

Egg Anatomy

Grade Level: 4-8

Lesson Overview

When you crack open an egg for cooking or baking, do you ever think about the parts inside? What is the actual purpose for each part of an egg? This lesson will have students investigating, identifying, and diagramming each part of the egg—a food ingredient we generally don't think much about beyond the final food product for which they are used.

Student Objectives

1. Name and identify the parts of an egg.
2. Identify and label the functions of an egg.

Materials

- ✓ small paper bowls
- ✓ yarn, string, or permanent marker (optional)
- ✓ plastic wrap or blank transparency sheets
- ✓ Egg Anatomy Diagram
- ✓ Egg Anatomy Worksheets 1-5
- ✓ raw eggs (1 per pair of students, plus a few extra)
- ✓ glue or glue stick
- ✓ scissors
- ✓ tape (optional)
- ✓ 1" X 2-5/8" mailing labels (optional)

Vocabulary

- **air cell** - pocket of air at the large end of the egg where there are more pores; allows for easy air exchange; chick pops the cell before hatching to fill lungs with fresh air.
- **albumen** - clear-like portion of the egg, also called the white; provides water and protein to growing embryo, as well as cushions it.
- **chalaza** - cord-like strand in albumen; anchors yolk in center of the egg; acts like a shock absorber for the developing embryo.
- **egg** - hard-shelled reproductive body produced by a bird and especially by domestic poultry.
- **fertilize** - to make fertile.

- **germ spot** - also called blastodisc; the area where the embryo will begin to grow if the egg is fertilized (then called a blastoderm).
- **shell** - outer covering of an egg, composed largely of calcium carbonate; provides protection and has pores for air exchange.
- **shell membrane** - two paper-like membranes that provide protection from germs and serve as a breathing surface for the embryo.
- **yolk** - yellow portion of the egg; major source of vitamins, minerals and fat; food source for developing embryo.

Background Information

- The shell contains between 6,000 and 8,000 pores.
- The pores permit the passage of air and water to the developing embryo.
- The shell is composed primarily of a porous form of calcium carbonate. The air cell is located in the large end of the egg.
- The chalaza holds the yolk in place.
- The white (albuminis sac) is called the egg membrane.
- The germinal disc is on the surface of the yolk; embryo development will occur here in fertilized eggs.
- Eggs are candled to determine the conditions of the air cell, yolk, white, and to observe germ development.

Procedure

Parts of an egg:

1. Pass out a paper bowl containing a raw egg to each pair of students and a copy of the Egg Anatomy Worksheet 1 to each student.
2. Using the worksheet and teacher-guided discussion, have students identify the parts of the egg on the raw egg and then label them on their worksheet.

Functions of an egg:

1. Pass out copies of Egg Anatomy Worksheets 2-5 on egg structure and a piece of plastic wrap or blank transparency master to each student.

Note: Worksheet #5 is designed to be copied on 1" X 2-5/8" mailing labels but can also be copied on regular paper and cut out by students.

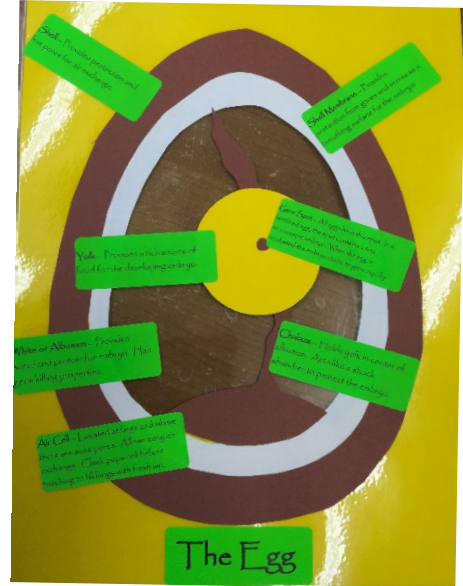
2. Using the Egg Anatomy Diagram, show students what they will be making.

3. Instruct students to cut out the yellow sheet first and tape a piece of plastic wrap, cut to size, or transparency master to the back.

Note: The yellow sheet must not be cut from the outside, as it will become the frame.

An alternative to this step is for the teacher to have the yellow sheets pre-cut and laminated for each student, eliminating the need for plastic wrap or transparency master and tape.

4. Students need to cut out the remaining pieces and glue them to the front (the side with no tape if using plastic wrap or transparency masters), according to the projected model.



Note: It may be helpful to use a box knife to make a slit in worksheets 3 & 4 to make it easier for students to cut on the inside lines and decrease the chance of them cutting through the “frames.”

5. Again, referring to the projected model, glue the square labels (or affix mailing labels) in place.
6. Students should now cut appropriate lengths of yarn and using a dot of glue per end, place pointer between correct label and part or use a permanent marker to draw an arrow.

Extension Activities

1. This lesson coordinates with the Embryology Terminology lesson.

Additional Resources

- <https://www.youtube.com/watch?v=APS8nVaO26k> Parts of an Egg 4-H Learning Network
- <https://www.youtube.com/watch?v=QDv0Nnyb1WA> Parts of an Egg National Agriculture in the Classroom
- <https://www.youtube.com/watch?v=aQHG8bnid1U> Exciting Eggs: Parts of an Egg Penn State Extension

Standards

Illinois Science Standard

MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

Illinois English Language Arts Standard

RST 4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics. L 4 Determine or clarify the meaning of unknown and multiple meaning words and phrases based on grade 6.

The **M**ultidisciplinary **A**gricultural **I**ntegrated **C**urriculum (mAGic) was created in 2004 under the leadership of the Illinois State Board of Education (ISBE) and the Facilitating Coordination in Agricultural Education Project (FCAE). Funding was made available through the FCAE grant budget from the agricultural education line item of the ISBE budget. This revision, as printed, was developed in September 2021.



These mAGic lessons are designed to bring agriculture to life in your classroom. They address the Illinois Learning Standards in math, science, English language arts and social studies.

Poultry mAGic project update writers/reviewers: Rhodora Collins – Dekalb County; Suzi Myers – Kane County; Connie Niemann – Montgomery County; Debbie Ruff – Livingston County; Jennifer Waters – Sangamon County; and Dawn Weinberg – Hancock County.

Egg Anatomy Diagram

Air Cell - Located at large end where there are more pores. Allows easy air exchange. Chick pops cell before hatching to fill lungs with fresh air.

Germ Spot - All eggs have this spot. In a fertilized egg, the spot contains a tiny microscopic embryo. When the egg is incubated the embryo starts to grow rapidly.

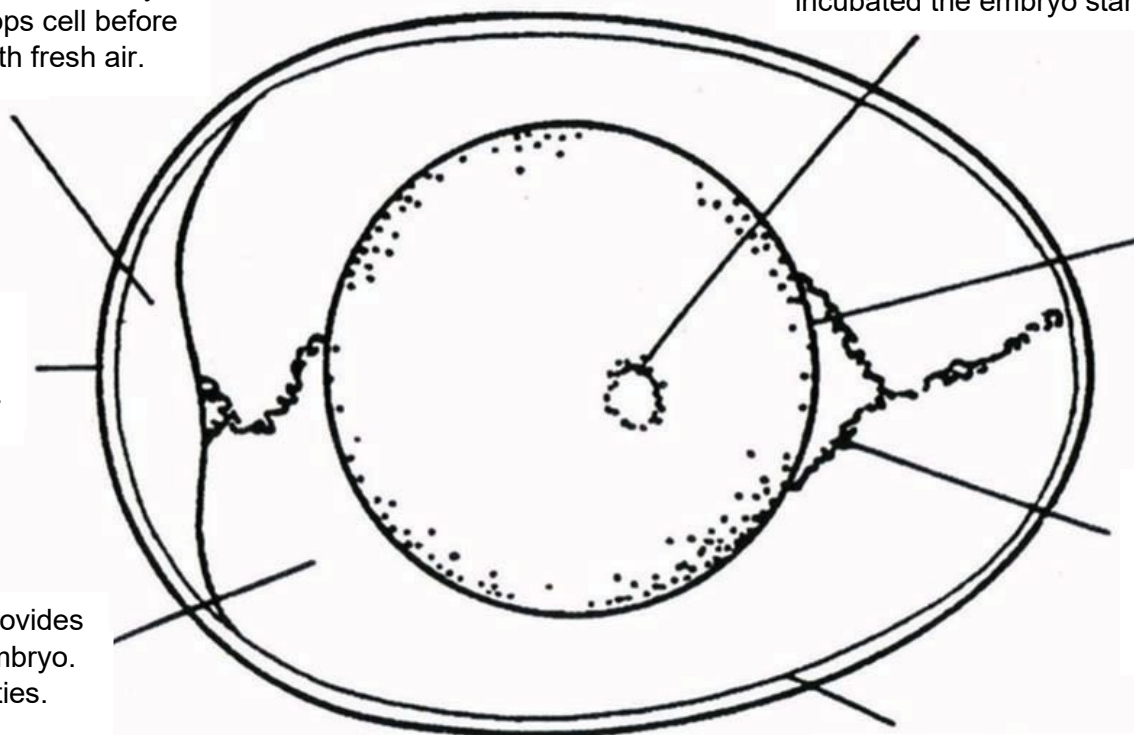
Shell - Provides protection and has pores for air exchange.

Yolk - Provides a rich source of food for the developing embryo.

White or Albumen - Provides water and protein for embryo. Has germ killing properties.

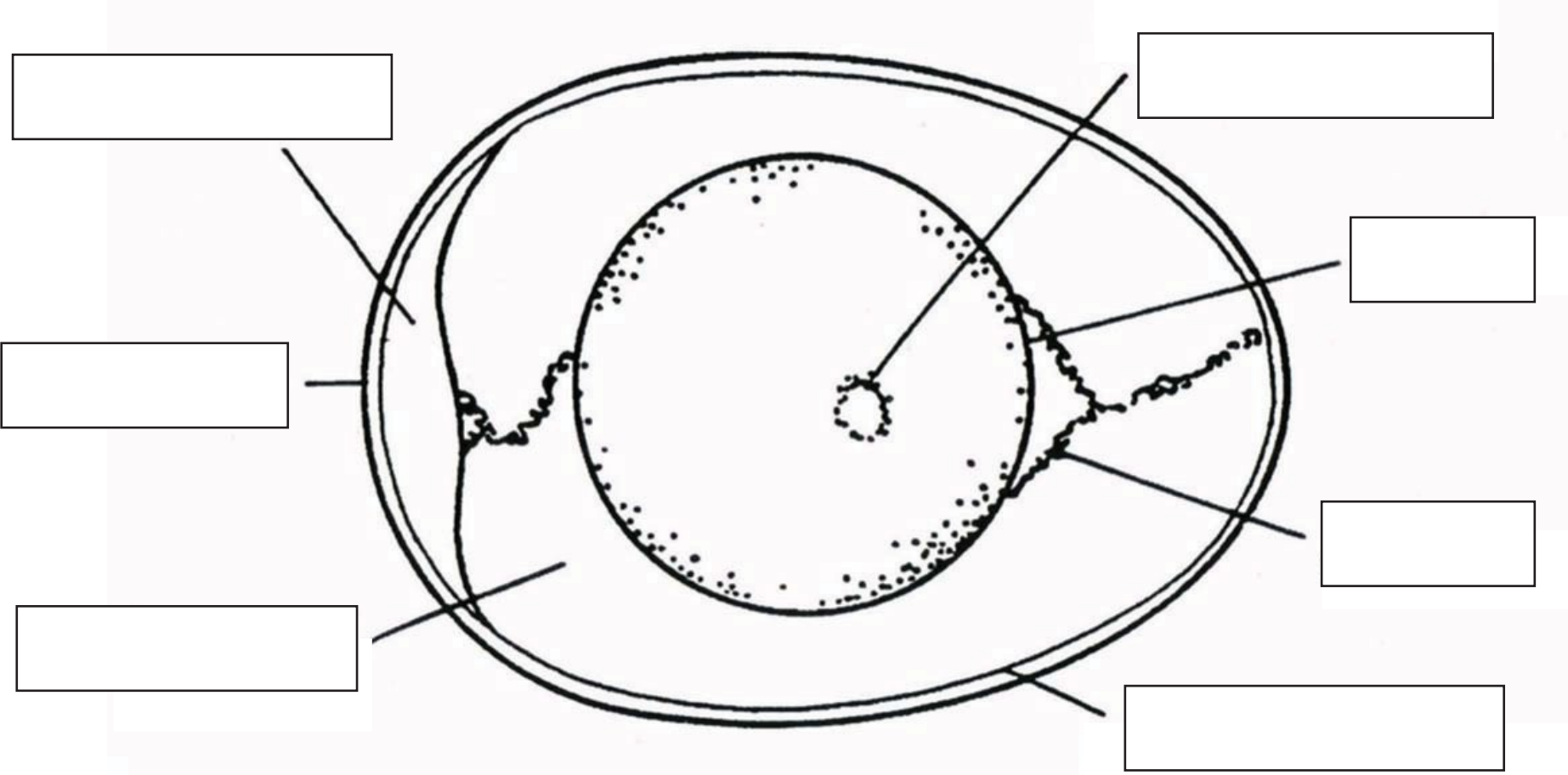
Chalaza - Holds yolk in center of albumen. Acts like a shock absorber to protect the embryo.

Shell Membrane - Provides protection from germs and serves as a breathing surface for the embryo.

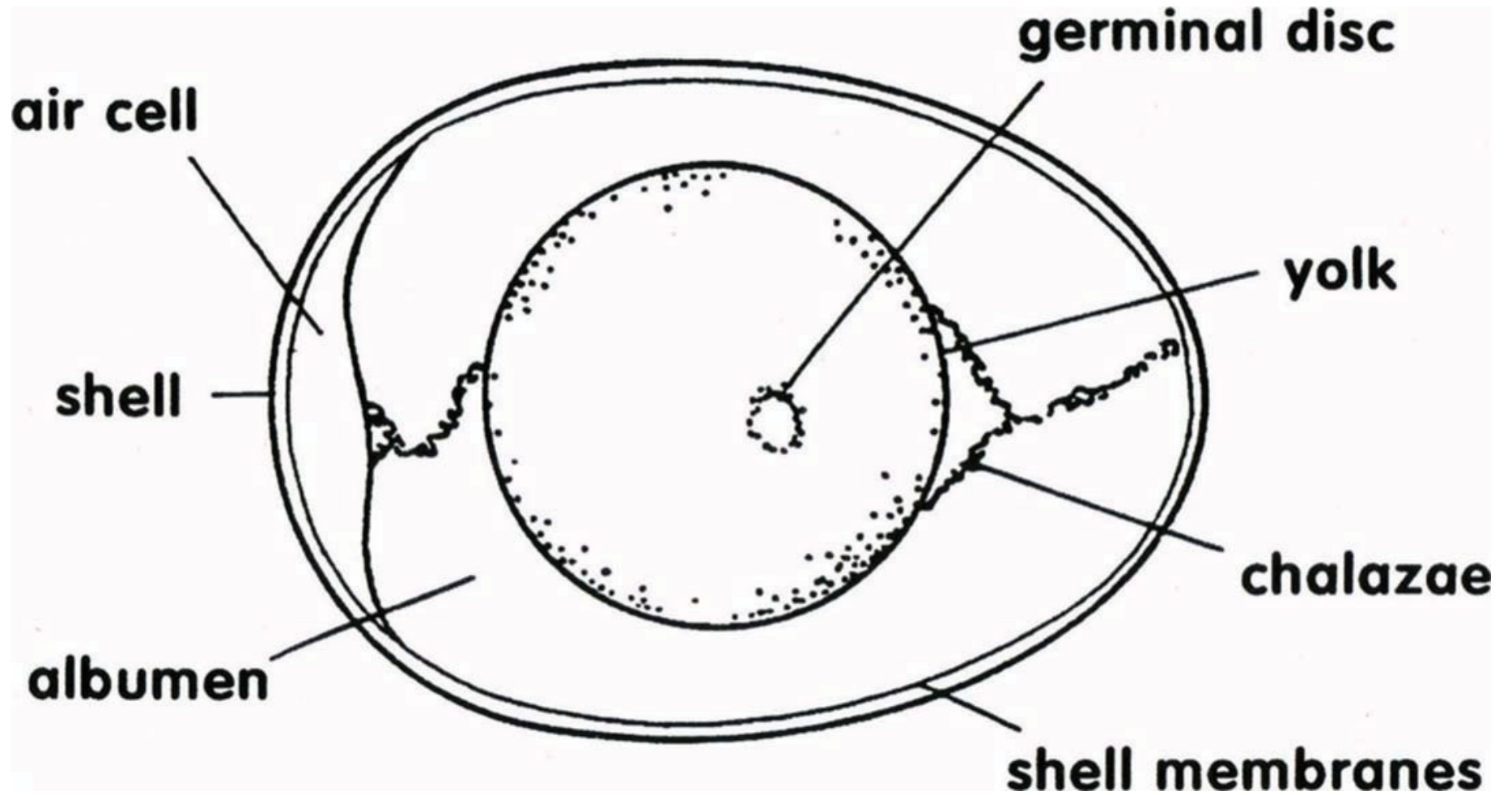


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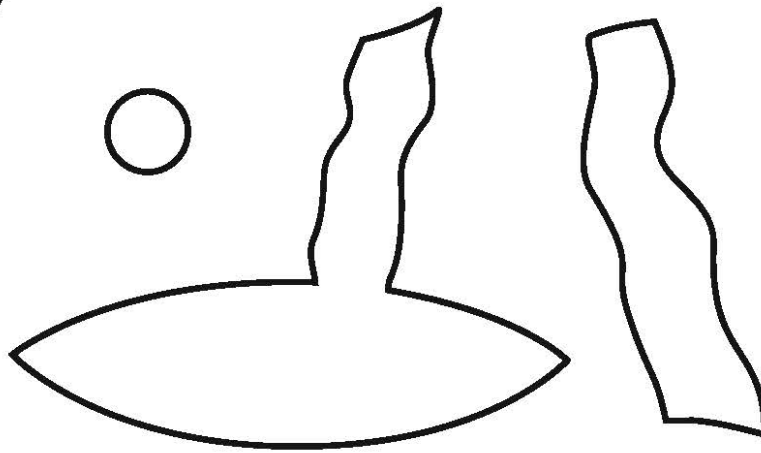
Egg Anatomy Worksheet 1



Egg Anatomy ANSWER KEY

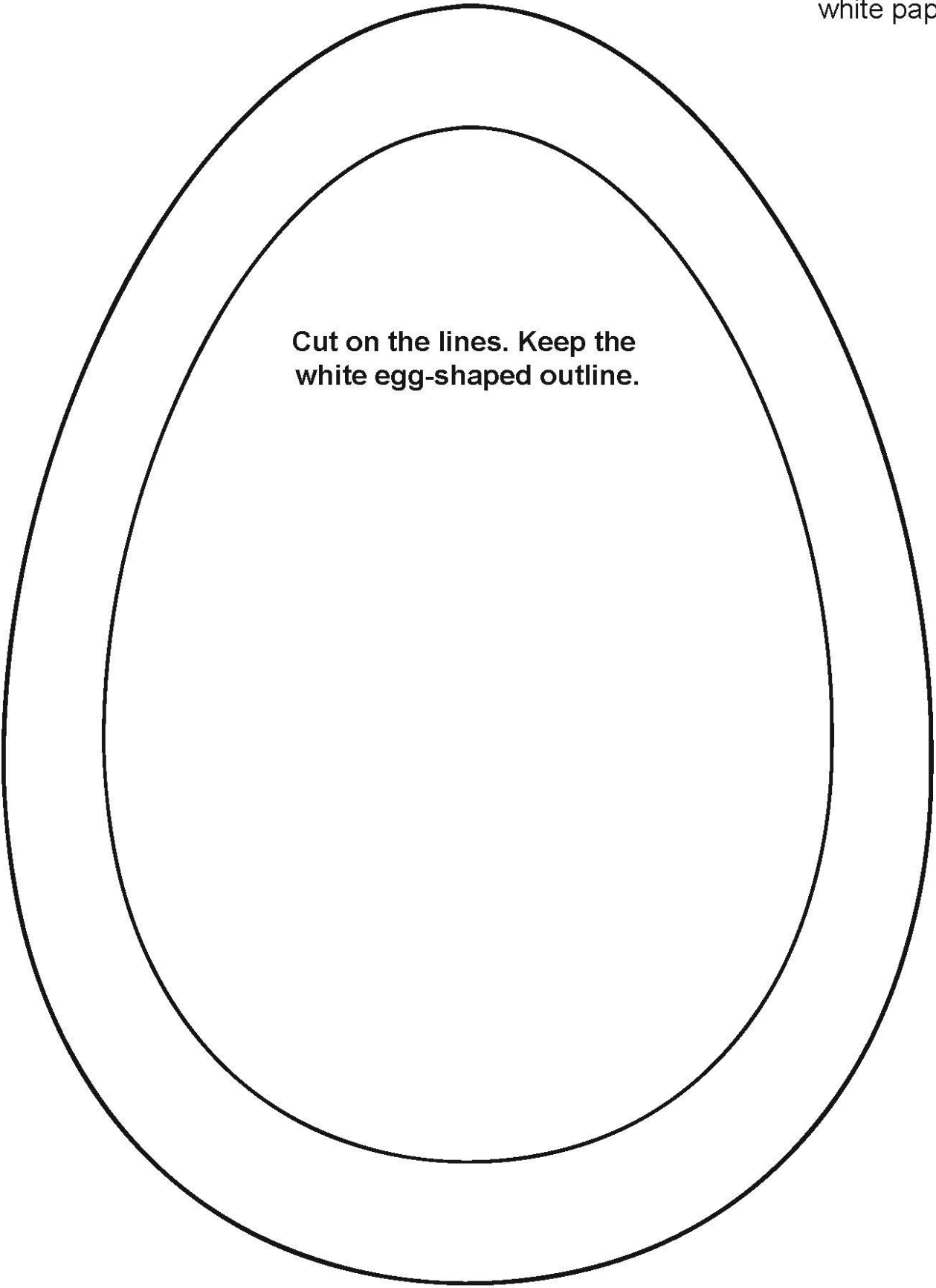


(Copy this page onto
brown paper.)



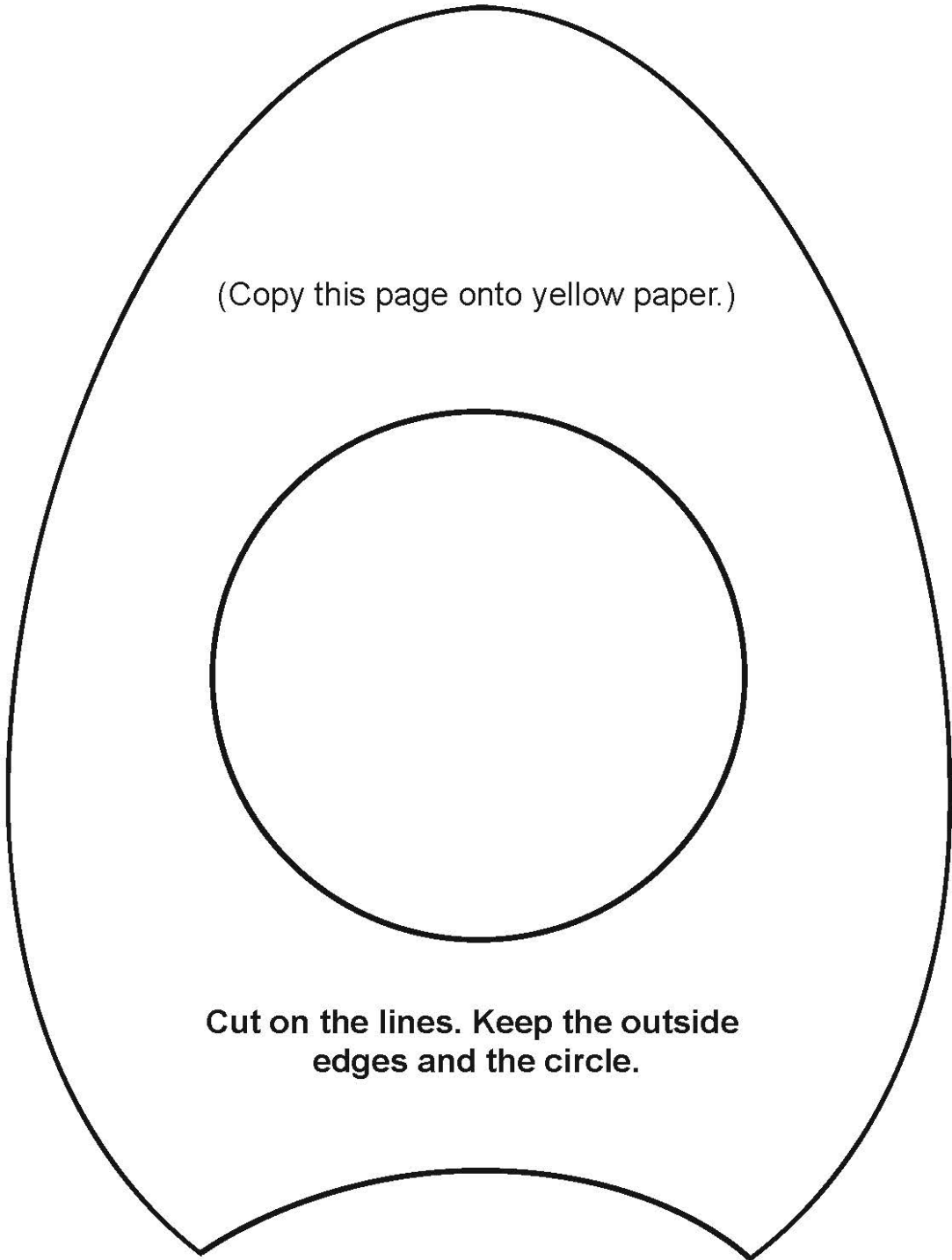
**Cut on the lines. Keep the three small
shapes and the brown, egg-shaped outline.**

(Copy this page onto white paper.)



Cut on the lines. Keep the white egg-shaped outline.

(Copy this page onto yellow paper.)



**Cut on the lines. Keep the outside
edges and the circle.**

The Egg

air cell

found at the egg's larger end where more pores allow easier air exchange. The chick pops the cell before hatching to fill its lungs with air.

albumen or white

provides water and protein for the growing embryo; has germ-killing properties

chalaza

holds yolk in center of the albumen and acts as a shock absorber to protect the embryo

germ spot

All eggs have this spot. In a fertilized egg, the spot contains a microscopic embryo which grows when the egg is incubated.

shell

provides protection for the embryo and has pores for air exchange

shell membrane

provides protection from germs and serves as a breathing surface for the embryo

yolk

provides a rich source of food for the developing embryo

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