



The Book Planter



Ag in the Classroom

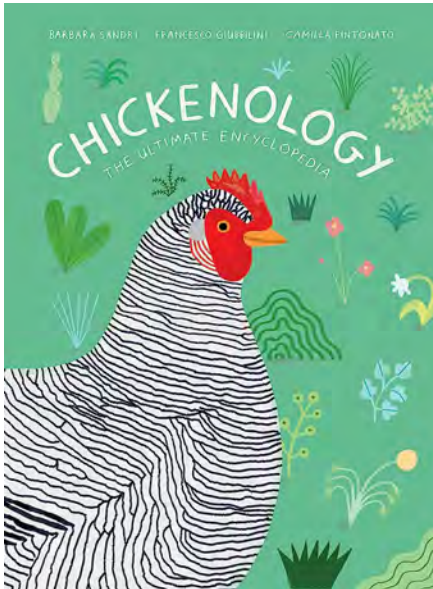
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Chickenology: The Ultimate Encyclopedia

Written by: Barbara Sandri & Francesco Giubbinini

Illustrated by: Camilla Pintonato



Chickenology takes young readers on a fascinating and informative tour of chickens. With a playful tone and irresistibly charming illustrations, this lively visual encyclopedia presents chickens in all of their feathered glory. Discover the incredible variety of chickens with different origins, breeds, and feather patterns. Learn incredible facts—did you know that chickens can learn to count up to four and have excellent hearing? Many even like to listen to music!

Chickenology is the perfect book for animal loving young readers, chicken enthusiasts, chicken farmers and pet chicken owners alike!

Vocabulary¹

breed: a group of animals or plants within a species having a distinctive appearance and typically having been developed by deliberate selection

broiler: a chicken that is raised for its meat

brood: a group of newly hatched chicks

chick: a young chicken, newly hatched

cockerel: a young rooster

embryo: unhatched offspring inside an egg

hen: a female chicken

incubation: the act of keeping an organism in conditions favorable for growth and development

poultry: domestic fowl, such as chickens, turkeys, ducks, and geese

rooster: an adult male chicken of breeding age

Engage¹

1. Begin a discussion with the students about chickens and baby chicks to create interest. Ask the following questions:

- What do you know about chickens?
- What kinds of sounds do chickens make?
- Where do chickens live?
- How are baby chicks born?
- How long does it take for an egg to hatch?

- Would you like to watch a baby chick being hatched?
2. Show the short [video](#) of chicks hatching.

Activity 1: The Life Cycle of a Chicken²

Materials:

- Black card stock arrows, 4 per student (template attached)
- *The Life Cycle of a Chicken* title card (attached)
- White, tan, or light green card stock
- Egg template (attached)
- White watercolor paper
- 11" x 14" drawing paper, 1 per student
- Black permanent markers
- Paint brushes, 1 per student
- Yellow, orange, and red egg tempera
 - Egg Tempera Materials
1 egg yolk
1/4 teaspoon water
Food coloring
 - Egg Tempera Directions
Mix egg yolk and water together.
Add food coloring until the desired color is achieved.
For best results, paint on watercolor paper.
Egg tempera can also be used to paint on sugar cookies.



Procedures:

1. Review pages 7 and 9 from the book *Chickenology*.
2. Ask students, "If we were going to create a life cycle of a chicken, what would it look like?" Allow students to discuss with a partner, and then share out their ideas with the class. Make a chart or list on the board for all to see.
3. Say, "The beginning of a chicken life cycle is the egg. First, we start with an egg." Start to draw a diagram like the picture above. Then say, "Next, the embryo in the egg begins to grow. Then, the chick hatches out of the egg. Last, the chick grows to become a chicken."
4. Review page 7 to show the different paths for female and male chickens, and the terms for each.
5. Use the egg template to trace and cut out two eggs from the same colored card stock.
6. On one of the eggs, cut a circular crack (see the photo above for reference).
7. Use a black permanent marker to draw two eyes on water color paper. Using yellow egg tempera, paint a circle slightly smaller than the egg over the eyes. Allow the paint to dry before painting an orange beak. Glue the cracked egg over the yellow chick, allowing the eyes and beak to be seen through the crack.
8. On a second piece of water color paper, draw two eyes and legs. Paint another, slightly larger, yellow circle. Include two lines on the top and sides of the circle for the wings and feathers.

9. On a third piece of watercolor paper, trace your hand with a pencil. Use a permanent marker to draw wings in the middle of the palm and an eye on the thumb. Use red egg tempera to paint the palm and thumb of the hand. Use orange egg tempera to paint two legs, a comb, and a beak. Cut the chicken out. Bend the thumb behind the palm until you have the desired head length.
10. Cut the 11" x 14" paper into a large egg shape. Glue the title in the center. Attach the egg, cracked egg, chick, chicken, and arrows on the large egg to show the chicken life cycle. They may also choose to use information from the book to include how long each cycle takes. For example, on page 7, there is information about how long a chick grows into a chicken, and on page 9, there is information about how long an embryo takes to grow and eventually hatch.
11. Finally, have students write a sentence for each stage of the life cycle using sequencers: First, then, next and last.

Activity 2: Chicken Genetics¹

1. Use the [Genetic Characteristics of Chickens](#) PowerPoint Slides to teach students about the basic genetic characteristics found in various breeds of chickens. Explain that each breed of chicken has specific genes which indicate what it will look like, how many eggs it will produce, how large its body will be, etc.
2. As you go through the PowerPoint, explain that some genetic characteristics can be seen simply by looking at a chicken. For example, feather color, feather texture, type of comb, etc. However, other characteristics cannot be seen simply by looking at a chicken. These characteristics can be measured by farmers as they keep records. For example, a farmer can record how many eggs a hen lays or how much a chicken weighs.
3. With a basic introduction to chicken characteristics, your students are ready to learn about a few chicken breeds. Divide your class into groups and give each group a set of eight [Chicken Pictures](#) and a blank [Chicken Characteristics Worksheet](#). Have the students look at the pictures and identify the characteristics of the chicken that are associated with its appearance. They will record these characteristics in the box. Once they are finished have the groups share their characteristics for each chicken. Compare each group's characteristics to each other. Are they similar or different? Were they able to identify feather color, egg color, feather texture, etc? Were they able to determine if the picture represented a rooster, hen, or chick?
4. Next, give each group one set of [Description Cards](#). The students will match the Description Cards to the pictures. They should also be asked to compare their own, written descriptions from step 3.
5. Review and summarize with students that an animal's genetics determine its physical characteristics (feather color, comb type, etc.) as well as its performance (egg or meat production). Ask your students to apply what they have learned by choosing the breed of chicken that would be best for each scenario below:
 - a. *Imagine you are a chicken farmer and you are raising chickens for their meat. Which breed would you choose?*
 - i. The Cornish chicken (#3) is the best meat producing chicken
 - b. *Imagine you are the manager of a layer farm. Your goal is to produce quality, white-shelled eggs. Which breed of chicken will likely be best for your farm to produce the most eggs?*
 - i. The White Leghorn (#2) is the best choice. White leghorns are the most widely used breed in white-shelled egg production in the United States.

- c. *Imagine you are raising chickens in your backyard for a hobby and you'd like to learn how to show them. Which breed would you choose?*
 - i. Students can choose any breed they'd like. Ornamental breeds such as the Cochin, Silkie, and Polish Crested are raised mostly for their novel feathering patterns. Hens of these breeds do produce eggs, but not as efficiently as other breeds.
 - d. *Imagine you are raising chickens for eggs and you'd like brown shells. Which chicken would you pick?*
 - i. The Sussex, Rhode Island Red, and Plymouth Rock all produce brown eggs. Be sure your students know that there is not a nutritional difference between white-shelled eggs and brown-shelled eggs. It is simply a consumer preference.
6. Ask the students questions that refer to the genetics of a chicken. *If both parents are the same breed what would you expect the offspring to look like? If the parents are different breeds, what would you expect the offspring to look like?* Compare the genetics of the chicken to humans. Ask the students, *"What characteristics do you have that are similar or different from your parent(s)?"* You can use the chicken pictures as a visual when asking these questions. Be sure to point out once again the similarities and differences found in the breeds.

Chickenology Scavenger Hunt/Breakout EDU Game (attached at the end of this activity sheet)

Note for teachers: [Breakout EDU](#) games are educational experiences for students using lock boxes with various combinations. You can order your own [Breakout EDU kit](#), or you can create using your own purchased locks and boxes. Students will use the Scavenger Hunt to answer questions from the book *Chickenology*. Some of the answers will correspond to lock combinations. For example, if one of the answers is "hen" that could correspond to an alpha lock, or if an answer is "red" that could correspond to a color lock. Of course there are number locks, and shape locks too.

If you do not have access to this resource, you can still use the Scavenger Hunt worksheet in your classroom for other purposes.

Extension Activities:

- **Chicken Breeds:** What chicken breeds are grown in North Carolina? Are those the same as the breeds featured or mentioned in *Chickenology*? Have students research the breeds and what makes them desirable to raise in North Carolina.
- **Chicken Parts:** Have students compare and contrast the physiology and anatomy of chickens and humans (pp. 22-25 in *Chickenology*).
- **Who Likes Eggs?** Create a poll for students to say how they like to eat eggs using the examples on pp. 42-43 in *Chickenology*. Then, allow students to graph the results.
- **Chicken Stories:** Read the tales on pp. 52-53 in *Chickenology*, and challenge the students to write their own fictional story about chickens (or eggs).
- **Chicken Coop Designing:** Ask students what makes a good chicken coop/house (pp 54-55 in *Chickenology*). Provide basic classroom materials or recycled materials (toilet paper rolls, scrap paper, paperclips, metal fasteners, rubber bands, cotton balls, wooden sticks, pipe cleaners, etc.) for students to construct their own models of chicken coops. They must include the necessary elements (as shown in *Chickenology*).

Links

Engage:

- Chicks Hatching (video): <https://www.youtube.com/watch?v=FiPIGp9tpK0&t=15s>

Activity 1:

- Life Cycle of a Chicken Templates:
https://cdn.agclassroom.org/media/uploads/2016/08/19/The_Lifecycle_of_a_Chicken_template_s.pdf

Activity 2:

- Genetic Characteristics of Chickens (PowerPoint):
https://cdn.agclassroom.org/media/uploads/2015/07/06/Chicken_Characteristics_PP_1.pptx
- Chicken Pictures:
https://cdn.agclassroom.org/media/uploads/2015/06/19/Chicken_Matching_Cards.pdf
- Chicken Matching Cards:
https://cdn.agclassroom.org/media/uploads/2015/06/19/Chicken_Matching_Cards.pdf
- Chicken Characteristics Worksheet:
https://cdn.agclassroom.org/media/uploads/2015/06/22/Chicken_Characteristics_Worksheet.pdf

Sources

1. <https://agclassroom.org/matrix/lesson/245/>
2. <https://agclassroom.org/matrix/resource/630/>

K-5 Subject Areas: English Language Arts, Math, Social Studies, and Science

English Language Arts (Reading and Writing)

- RI.K.1 With prompting and support, ask and answer questions about key details in a text.
- RI.K.2 With prompting and support, identify the main topic and retell key details of a text.
- RI.K.3 With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.
- W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. a. With guidance and support from adults, respond to questions and suggestions from adults and/or peers and add details to strengthen writing as needed.
- RI.1.1 Ask and answer questions about key details in a text.
- RI.1.2 Identify the main topic and retell key details of a text.
- RI.1.3 Describe the connection between two individuals, events, ideas, or pieces of information in a text.
- RI.1.4 Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.
- RI.1.5 Know and use various text features to locate key facts or information in a text.
- RI.1.6 Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.
- RI.1.7 Use the illustrations and details in a text to describe its key ideas.
- W.1.2 Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide closure. a. With guidance and support from adults, organize information and ideas around a topic to plan and prepare to write. b. With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed.
- W.1.3 Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal transition words to signal event order, and provide some sense of closure. a. With guidance and support from adults, organize information and ideas around a topic to plan and prepare to write. b. With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed.
- W.1.5 Participate in shared research and writing projects.
- W.1.6 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
- RI.2.2 Identify the main topic of a multi-paragraph text as well as the focus of specific paragraphs within the text.
- RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.
- RI.2.4 Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.
- RI.2.5 Know and use various text features to locate key facts or information in a text efficiently.
- RI.2.7 Explain how specific images contribute to and clarify a text.

- W.2.2 Write informative /explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section. a. With guidance and support from adults, organize information and ideas around a topic to plan and prepare to write. b. With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.
- W.2.3 Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal transition words to signal event order, and provide a sense of closure. a. With guidance and support from adults, organize information and ideas around a topic to plan and prepare to write. b. With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.
- W.2.5 Participate in shared research and writing projects.
- W.2.6 Recall information from experiences or gather information from provided sources to answer a question.
- RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.
- RI.3.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.
- RI.3.5 Use text features and search tools to locate information relevant to a given topic efficiently.
- RI.3.7 Use information gained from illustrations and the words in a text to demonstrate understanding of the text.
- W.3.2 Write informative /explanatory texts to examine a topic and convey ideas and information clearly. a. Organize information and ideas around a topic to plan and prepare to write. b. Introduce a topic and group related information together; include illustrations when useful to aiding comprehension. c. Develop the topic with facts, definitions, and details. d. Use linking words and phrases to connect ideas within categories of information. e. Provide a concluding statement or section. f. With guidance and support from peers and adults, develop and strengthen writing as needed by revising and editing, with consideration to task and purpose.
- W.3.5 Conduct short research projects that build knowledge about a topic.
- RI.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
- RI.4.2 Determine the main idea of a text and explain how it is supported by key details; summarize the text.
- RI.4.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
- RI.4.4 Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.
- RI.4.5 Describe the overall structure of events, ideas, concepts, or information in a text or part of a text.
- RI.4.7 Interpret information presented visually, orally, or quantitatively and explain how the information contributes to an understanding of the text in which it appears.
- W.4.2 Write informative /explanatory texts to examine a topic and convey ideas and information clearly. a. Organize information and ideas around a topic to plan and prepare to write. b. Introduce a topic clearly and group related information in paragraphs and sections; include formatting, illustrations, and multimedia when useful to aiding comprehension. c. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic. d. Link ideas within categories of information using words and phrases. e. Use precise language and domain-specific vocabulary to inform about or explain the topic. f. Provide a concluding statement or section related to the information or explanation presented. g. With guidance and support from peers and adults, develop and strengthen writing as needed by revising and editing, with consideration to task, purpose, and audience.
- W.4.5 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
- RI.5.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
- RI.5.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.
- RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question or to solve a problem efficiently.
- W.5.2 Write informative /explanatory texts to examine a topic and convey ideas and information clearly.
- W.5.3 Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.
- W.5.5 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.

Math

- 1.MD.4 Organize, represent, and interpret data with up to three categories. • Ask and answer questions about the total number of data points. • Ask and answer questions about how many in each category. • Ask and answer questions about how many more or less are in one category than in another.
- 2.MD.10 Organize, represent, and interpret data with up to four categories. • Draw a picture graph and a bar graph with a single-unit scale to represent a data set. • Solve simple put-together, take-apart, and compare problems using information presented in a picture and a bar graph.
- 3.MD.3 Represent and interpret scaled picture and bar graphs: • Collect data by asking a question that yields data in up to four categories. • Make a representation of data and interpret data in a frequency table, scaled picture graph, and/or scaled bar graph with axes provided. • Solve one and two-step “how many more” and “how many less” problems using information from these graphs.
- 4.MD.4 Represent and interpret data using whole numbers. • Collect data by asking a question that yields numerical data. • Make a representation of data and interpret data in a frequency table, scaled bar graph, and/or line plot. • Determine whether a survey question will yield categorical or numerical data.

- 5.MD.2 Represent and interpret data. • Collect data by asking a question that yields data that changes over time. • Make and interpret a representation of data using a line graph. • Determine whether a survey question will yield categorical or numerical data, or data that changes over time.

Social Studies

- K.B.1.1 Identify cultural practices in local communities and around the world.
- K.B.1.2 Compare cultural practices of people in local communities and around the world.
- 1 B.1.1 Identify cultural practices and traditions in local communities and places around the world.
- 1.C&G.1.1 Exemplify ways individuals and groups play a role in shaping communities.

Science

- 1.L.1 Understand characteristics of various environments and behaviors of humans that enable plants and animals to survive.
- 1.L.2 Summarize the needs of living organisms for energy and growth.
- 4.L.1 Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats.
- 5.L.2 Understand the interdependence of plants and animals with their ecosystem.

Name _____

Chicken Characteristics Worksheet

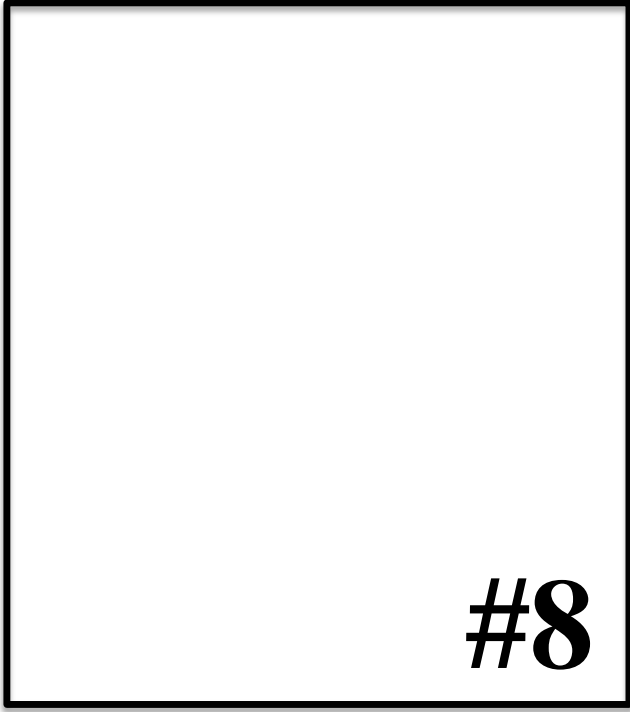
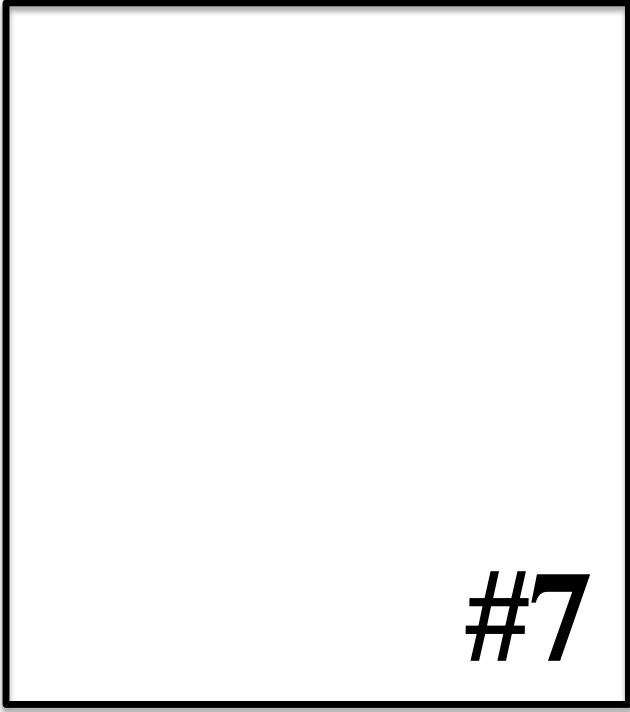
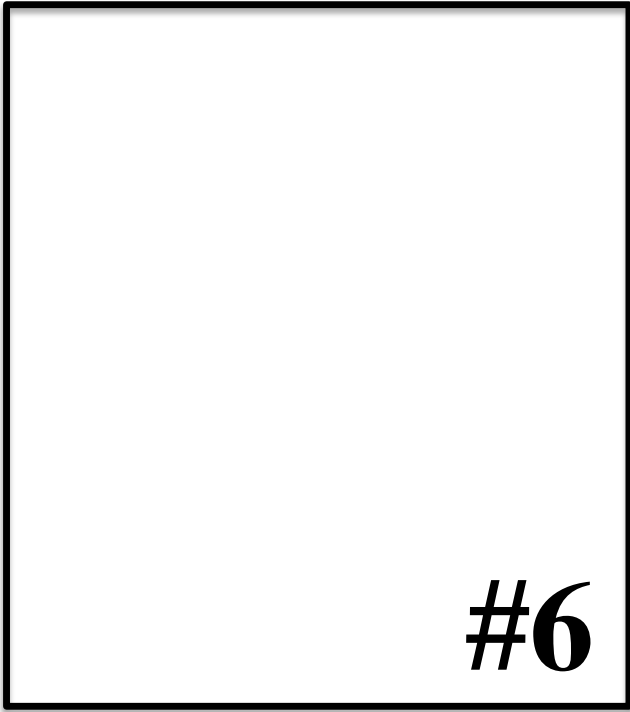
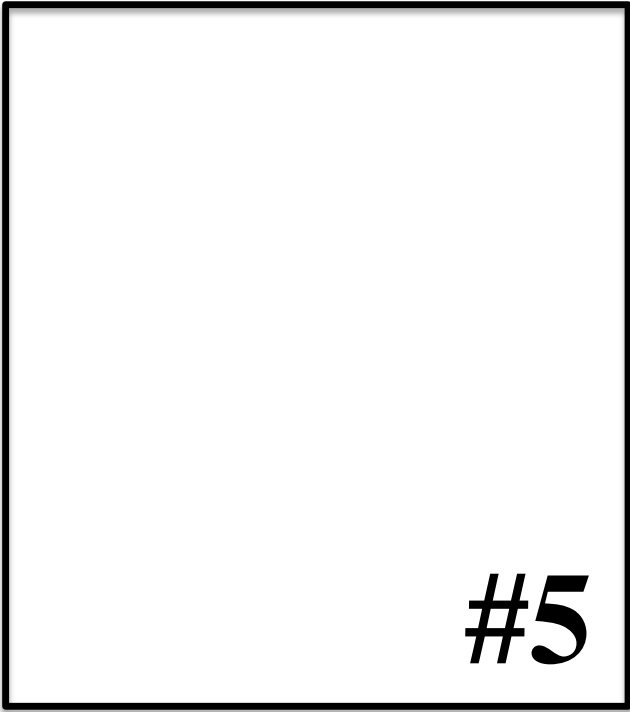


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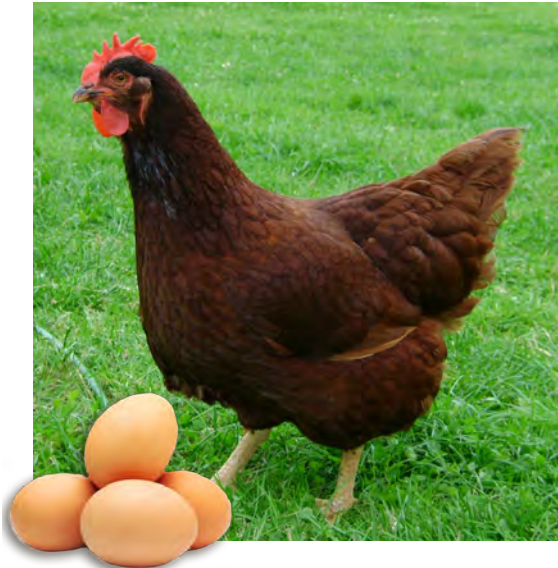
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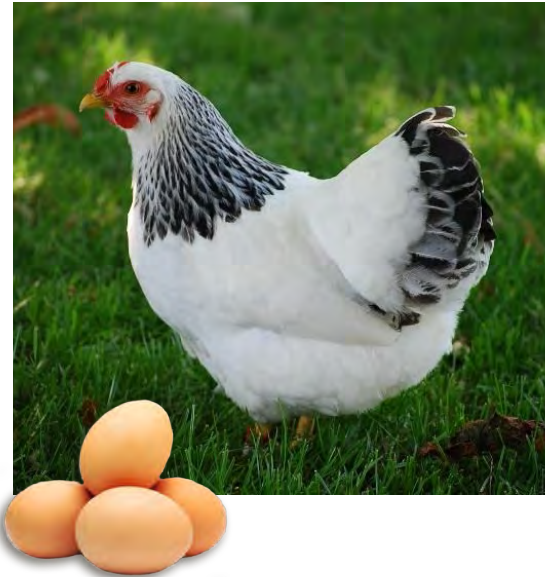
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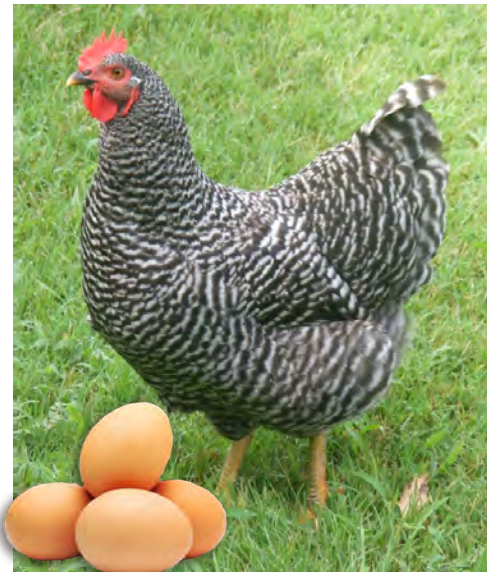
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#6



#7



#8

Silkie

Characteristics you can see:

- Small, fluffy feathers appearing like silk
- Feathers in a ball shape on their head AND covering their feet
- Many colors including white, brown, and black
- Small, brown eggs

Characteristics farmers look for:

- Low egg production
- These chickens are typically raised for shows or as a hobby

A

Sussex

Characteristics you can see:

- White feathers on body, black feathers on neck and tail
- No feathers on legs or feet
- Large brown eggs

Characteristics farmers look for:

- Good egg layers

B

Cornish

Characteristics you can see:

- Smooth white or brown feathers
- Thick, heavy body
- Small white eggs

Characteristics farmers look for:

- Very good for meat production
- Fast growing
- Poor egg production, so they are mostly raised for meat

C

Cochin

Characteristics you can see:

- Very thick, fluffy feathers that give body a round appearance
- Feathers cover legs and feet
- Many colors including white, brown, and multi-colored
- Medium brown eggs

Characteristics farmers look for:

- Low egg production
- These chickens are typically raised for shows or as a hobby

D

Rhode Island Red

Characteristics you can see:

- Smooth reddish brown feathers
- No feathers on legs or feet
- Large brown eggs

Characteristics farmers look for:

- Very good egg layers!

E

White Leghorn

Characteristics you can see:

- Smooth, white feathers
- No feathers on feet or legs
- White
- Large white eggs

Characteristics farmers look for:

- Very good egg-laying chickens

F

Plymouth Rock

Characteristics you can see:

- Smooth feathers
- Feathers are black and white and appear like stripes
- No feathers on legs or feet
- Large body size
- Large brown eggs

Characteristics farmers look for:

- Good egg layers

G

Polish Crested

Characteristics you can see:

- Smooth feathers on body
- “Crest” of feathers on the head
- No feathers on legs or feet
- Many colors including black, brown, and multi-colored
- Medium white eggs

Characteristics farmers look for:

- Low egg production
- These chickens are typically raised for shows or as a hobby

H

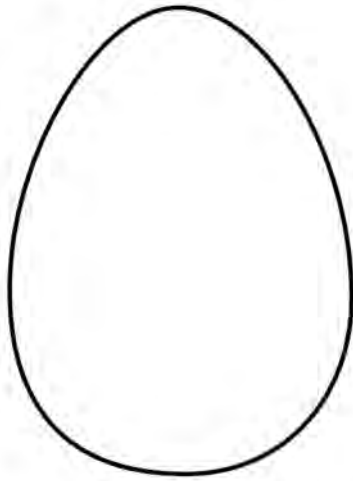
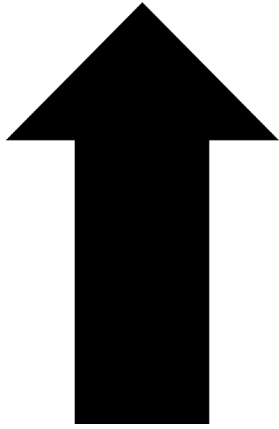
Teacher Key

Picture Card Key:

1. Cochin
2. Leghorn
3. Cornish
4. Silkie
5. Rhode Island Red
6. Sussex
7. Polish Crested
8. Plymouth Rock

Description Card Key:

- A. Silkie
- B. Sussex
- C. Cornish
- D. Cochin
- E. Rhode Island Red
- F. White Leghorn
- G. Plymouth Rock
- H. Polish Crested



The
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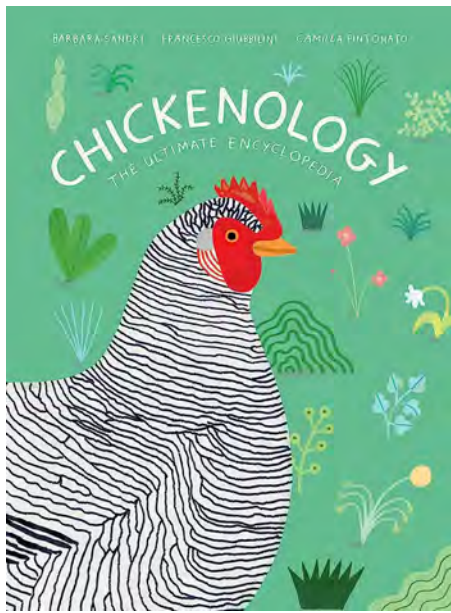
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Name: _____

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SCAVENGER HUNT

Answer Key

1. What percentage of egg yolk is water? (50%)
2. What is the total combined time to cook an omelet and a fried egg? (10 min. + 7 min. = 17 min.)
3. What type of bacteria can spread from chickens to humans byway of eggshells? (salmonella)
4. These parts of chickens can come in a variety of colors, such as yellow, green, blue and black. (legs)
5. How many months does it take for a chick to become an adult chicken? (6 to 8)
6. How many years ago did *Gallus gallus* come in contact with humans? (5,000)
7. What colors are chicken eggs? (blue, green, brown, white, pink)
8. How can you tell if an egg is fresh? (It sinks in water.)
9. What are the physical qualities of Silkie chickens? (black skin, silky feathers)
10. What musical instrument have chickens learned to play? (piano)

If using with Breakout EDU boxes, here are some possible lock combinations:

Word lock: LEGS (#4)

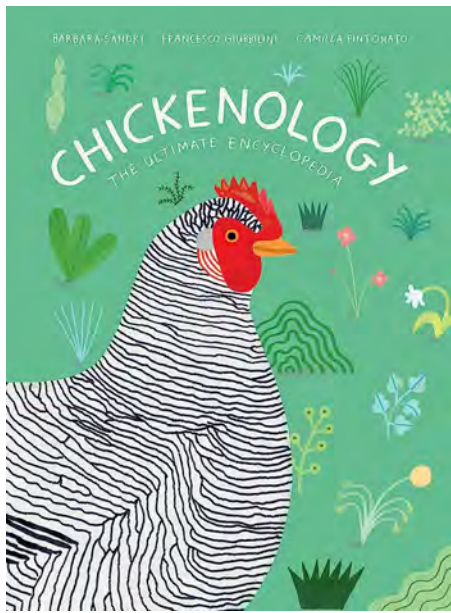
4-digit lock: 5000 (#6)

3-digit lock: 017 (#2)

Color lock: blue dots, or blue and green dots (#7)



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Chickenology

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SCAVENGER HUNT

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