected birds & strict sanitation
Fowl Pox, Avian Pox (all poultry)	lesions on comb, wattles, mouth, throat; drop in egg production	viral; bird to bird and by infected misquitoes	vaccination
Infectious Bronchitis (all poultry)	respiratory distress like coughing & gasping	viral; bird to bird	vaccination

Fowl Thyphoid (now mostly chickens, has been found in ducks/turkeys)	swelling under the eye, will swell shut, coughing, sneezing, stunted growth lethargy, yellow diarrhea, sporadic mortality	bacterial (mycoplasma gallisepticum); bird to bird, droppings, contaminated materials, transmitted into eggs from infected hens bacterial (salmonella gallinarum); affects adult birds,transmitted into eggs from infected hens or if adult chicken eats eggs	eradication (to prevent, vaccination & practice strict biosecurity measures) strict sanitation, (to prevent, practice strict biosecurity measures)
Note: fowl typhoid & pullorur	I n are closely related; you may see	the names interchangeably	
Pullorum/Bacillary White Diarrhea (now mostly chickens, has been found in ducks/turkeys)	droopiness, white diarrhea, pasted vent,	bacterial (salmonella pullorum); affects birds up to 3 wks old,transmitted into eggs from infected hens or cannibalism	eradication (to prevent, practice strict biosecurity measures)
PARASITES PARASITES	<u>Symptoms</u>	Transmission	Treatment
Ascarid, round worm	droopiness, diarrhea, 1 1/2 inches to 3 inches long	birds eat worm eggs passed through bird droppings; worms live in intestine but may migrate into oviduct and become incorporated into hen's egg	
Cecal worms (all poultry)	small white worms up to 1/2 inch, normally do not affect bird's health themselves, but are carriers of bacteria	birds eat worms in droppings or earthworms; cecal worms can contain bacteria that causes blackhead	medication (levamisole & fenbendazole)
Lice (all poultry)	small insects, 6 legs, larger than mites; look along shaft of feather for insect, will lay eggs in clusters	bird to bird	dust or spray, strict sanitation
Mites (all poultry)	very small insects, usually first around vent, then spreading to comb, wattle, rest of bird	bird to bird	dust or spray, strict sanitation
Thread worms, capallaria worms (all poultry)	reduced growth, reduced egg production, death; found in crop/esophagus	worms lay eggs in esophagus and are passed in droppings	preventative measures (clean bedding, strict sanitation)

#1





























A type of internal parasite (small in size, white in color) that infest the ceca. They are extremely common and thrive on the ground or litter of overcrowded bird enclosures. Eggs are also ingested by earthworms, which are then consumed by the chicken who becomes infected through the earthworm.

Health Key:

- 1. Bumblefoot
- 2. Coccidiosis
 - 3. Mites
 - 4. Lice
- 5. Fowl Pox
- 6. Blackhead
- 7. Fowl Cholera
- 8. Cecal Worms

Use this situation/task with answer key in conjunction with Brooding Aerial View with Brooder Guard activity mat, Brooding Aerial View Scenario cards and Brooding Aerial View manipulatives.

Maintaining Proper Brooder Temperature

ANSWER KEY

SCENARIO 1

Cause: The chicks chirp and pile up under the bulb

brooders because the brooding area is too cold.

Correction: Raise the brooder temperature.

SCENARIO 2

Cause: The chicks are drowsy and move away from

the bulb brooder because the brooding area

is too hot.

Correction: Lower the brooder temperature.

SCENARIO 3

Cause: The chicks chirp and huddle together in one

area because the brooding area is too drafty.

Correction: Prevent drafts in the brooder house.

SCENARIO 4

Cause: The chicks are dispersed evenly over the entire

brooding area because the temperature is just

right.

Correction: None



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Use this situation/task with answer key in conjunction with Brooding Aerial View with Brooder Guard activity mat, Brooding Aerial View Scenario cards and Brooding Aerial View manipulatives.

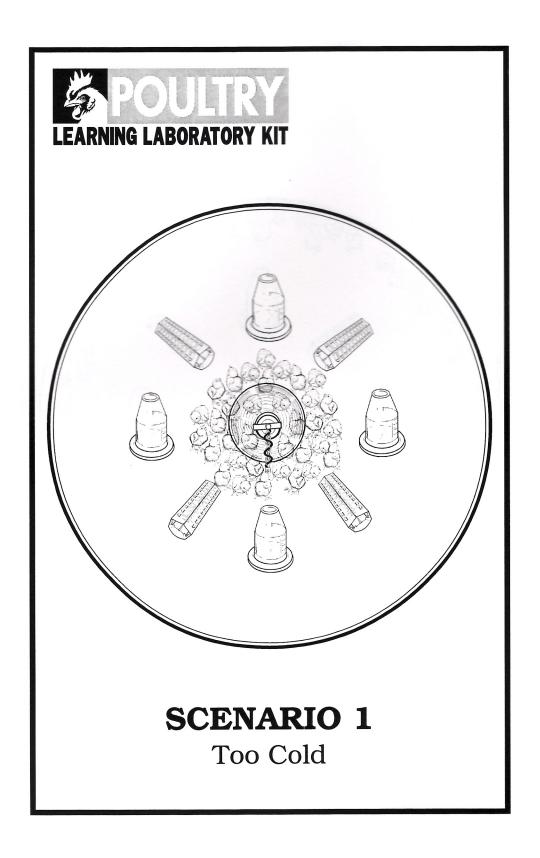
Preparing the Brooder Area

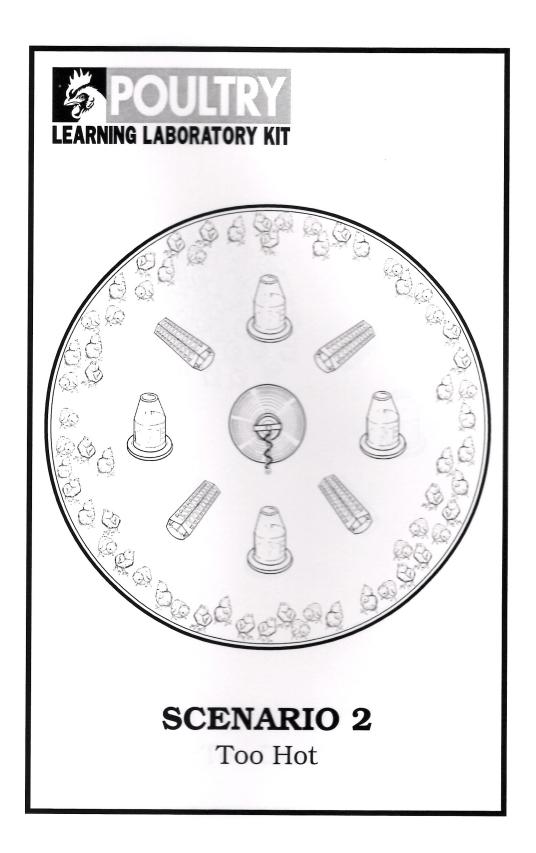
ANSWER KEY

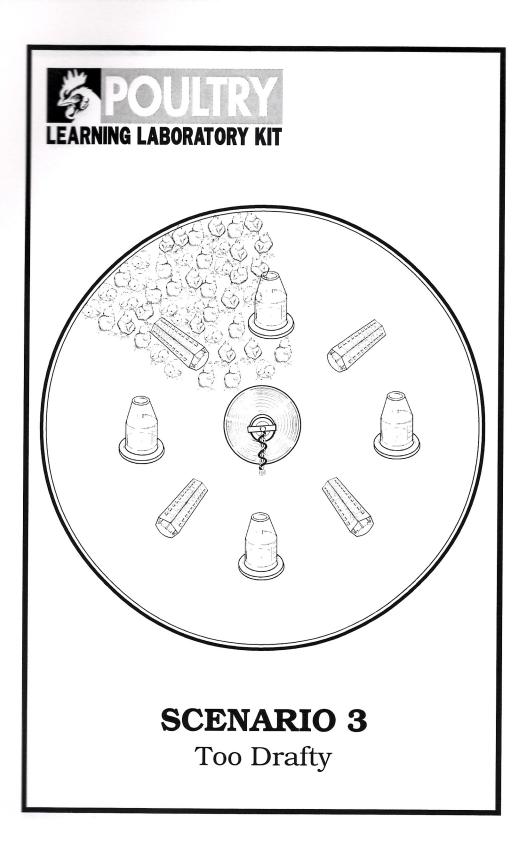
- **9:** Why should you disinfect the equipment, brooder house, and surrounding area each time new chicks arrive at the farm?
 - A: Disinfecting the equipment and environment each time new chicks arrive at the farm is important in maintaining the chicks' good health. Proper cleaning and disinfecting is critical in preventing the growth of disease-producing organisms.
- **2) Q:** Why should you cover the entire floor with shavings, straw, or similar materials?
 - A: Covering the entire floor with shavings or straw helps prevent heat loss. Make sure you level the shavings or straw - uneven floor covering material causes uneven floor temperatures.
- **3) Q:** Why is it important to preheat the brooding house before the chicks arrive?
 - A: Preheating the brooding house helps maintain a constant temperature for the chicks. Preheat the house 24 hours before the chicks arrive. Make sure both the air and shavings/straw are warm.
- 4) **Q:** What temperature should the brooding area be?
 - A: The temperature should read 90°F at the bottom edge of the infrared bulb brooder and also 2 inches above the shavings, straw, or other floor covering.

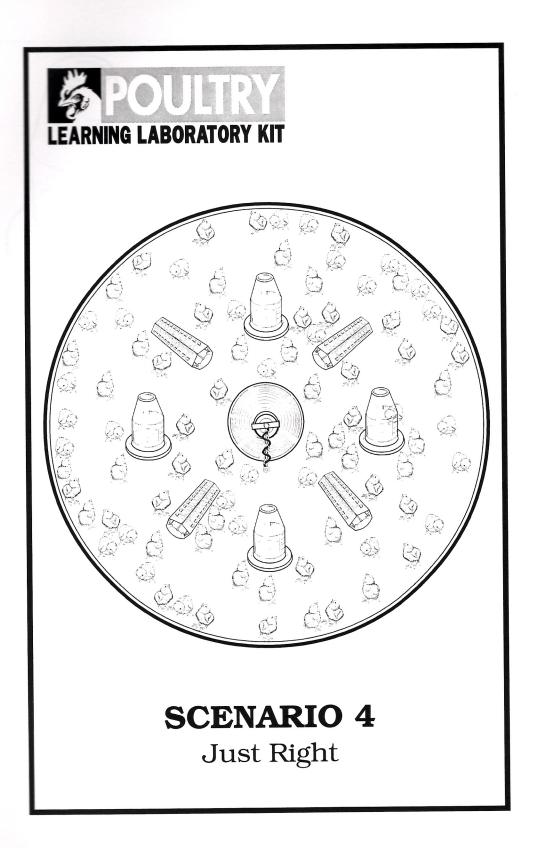


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Use this diagram in conjunction with the Read the Medication Label Directions: Match to Corresponding Location situation/task statement and Medication Label Parts identification tags.

	Active Ingredients		Withholding Times	Storage	Name of Distrib <u>u</u> tor
Medication Label	Carramycin-152 (oxytetracycline HCI)————————————————————————————————————	DIRECTIONS FOR USE: See package indications and directions for use.	Warning: The use of this drug must be discontinued for 5 days before treated animals are slaughtered for food. Exceeding the highest recommended dosage level may result in antibiotic residues in meat beyond the withdrawal time.	Store below 77°F (25°C). Keep dry and keep away from light.	Net contents: 4.78 oz. packet Distributed by Livestock Health, Inc.
	Trade Name of Drug		Cautions and Warnings		Quantity of Contents

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Use this diagram in conjunction with the Medication Directions task and answer key and Medication Directions Parts identification tags.

Medication Directions

Drug Name Carramycin-152 Active **Ingredients** (oxytetracycline HCl as soluble powder) Species and For control and treatment of specific disease Animal Class in poultry, cattle, swine, and sheep. CAREFULLY READ ALL DIRECTIONS BEFORE USING THIS PRODUCT. Soluble Powder for Use in Drinking Water Only. Active Ingredients: Carramycin-152 is a broad-spectrum antibiotic. This 4.78 oz packet contains 102.4 grams oxytetracycline HCl (after mixing with clean, fresh water - 512 gallons containing 200 mg oxytetracycline HCl per gallon; 256 gallons containing 400 mg oxytetracycline HCl per gallon; 128 gallons containing 800 mg oxytetracycline HCl per gallon). **Approved** Uses Indications: For control of poultry diseases caused by organisms susceptible to oxytetracycline. Recommended Dosage Add the following amount to two (2) gallons of fresh, clean water to make the stock solution. Mix one (1) ounce of stock solution per one (1) gallon of drinking water. Packs/2 Gallons Stock Solution Dosage Chickens Infectious synovitis 200mg/gal 1/2 Dosage Chronic respiratory disease 800mg/gal 2 Fowl cholera 800mg/gal 2 Infectious synovitis **Turkevs** 400mg/gal 1 Hexamitiasis 200mg/gal 1/2 Route of **Administration** Cautions: 1. Carramycin-152 is for use in flock drinking water only. 2. Medicate continuously at the first clinical signs of disease and continue for 7 to 14 consecutive days. If improvement is not noted within 24 to 48 hours, consult a veterinarian or diagnostic laboratory to determine diagnosis and advice on dosage. 3. Use as sole source of oxytetracycline. Do not use for more Storage than 14 consecutive days in chickens and turkeys or five (5) consecutive days Cautions and Requirements in cattle, sheep, or swine. 4. Carramycin-152 is to be stored below 77° F **Warnings** (25° C). 5. The concentration of drug required in medicated water must be adequate to compensate for variations in age of the animal, feed consumption rate, and the environmental temperature and humidity - each of which affects water consumption. Withholding Warning: Do not administer to chickens, turkeys, swine, cattle, or sheep Times within five (5) days of slaughter. Do not administer to chickens or turkeys producing eggs for human consumption. **Available** Sizes How Supplied: Carramycin-152 soluble powder is available in packets TAKE TIME of 4.78 oz. Distributed by Livestock Drug - Not For Human Use OBSERVE LABEL



KEEP OUT OF CHILDREN'S REACH

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Livestock Health, Inc.

Product distribution through Curriculum Materials Service

DIRECTIONS

Answer Key

a. How many packs of soluble powder Carramycin-152 do you mix with two (2) gallons of water to make the stock solution?

You mix 2 packs of Carramycin-152 with 2 gallons of water.

b. How much stock solution do you mix with one (1) gallon of drinking water?

You mix 1 ounce of stock solution with 1 gallon of water. c. How many packs of soluble powder Carramycin-152 must you purchase to treat your broilers for 10 days?
 You must purchase 20 packs of Carramycin-152.

 d. How many ounces of stock solution will you use per day? You will use 256 ounces of stock solution per day.

e. How many milligrams of oxytetracycline will each broiler receive?

Each broiler will receive 64 mg.

f. What is the first day your broilers can safely be sold for food?

June 23, XXXX – 5 days after the treated drinking water was last given on June 18th.

Carramycin-152

(oxytetracycline HCl as soluble powder)

For control and treatment of specific disease

in poultry, cattle, swine, and sheep.

CAREFULLY READ ALL DIRECTIONS BEFORE USING THIS PRODUCT.

Soluble Powder for Use in Drinking Water Only

Active Ingredients: Carramycin-152 is a broad-spectrum antibiotic. This 4.78 oz packet contains 102.4 grams oxytetracycline HCl (after mixing with clean, fresh water - 512 gallons containing 200 mg oxytetracycline HCl per gallon; 256 gallons containing 400 mg oxytetracycline HCl per gallons containing 800 mg oxytetracycline HCl per gallon; 128 gallons containing 800 mg oxytetracycline HCl per gallon; 128 gallons containing 800 mg oxytetracycline HCl per gallon;

Indications: For control of **poultry** diseases caused by organisms susceptible to oxytetracycline.

Recommended Dosage

Add the jollowing amount to two (2) gallons of fresh, clean water to make the stock solution.

Mix one (1) ounce of stock solution per one (1) gallon of drinking water.

Packs/2 Gallons

		Dosage	Stock Solution
Chickens	Infectious synovitis	200mg/gal	1/2
	Chronic respiratory disease	800mg/gal	2
	Fowl cholera	800mg/gal	8
Turkeys	Infectious synovitis	400mg/gal	
	Hexamiliasis	200mg/gal	1/2

Cautions: 1. Carramycin-152 is for use in flock drinking water only. 2. Medicate continuously at the first clinical signs of disease and continue for 7 to 14 consecutive days. If improvement is not noted within 24 to 48 hours, consult a veterinarian or diagnostic laboratory to determine diagnosis and advice on dosage. 3. Use as sole source of oxytetracycline. Do not use for more than 14 consecutive days in chickers and turkeys or five [5] consecutive days in cattle, sheep, or swine. 4. Carramycin-152 is to be stored below 77° F (25° C). 5. The concentration of drug required in medicated water must be adequate to compensate for variations in age of the animal, feed consumption rate, and the environmental temperature and humidity – each of which affects water consumption.

Warning: Do not administer to chickens, turkeys, swine, cattle, or sheep within five (5) days of slaughter. Do not administer to chickens or turkeys producing eggs for human consumption.

How Supplied: Carramycin-152 soluble powder is available in packets of 4.78 oz.

stock Drug – *Not For Huma*r

KEEP OUT OF CHILDREN'S REACH

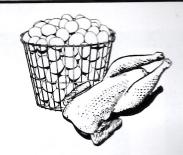
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TAKE TIME
OBSERVE LABEL
DIRECTIONS

POULTIPY Exploi

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Individual Egg Shell Evaluation



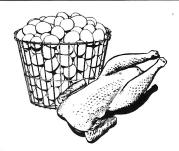
ANSWER KEY

- 1) **Q:** What are the four grades of egg shells?
 - A: AA, A, B, and Dirty
- **2) Q:** What six factors are used to grade egg exteriors?
 - A: Stains, adhering foreign material, shell shape, shell texture, body checks, and shell thickness
- **3) Q:** The presence of what factor automatically makes an egg a "B" grade?
 - A: Adhering foreign material
- **4) Q:** What two defects determine that an egg will receive a "dirty" grade?
 - A: Adhering foreign material 1 mm or greater or prominent stains (localized stains covering more than 1/32 of the shell or moderately scattered stains covering more than 1/16 of the shell)
- **5) Q:** Name two types of body checks.
 - A: Ridges and calcified body checks



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Carton of Eggs Evaluation



ANSWER KEY

- 1) **Q:** Name the three factors used to grade a carton of eggs.
 - A: Soundness, cleanness, and uniformity of size
- **2) Q:** What is the difference between a checked egg and a cracked egg?
 - A: A checked egg has a cracked or broken shell with an intact membrane and no leakage; a cracked egg has a damaged membrane and leakage.
- **3) Q:** What is a body check?
 - A: A body check is a ridge in the shell occurring when the egg is cracked while still inside the hen's body and then repaired by additional calcium deposits.



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EVALUATING INDIVIDUAL SHELL EGGS FOR EXTERIOR QUALITY *

INTRODUCTION

Class 7 consists of ten chicken eggs to be graded for exterior qualities. Egg shell factors listed in the latest edition of *U.S. Standards and Grades for Shell Eggs* are the basis for evaluation. Exterior quality grades used in the event will be AA/A, B, and NG (nongradable). Eggs will be placed on flats or cartons, and only the visible portion of each egg is to be evaluated. The participant is not permitted to touch the eggs or the flats/cartons holding the eggs.



Class 8 is the evaluative criteria for the exterior quality grading class (Class 7). The exterior quality factors discussed in this section will be used to determine the grade of each egg in Class 7.

EXTERIOR QUALITY FACTORS

Follow a systematic order in evaluating soundness, cleanness, shape, texture, and thickness of an egg shell. Determine a final grade of either AA/A quality, B quality, or NG (nongradable) for the egg based on the *Standards of Exterior Quality for Individual Shell Eggs*. These standards are discussed briefly in this section. For further reading, refer to the REFERENCES section of this manual for *Egg-Grading Manual – Agriculture Handbook Number 75*.

IMPORTANT: One or more exterior quality factors may influence the final grade of an egg. For Class 7, assign each egg a final grade based on the factor having the lowest grade. For example, give an egg a final grade of B quality if it meets the standards for AA/A quality in all factors except two and is appraised a B quality for each of those two factors. Then, for Class 8, designate those two factors.

Soundness

The shell of an egg may be unbroken, or it may be cracked. Terms that define egg shell soundness include —

NO DEFECT — An egg shell that is unbroken. AA/A Quality and B Quality

CHECK — An egg shell that has a fine, hair-like crack. The shell membranes are intact, and the egg contents do not leak. [The shell of a check is diminished strength.]

NG (nongradable)

DENTED CHECK — An egg shell that has a dented crack. The shell membranes are intact, and the egg contents do not leak. [The shell of a dented check is diminished strength.] **NG (nongradable)**

Leaker — An egg shell that is cracked with broken membranes allowing the egg contents to leak or be free to leak. [The shell of a leaker is diminished in strength.] **NG (nongradable)**

Cleanness

The shell of an egg may be clean, or it may be stained or contain adhering dirt and foreign material.

Terms that define egg shell cleanness include —

NO DEFECT — An egg shell that is clean or free of stains (permanent discolorations) and adhering material. [A shell showing traces of processing oil is clean, unless the oil is soiled.] **AA/A Quality**

SLIGHT/MODERATE STAIN — An egg shell that has localized stains covering less than 1/32 of the shell or scattered stains covering less than 1/16 of the shell. [A slight stain detracts from the appearance of the egg but not as much as a prominent stain.] **B Quality**

PROMINENT STAIN — An egg shell that has localized stains covering more than 1/32 of the shell or scattered stains covering more than 1/16 of the shell. [A prominent stain significantly detracts from the appearance of the egg.] **NG (nongradable)**

ADHERING DIRT OR FOREIGN MATERIAL — An egg shell that has dirt or foreign matter (such as blood, yolk, albumen, or fecal material) sticking to the shell. [Adhering material one millimeter or greater in area significantly detracts from the appearance of the egg.]

NG (nongradable)

The following may help visualize surface area dimensions of an egg shell.

Total surface area of a normal 2-ounce egg = $10 \frac{1}{2}$ square inches.

1/32 of shell surface area measures approximately 9/16" x 9/16".

1/16 of shell surface area measures approximately 13/16" x 13/16".

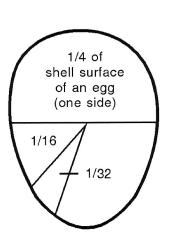
1/4 of shell surface area measures approximately 1 9/16" x 1 9/16".

Shape

The shell of an egg may be normal or approximately normal in shape, or it may be abnormal in shape.

Terms that define egg shell shape include —

No Defect — An egg shell that is normal or practically normal in shape. The ideal egg is oval in shape, with one end larger than the other. The large end (air cell end) tapers toward the smaller end. AA/A Quality



DECIDEDLY MISSHAPEN — An egg shell that is irregular or unusual in shape and affecting a substantial amount of shell surface. The shell deviates from the normal by being round, long, pointed, or distorted. [A decidedly misshapen shell is faulty in soundness/strength, and it detracts from the appearance of the egg.] **B Quality**

IMPORTANT: Egg shell shape abnormalities associated with ridges, calcium deposits, or rough surfaces and bulges caused by body checks, thin spots, or cracked shells should not be designated as decidedly misshapen.

Texture

The shell of an egg may be sound and strong in texture, or it may be faulty in soundness/strength, containing rough areas of calcium deposits, body checks, or pronounced ridges.

Terms that define egg shell texture include —

NO DEFECT — An egg shell that is sound and strong, with few to no calcium deposits, no body checks, and slight to no ridging. AA/A Quality

CALCIUM DEPOSITS — An egg shell that has rough areas of calcium deposits. [A few small calcium deposits do not diminish an egg's strength, but rough areas of calcium deposits decrease shell soundness/strength and also detract from the appearance of the egg.]

B Quality

BODY CHECK — An egg shell that cracked inside the hen's body and then was repaired by additional calcium deposited over the cracked area, resulting in a ridged area. [A body check decreases shell soundness/strength and detracts from the appearance of the egg.] **B Quality**

IMPORTANT: A "body check" should not be designated as having pronounced thin spots or for being decidedly misshapen when resulting from (or caused by) the body check.

PRONOUNCED RIDGES — An egg shell that has definite ridges affecting its shape. [Pronounced ridges decrease shell soundness/strength and detract from the appearance of the egg.] **B Quality**

Thickness

The shell of an egg may be uniform in thickness, or it may contain pronounced thin spots that contribute to breakage of the egg.

Terms that define egg shell thickness include —

NO DEFECT — An egg shell that is free or practically free of thin spots. AA/A Quality

PRONOUNCED THIN SPOTS — An egg shell that has definite thin areas. [Pronounced thin spots diminish shell soundness/strength and detract from the appearance of the egg.] **B Quality**

SUMMARY OF SPECIFICATIONS FOR STANDARDS OF EXTERIOR QUALITY FOR INDIVIDUAL SHELL EGGS*

(Minimum Requirements and Maximum Defects Permitted)

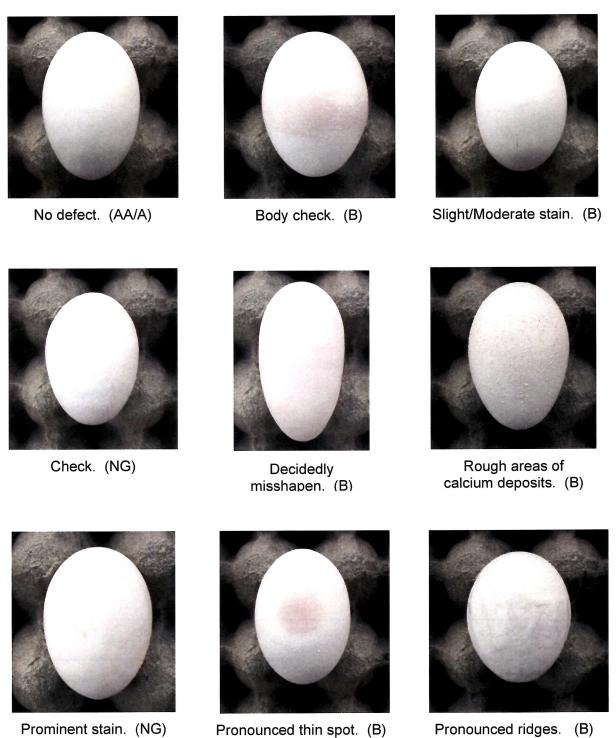
SHELL FACTOR	AA/A QUALITY	B QUALITY	NONGRADABLE
SOUNDNESS	Unbroken.	Unbroken.	Check – fine, hair-like crack with membranes intact and egg contents not leaking. Dented check – dented crack with membrane intact and egg contents not leaking. Leaker – broken membrane with contents leaking or free to leak.
CLEANNESS	Clean or free of stains and adhering material. Traces of unsoiled processing oil.	Slight/Moderate stain. If localized, covering less than 1/32 of the shell. If scattered, covering less than 1/16 of the shell.	Prominent stain. If localized, covering more than 1/32 of the shell. If scattered, covering more than 1/16 of the shell. Adhering dirt or foreign material (one mm or greater in area).
SHAPE	Normal or practically normal.	Decidedly misshapen. ¹ Irregular or unusual (round, long, pointed, or distorted).	
TEXTURE	Sound and strong. Few to no calcium deposits. No body checks. Slight to no ridging.	Faulty soundness or strength. Weak. Rough areas of calcium deposits. Body check. ² Pronounced ridges.	
THICKNESS	Free or practically free of thin spots.	Pronounced thin spots.	

¹ Egg shell shape abnormalities associated with ridges, calcium deposits, or rough surfaces and bulges caused by body checks, thin spots, or cracked shells should not be designated as decidedly misshapen.

² A "body check" should not be designated as having pronounced thin spots or for being decidedly misshapen when resulting from (or caused by) the body check.

^{*} Adapted from Egg-Grading Manual – Agriculture Handbook Number 75, USDA, Washington, DC.

EXAMPLES OF EXTERIOR QUALITIES OF EGGS (Quality grade is listed in parenthesis.)



^{*} Photographs are courtesy of Instructional Materials Service, Texas A&M University.

Yolk

The yolk of a fresh, high quality egg will be surrounded by a rather dense layer of albumen or white. Therefore, it moves only slightly away from the center of the egg when it is twirled before the candler. Because of this, yolk outline is only slightly defined or partially visible. As the egg ages or deteriorates in quality, the albumen thins and the yolk tends to move more freely and approaches the shell more closely. The yolk then becomes more visible when candled.

White or Albumen

The character and condition of the white or albumen is determined largely by the egg yolk's behavior when the egg is candled. When the egg is twirled, if the yolk retains its position in the center, the white is usually firm and thick.

Eggs with blood or meat spots more than 1/8-inch in diameter would be classified as inedible. Eggs with small spots less than 1/8-inch in diameter should be classified as Grade B. However, very small pinpoint spots should not be used in judging contests. Contestants should not confuse blood spots with the chalaza. This string of albumen helps hold the yolk in the egg's center and may be prominent in some eggs. The chalaza is distinguished from a blood spot by a bright area of refracted light that accompanies the chalaza's darker shadow.

When determining an egg's grade by candling, the lowest factor in the air cell depth, yolk or albumen quality will determine the grade. For example, an egg may have a clearly defined yolk that is flat and at the egg's bottom while the air cell is less than 1/8-inch in depth. This egg would be a B grade.

The following will not be considered as quality factors when candling eggs for interior quality:

- Loose, bubbly or out-of-position air cell
- Exterior stains or dirt
- Faulty egg shell shape or texture

Exterior Quality

In commercial egg-processing plants, eggs are graded simultaneously for exterior and interior quality. However, in judging contests, it is necessary to grade eggs for exterior quality separately because handling of eggs by contestants can change the grade. Exterior quality standards reduce the number of eggs with defects that detract from the egg's appearance or that would have a low probability of surviving the rigors of handling in normal market channels. In other words, we want the consumer to have clean, unbroken eggs with practically normal shape and texture. Contestants should not be too harsh in assigning grade to eggs that may have minor defects. This is especially important when judges have gained experience in evaluating eggs with various degrees of abnormalities.

Exterior Quality Grades

Table 2 summarizes the descriptive terminology used in the USDA Egg Grading Manual to help determine an egg's grade by exterior quality. For 4-H Poultry Judging Contests, eggs will be assigned the grades of A, B and Dirty. Grades AA and A have identical standards. The factors that affect exterior quality are discussed below. Eggs graded for exterior quality cannot be handled during the contest.

Table 2. Summary of Standards for Exterior Quality of Eggs Stains

Factor	Grade				
	AA or A	В	Dirty		
Stain	Clean — may show small specks, stains or cage marks that do not detract from general clean appearance of the egg — may show traces of processing oil.	Slight or moderate localized stains less than 1/32 of shell or scattered stains less than 1/16 of shell.	Prominent stains. Slight or moderate stains covering more than 1/32 if localized and 1/16 of the shell if scattered.		
Adhering Dirt or Foreign Material	NONE	NONE	Adhering dirt or foreign material (1.0 mm in area or greater)		
Egg Shape	Approximately the usual shape.	Unusual or decidedly misshapen (very long or distorted).			
Shell Texture	May have rough areas and small calcium deposits that do not materially affect shape or strength.	Extremely rough areas that may be faulty in soundness or strength. May have large calcium deposits.			
Ridges	Slight ridges that do not materially affect shape or strength.	May have pronounced ridges.			
Shell Thickness	Free of thin spots.	May show pronounced thin spots.			
Body Checks	Absence of body checks.	May show pronounced body checks.			

A. Localized moderate stain covering approximately 1/32 of the shell surface. Grade B.



C. Prominent stain or moderate stain in excess of allowable stain size for B quality is graded Dirty.



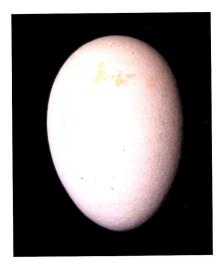
Figure 22. Specifications for exterior quality of eggs.

Grade A eggs must be clean. These eggs can show traces of processing oil (used to preserve freshness). This processing oil may create a shiny or opaque appearance. Eggs are assigned Grade B if they have slight stains or moderate stains covering less than 1/32 total area of the shell if the stain occurs in one localized area; or 1/16 total area of the shell surface if the stains are scattered (two or more stains).

Figure 22 will help to visualize these areas. Dirty eggs have prominent stains, or have slight or moderate stains covering more than 1/32 of the shell if localized, and 1/16 of the shell if scattered. (Add up the stained areas to determine total size.) Eggs with adhering dirt or foreign material are also classified as Dirty.

Contestants will be evaluating only the egg's exposed surface. The underside of the egg should be considered free from defects. Evaluate only what you see.

B. Scattered moderate stain covering approximately 1/16 of the shell surface. Grade B.



D. Any egg with adhering dirt is graded Dirty.



Adhering Dirt or Foreign Material

Grade A and B eggs cannot have any adhering dirt or foreign material. Eggs with adhering material (3-dimensional) larger than a speck (about 1.0 mm) should be classified as **Dirty**. Small specks of dust or lint that may have settled out of the air should not be considered.

Egg Shape

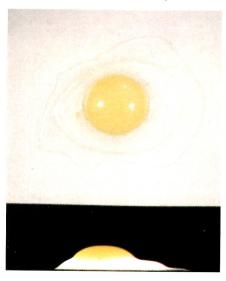
A considerable range of egg shapes may be considered "approximately the usual shape" or Grade A. Eggs that are spherical (round) or too long to fit in the egg carton should be graded B quality. B quality grade for egg shape will include eggs that are clearly misshapen or that have definite flat areas.

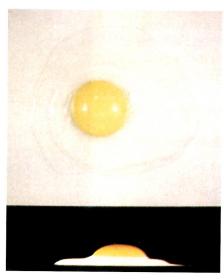
Shell Texture

Eggs with faulty texture are much weaker in shell strength and may be broken during distribu-

A Quality

B Quality





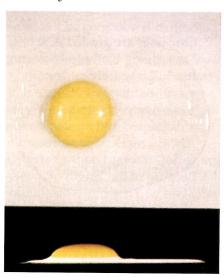


Figure 23. Specifications for broken-out eggs.

tion. Shells with large calcium deposits (greater than 1/8 inch in diameter) should be classified as Grade B. Eggs with small calcium deposits are classified as Grade A. There is no standard for the number of calcium deposits, which means that small calcium deposits over the entire shell may be classified as Grade A if otherwise qualified. A good rule of thumb is that if you were to pull your fingernail across a calcium deposit and a good size hole would be created if it came off, the egg would be classified as Grade B.

Ridges

Ridges can result in weakened shells. Many eggs show small ridges, and most of these should be classified as Grade A. Those eggs with large ridges are Grade B.

Shell Thickness

The shell should appear thick enough to withstand reasonable handling without breaking. Grade A eggs must have thick shells with no thin spots. Thin shells or thin spots would place an egg in Grade B. In all cases, the shell must not be broken.

Body Checks

Body checks can cause weakened shells. This is a condition in which the egg shell looks like it is cracked but the shell is intact. Body check occurs during shell formation when the shell is cracked and then partially calcified before being laid. An egg with body check is classified as Grade B.

Broken-Out Quality

Eggs broken out for this class will be Grades AA, A, B and Inedible. Eggs with spots (blood and meat) more than 1/8 inch in diameter will be classified as Inedible. Eggs with spots less than 1/8 inch will be classified as Grade B.

The only other criteria that should be used to grade broken-out eggs is the height of the thick albumen relative to the egg's size. The yolk's size, flatness, or position should not be considered. Broken-out grade determination must be based on USDA "U.S. Standards for Quality of Shell Eggs." Representative AA, A and B grade eggs from this chart are provided in *Figure 23*. The thick albumen retains the egg's shape in Grade AA and is thick, whereas there is a flattening and rounding of edges in a Grade A egg. The thick albumen in a Grade B egg is flat and barely visible.

Contestants should learn to assign the proper grade by comparing actual broken-out eggs with the USDA broken-out egg chart. The diameter of the outline of the thick albumen (top view) may give an indication of grade; however, the height of the thick albumen (side view) is the most important factor in determining grade. For example, an extra large egg may have a rather large, thick albumen outline and also sufficient height of thick albumen to be Grade AA.

Contestants should evaluate each egg on its own merit and not compare it with other eggs in the class. If you set an incorrect standard, your grade scale could be off, causing you to incorrectly grade several eggs. Learn by comparing to the USDA chart for broken-out eggs.