

EGG READER TEACHER'S GUIDE

AG IN THE CLASSROOM - HELPING THE NEXT GENERATION UNDERSTAND THEIR CONNECTION TO AGRICULTURE

RESOURCES

Colorado Egg Producers Association
P.O. Box 20, Livermore, CO 80536
ColoradoEggProducers.com
970-881-2902

Egg Nutrition Center: enc-online.org
The Egg Nutrition Center (ENC) was established in 1984 to provide commercial egg producers/processors, health promotion agencies and consumers with a resource for scientifically accurate information on egg nutrition and the role of eggs in the health and nutrition of the American diet.

On the Web:

Take a tour of an egg farm: uepcertified.com

ThinkEgg.com

Information on all types of food:
FeedStuffsFoodLink.com

American Egg Board
The Incredible Edible Egg Web Site: aeb.org

Other Reading:

The Nature and Science of Eggs

(Exploring the Science of Nature)
by Jane Burton. Published by Gareth Stevens Publishing, 1998. Describes the purpose, parts, fertilization, development, and other aspects of eggs. Includes experiments and activities.

Chicken and Egg

by Christine Back. Published by S. Burdett Co, 1986. Photographs, drawings, and text on two different levels of difficulty follow the development of a chick embryo from the fertilization and laying of the egg to the time the chick hatches.

Comments, questions, suggestions and feedback about the Colorado Reader are welcome.

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Page 2 - History ~

Both eggs and birds have been around longer than historians. Nobody really knows when the first fowl was domesticated although Indian history places the date as early as 3200 B.C. Egyptian and Chinese records show that domestic birds were laying eggs for man in 1400 B.C. The dependability of the rooster's early morning call and the regularity with which newly-laid eggs appeared probably inspired the Chinese to describe fowl as "the domestic animal who knows time."

It is believed that Columbus' ships carried the first of the chickens related to those now in egg production to this country. These strains originated in Asia.

Answers to activities:

Best meaning for the word exposed is b. left or being without shelter or protection.

Best meaning for the word balanced is c. diet that contains all nutrients the body needs

Best meaning for the word genetics is a. selecting and breeding animals for improved performance

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Egg producers raise hens using different methods. How hens are kept depend upon what consumers choose to buy. For example, if consumers want more Omega 3 rich eggs, egg farmers will feed more hens a diet enriched with Omega 3 to meet the demand.. The chart on page 3 shows the differences in all the eggs.

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Eggs from farm to your table shows the steps in the process. Eggs laid on the farm today may be in your store

tomorrow. If your students would like to see a video of egg production, go to: <http://coloradoeggproducers.com/resources/educational-resources/video-egg-processing>.

Page 5 - More Information about Nutrition ~

Eggs are among the most nutritious foods. An egg contains varying amounts of 13 vitamins plus many minerals. An egg yolk is one of the few foods which contains vitamin D, the sunshine vitamin. Eggs are low in calories with only about 75 in a large egg, yet high in protein. Egg protein is of such high quality that it is often used as the standard by which other protein is measured.

Egg protein contains all the essential amino acids in a pattern that matches very closely the pattern the body needs. This is why eggs are classified with fish, meats and nuts in the protein food group and why egg protein is called complete protein.

A moderate amount of fat, about 5 grams, is found in a large egg yolk (about 2 grams saturated fat and 3 grams unsaturated fat).

One large egg contains 213 mg of cholesterol. Cholesterol is a fat-like substance found in every living cell in the body. It is made in necessary amounts by the body and is stored in the body. It is especially concentrated in the liver, kidney, adrenal glands and brain. Cholesterol is required for the structure of cell walls, must be available for the body to produce vitamin D, is essential to the production of digestive juices, insulated nerve fibers and is the basic building block for many hormones. Cholesterol is essential for life.

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It is important for students to know that there are many things they can do to make sure their food is safe to eat. Cleanliness is one of the most important things they can do. Washing their hands with soap and water before eating lunch is a good habit to develop. Have them practice washing their hands for one minute. Pick a song that your students like to sing and have them sing it for one minute so they know how long to wash their hands.

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Alphabetize the parts of an egg:

air cell	thick albumen
chalazae	thin albumen
germinal disk	vitelline membrane
shell	yolk
shell membranes	

Go to this link to print a coupon for \$.55 off of your next dozen eggs
<http://www.coloradoeggproducers.com/eggcoupon>

EGG GAMES

How much do you know about eggs? Play one of our fun, interactive games below and find out.

<http://www.growingyourfuture.com/civi/node/163>

<http://www.growingyourfuture.com/civi/node/175>

Steve Spangler has all kinds of experiments using eggs. Here is one:

Separating Egg Whites and Egg Yolks

A simple and quick method to remove the yolk from the white of an egg for your favorite recipes.

When a recipe calls for egg whites, you might want to freak out if you're running short on time, you don't have the patience and time necessary to separate that pesky yolk from the egg white. Not to worry, because Steve has found a way to pull the yolk right out of the egg white. It's quick, easy, and a little fun.

Materials

Egg (or two, or three)
Empty plastic water bottle
Bowls or plates

Experiment

- Crack an egg into a bowl or plate. Be careful not to break the yolk when cracking the egg.
- In your hand, lightly squeeze an empty plastic water bottle. You don't want to compress the water bottle all of the way.
- Hold the water bottle in the squeezed position. Don't release it.
- Touch the mouth of the water bottle

to the egg yolk and slowly release the squeeze on the bottle. The egg yolk is pushed right into the bottle, leaving the egg white!

If you want to use this tool for more than recipes in your home, turn it into a literature connection. Separate the yolk from the egg white and add green food coloring to the egg white. Now you have real green eggs to use while reading Green Eggs and Ham to your students.

How Does It Work?

When you squeeze the bottle, you are decreasing the air inside. If you squeeze the bottle while the mouth is facing towards you, you'll feel air rush out. Releasing the squeeze on the bottle allows air to rush back into the bottle. If you cover the mouth of the bottle with the egg yolk prior to releasing the squeeze, the available volume inside the bottle is filled by the egg yolk. The egg yolk separates easily from the egg white because of their differing viscosity. While the egg white is runny and slimy, the yolk is more solid, enabling the entire yolk to enter the bottle while the egg white runs off onto the plate or bowl.

Find more at:
<http://www.stevespanglerscience.com>

Page 8 - answers

Math

$$5 - 3 + 10 = 12$$

$$8 / 2 + 1 = 5$$

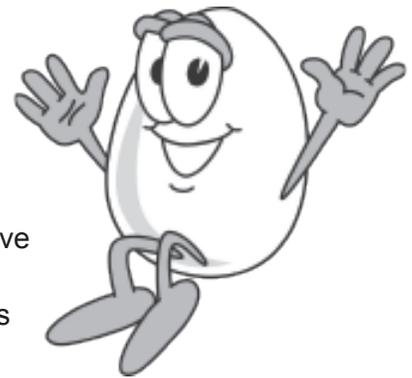
$$4 / 2 - 2 = 0$$

$$9 \times 3 - 13 = 14$$

$$1 \times 15 / 3 = 5$$

Review

1. automation
2. chalazae
3. salmonella
4. shell
5. refrigeration
6. all of the above
7. sanitize
8. laying houses
9. biosecurity
10. yolk



NATIONAL SCIENCE EDUCATION STANDARDS

K-4 Content Standards A, C, F, G
NATIONAL AGRICULTURAL LITERACY OUTCOMES
Food, Health and Lifestyle Outcomes. Social Studies: Diagram the path of production for a processed product, from farm to table. Health: Identify food sources of required food nutrients; Explain the practices of safe food handling, preparation, and storage
Science, Technology, Engineering & Mathematics. Provide examples of science being applied in farming for food, clothing, and shelter products
Culture, Society, Economy & Geography. Social Studies: Describe how supply and demand impact the price of agricultural goods
CCSS for English Language Arts & Literacy in History/ Social Studies, Science, and Technical Subjects
L.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate; R.4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone; RF.4.4. Read with sufficient accuracy and fluency to support comprehension; RF.4.4a. Read grade-level text with purpose and understanding; RF.4.4c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary; RI.4.2. Determine the main idea of a text and explain how it is supported by key details; summarize 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.4.7. Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears; Mathematics Standard 1. Number Sense, Properties and Operations
3. Different models and representations can be used to compare fractional parts.
4. Formulate, represent, and use algorithms to compute with flexibility, accuracy, and efficiency
Mathematics Standard 2: Patterns, functions, and Algebraic Structures 2. Number patterns and relationships can be represented by symbols