

**CHICKENS AND THE NUTRIENT CYCLE JOURNAL PAGE**

Name:

Date:

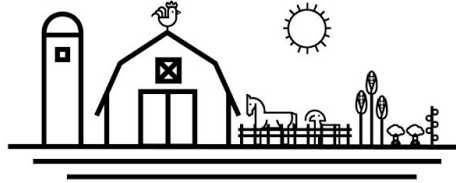
What is the mystery we are trying to solve today?

What do chickens eat?  
Are they herbivores, carnivores, or omnivores?

How are chickens part of the nutrient cycle?

What purpose do chickens serve on the farm?

Draw a picture of the egg you dissect and each of its parts?



## Chickens and the Nutrient Cycle: Egg Dissection Investigation

Name:

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**Objective:** To investigate the parts of an egg

**Driving question:** How does an egg help a chicken (reproduce) make more chickens?

### Materials:

- Chicken egg
- Bowl
- Toothpick (optional)
- Paper towel or second bowl
- Magnifying lens (optional)

- *What is the function of an egg?*
- *What does a growing chick need to survive inside the egg?*
- *What is on the inside of the egg?*
- *What purpose does each part of the egg serve?*

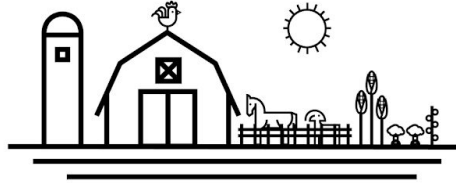
### Do:

1. Let's take a close look at an egg. You can see with your eyes, the bumpy grainy texture of the shell. If you have a magnifying lens, you can see the tiny holes or pores in the shell. There are up to 7000 pores which allow air and moisture to pass through the shell. Before an egg is washed, there is something called a 'bloom' that helps keep bacteria and dust from entering the egg. Once the egg is washed it needs to be refrigerated because the bloom is gone.
2. Carefully tap the egg's hard shell against the table to crack the egg gently to see what's inside.
  - a. Use your fingers to slowly, carefully remove the shell piece by piece.
  - b. See how far you can get before the membrane tears.
  - c. Allow the egg contents to go into a bowl, trying your best to not let the yolk break.
3. You will see the inner and outer membrane. See if you can extract part of the membrane which is very thin, but surprisingly strong and flexible like our skin. The membrane is made of keratin, a protein that's also in human hair. Remove part or all of this membrane and place on a double layer of paper towel or in a second bowl.
4. Look in the shell halves. Locate the air cell or air pocket. It is usually located in the larger end of the shell. When you press on it, you should feel the air bubble.
5. Looking at the bowl with the yolk and albumen. Try to find the division between the thin clear and the thick albumen. Albumen is 90 percent water and 10 percent protein.

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6. How can we tell the difference between the thin and thick albumen? What does it look like? How does the color or consistency change?
7. Locate the chalazae. This should be running under the yolk, either extending out on either side or just one side of the yolk. Using the toothpick, see if you can remove the chalazae without piercing the yolk. Place on the paper towel or in the second bowl. These hold the yolk in the center of the egg like anchors. They are most visible when the egg is freshest.
8. Let's take a look again at the parts of the egg we've seen so far. Here is the shell and the inner and outer membranes. Here is the air cell where gases like oxygen are stored in the egg. The egg cell is created when the egg is laid and as the egg ages, the air cell grows larger which is why older eggs float to the top of the water. Here is the albumen, thick and thin.
9. Now let's look at the yolk. The yolk would be food for the baby chick. Do you see a white spot on the surface of the yolk? This is known as the germinal disc. This is where the baby chick would start to grow if the egg is fertilized and three other conditions are met by either the mother hen or an incubator. The egg would 1. need to be kept warm, right around 100 degrees, 2. be kept within a certain range of moisture, and 3. be rotated regularly.
10. Very gently poke the yolk without breaking it. You can see the vitelline membrane, the clear casing that keeps the yolk all contained. The yolk contains protein, some fat, and vitamins and minerals.
11. Using another bowl to catch the albumen, pour the entire contents of the first bowl through your hand. Be sure to catch the yolk, but let the albumen pass through. Be careful not to break the yolk. Let the yolk roll back and forth between your palms. What does it feel like? What does it remind you of? Eventually the vitelline will become dry and will break and the yolk will break. Congratulations. You have successfully dissected an egg.
12. Now it's time to clean your work area. Make sure to dispose of your egg specimen and paper in the trash can. Clean your bowls and wash, dry, and return any equipment you used. Wipe your table and/or counters down with sanitizing wipes. Wash your hands thoroughly with warm soapy water for 20 seconds or more.

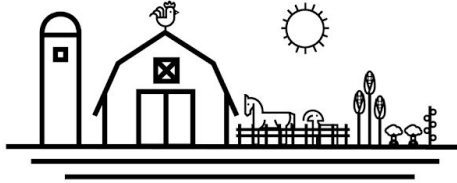
## Reflect:

- *How do eggs help chickens reproduce or make chicks?*
- *Are eggs fragile or strong? Why?*
- *What will you notice if you put an egg in a glass of water?*
- *Why does an egg have each of its parts?*
- *Why does an egg need to be able to 'breathe'?*

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## The Parts of an Egg

Name \_\_\_\_\_

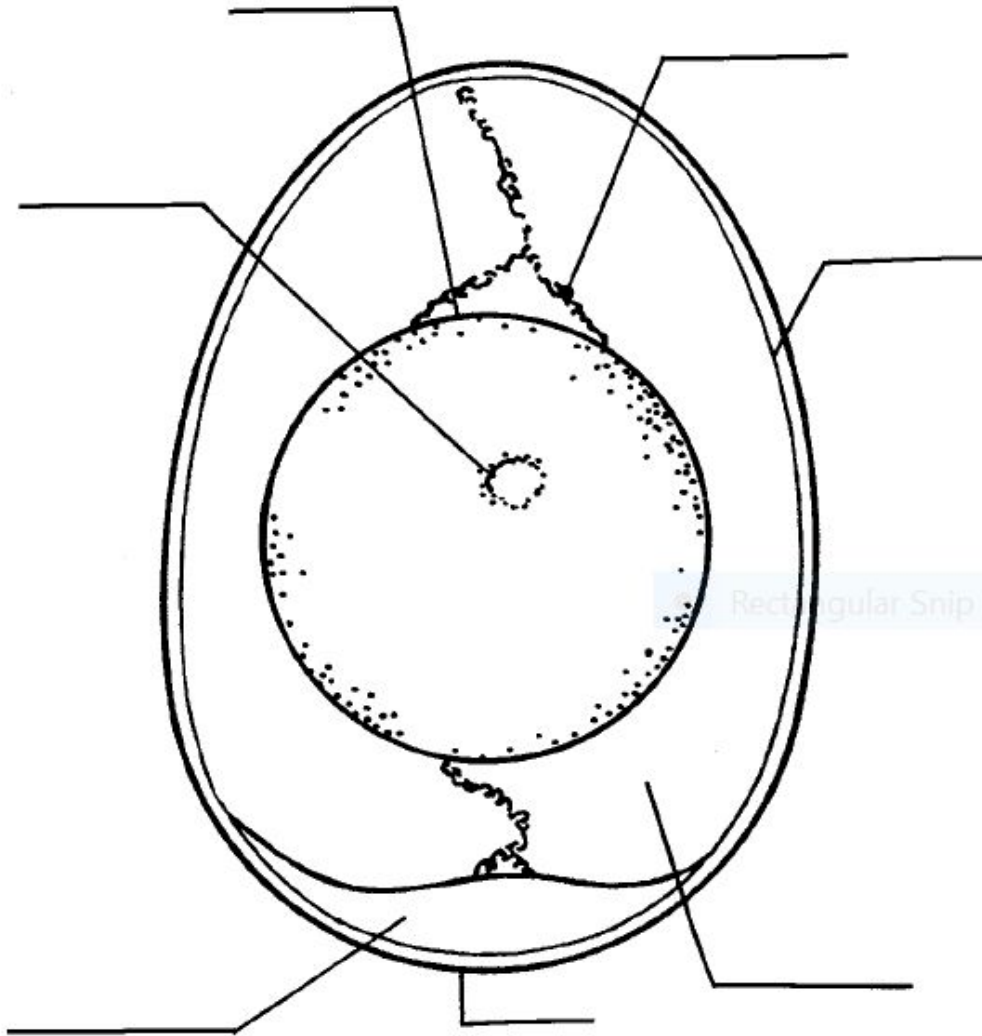
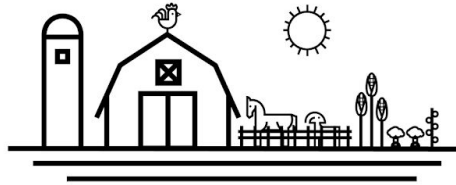


Diagram from The Incredible Egg 4-H Curriculum Guide Oregon State University

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## The Parts of an Egg

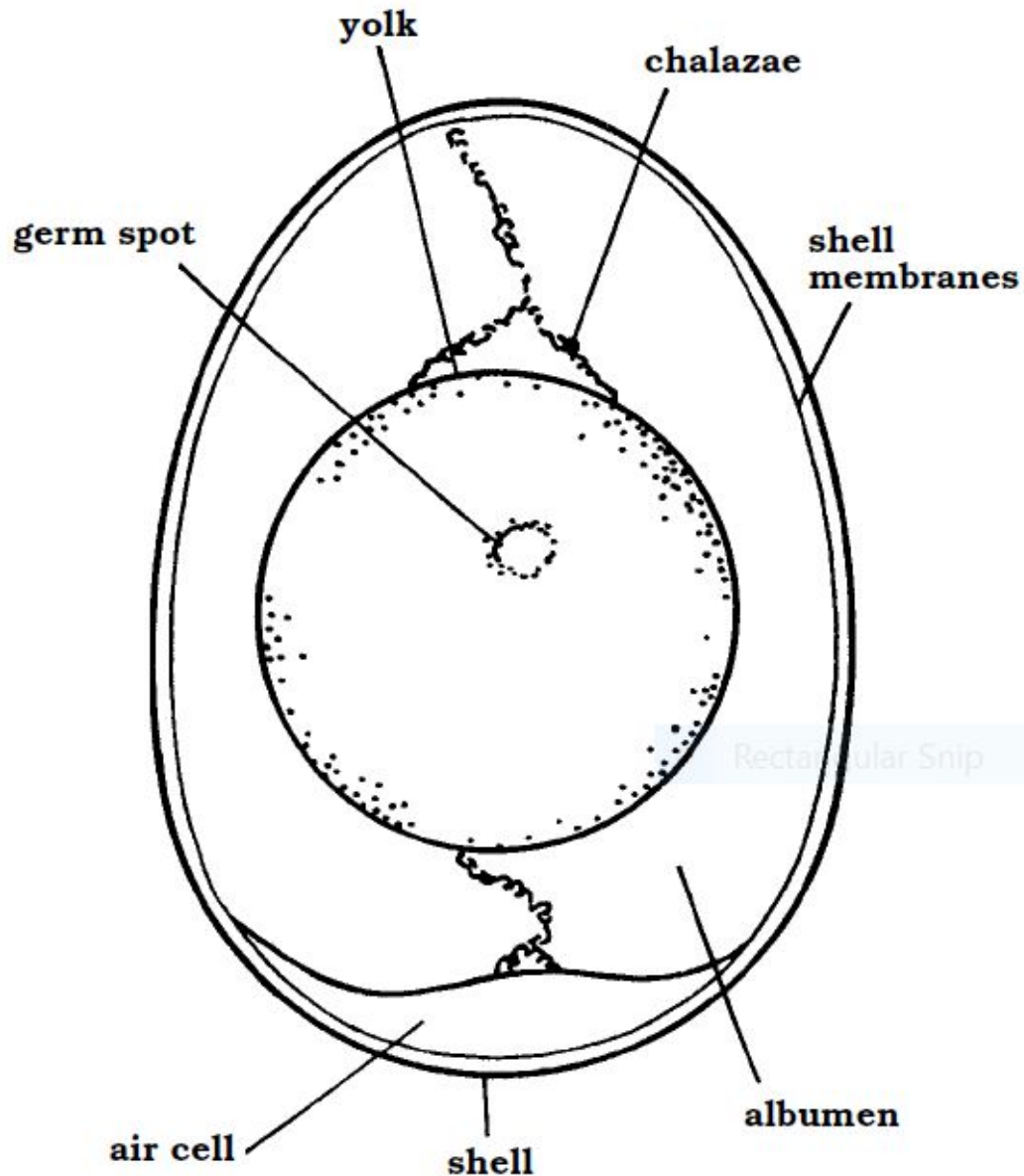


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