

Lesson Two

Nutrition

Subject Area

Science/Health/Math

Objectives

- Identify the food group in which eggs belong
- Understand the nutritional value of eggs, and realize how many foods use eggs as an ingredient

4-H Life Skills

Learning to Learn, Communicating with Others, Planning and Organizing

Suggested Grade Level

4–5

Background

Eggs are Nutritional!

Eggs are among the most nutritious foods. They are a good source of vitamins A, B, and D; riboflavin, biotin, phosphorus, and some iron also are found in eggs. Eggs are low in calories (with only about 80 in a large one), yet high in protein. In fact, egg protein is extremely high in quality, and includes all the amino acids needed to build and improve body tissues.

Eggs are Economical!

One dozen large eggs equals 1½ pounds of protein-rich food. If large eggs are \$1 per dozen, that is only 67 cents per pound. Of the basic four food groups, eggs are in the meat group and are an “eggcellent” meat substitute, with two eggs equaling one serving of meat.

Eggs are Incredible!

Eggs can be served any time of the day. In fact, eggs are so versatile, they can be prepared easily in a variety of ways. However, eggs—like other foods—are susceptible to contamination and bacterial growth due to their concentrated content of nutrients and high quality protein. Be certain eggs are cooked completely before eating.

Materials

1. Daily food intake charts (Worksheet H)
2. Cookbooks
3. Transparencies B1 and B2
4. Worksheet G
5. *A Close Look at MyPyramid for Kids* (H1)

Procedure

1. Discuss and decide in which food group eggs belong.
2. Discuss the nutritional value of eggs and the role some nutrients play in maintaining a human body, using Transparency B2. You may wish to have students complete Worksheet G as you discuss this topic.
3. Have each student keep track of all the food consumed in a 2-day period using Worksheet H. Students can then compare their food intake choices with those on MyPyramid.gov (B1), or *A Close Look at MyPyramid for Kids* (H1).
4. Later, go over each student's food intake chart to survey the amount of food each student eats that contains eggs. Use the cookbooks for reference. (Students may be surprised with the amount of eggs they have eaten.)

Eggstra Activities

- Go over *A Close Look at MyPyramid for Kids* on H1. Students may take this home and discuss food groupings with adults and siblings.
- Worksheets I and J (math story problems)
- Prepare eggs before class by soaking them in vinegar for 48 to 72 hours in a refrigerator. The acid in the vinegar will decalcify the shells making them soft and semi-permeable. In class, let your students gently handle the softened eggs so they can observe the differences between an ordinary egg shell and the decalcified shell.
- With your class, conduct the separation experiment entitled "Making Meringue" on page 30.

The Food Guide Pyramid

A Guide to Daily Food Choices



MyPyramid.gov

STEPS TO A HEALTHIER YOU

Eggs—A Natural Wonder

Shell

- Outer covering of egg, composed of calcium carbonate
- Color does not affect quality, cooking characteristics, or nutritional value

Yolk

- Color varies with feed of the hen, but doesn't indicate nutritional content
- Major source of vitamins, minerals, and fat

Chalazae

- Prominent chalazae indicate high quality

Air Cell

- Increases in size with age

Shell Membranes

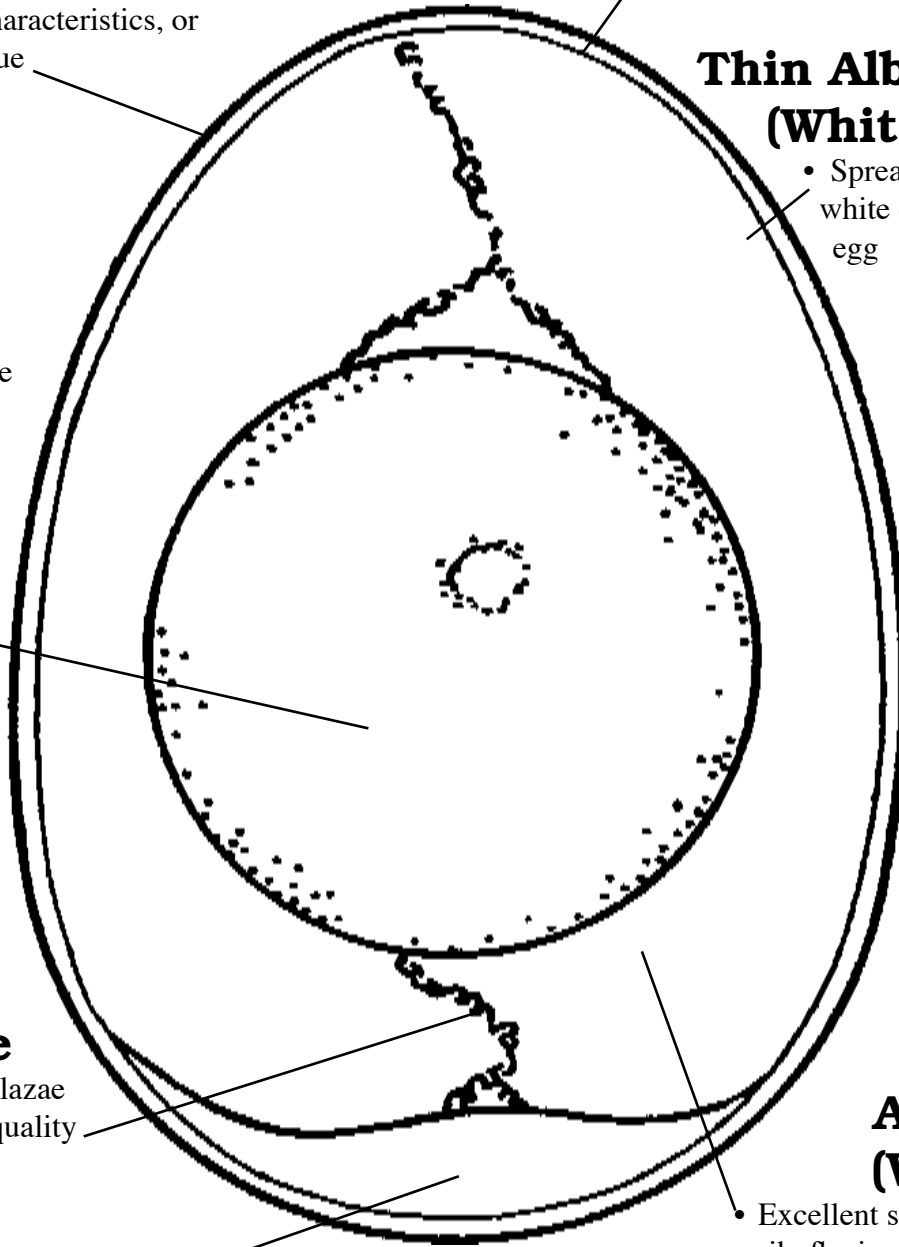
- Provide protective barrier against bacteria

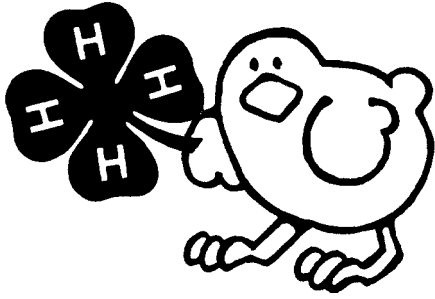
Thin Albumen (White)

- Spreads around thick white of high quality egg

Thick Albumen (White)

- Excellent source of riboflavin and protein
- Stands higher and spreads less than thin white in high quality eggs
- Thins and becomes indistinguishable from thin white in low-quality eggs





A Natural Wonder

Name _____

-
- Outer covering of egg, composed of calcium carbonate
 - Color does not affect quality, cooking characteristics, or nutritional value

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- Color varies with feed of the hen, but doesn't indicate nutritional content
 - Major source of vitamins, minerals, and fat

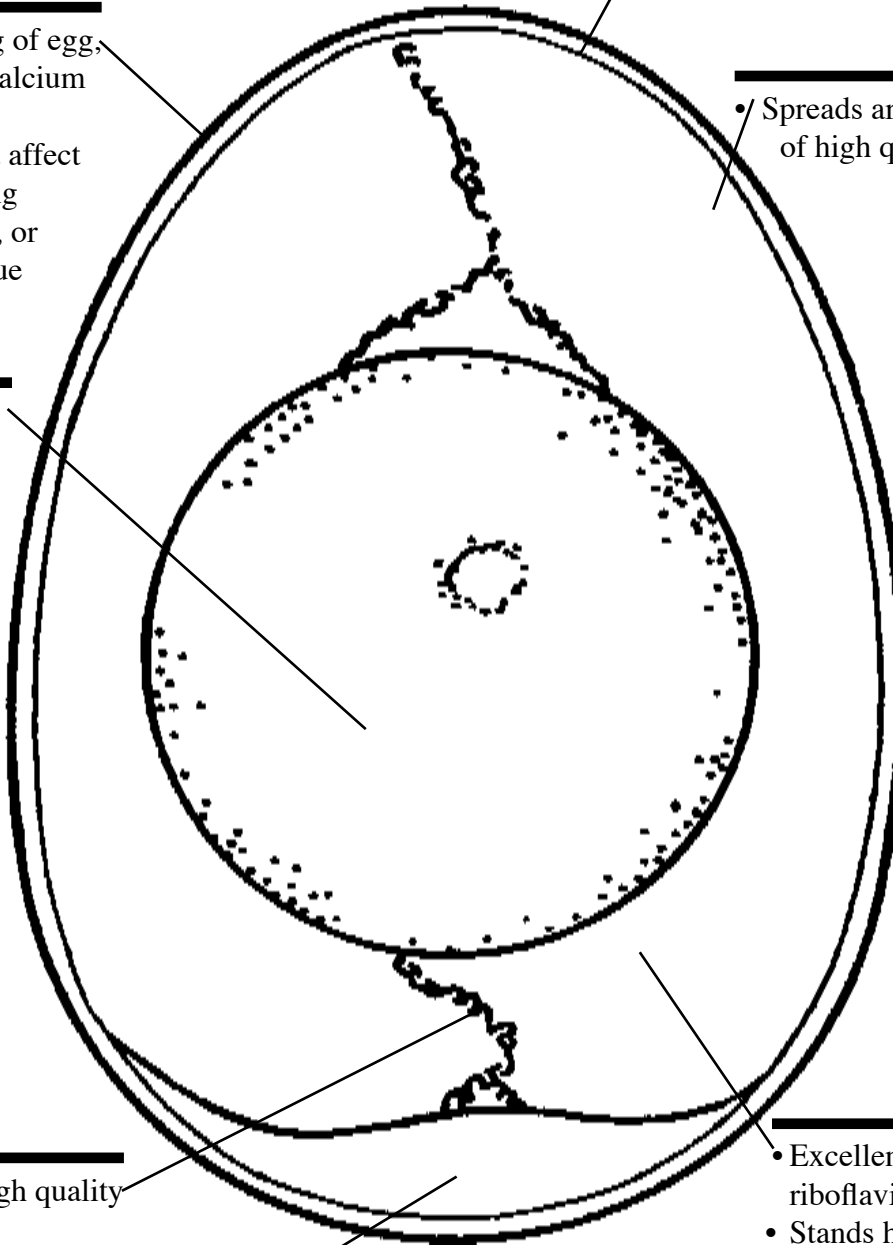
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- Indicator of high quality

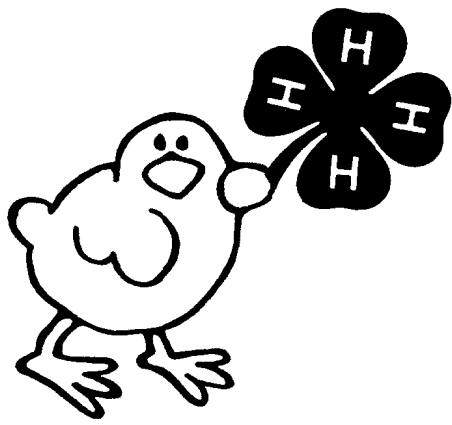
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- Increases in size with age

-
- Provide protective barrier against bacteria

-
- Spreads around thick white of high quality egg

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- Excellent source of riboflavin and protein
 - Stands higher and spreads less than thin white in high quality eggs
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Daily Food Intake

Name _____

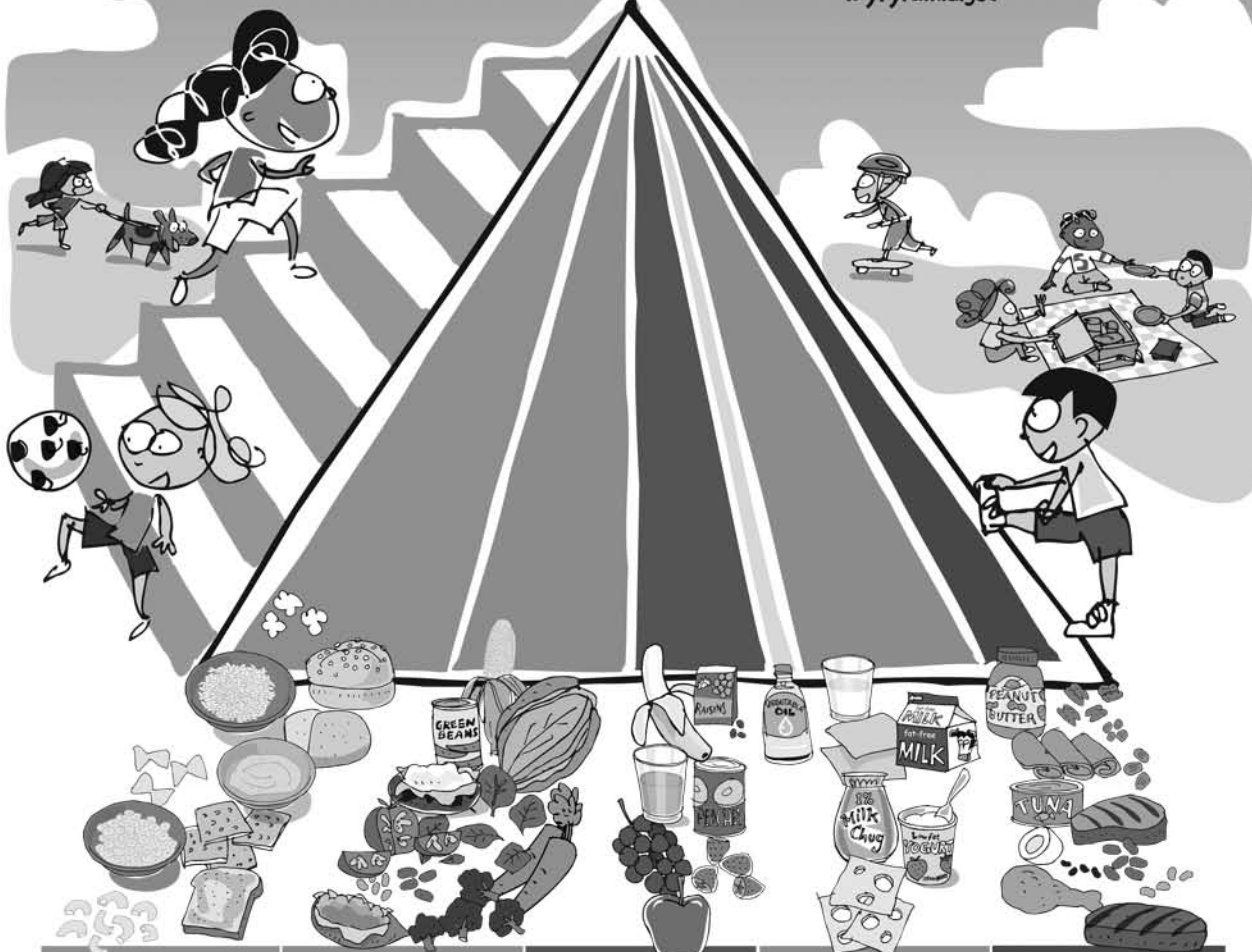
	Day 1	Day 2
Breakfast		
Lunch		
Supper		
Snacks		



MyPyramid ^{For Kids}

Eat Right. Exercise Have Fun.

MyPyramid.gov



Grains Make half your grains whole	Vegetables Vary your veggies	Fruits Focus on fruits	Milk Get your calcium-rich foods	Meat & Beans Go lean with protein
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<p>Start smart with breakfast. Look for whole-grain cereals.</p> <p>Just because bread is brown doesn't mean it's whole-grain. Search the ingredients list to make sure the first word is "whole" (like "whole wheat").</p>	<p>Color your plate with all kinds of great-tasting veggies.</p> <p>What's green and orange and tastes good? Veggies! Go dark green with broccoli and spinach, or try orange ones like carrots and sweet potatoes.</p> 	<p>Fruits are nature's treats – sweet and delicious.</p> <p>Go easy on juice and make sure it's 100%.</p>	<p>Move to the milk group to get your calcium. Calcium builds strong bones.</p> <p>Look at the carton or container to make sure your milk, yogurt, or cheese is lowfat or fat-free.</p> 	<p>Eat lean or lowfat meat, chicken, turkey, and fish. Ask for it baked, broiled, or grilled – not fried.</p> <p>It's nutty, but true. Nuts, seeds, peas, and beans are all great sources of protein, too.</p>
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For an 1,800-calorie diet, you need the amounts below from each food group. To find the amounts that are right for you, go to MyPyramid.gov.

Eat 6 oz. every day; at least half should be whole	Eat 2 1/2 cups every day	Eat 1 1/2 cups every day	Get 3 cups every day; for kids ages 2 to 6, it's 2 cups	Eat 5 oz. every day
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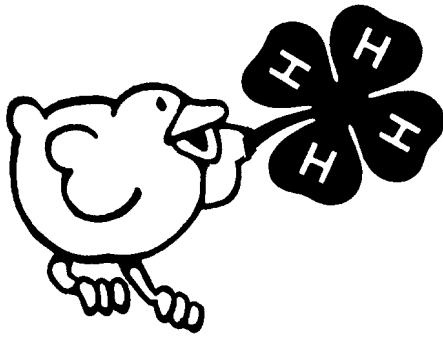
Oils Oils are not a food group, but you need some for good health. Get your oils from fish, nuts, and liquid oils such as corn oil, soybean oil, and canola oil.

<p>Find your balance between food and fun</p> <ul style="list-style-type: none"> Move more. Aim for at least 60 minutes everyday, or most days. Walk, dance, bike, rollerblade – it all counts. How great is that! 	<p>Fats and sugars – know your limits</p> <ul style="list-style-type: none"> Get your fat facts and sugar smarts from the Nutrition Facts label. Limit solid fats as well as foods that contain them. Choose food and beverages low in added sugars and other caloric sweeteners.
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Eggstra Math

Name _____

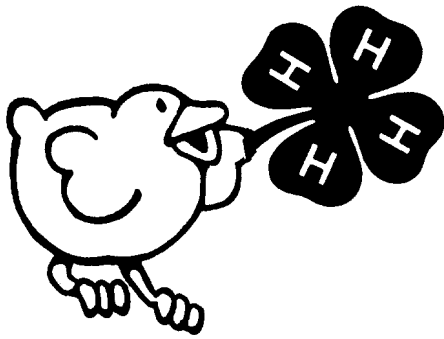
Read each problem carefully. Show your work below the crack in the shell. Remember to label your answers.

There are
12 eggs in a dozen.
How many eggs
are in 2 dozen?
3 dozen?
 $4\frac{1}{2}$ dozen?

If medium
eggs are on sale
for 49 cents a
dozen, how much
will 3 dozen
eggs cost?

Safeway sold
1,488 eggs on
Wednesday and
1,548 eggs on Friday.
How many more did
they sell on Friday?

How many
dozen eggs can
Andrew buy if they
sell for 66 cents a dozen
and he has \$2? Will
he receive any change
back? If so, how much?



Eggstra Math

Name ANSWER KEY

Read each problem carefully. Show your work below the crack in the shell. Remember to label your answers.

There are 12 eggs in a dozen. How many eggs are in

2 dozen? **24**
3 dozen? **36**
4¹/₂ dozen? **54**

$$\begin{array}{r} 12 \\ \times 2 \\ \hline 24 \end{array}$$
$$\begin{array}{r} 12 \\ \times 3 \\ \hline 36 \end{array}$$
$$\begin{array}{r} 12 \\ \times 4 \\ \hline 48 \\ + 6 \\ \hline 54 \end{array}$$

If medium eggs are on sale for 49 cents a dozen, how much will 3 dozen eggs cost?

$$\begin{array}{r} \$0.49 \\ \times 3 \\ \hline \$1.47 \end{array}$$

Safeway sold 1,488 eggs on Wednesday and 1,548 eggs on Friday. How many more did they sell on Friday?

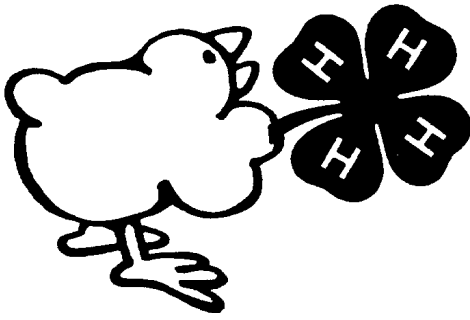
$$\begin{array}{r} 1548 \\ - 1488 \\ \hline 60 \text{ EGGS} \end{array}$$

How many dozen eggs can Andrew buy if they sell for 66 cents a dozen and he has \$2? Will he receive any change back? If so, how much?

$$\begin{array}{r} \$0.66 \\ \times 3 \\ \hline \$1.98 \end{array}$$

3 DOZEN

$$\begin{array}{r} \$2.00 \\ - 1.98 \\ \hline \text{YES} - 2\phi \end{array}$$



More Eggstra Math

Name _____

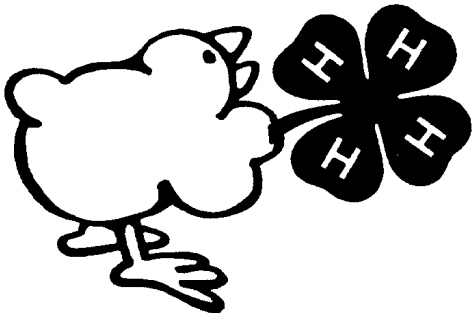
Read each problem carefully. Show your work below the egg. Remember to label your answers.

Marvin delivers eggs to grocery stores. He delivered 326 dozen to Roth's IGA, 450 dozen to Fred Meyer, and 298 dozen to Albertsons. How many dozen eggs did he deliver in all?

There are 80 calories in a large egg. If Mrs. Shell eats three eggs, how many calories did she gain?

Mike and Terry are stacking egg cartons. Mike stacked 136 cartons and Terry stacked 98 cartons. How many more does Terry need to stack to have more than Mike?

Amy wants to cook breakfast for herself and six guests. She will fry two eggs for each person. How many eggs will she need to fix?



More Eggstra Math

Name ANSWER KEY

Read each problem carefully. Show your work below the egg. Remember to label your answers.

Marvin delivers eggs to grocery stores. He delivered 326 dozen to Roth's IGA, 450 dozen to Fred Meyer, and 298 dozen to Albertsons. How many dozen eggs did he deliver in all?

1,074 EGGS

$$\begin{array}{r} 326 \\ 450 \\ + 298 \\ \hline 1,074 \end{array}$$

There are 80 calories in a large egg. If Mrs. Shell eats three eggs, how many calories did she gain?

240 CALORIES

$$\begin{array}{r} 80 \\ \times 3 \\ \hline 240 \end{array}$$

Mike and Terry are stacking egg cartons. Mike stacked 136 cartons and Terry stacked 98 cartons. How many more does Terry need to stack to have more than Mike?

38 EGG CARTONS

$$\begin{array}{r} 136 \\ - 98 \\ \hline 38 \end{array}$$

Amy wants to cook breakfast for herself and six guests. She will fry two eggs for each person. How many eggs will she need to fix?

14 EGGS

$$\begin{array}{r} 7 \\ \times 2 \\ \hline 14 \end{array}$$

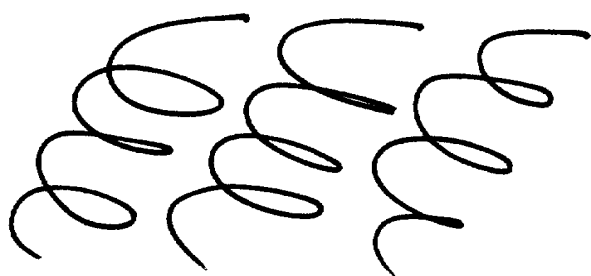
Separation Experiment

Making Meringue

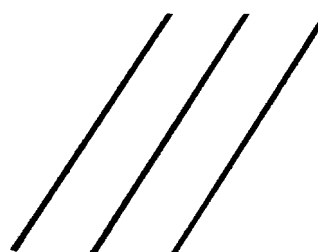
Discussion

The white of an egg is the albumen. It surrounds the yolk in four layers and contains half the protein of the egg, some of the minerals and vitamins, a large quantity of water, and a little fat.

Before egg whites are beaten, they contain curled-up molecules of protein. Beating changes the molecules by unrolling them until they resemble stretched-out fibers. Still attracted to each other, the thread-like molecules form a three-dimensional network. In this structure, the molecules trap the air beaten into the egg white. When cooked, the molecules become rigid, making the structure permanent.



Molecules Before Beating



Molecules After Beating

Classroom Demonstrations

1. Separate the whites from several room temperature eggs and beat them in front of the class. You may wish to have some students help you separate the whites from the yolks. Before beating, try to get the students to guess how long it will take for the whites to “whip up.” Try the experiment again with eggs kept in the refrigerator. Have students determine if temperature has an effect on the expansion of egg whites.
2. Use a clear glass beaker to show what happens when egg whites are boiled in muddy water. Have students watch as the albumen coagulates, trapping the impurities within it.