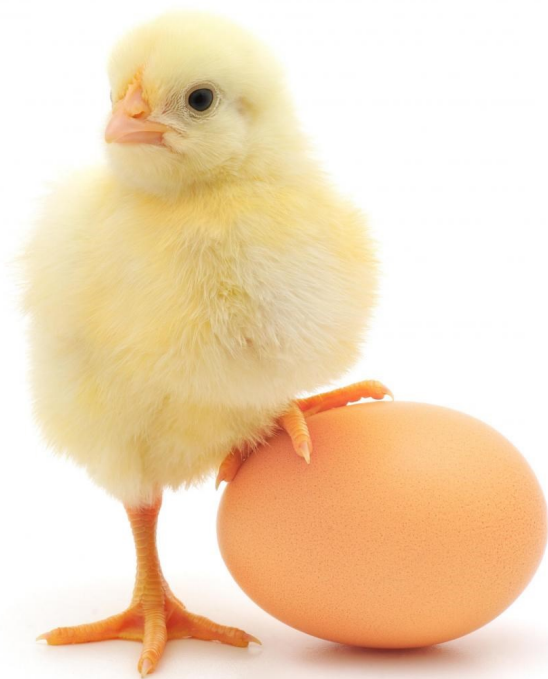




Eggcellent Adventures in Classroom Embryology!



**An Intra-curricular Guide
to Chicken Embryology**



4-H Experiential Learning Model

Current research points to the advantage of authentic instruction, involving “active knowledge construction” by learners, relevance, active feedback on learner progress, ongoing opportunities to re-think and reflect, and highly interactive learning activities (Eccles & Gootman, 2002). 4-H Youth Development has been using active knowledge construction processes through a process called experiential learning for decades.

Why Use Experiential Learning?

- Using multiple senses can increase retention.
- Multiple teaching methods can be integrated to maximize creativity.
- Child-centered learning becomes the focus.
- Discovery of knowledge and solutions builds competence and confidence.
- Youth can learn life skills that will be used, plus subject matter content.
- Learning is more fun!

4-H Youth Development relies heavily upon the five steps of the experiential learning model to teach life skills. The sequential steps of the model help youth identify what they have learned from a 4-H experience or activity and to apply that learning to other experiences or situations.

This model requires that the “teacher/leader” be very clear about the skill or concept targeted and that the experience and the processing questions are designed to support that learner goal. The experiential learning process engages the learners in all phases of the activity, resulting in the ability to generalize this learning to new situations.

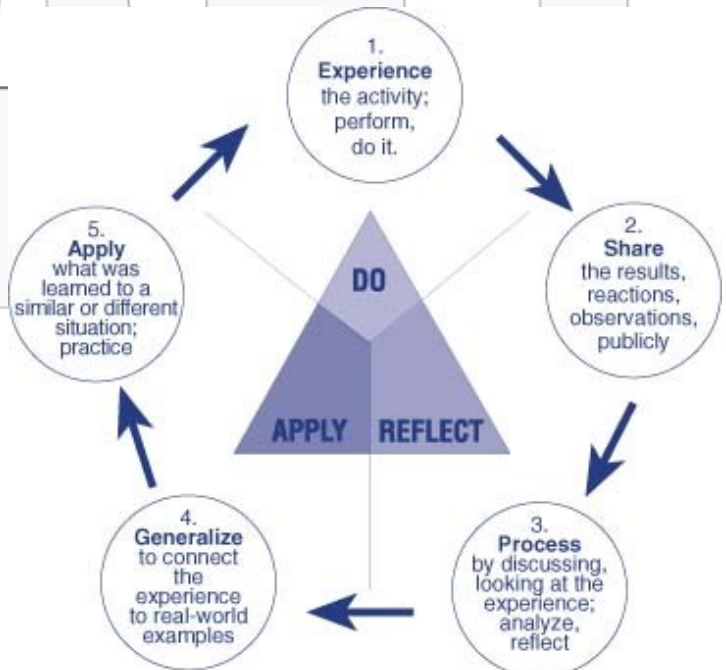


Figure 1: The Experiential Learning Model

Information adapted from: <http://edis.ifas.ufl.edu/4h243>

What you hear, you will probably doubt. What you see, you may possibly doubt. But what you do for yourself, you cannot possibly doubt. -Seaman A. Knapp, Founder of the Extension concept

From: <http://okeechobee.ifas.ufl.edu/Knapp.pdf>

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Embryology 101

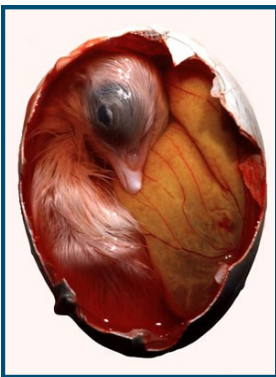
What is chicken embryology and how can I incorporate it into my classroom?

Embryology is the study of how embryos grow and develop. What kinds of things grow and develop from embryos? All plants and animals develop from embryos. Just as a lima bean is the embryo of a lima bean plant, a fertilized chicken egg is an embryo of a chicken.

Chicken embryology in the classroom is about learning through experience. Students see first hand how a chicken develops in an egg through a series of activities. Students can observe the growth from candling sessions that show the development of the chick, they can record data, make predictions, and conclude what they think the final outcome will be.

In most cases, when a teacher signs up to do chicken embryology in the classroom they set up the incubator, set the eggs, wait for them to hatch and that is the experience. This guide has lessons to incorporate into a daily plan to make the chicken embryology experience intra-curricular. The lessons follow Florida Sunshine State Standards and incorporate activities from various sources. Each lesson contains an experience, instructions on how to do the experience, background information if needed and reflection questions. There are a total of 30 lessons for the unit, or approximately two lessons for each day of in-class instruction. Overall lessons address agricultural literacy and science concepts, and they also address math, language arts and visual arts.

How long is this unit? What does it require of me as a teacher?



Chicken Embryo at day 16.
<http://www.oqbbb.com/chicken-embryo-development/chick-embryo.html>

It takes chicks approximately 21 days to hatch from start to finish. Typically a unit on chicken embryology is a minimum of 15 instructional days. The lessons will only include the days that youth are in the classroom. The unit can also be made longer as desired.

As the teacher, this project comes with a great amount of responsibility, but don't let that scare you away! This is a very rewarding experience for both the instructor and youth involved. This unit requires taking care of chicken eggs, an incubator, and eventually baby chickens. The eggs and incubator require frequent monitoring and once the chicks hatch they require special care as well. In addition, when the experience is over teachers are responsible for cleaning equipment and returning everything just as it was given to them.

Chick Journal

Using a Chick Journal

A chick journal is a great way for students to document and record what they learn over the period of the project. A chick journal can be as simple as a pocket folder with fasteners to hold worksheets/sheets of notebook paper from activities. It can also be as fancy as a printed up workbook with the lessons included. This is all flexible based on the needs and resources of the class. It is encouraged that the students are at least incorporating what they are learning in the varying subject areas throughout the project for retention. In addition, the chick journal is a great way for youth to show their parents what they are doing in class. Having students use the journals is a great way to focus their enthusiasm about the project. For example, students constantly want to check the incubator and eggs, having them document the results daily will not only help you as the teacher remember data, but if they have a task they are to complete they may be less likely to interrupt other classmates and/or the teacher about the incubator.

Additional Resources Available for the Classroom Experience:

1. Classroom Poster- This poster is a great way to let the school know that you are participating in the embryology project! Post it on your door to let everyone know! (link)
2. Postcard- This postcard is to be sent home with students to let their families know what the students are doing in the classroom. (link)
3. Safe Handling Poster- This poster is a guide to help students and teachers remember the safe handling procedures when it comes to eggs and chickens. (link)
4. Post-Letter- This letter goes home to families to tell them that the embryology experience may be over, but there is more in 4-H that is available!
5. Evaluation- This evaluation is tool geared to demonstrate the outcomes and impacts that the embryology program has in the classroom. Without an evaluation, how can we prove that the program is good?!

Sample Schedule for Embryology Lessons			
Day	Lesson	Time	Who Teaches
1	Introduction to Embryology*	45 min to 1 hr	Agent
2	What is Embryology?*	1 hour	Teacher
	Parts of Egg**		
3	Chick Development**	20 min	Teacher
	Chick Growth**		
4	21 Days song**	1 hr	Teacher
	Egg Production*		
5	Candled Egg**	1 hr to 1.5 hrs	Agent
	Pick-A-Chick**		Teacher
6	Chicken Breeds**	45 min	Teacher
7	The Little Red Hen**	1 hr	Teacher
	The Magic Egg**		
8	Eggciting Fractions	25 min to 1 hr	Teacher
	What is Temperature?***		
9	What Happened?	45 min to 1 hr	Teacher
	Egg Word Search**		
10	Eggceptional Products	30 min to 45 min	Teacher
	Baby Chick**		
11	Eggcellent Vocabulary**	30 min to 1 hr	Teacher
	Pecking Protein		
12	Eggciting Criss-Cross Puzzle**	30 min to 45 min	Teacher
	Make-A-Word**		
13	Fact or Opinion**	1 hr to 1.5 hrs	Teacher
	Pecking Order		
14	Eggstraordinary Fractions	1 hr	Teacher
	Eggciting Writing		
15	Eggcellent Vocabulary II**	1 hr	Teacher
	Create an Egg**		
	Evaluation*** Submit to Agent		

*Indicate lessons that ensure basic information for embryology. ** Indicates lessons that go with chick journal.

Embryology Basics

Basic Information on Chicken Embryology

It takes 21 days for chicks to hatch.

Hatching rates all depend on the factors of **temperature, humidity, egg position and air exchange** being precise and maintained.

- **Temperature:** The temperature for a forced-air incubator is 99.5°F and 101° to 103° for a still-air incubator with the bulb of the thermometer at the TOP of the eggs.

Be sure that the incubator is not in direct sunlight or drafts or subject to other conditions that may alter the temperature. The best room temperature for incubators is between 75°F and 80°F.

- **Humidity:** Humidity helps the eggs from drying out. Relative humidity should be 60% for the first 18 days and then increased to 65%-70%.
- **Egg Position:** The more pointed end of the egg should point down (the air cell should be at the top).

Eggs must be turned routinely throughout the day so the developing embryo does not stick to the shell. Turning the eggs in different directions prevents twisting of the embryonic membranes. An odd number of turning times prevents the eggs from being in the same position each night. This can also be easier if an egg turner is used; which is removed on the 18th day.

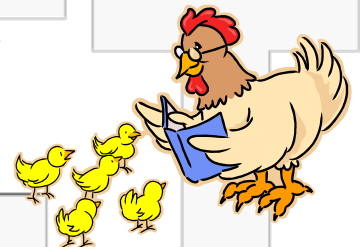
- **Air exchange:** Make sure that all hands are washed before handling the eggs. Oils from human skin can reduce air exchange.

Using lights to see inside eggs, or candling, should occur on or around days 7, 14, and 18.

Always keep in mind, not all eggs will hatch. In addition, not all chicks will hatch out all the way. **DO NOT** help a chick out of its shell. If it is not strong enough to get out of the shell it is not strong enough to survive!

It is imperative that chicks stay in the incubator until they are completely dry and fluffy.

Do not let students handle baby chicks. Handling increases the risk for their survival in the first few days.



Depending on the embryology program incubators, egg turners, brooder boxes, and other supplies may be provided. In many cases, just incubators are provided to the classrooms. It is suggested that if you plan on participating in the program frequently invest in your own supplies to ensure that all the equipment is always functioning at its best.

Breakdown During Incubation

Day 0- 1: The first 24 hours. Cells start dividing at the germinal disc, circulation system, digestive system, vertebrae, and nervous system begin.

Day 2: Eye is appearing, visible vertebral column, ears begin, embryonic membrane forms to prevent sticking, and heartbeat begins.

Days 3-4: Allantois begins to form, limbs, lungs, outer/middle ear begins to form. The tongue and esophagus start to form, the embryo separates from yolk sac, kidney begins, gizzard and large intestine begin to form.

Days 5-6: Reproductive system begins, first cartilage present, appearance of beak, voluntary movement, allantois and chorion lay against shell.

Days 7-10: Digits appear, comb begins, egg tooth begins, feather tracts appear, mouth opening appears, beak begins to harden, digits are completely separated.

Days 11: Abdominal walls are established. Intestine becomes more visible, down feathers begin to appear. Comb and wattles are visible, there are scales and claws on toes.

Days 12-13: Allantois completes enclosure of egg contents. The cartilaginous skeleton is almost complete.

Days 14-15: Embryo begins to turn head toward large end of egg. Ossification or hardening of the bones begins. Intestines can now be seen in the yolk sac.

Within the first six hours kidney-like cells are beginning to form!

Day 16: Beak, claws, and scales are making keratin, the albumen is practically gone and the yolk is an important food source. Down feathers are covering the body and the intestines are retracting into the body.

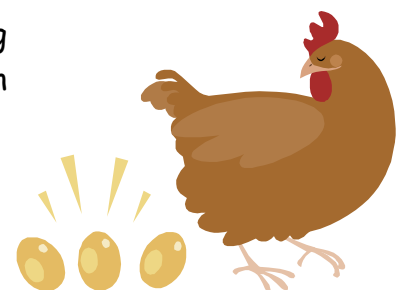
Days 17-18: Head toward large end under the right wing, beak towards the air cell. Definitive feathers begin. On day 18 the egg turner is removed if present because turning is no longer needed.

Day 19: Intestinal retraction is complete, yolk sac begins to enter body, beak may pierce air cell, some lung functions.

Day 20: Yolk sac has completely drawn into the body, the air cell has been pierced, pulmonary respiration begins. The embryo can be heard making sounds. May pip shell

Day 21: Hatching begins! Remember this can be a fast or long process. Don't help chicks out, they can sometimes take more than 24 hours to hatch out!

Wilson, H., Ouart, M., Douglas, C., & Mather, F. (1990). *Incubation, Embryo Development, Display, and Baby Chick Care*. Gainesville, FL: Institute of Food Agricultural Sciences.



What our AGENT will do! Checklist

- Deliver and set up the incubator in a safe area and start running it 48 hours before eggs are to arrive.
- Prepare the students a few days before the project begins. Help them understand the meaning of incubation and embryology. Introduce the chick science journal to record data.
- Discuss what the class wishes to accomplish and what role they will play in reaching the goals of the project. This includes preparing calendars and other project resources.
- If your class plans to incubate eggs, prepare the eggs for incubation. Turn the eggs three times daily.
- Keep water pans full at all times. Always add water that is warm to the touch.
- Keep daily records of all activities involving the eggs (i.e., turning, temperature, water added, candling, and other activities). These records are extremely helpful for trouble-shooting causes of poor hatches.
- Candle the eggs every three days to check progress.
- Stop turning eggs three days (after 18 days for chicken eggs) prior to expected hatch.
- Prepare brooder box at least two days prior to expected hatch.
- Remove the chicks from the incubator and place them in a warm brooder within two to six hours after they hatch.
- Remove and discard all remaining unhatched eggs 60 hours after the first chick hatches, then disconnect incubator power.
- Clean and disinfect the incubator as soon as the power is disconnected.
- Let the incubator dry. Then store it in a cool dry place or prepare for it to be picked up.

Have students keep records throughout the project as well. It not only helps them to make observations, but can help you if you miss a time to write down observations.

Reference: Renner, R.L., *4-H Embryology*. Gainesville, FL: Florida cooperative Extension Service/IFAS/ University of Florida.

TEACHER Planning and Scheduling

- Set up the incubator in a safe area and start running it 48 hours before eggs are to arrive.
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STUDENT ROLE

- Keep daily records of all activities involving the eggs (i.e., turning, temperature, water added, candling, and other activities). These records are extremely helpful for trouble-shooting causes of poor hatches.

Fill out your Chick Science Journal

- Record the temperature of the incubator each time the eggs are turned
- Wash your hands before handling eggs or the incubator
- Record the number of infertile eggs, embryos that die and number of eggs broken open for observation.
- Remove infertile eggs and dead embryos as soon as they are observed. This is done by candling . (Dead embryos give off poisonous gases that could affect the other developing embryos)
- Candle eggs on the 4th, 6th, 10th and 16 days or every three days. Record observations in your chick science journal.
- Turn the eggs three times daily.
- Keep water pans full at all times. Always add water that is warm to the touch.
- Stop turning eggs three days (after 18 days for chicken eggs) prior to expected hatch.
- Prepare brooder box at least two days prior to expected hatch.
- Remove the chicks from the incubator and place them in a warm brooder within two to six hours after they hatch.
- Remove and discard all remaining unhatched eggs 60 hours after the first chick hatches, then disconnect incubator power.
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- Let the incubator dry. Then store it in a cool dry place or prepare for it to be picked up.

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What is Embryology?

Language Arts

Time: 25-30 minutes

Sunshine State/Common Core **Standards:**

LACC.3.RI.1.1. Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

Objective:

The student will be able to recollect information from a given text and answer questions.

Materials:

What is Embryology? Informational Text Journals Critical Thinking Comprehension

Activity:

Life Skills:

Experience

1. Have youth individually read the following information about embryology and answer the questions at the end. Then discuss the passage and answers with the class.

What is Embryology?

Embryology is the study of how embryos grow and develop. Embryos are plants or animals in the process of developing. What kinds of things grow and develop from embryos? Just as a lima bean is the embryo of a lima bean plant, a fertilized chicken egg is an embryo of a chicken. You are learning how a chicken develops in an egg.

First of all chicken eggs are usually hatched on the farm with a mother hen. In your case you are hatching baby chickens in your classroom, where you cannot have the mother hen sit on the eggs. You need an incubator to hatch the eggs in your class. An incubator is a box that provides and maintains a favorable environment for hatching fertile eggs. Four factors are very important to insure the success of hatching fertile eggs in an incubator. They are temperature, humidity, ventilation, and turning the eggs regularly. Temperature is the most important of these factors. Humidity is the measure of moisture, or water, in the air while ventilation is movement of fresh air through the incubator. Turning each egg several times daily prevents the embryo from sticking to the shell.

What is Embryology?

To set up your incubator you must consider the four factors mentioned above as well as location. The location of your incubator should be placed so that it is free from drafts of air and direct sunlight. Temperature is most important when considering the effectiveness for a good hatch. Ventilation from the incubator, provides oxygen for the embryo to develop while the gases given off by the embryo need to be removed. The ideal temperature in a still-air ventilated incubator is 100 degrees. Lastly, turning eggs is important from the second to the eighteenth day. All eggs should be turned a minimum of three times per day.

Questions: Answer on your own sheet of paper.

1. What did you learn by reading the text?
2. What are the four factors that are important for hatching eggs?
3. What is the ideal temperature for hatching eggs?
4. How many times should eggs be turned each day? Why do we turn the eggs?
5. Why do the eggs need to ventilate?
6. Do our bodies ventilate? If you so, how does this happen? What helps provides ventilation for our bodies?

Keep these words in mind for your future Vocabulary Activity!

- Embryo
- Fertilize
- Incubator
- Fertile
- Humidity
- Ventilation

Parts of the Egg

Science

Time: 10 minutes

Sunshine State/Common Core **Standard:**

SC.3.L.14.1: Describe structures in plants and their roles in food production, support, water and nutrient transport, and reproduction.

Objective:

The student will be able to identify and label the parts of an egg when provided a diagram of the egg after a class activity and discussion.

Materials:

Egg Paper Plate

Life Skills:

Communication Observation

Activity:

Experience

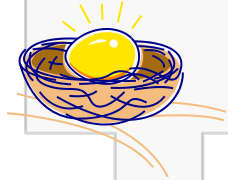
1. Ask youth the following:

What do you think the inside of an egg looks like? Almost all of us have seen an egg one time or another. What is in the center of the egg called? (Yolk). What color is it? (Yellow/orange) What is the clear stuff around the yolk called? (The white or albumen.) Discuss in further detail that the white is the albumen if needed.

2. Crack open egg onto paper plate (*if you have an elmo this is a great way to show the class all at once*).

Says Let's crack open this egg and look at the insides.

What is the yolk? (The center yellow circle). **Can you see the albumen?** **Do you see the white twisted string like things holding the yolk in place?** (That is the chalaza (pronounced kuh-lay-zuh). The chalaza is the "seatbelt" for the yolk so that it doesn't roll around in the egg and stays in place when the egg is moved. If we look at the inside of the eggshell we will see something that looks like white skin, which is the membrane. This membrane also helps to make the air cell at the top of the egg. **Can you see where the air cell is?** While we are talking about membranes, there is another membrane that goes around the yolk. It is called the vitelline membrane. The vitelline membrane is a clear casing that protects the yolk, or vitelline. It is kind of hard to see but it holds the yolk in the circle shape that it is. Next is the germinal disc. The germinal disc is a slightly white spot on the yolk that will hopefully develop into a chick. Eggs that are not fertilized have a slight coloration that is harder to see. **Can you see the germinal disc?** Lastly, let's look at the shell. The shell is the hard part that is the outer part of the egg. It protects all of the parts on the inside and is made of calcium.



Parts of the Egg: Part 2

Objective:

The student will be able to identify and label the parts of an egg when provided a diagram of the egg after a class activity and discussion.

Materials:

Crayons/Colored Pencils Parts of the Egg Worksheet

Life Skills:

Critical Thinking Recollection of Material

Experience

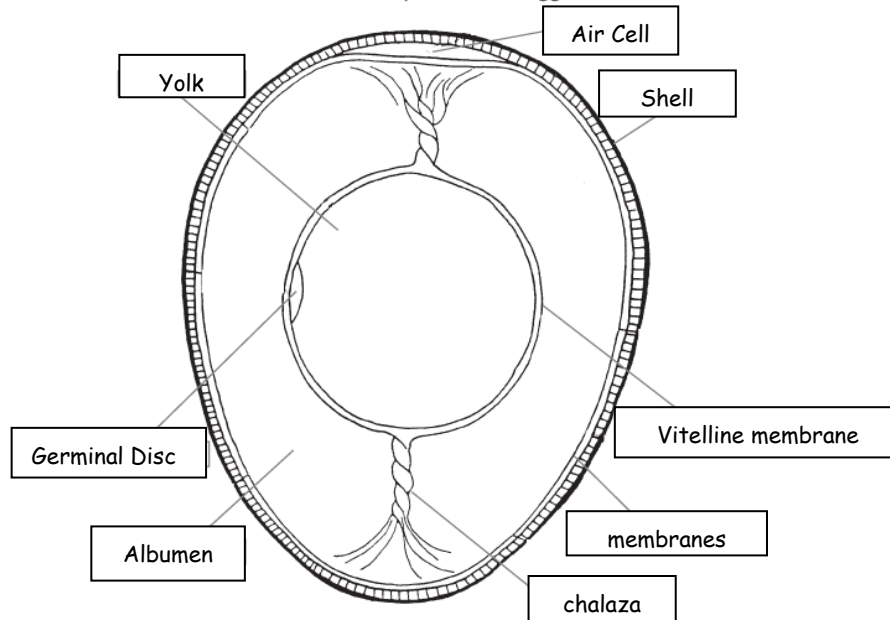
1. Pass out copies of the Egg Parts worksheet.

Say: Now that we have gone over the parts of the egg, here is a worksheet for you to color and fill in the blanks of the parts of the egg.

Answer Key

Egg Parts

Color each part of the egg a different color and label each part of the egg.



Use each word only once:

air cell
germinal disc
vitelline membrane

albumen or white
membranes
yolk

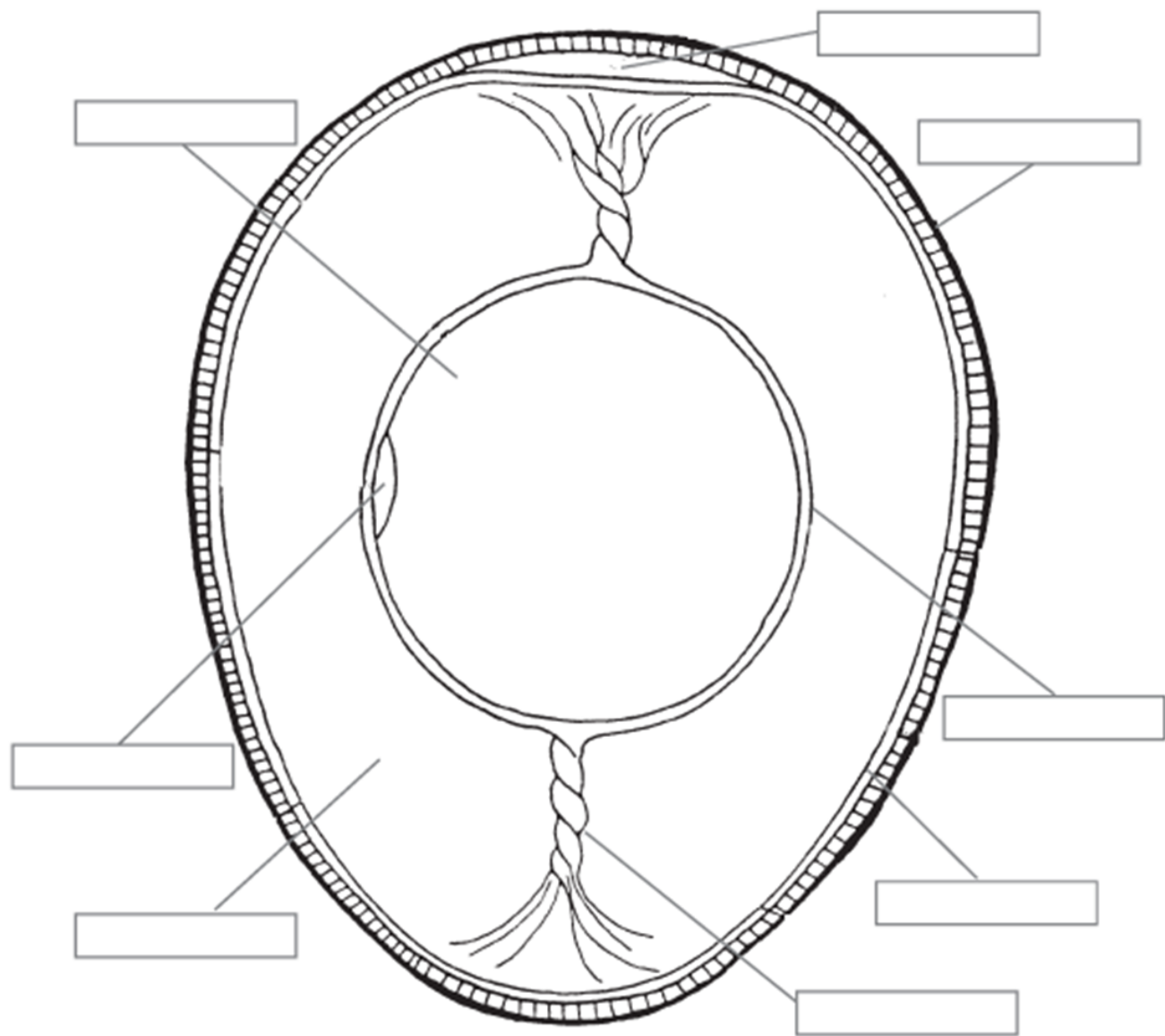
chalaza
shell

This worksheet is a part of the Incubation and Embryology Project (<http://www.urbanext.uiuc.edu/eggs>). University of Illinois Extension, 1999.

Name: _____

Egg Parts

Color each part of the egg a different color and label each part of the egg.



Use each word only once:

air cell
germinal disc
vitelline membrane

albumen or white
membranes
yolk

chalaza
shell

Chick Development

Science

Time: 25-30 minutes

Sunshine State/Common Core Standards:

SC.3.L.15.1: Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.

Objective:

The student will be able to make predictions about how chicks develop and compare with the appropriate life stages of a chick as it develops in an egg.

Materials:

Chick Calendar Journals

Keeping Records Critical Thinking

Chickoscope Website (<http://chickscope.beckman.uiuc.edu/explore/embryology/>)

Activities:

Life Skills:

Experience: Exploring the Development of Baby Chicks

You know that we have baby chicks (hopefully) developing in eggs in our incubator.

1. Ask youth: **How do you think they develop? Do the feathers grow first? What about when they get their beak?** List youth's predictions on the board.

2, We are going to explore how a baby chick develops by looking at the Chickoscope and our development calendars. With the Chickoscope, look at pictures in color and discuss major development details. For example, look at the development from early on, days 3-6, and then later on like days 15-18. Discuss items developing such as the brain, heart, wings, or feathers, this doesn't have to be in depth. Use it as an opportunity to show that there is a difference from the beginning to the end of development. Have students write down in their journals and then discuss what things they see that are different from the beginning to end.

Questions:

1. What did you predict? What did you see happen? Was your prediction correct?
2. What was the most exciting part of seeing the development of the baby chick?

Chick Growth

Science

Time: 25-30 minutes

Sunshine State/Common Core **Standards:**

SC.3.L.15.1: Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.

Objective:

The student will be able to differentiate the appropriate life stages of a chick as it develops in an egg.

Materials:

Chick Calendar Journals Chick Growth Worksheet Keeping Records Critical Thinking Sharing
Chickoscope Website (<http://chickscope.beckman.uiuc.edu/explore/embryology/>)

Life Skills:

Activities:

Experience: Chick Growth Worksheet

1. Share with youth:

The goal of this assignment is for students to be able to tell how living things change.

We know what baby chicks look like in the egg while they develop. But can we tell the difference between chicks that are in early development from chicks in late development? Let's do this activity to find out.

2. Have youth work individual on the How do living things worksheet. Then ask youth to pair up to compare their answers. Review as a whole group and ask the class the following questions:

1. How could you tell the differences in the stages?
2. What differences are there in a chick in the end stages of development from one in the beginning?
3. What happens to the embryo, the yolk, the vitelline membrane, the albumen?

Chick Growth

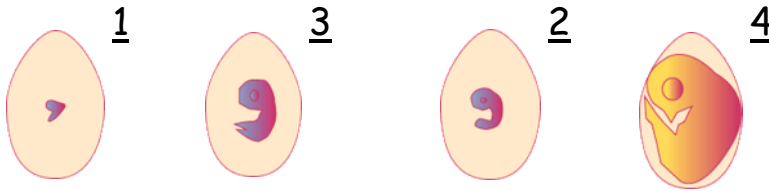
Name: _____









Answer Key:

How Do Living Things Change?

Directions: Put the chicks in the eggs in the right order, from youngest to oldest. The oldest is 4 and the youngest that came first is 1.

Example:



3	2	1	4
			
1	4	2	3
			

Chick Growth

Name: _____

How Do Living Things Change?

Directions: Put the chicks in the eggs in the right order, from youngest to oldest. The oldest is 4 and the youngest that came first is 1.

Example:

1



3

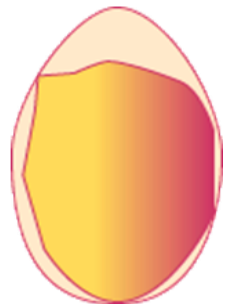


2



4







21 Days Song

Music

Time: 25-30 minutes

Sunshine State/Common Core **Standards:**

MU.3.S.1.2: Create an alternate ending to a familiar song.

Objective:

The student will be able to listen to a song and create a new ending to the song with the help from classmates.

Materials:

Youtube accessibility Speakers Journals

Life Skills:

Sharing Communication Cooperation Social Skills

Activities:

21 Days Song

1. Go to: <http://www.youtube.com/watch?v=pVWxgwyxsUU>
2. Listen to the song as a class, discuss the parts of the song. Have the students get into groups of four and write either a new ending or add another stanza to the song. What happens next?

Questions:

1. What did you enjoy about the song?
2. What did your group think was most important to add to the song?
3. What new informational did you learn about embryology?

Egg Production

Social Sciences

Time: 20 minutes

Sunshine State/Common Core **Standards:**

SS.3.G.1.1: Use thematic maps, tables, charts, graphs, and photos to analyze geographic information.

Objectives:

The student will be able to locate the top 10 egg producing states on a given map and explain why chicken egg production is located in the top 10 egg producing states.

Materials:

Map of the United States

Sticky Notes Numbered 1-10 Copies USA Map Handout

Activity:

Experience: Egg Layer Production

1. Ask youth the following questions: Where do the eggs we get from the grocery store come from? (Farms). That's right, but where are the farms that the eggs come from located?
2. Let's find out: Share the map of the United States. Share the list of the top 10 egg layer producing states in the United States for the year 2012 (see below- you can update this by going to: www.nass.usda.gov/Charts_and_Maps/Poultry/eggmap.asp).
3. Ask youth to raise their hand when a state is called out and give them a sticky note with a number that represents how many layers or egg producing chickens there are per state. Have youth place the sticky note on the map.
4. Ask youth to mark on their own map (handout) by placing a number 1, 2, 3, or etc. We will start at number 10, which produces the least out of the 10. I call the states out,

10. Georgia- 8,492,000 layers

9. Nebraska- 9,245,000 layers

8. Minnesota- 9,359,000 layers

7. Michigan- 12,188,000 layers

6. Texas- 14,671,000 layers

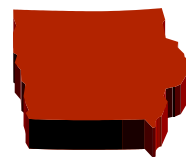
5. California- 19,092,000 layers

4. Pennsylvania- 23,683,000 layers

3. Indiana- 25,802,000 layers

2. Ohio- 27,944,000 layers

1. Iowa- 51,504,000 layers



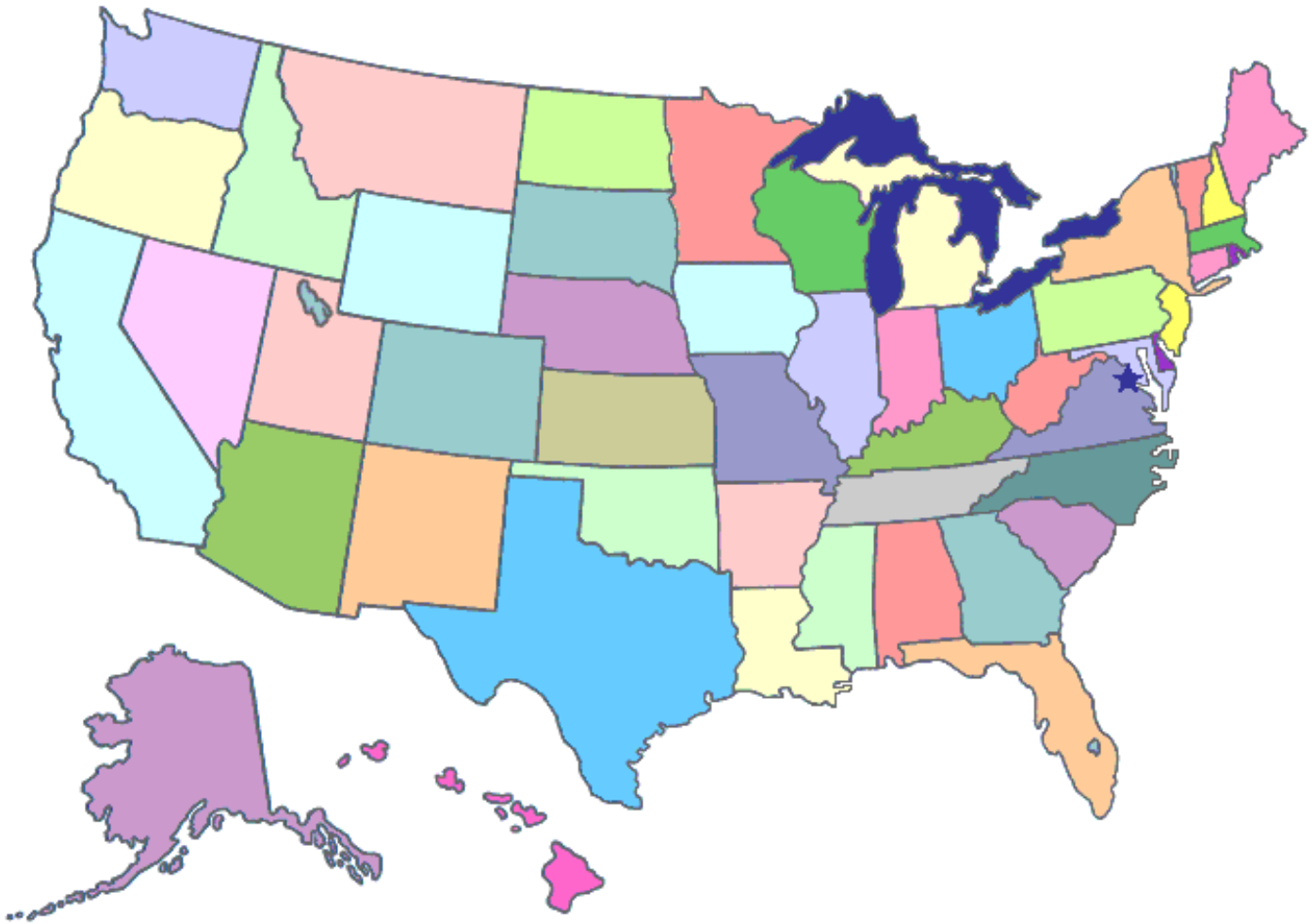
Life Skills:

Critical Thinking Geographical/Spatial Skills

Egg Production

Name: _____

Map of United States



Top 10 Egg Layer States

- | | |
|----|-----|
| 1. | 6. |
| 2. | 7. |
| 3. | 8. |
| 4. | 9. |
| 5. | 10. |

Why do you think that some states produce more egg laying chickens than others? Why is/isn't our state on this list?

Candled Egg

Science

Time: 25-30 minutes

Sunshine State/Common Core **Standards:**

SC.3.N.1.3. Keep records as appropriate, such as pictorial, written, or simple charts and graphs, of investigations conducted.

Objective:

The student will be able to make predictions, record data from candling eggs and draw what the chick and/or egg looked like.

Materials:

Journals Flashlight
Elmo (optional)

Life Skills:

Keeping Records Observation

Activities:

Experience: Journal (See pg.5)

1. This activity can occur periodically throughout the 15 days, every 3-4 days or as suggested on pg. 7.
2. Every student in the class must have a chance to see a candled egg. You may be able to use a mobile phone's flashlight with the lights off under an Elmo (if available) to show all of the class at once. This activity consists of watching the embryo move and see how it has developed. Having students draw the chick on each occurrence will show the difference like the worksheet on pgs. 19-21.
3. Tell students: Today we are going to take a look at the inside of our eggs and see how our baby chicks are developing. I want all of you to pay close attention. You will need to write down what you see and then draw a big picture of the egg. After you have drawn what the baby chick inside the egg looks like write a prediction or hypothesis about what you think the chick will look like the next time we candle the eggs.

Questions:

1. What was the most interesting thing that we looked at with the chicks?
2. What do you think will happen next in the development of the chick?

Pick-A-Chick

Art
minutes

Time: 30-45

Sunshine State/Common Core **Standards:**

VA.3.C.1.1. Use the art-making process to develop ideas for self-expression.

Objective:

The student will be able to evaluate breeds of chickens and create their own breed.

Materials:

Journals Examples of Chicken Breeds

Drawing supplies or other art supplies

Life Skills:

Critical Thinking Teamwork Cooperation Sharing

Activities:

Experience: Pick-A-Chick

1. Ask students to think about the different breeds of chickens (it may be helpful to have some examples printed out or bring some up online from the APA American Poultry Association). **Ask: What are some of the traits, or characteristics that they have? Ask: What advantage or disadvantage would having these characteristics have for chicken and for the farmer?**
2. Ask students: **Why would you choose an Americana breed of chicken?** (Because it is a good egg layer. Answers will vary). Share that different breeds were "bred" for different reasons.
3. Ask youth to come up with the characteristics they would want in your own breed of chicken. Provide students with drawing materials or other art supplies so youth can either draw or create their own chicken that have the desired characteristics. The characteristics should have advantage for both the chicken and the farmer. Work with a partner and then we can share our chicken breeds with the class. Ask youth to name their "new breed of chicken."

Questions:

1. Why did you choose the breed of chicken you chose?
2. What advantages does the bred have for the chicken and the farmer?
3. What are some important traits to have for a chicken that lays eggs?

Chicken Breeds!

Science

Time: 25-30 minutes

Sunshine State/Common Core **Standards:**

SC.3.L.15.1: Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.

Objective:

The student will be able to differentiate breeds and sexes of chickens and compare and contrast their characteristics.

Materials:

Similarities and Differences worksheet Computer Projector

Life Skills:

Compare/Contrast Critical Thinking

Activities:

Experience 1: Chicken Breeds!

1. Go online to: <http://www.mypetchicken.com/chicken-breeds/breed-list.aspx> or search American Poultry Association (APA) list of chickens online. Choose some breeds to look at with students and talk about their characteristics, also compare male to female chickens.
2. Share with students that there are different types or breeds of chickens, white, spotted, brown, black, red, and even mixed colored and they all have different characteristics. There are also male and female chickens that have different characteristics too. This can be based on the level of your students, a discussion on the chicken breeds given on the worksheets can take place, or you can choose different breeds as long as you are discussing the characteristics that they have and the different characteristics the male/females have.
3. Have students work in pairs to work on the **Similarities and Differences worksheet**. After the students have completed the worksheet discuss the similarities and differences in chicken breeds and sexes. Discuss egg characteristics too (available on website). Is the hen a good layer? What do the eggs look like?

Chicken Breeds!

Name: _____



Similarities and Differences

Directions: Compare and contrast the characteristics of chicken breeds and sexes.

Contrast:

Black Australorp



Frizzle



Contrast:

Compare:

Contrast:

Rooster



Hen



Contrast:

Compare:

How similar are all four chickens? How different are they? Please explain.

Chicken Breeds!

Science

Time: 25-30 minutes

Sunshine State/Common Core **Standards:**

MACC.3.MD.2.3: Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories.

Objective:

The student will be able to interpret data and organize it in a frequency table and solve problems.

Materials:

Chicken breeds! Worksheet

Life Skills:

Critical Thinking Problem Solving Mathematics

Activities:

Experience 2: Chicken Breeds Bar Graph!

1. Share with students that the class has looked at the differences in chicken breeds and sexes. Ask youth which breed they liked best?
2. Ask youth if they were to pretend that we are going to be chicken farmers which of these three breeds should we choose:

White Leghorn, Rhode Island Red or Frizzle? Have students think about why they would want this breed:

Would they want them for eggs?

Do the hens make good mothers?

Do they do well in Florida conditions?

What about for show? Some people have special chickens that they raise to show the breed in competition like the fair. Ask youth if they have ever seen chickens at the fair? They are there to compete for a prize.

3. Ask students to vote for the breed Then have them fill out the Chicken Breeds worksheet.

Answer Key

Name: _____



Chicken Breeds!

Directions: Use the information provided to create a frequency table and answer the questions related to the table.

The students in your class voted for their favorite chicken breeds. They put the information in a frequency table. How many more students chose Frizzle over Rhode Island Red?

_____ 2 _____.

How many students chose White Leghorn Chickens over Frizzles? What about Rhode Island Reds?

_____ 2. 4. _____

Favorite Chicken Breeds	
Breed	Tally
White Leghorn	/
Frizzle	/
Rhode Island Red	

What numbers are you comparing? How many students chose a certain breed of chicken over another breed of chicken.

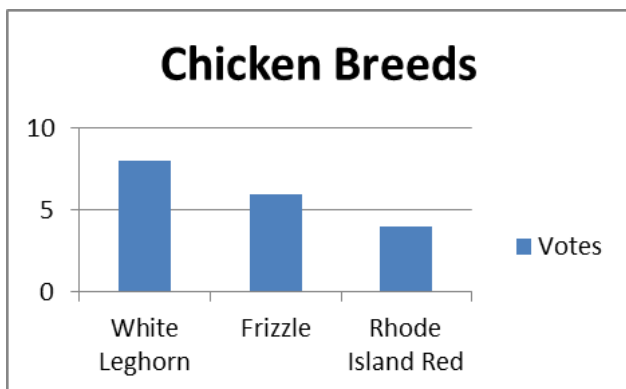
What information do you need to use? The tally marks of how many students chose White Leghorn, Frizzle, or Rhode island red chickens.

What do you need to find? What breed our class wanted most for our chicken farm.

How will you use this information? To see which breed our class wanted most.

Why are you using this information? To find what chicken breed our class wanted for our future chicken farm.

Draw a bar graph of the information from the frequency table.





Name: _____

Chicken Breeds Worksheet !

Directions: Use the information provided to create a frequency table and answer the questions related to the table.

The students in your class voted for their favorite chicken breeds. They put the information in a frequency table. How many more students chose Frizzle over Rhode Island Red?

_____.

How many students chose White Leghorn Chickens over Frizzles? What about Rhode Island Reds?

_____.

Favorite Chicken Breeds	
Breed	Tally
White Leghorn	
Frizzle	
Rhode Island Red	

What numbers are you comparing? _____

What information do you need to use? _____

What do you need to find? _____

How will you use this information? _____

Why are you using this information? _____

Draw a bar graph of the information from the frequency table.



The Little Red Hen

Language Arts

Time: 25-30 minutes

Sunshine State/Common Core Standards:

CCSS.ELA-Literacy.RL.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

CCSS.ELA-Literacy.RL.3.2 Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.

CCSS.ELA-Literacy.RL.3.3 Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events.

Objective:

The student will be able to identify the main characters, feelings of the characters, the setting, and overall thoughts of the story, *The Little Red Hen*, with 90% accuracy based on class discussion, and journal entry.

Materials:

Journals Crayons/Coloring Pencils

Life Skills:

Comprehension Critical Thinking Problem Solving Conflict Resolution
Reading/Comprehension

Experience: The Little Red Hen

From EnchantedLearning.com

1. Share with students that you will be reading the Little Red Hen. Ask students to listen carefully as they will be asked to identify and describe the main characters, the setting and the motivation of the characters.

Once upon a time, there was a little red hen who lived on a farm. She was friends with a lazy dog, a sleepy cat, and a noisy yellow duck.

One day the little red hen found some seeds on the ground. The little red hen had an idea. She would plant the seeds.

The little red hen asked her friends, "Who will help me plant the seeds?"

"Not I," barked the lazy dog.

"Not I," purred the sleepy cat.

"Not I," quacked the noisy yellow duck.

"Then I will," said the little red hen. So the little red hen planted the seeds all by herself.

When the seeds had grown, the little red hen asked her friends, "Who will help me cut the wheat?"

"Not I," barked the lazy dog.

"Not I," purred the sleepy cat.

"Not I," quacked the noisy yellow duck.

"Then I will," said the little red hen. So the little red hen cut the wheat all by

The Little Red Hen

"Not I," quacked the noisy yellow duck.

"Then I will," said the little red hen. So the little red hen cut the wheat all by herself.

When all the wheat was cut, the little red hen asked her friends, "Who will help me take the wheat to the mill to be ground into flour?"

"Not I," barked the lazy dog.

"Not I," purred the sleepy cat.

"Not I," quacked the noisy yellow duck.

"Then I will," said the little red hen. So the little red hen brought the wheat to the mill all by herself, ground the wheat into flour, and carried the heavy sack of flour back to the farm.

The tired little red hen asked her friends, "Who will help me bake the bread?"

"Not I," barked the lazy dog.

"Not I," purred the sleepy cat.

"Not I," quacked the noisy yellow duck.

"Then I will," said the little red hen. So the little red hen baked the bread all by herself.

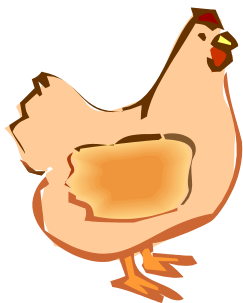
When the bread was finished, the tired little red hen asked her friends, "Who will help me eat the bread?"

"I will," barked the lazy dog.

"I will," purred the sleepy cat.

"I will," quacked the noisy yellow duck.

"No!" said the little red hen. "I will." And the little red hen ate the bread all by herself.



The Little Red Hen

Discussion

Who was the main character in the story? The little red hen.

Who were the other characters? The lazy dog, sleepy cat, and noisy yellow duck.

What was the setting? A farm.

What did the little red hen do? She planted seeds, cut the wheat, took the wheat to be milled into flour, and baked the bread.

Why did the little red hen tell the lazy dog, sleepy cat, and noisy yellow duck they could not eat the bread? Because she did all of the work to make the bread (answers may vary).

How would that make you feel if you were the little red hen? Answers will vary.

If you were the little red hen what would you have done differently? How could you have changed the other animals' minds about helping? Answers will vary.

Take It Further For Agricultural Literacy:

Explore how bread is made, see if any of these books are in your library!

Bread, Bread, Bread by Ann Morris

Bread Comes to Life by George Levenson

Tony's Bread by Tomie dePaola

Everybody Bakes Bread by Norah Dooley

Journal

Draw the story in your chick journal.

It can be the whole story, the end of the story, or just the main parts of the story.

The Magic Egg

Writing

Time: 35 minutes

Sunshine State/Common Core **Standards:**

LACC.3.W.1.3: Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

Objectives:

The student will be able to write a narrative story with details, transitional words, and in proper five paragraph format.

Materials:

Journal

Activity:

Life Skills:

Critical Thinking Relating

Writing Prompt

The Magic Egg

1. Tell students:

You have received a mysterious package from a friend. Inside is a very unusual egg.

Write a story about what happens next. What does the egg look like? Does the egg hatch? What is inside it? Provide a small illustration at the end.



Prompt and image from k12reader.com



Writing Prompt

You have received a mysterious package from a friend. Inside is a very unusual egg. Write a story about what happens next. What does the egg look like? Does the egg hatch? What is inside it? Draw your egg at the end of your story.

Eggciting Fractions!

Mathematics

Time: 30 minutes

Sunshine State/Common Core **Standard:**

CCSS.Math.Content.3.NF.A.1 Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.

Objective:

The student will be able to make predictions about hatching percentages utilizing fractions to see what the possible outcome could be on a worksheet after classroom discussion.

Materials:

White Board Fraction Worksheet Critical Thinking Problem Solving
Dry Erase Markers

Life Skills:

Activities:

Experience: Fractions with Eggs

1. Share with Students:

We know that fractions are parts of totals. For example, if we have 6 apples and 3 are red apples and 3 are green apples that 3 out of 6 apples are either red or green.

(This can also be taken further to say the $3/6$ is equivalent to $1/2$ if the material has already been learned)

Let's think about what is in our incubators, if we have 26 eggs in our incubators and 18 have a baby chick in them what is the fraction? ($18/26$).

2. Provide additional examples of numbers on the board. Some examples are:

12 out of 15 eggs hatched

16 out of 20 chicks hatched on the 20th day

7 out of 10 eggs had a chick inside when candled

2 out of 12 eggs were dropped

3. Have students work on their **Eggciting Fractions worksheets** and then compare answers.

Answer Key

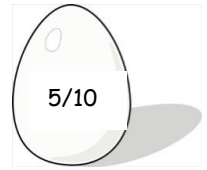
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Eggciting Fractions!

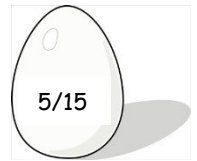
Directions: Write the fraction in the egg provided to the right.

Example: 5 eggs are cracked out of the 10 eggs in the incubator.

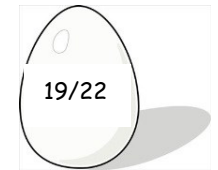
What is the fraction?



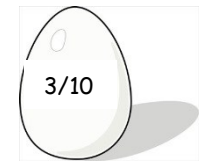
1. 15 chicks hatched and 5 eggs did not hatch. What is the fraction?



2. A total of 22 eggs are in an incubator, if 19 of the eggs hatch what is the fraction?



3. 3 out of 10 eggs are cracked and did not hatch. What is the fraction?



4. Ms. Davis accidentally dropped 4 eggs when she was candling them. There were a total of 17 eggs in the incubator to start. What is the fraction?



5. 18 eggs hatched into chicks on the 20th day, and those chicks are now in the brood-er box, 7 have started hatch-ing, but are not out yet. What is the fraction?

18+7=25; 7 out of 25 have not hatched.



Making Predictions:

How many eggs are in your incubator?

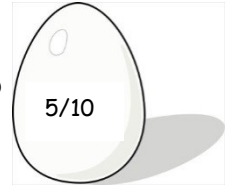
How many do you think will hatch? What is the fraction?

Name: _____

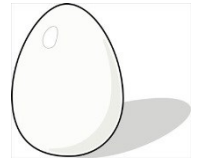
Eggciting Fractions!

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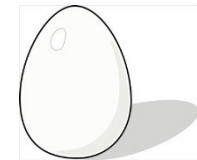
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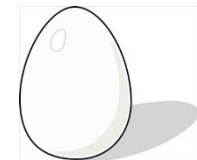
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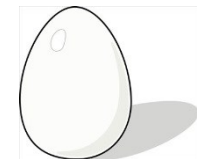
2. A total of 22 eggs are in an incubator, if 19 of the eggs hatch what is the fraction?



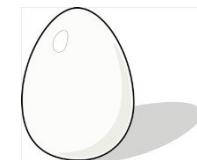
3. 3 out of 10 eggs are cracked and did not hatch. What is the fraction?



4. Ms. Davis accidentally dropped 4 eggs when she was candling them. There were a total of 17 eggs in the incubator to start. What is the fraction?



5. 18 eggs hatched into chicks on the 20th day, and those chicks are now in the brooder box, 7 have started hatching, but are not out yet. What is the fraction?



Making Predictions:

How many eggs are in your incubator?

How many do you think will hatch? What is the fraction?

How many do you think will not hatch? What is the fraction?

What is Temperature?

Science/Math

Time: 25-30 minutes

Sunshine State/Common Core **Standards:**

SC.3.P.8.1: Measure and compare temperatures of various samples of solids and liquids.

MACC.K12.MP.5.1: Use appropriate tools strategically.

Objective:

The student will be able to measure temperature by using a thermometer in a variety of settings.

Materials:

Thermometers Journals Cups of water Incubators

Life Skills:

Critical Thinking Compare/Contrast

Activities:

What is temperature?

1. Share with students that temperature is the measure of how hot or cold something is. Say: When you are sick you use a thermometer to tell your temperature, how much of a fever, or how hot your body is. The incubators have to be a certain temperature to keep the chicks in the eggs developing. **Who can tell me what that temperature is?** (100 degrees Fahrenheit.)
2. In the United States we use Fahrenheit to measure temperature for weather, cooking, and for body temperature. However, in the other parts of the world and in science Celsius is used to measure temperature. (In case they ask: Fahrenheit, created by German Scientist Daniel Gabriel Fahrenheit, used salt water as his 0 degree point. Meaning that when salt water freezes a mercury thermometer will read 0 degrees. 32 degrees is when fresh water freezes and 212 degrees is when water boils. Celsius, invented by Swedish Astronomer Anders Celsius, is based on freshwater freezing at 0 degrees and 100 degrees is when water boils.)
3. Tell students: Let's check the temperature in the incubator and record our data on our **How Hot or Cold Is It worksheet**. Let's also check some other areas in the classroom. We could see how hot the hot water out of the bathroom faucet is or how cold the cold water coming out of the water fountain is, how cold or hot our classroom is, and see if the temperature in the incubator changes, or fluctuates.

What is Temperature?

Name: _____



How COLD or HOT is it?

Directions: Using a thermometer, measure items in your school to find out how hot or how cold they are. If you can think of more to measure fill them in in the bottom rows.

For example: The classroom measures 75 °F.

Object being tested	Temperature of object
Example classroom	75 °F
My Classroom	
Incubator first time	
Hot faucet water	
Cold faucet water	
Water from drinking fountain	
Incubator second time	

Why did you choose the other areas to measure the temperature? Did any item or area surprise you with how hot or cold it is?

What Happened?

Language Arts

Time: 25-30 minutes

Sunshine State/Common Core **Standards:**

LACC.3.RI.1.3. Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

Objective:

The student will be able to determine the cause and effect for scenarios given.

Materials:

What Happened? Worksheet

Life Skills:

Critical Thinking Problem Solving Cause/Effect

Activities:

Experience: Cause and Effect with Chickens!

- 1, Ask students: **Who can remind everyone what cause and effect is? (Answers will vary).**
2. Ask students to give examples of cause and effect (Answers will vary).
3. Now that we have reminded ourselves what cause and effect is let's do this worksheet about chickens and cause and effect.

Answer Key

Name: _____



What Happened?

Match the correct cause to the correct effect by drawing a line from one to the other.

Example:	<u>Cause</u>	<u>Effect</u>
	The hen sat on her nest all night. <i>Cause 1</i>	An egg was in the nest the next morning. <i>Effect 1</i>
1. The sun came up.		1. The hen is nesting in the hen house.
2. Chicken eggs incubated for 21 days.		2. The hen is protecting her baby chicks.
3. The chicks got mud in the water dish.		3. The rooster crowed.
4. The hen laid eggs.		4. The pen needs more fresh water.
5. A fox got in the hen house.		5. Baby chicks hatched out.



Name: _____

What Happened?

Match the correct cause to the correct effect by drawing a line from one to the other.

Example:	<u>Cause</u>	<u>Effect</u>
	The hen sat on her nest all night.	An egg was in the nest the next morning.
1. The sun came up.		1. The hen is nesting in the hen house.
2. Chicken eggs incubated for 21 days.		2. The hen is protecting her baby chicks.
3. The chicks got mud in the water dish.		3. The rooster crowed.
4. The hen laid eggs.		4. The pen needs more fresh water.
5. A fox got in the hen house.		5. Baby chicks hatched out.

Egg Word Search

Language Arts

Time: 30-45 minutes

Sunshine State/Common Core **Standards:**

LACC.K12.L.3.6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

Objective:

The student will be able to recognize words that are specific to chickens through a word search.

Materials:

All About Eggs Word Search

Life Skills:

Critical Thinking Recollection of Knowledge

Activities:

Word Search

1. Share with students the wordsearch. Say: Using the words we have learned so far about embryology, solve the word search.



NAME: _____ DATE: _____

Name: _____

All About Eggs

S F B I N C U B A T O R T H T
 L C B J G B O U S C W E H O V
 E R A Q D M A P I T N G L R V T E
 U T A B E H U R J M X H I A G H
 A Z Y G T R F E H M J N R E O
 R E A C G I L B N E M U B L A N F
 P Q I H U R O X Q V C R X I I H R
 M E T K A U L E C R I A J S L O S
 E T F N L W X D T S G N Y C L I K
 Y T I D I M U H L V T K G C U

CHALAZAE
 GERMINALDISC
 SHELL
 MEMBRANE
 YOLK
 ALBUMEN
 CHICK
 EGG
 AIRCELL
 INCUBATOR
 HUMIDITY
 TEMPERATURE
 HEN
 ROOSTER
 EGGTOOTH

Eggeceptional Products!

Mathematics

Time: 25-30 minutes

Sunshine State/Common Core **Standards:**

MACC.3.OA.1.3: Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Objective:

The student will be able to multiply rows and columns of eggs in an incubator and in egg cartons to get a final product.

Materials:

Egg cartons Plastic Easter eggs (or whatever else that may suffice)

Eggeceptional Products! Worksheet

Activities:

Eggeceptional Products! Worksheet

1. Have the students make physical arrays with the egg cartons and Easter eggs. Different sizes of egg cartons can make it more challenging.
2. Have students complete the worksheets. Then discuss the following with students.
 - How many eggs do we have in the incubator?
 - How did you know how many are in there? Did you count them? How did you count them? One by one?
 - Did you multiply one row of eggs by a column of eggs?

Answer Key

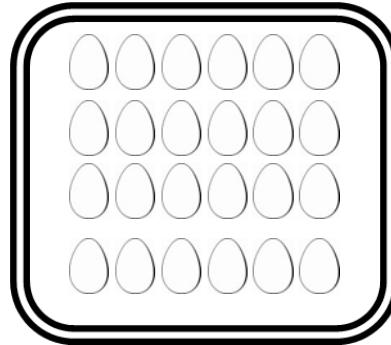
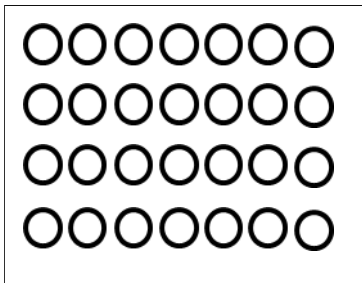
Name: _____

EGGCEPTIONAL PRODUCTS

1. There are four rows of eggs with six eggs in each row in the incubator. How many eggs are there?

24

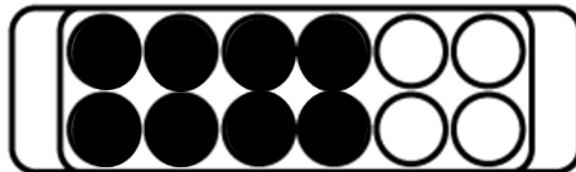
Draw an array of the 4 rows of 6 eggs. Draw your array in the incubator as eggs.



Incubator

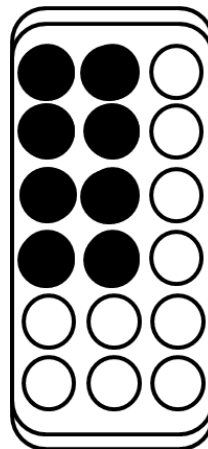
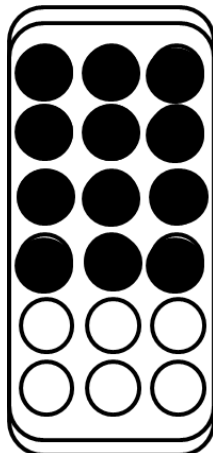
2. If there are 8 eggs in an egg carton, what array can be made in an egg carton?

Fill in the empty holes in the carton.



3. If there are 12 eggs in the carton how many different arrays can you make?

Fill in the cartons to show your arrays.



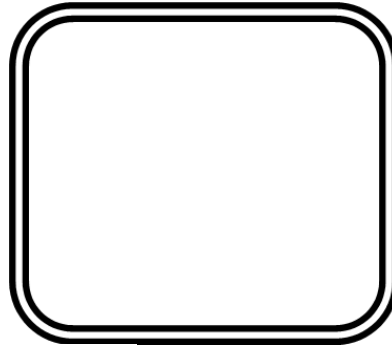
Can you set the eggs in any other different arrays? If so, draw one on the back of your sheet.

Name: _____

EGGCEPTIONAL PRODUCTS

1. There are four rows of eggs with six eggs in each row in the incubator. How many eggs are there?

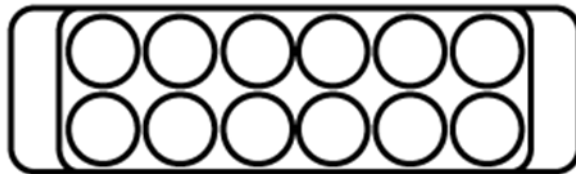
Draw an array of the 4 rows of 6 eggs. Draw your array in the incubator as eggs.



Incubator

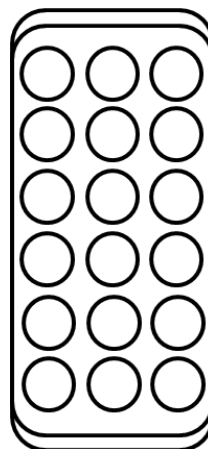
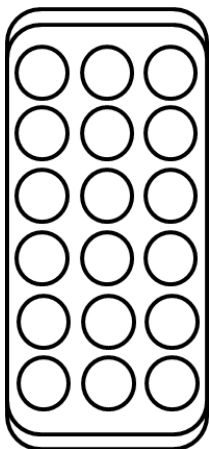
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Fill in the empty holes in the carton.



3. If there are 12 eggs in the carton how many different arrays can you make?

Fill in the cartons to show your arrays.



Can you set the eggs in any other different arrays? If so, draw one on the back of your sheet.

Baby Chick

Language Arts

Time: 20 minutes

Sunshine State/Common Core Standards:

LACC.3.RL.2.5: Refer to parts of stories, dramas, and poems when writing or speaking about a text, using terms such as chapter, scene, and stanza; describe how each successive part builds on earlier sections.

Objectives:

After reading the poem, *Baby Chick* by Aileen Fisher, the student will be able to comprehend what the poem's meaning is.

The student will be able to write a poem of their own.

Materials:

Journals *Baby Chick* poem by Aileen Fisher

Life Skills:

Critical Thinking

Activity:

Experience: Poem

1. After handing out the worksheet with the poem on it and reading the class the poem discuss what they think the meaning of the poem is.

Baby Chick

Peck

Peck

Peck

on the warm brown egg.

OUT comes a neck.

OUT comes a leg.

How

does

a chick,

Who's not been about,

discover the trick

of how to get out?

-- Aileen Fisher

2. Ask these questions: What do you think the poem's meaning is?

How do we know to say the word "out" louder than the rest of the words?

Is this a happy or sad poem?

Is it stating a fact or asking a question?

What did you think of the poem?

Do you like it? Is it exciting or boring? What else could we do to make the poem more exciting, speak faster or louder?

Baby Chick

Name: _____

Baby Chick By Aileen Fisher

Peck

Peck

Peck

on the warm brown egg.
OUT comes a neck.
OUT comes a leg.

How

does

a chick,

Who's not been about,
discover the trick
of how to get out?

Write your own poem about an egg, a baby chick, or chicken like Aileen Fisher did.

Draw a picture that shows your poem on the back.

Eggcellent Vocabulary

Language Arts

Time: 35 minutes

Sunshine State/Common Core **Standards:**

LACC.3.RI.2.4: Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.

Objectives:

The student will be able to define vocabulary words with the assistance of a dictionary.

The student will be able to write vocabulary words in a sentence by utilizing context clues.

Materials:

Journals Dictionaries

Life Skills:

Critical Thinking Recollection of Knowledge Research

Activity:

Experience: Vocabulary Assignment

Define the following vocabulary words and then write each one in a sentence.

1. Germinal disc
2. Yolk
3. Chalaza
4. Egg
5. Vitelline Membrane
6. Albumen
7. Air Cell
8. Membrane
9. Shell
10. Incubator

Cooking with Eggs!

Health

Time: ~1 hour

Sunshine State/Common Core **Standard:**

HE.3.B.3.3: List healthy options to health-related issues or problems.

Objectives:

The student will be able to identify a variety of healthy protein choices.

The student will be able to make informed decisions when choosing to eat eggs.

The student will learn how to make eggs.

Materials:

Eggs Paper Plates Forks Hot Plate/Griddle Salsa
Cheese Low-fat Milk Microwave Non-stick Spray
Lunchmeat (Ham) small whole wheat tortillas Salt Pepper Food Critique Worksheet

Life Skills:

Healthy Lifestyle Choices

Activities:

Experience: Egg Cookery

1. Ask students:

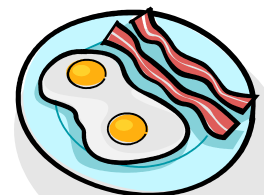
How many of you eat eggs? How often do you eat them? What are the different ways to eat eggs? Scrambled, over easy, omelet, boiled, deviled? (Answers will vary).

2. Share that: Eggs are an excellent source of protein and vitamins that are good for us. They can be a great snack or meal! We are going to explore some healthy ways to make and eat eggs.

The ways we are going to cook eggs are: scrambled, boiled, pan fried, an omelet, and even a breakfast burrito! (You can change this based on availability of products).

Recipes are from <http://www.incredibleegg.org/recipes/collection/simply-eggs>

3. Have students make a variety of eggs in the classroom using the recipes provided. After the students have completed their cooking have them record their results (Name of dish, smell, look, taste, thoughts, and attitude about the taste on the **Food Critique Worksheet**. Have them add this information in their Journals.



Cooking with Eggs!

Basic Hard-Boiled Eggs



Prep Time: 1 minute
Cook Time: 9-15 minutes
Servings: As desired

Ingredients:

Eggs

Directions:

Step 1:

PLACE eggs in saucepan large enough to hold them in single layer. ADD cold water to cover eggs by 1 inch. HEAT over high heat just to boiling. REMOVE from burner. COVER pan.

Step 2:

LET EGGS STAND in hot water about 12 minutes for large eggs (9 minutes for medium eggs; 15 minutes for extra large).

Step 3:

DRAIN immediately and serve warm. OR, cool completely under cold running water or in bowl of ice water, then REFRIGERATE.



For easier peeling, use eggs that are 7 to 10 days old. Pack hard-boiled eggs for lunch. Slice or cut into wedges for tossed salad. Dice for egg salad. Color and decorate for Easter.

Recipes/images are from <http://www.incredibleegg.org/recipes/collection/simple-eggs>

Basic Fried Eggs

Prep Time: 1 minute
Cook Time: 6–8 minutes
Servings: 2 to 4 servings



Ingredients:

Butter 2 to 4 Eggs Salt and Pepper

Directions:

Step 1:

For Over-Easy or Over-Hard Eggs: Heat 2 tsp. butter in nonstick skillet over medium-high heat until hot.

Step 2:

Break eggs and slip into pan, 1 at a time. Immediately reduce heat to low.

Step 3:

Cook slowly until whites are completely set and yolks begin to thicken but are not hard, 5 to 6 minutes. Slide turner under each egg and carefully flip it over in pan. Cook second side to desired doneness. Sprinkle with salt and pepper. Serve immediately.

Step 4: For Basted Eggs: Cook as for Over-Easy or Over-Hard Eggs, but use 2 Tbsp. butter. Cook until edges turn white. Begin basting eggs with butter from pan. Cover pan between basting and continue cooking until whites are completely set and yolks begin to thicken but are not hard.

Step 5:

For Steam-Basted Eggs: Cook as for Over-Easy or Over-Hard Eggs, but use 1 tsp. butter or a light coating of cooking spray. Cook until edges turn white. Add 1 tsp. water to pan. Cover pan tightly. Continue cooking until whites are completely set and yolks begin to thicken but are not hard.



Serve fried eggs for breakfast, in sandwiches or on top of steaks, burgers or hash. For a cleaner shape, break eggs into custard cups before sliding them into the pan.

Recipes/images are from <http://www.incredibleegg.org/recipes/collection/simply-eggs>

Basic Microwave Scrambled Eggs



Ingredients:

2 Eggs
2 TBSP Milk
Salt and Pepper

Directions:

Step 1:

BEAT eggs, milk, salt and pepper in microwave-safe bowl until blended.

Step 2:

MICROWAVE on HIGH 45 seconds: stir. MICROWAVE until eggs are almost set, 30 to 45 seconds longer. SERVE immediately.

Prep Time: 1 minute
Cook Time: 2 minutes
Servings: 1 serving



Microwave scrambled eggs done in less than 3 minutes. Add diced meat, shredded cheese or chopped veggies for a more

interesting breakfast or snack.

Don't overcook. Scrambled eggs will continue to cook and firm up after removed from microwave.

Spinach, Ham & Cheese Omelet



Ingredients:

2 Eggs 1 TSP butter 2 TBSP Water 1/4 cup finely chopped ham
1/4 cup shredded Italian cheese 1/4 cup baby spinach
Salt and Pepper

Directions:

Step 1:

BEAT eggs and water in small bowl until blended.

Step 2:

HEAT butter in 7 to 10-inch nonstick omelet pan or skillet over medium-high heat until hot. TILT pan to coat bottom. POUR IN egg mixture. Mixture should set immediately at edges.

Step 3:

GENTLY PUSH cooked portions from edges toward the center with inverted turner so that uncooked eggs can reach the hot pan surface. CONTINUE cooking, tilting pan and gently moving cooked portions as needed.

Step 4:

When top surface of eggs is thickened and no visible liquid egg remains, season with salt and pepper. PLACE cheese on one side of omelet; top with spinach and ham. FOLD omelet in half with turner. With a quick flip of the wrist, turn pan and INVERT or SLIDE omelet onto plate. SERVE immediately.

Prep Time: 5 minutes
Cook Time: 5 minutes
Servings: 1 to 2 servings

This fast classic savory egg, spinach and cheese omelet is an excellent source of protein and vitamin D.



Recipes/images are from <http://www.incredibleegg.org/recipes/collection/simple-eggs>



Microwave Egg & Cheese Breakfast Burrito

Ingredients:

1 Egg 1 Flour Tortilla 1 TBSP salsa
1 TBSP shredded Mexican Cheese Blend

Directions:

Step 1:

LINE 2-cup microwave-safe cereal bowl with microwave-safe paper towel. PRESS tortilla into bowl. BREAK egg into center of tortilla. BEAT egg gently with a fork until blended, being careful not to tear tortilla.

Step 2:

MICROWAVE on HIGH 30 seconds; stir. MICROWAVE until egg is almost set, 15 to 30 seconds longer.

Step 3:

REMOVE tortilla with paper towel liner from bowl to flat surface. TOP egg with cheese and

Prep Time: 2 minutes
Cook Time: 45-60 seconds
Servings: 1 serving



Whip up an on-the-go Mexican-style breakfast with a quick and easy microwave egg scramble.

Recipes/images are from
<http://www.incredibleegg.org/recipes/collection/simply-eggs>

Food Critique

Name: _____

Dish:
Smell:
Taste:
Look:
Thoughts:



Dish:
Smell:
Taste:
Look:
Thoughts:



Dish:
Smell:
Taste:
Look:
Thoughts:



Dish:
Smell:
Taste:
Look:
Thoughts:



Dish:
Smell:
Taste:
Look:
Thoughts:



What dish was your favorite? What dish did you not like? What do you think you will make at home?

Eggciting Criss-Cross Puzzle

Language Arts

Time: 25-30 minutes

Sunshine State/Common Core **Standards:**

LACC.3.RL.2.4: Determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.

Objective:

The student will be able to solve the crossword puzzle made of words learned in class.

Materials:

Eggciting Criss-Cross Words!

Life Skills:

Critical Thinking Recollection of Knowledge

Activities:

Experience: Vocabulary Crossword Puzzle

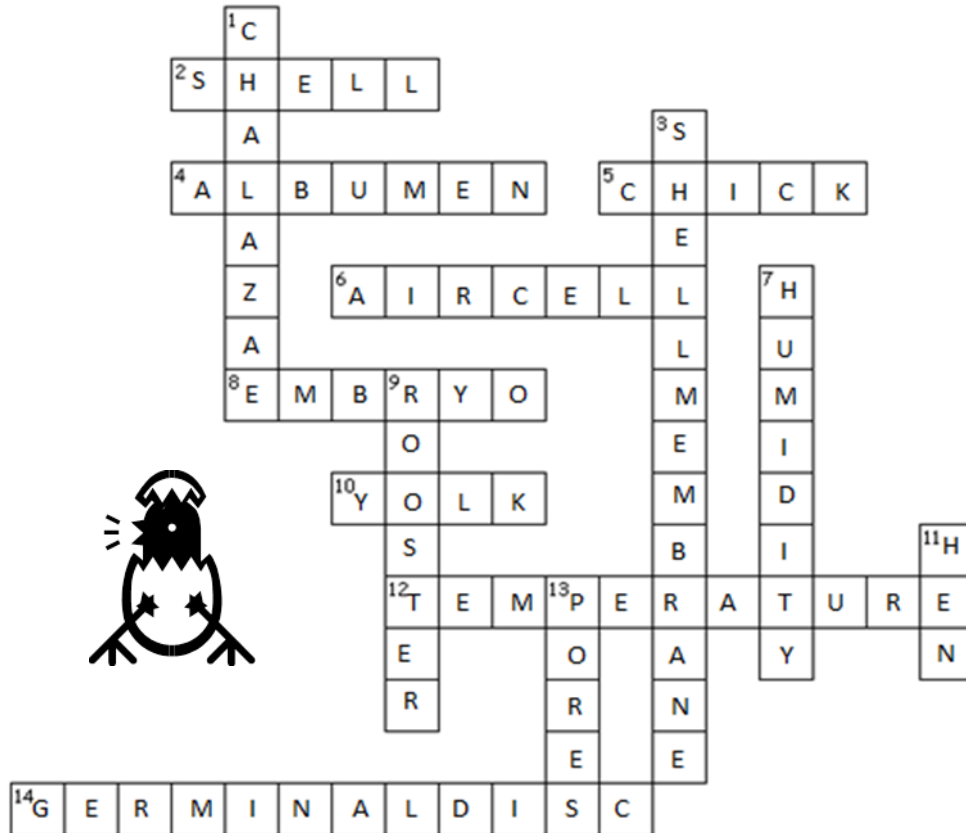
1. Have students fill out the crossword puzzle. Share with students: Using the words we have learned so far about embryology, solve the crossword puzzle. Your journal activities could help solve some of the clues. Using their chick journals they should be able to solve the clues of the words. Depending on level, partnering up may be better for them to work together to solve the puzzle.

Eggciting Criss-Cross Puzzle

Name: _____

Eggciting Criss-Cross Words!

Directions: Use the clues to fill in the blanks with words related to embryology



Across

2. Hard protective outer covering of an egg.
4. White of an egg, supplies the embryo with food and water.
5. Baby chicken.
6. Pocket of air at the large end of the egg.
8. Earliest stage of growth/development of an organism.
10. Yellow of the egg, the primary food source for the embryo.
12. How hot or how cold something is.
14. "White spot" on the yolk where the embryo develops.

Down

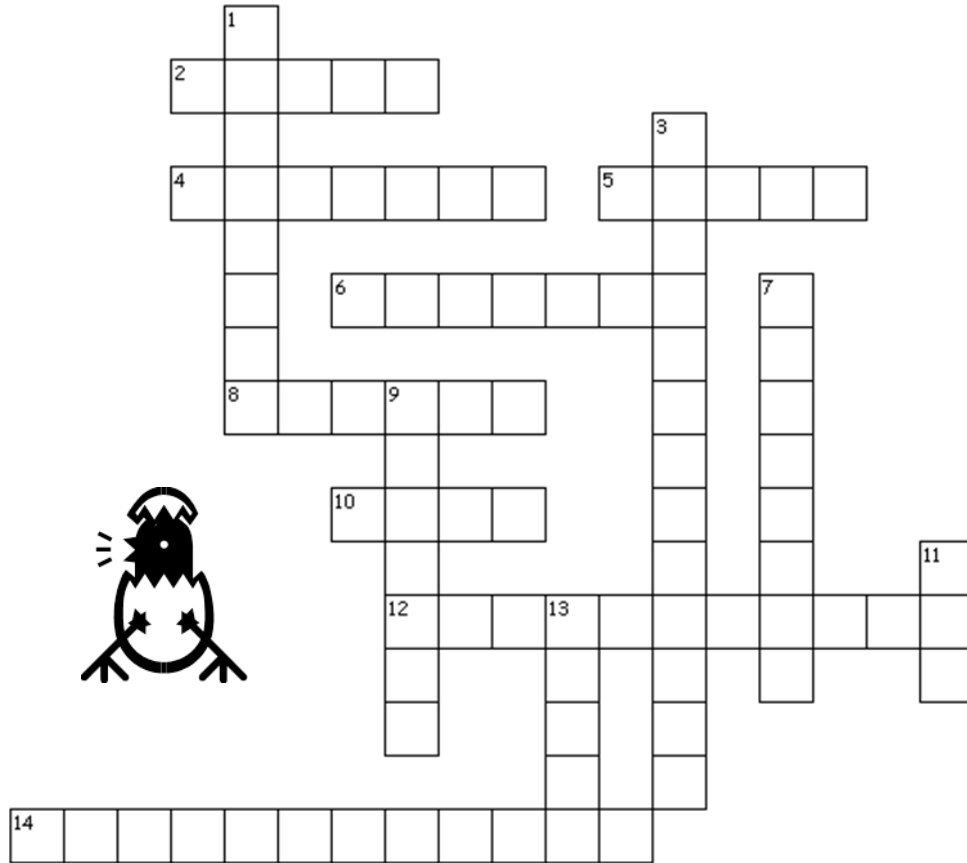
1. Two twisted cords at each end of the yolk.
3. Two thin layers inside of the shell.
7. Water in the air.
9. Male chicken.
11. Female chicken.
13. Tiny holes that let air and water in and out of the egg.

Eggciting Criss-Cross Puzzle

Name: _____

Eggciting Criss-Cross Words!

Directions: Use the clues to fill in the blanks with words related to embryology



Across

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Down

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3. Two thin layers inside of the shell.
7. Water in the air.
9. Male chicken.
11. Female chicken.
13. Tiny holes that let air and water in and out of the egg.

Make-A-Word

Language Arts
minutes

Time: 30-45

Sunshine State/Common Core **Standards:**

LACC.K12.L.3.6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

Objective:

The student will be able to recognize words that can be made out of other words.

Materials:

Make-A-Word Worksheet

Activities:

Make-A-Word

1. Have students make words from the words "Chicken" and "Hatchlings." Tell students: This worksheet is a little difficult, but is fun as well. You will be given a word and then you have to see how many words you can make from that one word.

For example, if you are given the word "wonderful" how many words can you make from it? (Answers will vary). Some words that I think of are flower, found, fun, red, run, folder, and there are plenty other words too.

Answers will vary, the ones provided on the answer key are examples.

Answer Key

Name: _____

Make-A-Word

How many words can you make from the words CHICKEN and HATCHING?

Print one word on each line.

CHICKEN

- | | |
|----------|----------|
| 1. check | 6. chick |
| 2. nice | 7. ice |
| 3. neck | 8. inch |
| 4. hike | 9. hen |
| 5. chin | 10. ink |

HATCHING

- | | |
|---------|-----------|
| 1. chat | 6. at |
| 2. hat | 7. chain |
| 3. cat | 8. giant |
| 4. act | 9. night |
| 5. ha | 10. thing |

Can you think of more than 10 words for CHICKEN and HATCHING?

Name: _____

Make-A-Word

How many words can you make from the words CHICKEN and HATCHING?

Print one word on each line.

CHICKEN

1. _____ 6. _____

2. _____ 7. _____

3. _____ 8. _____

4. _____ 9. _____

5. _____ 10. _____

HATCHING

1. _____ 6. _____

2. _____ 7. _____

3. _____ 8. _____

4. _____ 9. _____

5. _____ 10. _____

Can you think of more than 10 words for CHICKEN and HATCHING?

Fact or Opinion?

Language Arts
minutes

Time: 25-30

Sunshine State/Common Core **Standards:**

LACC.3.1.3.4 Determine or clarify the meaning of unknown and multiple-meaning word and phrases based on grade 3 reading and content, choosing flexibly from a range of strategies.

Objective:

The student will be able to recognize the differences between facts and opinions.

Materials:

Fact and Opinion Worksheet

Life Skills:

Critical Thinking Fact/Opinion

Activities:

Experience: Fact or Opinion

1. Share with students: We all know what fact and opinion is. **Who can tell me what they are?** (Answers will vary). **What are some examples?** Now that we have reminded ourselves what fact and opinion are let's do this worksheet about chicken facts and opinions.
2. Have students fill out the worksheet and discuss how to tell if something is fact or opinion.

Answer Key

Name: _____

Fact or Opinion?

Directions: Tell whether the statements below are a fact or an opinion.

Example

Chickens have an odor. <i>Fact</i>	Chickens smell bad. <i>Opinion</i>
Chicken feet are creepy. Opinion	Chicken feet have toes. Fact.
It takes 21 days for chicks to hatch. Fact.	Chicken eggs must be 100°F to hatch. Fact.
Some breeds of chickens are pretty. Opinion	Hens like laying eggs. Opinion
Roosters crow loudly. Opinion	Baby chicks do not have feathers. Fact.
Hens are mean. Opinion	Hens protect their baby chicks. Fact.
Make up your own fact about chickens.	Make up your own opinion about chickens.

Name: _____

Fact or Opinion?

Directions: Tell whether the statements below are a fact or an opinion.

Example

Chickens have an odor. <i>Fact</i>	Chickens smell bad. <i>Opinion</i>
Chicken feet are creepy.	Chicken feet have toes.
It takes 21 days for chicks to hatch.	Chicken eggs must be 100°F to hatch.
Some breeds of chickens are pretty.	Hens like laying eggs.
Roosters crow loudly.	Baby chicks do not have feathers.
Hens are mean.	Hens protect their baby chicks.
Make up your own fact about chickens.	Make up your own opinion about chickens.

Pecking Order

Reading

Time: 35 minutes

Sunshine State/Common Core **Standards:**

SS.3.C.3.1. Identify the levels of government (local, state, federal).

Objectives:

The student will be able to describe the levels of government through learning about Pecking Order.

Materials:

Deck of Cards Journal

Life Skills:

Accepting Differences Social Skills Cooperation Teamwork

Activity:

Experience: Pecking Order

1. Ask students: What is meant by the term pecking order? (Answers will vary).
2. Share that: Dominance structure is an important feature of how chicken relate to members of their species. Have you noticed that Pecking order, or the urge to fit into social hierarchies, is also powerful in humans?

For example, the armed forces depend upon a hierarchical structure for efficiency and discipline. We see hierarchical structures in corporations and other organizations as well as in peer groups and on playgrounds. Sometimes a person so badly wants a higher place in that hierarchy that they turn into a bully. Most of us can give examples of how bullying behavior affects our lives, or lives of people we know. Luckily, we humans have the ability to reason through this and find much more peaceful ways of settling our disputes.

Such discussions are a valuable part of the preparation and follow-up for this simulation game about pecking order.

3. Have students play the **Pecking Order Game**.

Main Idea

In this game, each person will find their place in a "pecking order" based on the value of a playing card, which they will chose at random. The highest ranking card is a king, followed by queen, jack, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, and Ace.

Pecking Order

Directions

Each player chooses a playing card. WITHOUT looking at it, each places the card above their forehead so that others can see it.

The players interact with one another for 5 minutes. The goal is to interact with people who are at the top of the pecking order. However, players do not know the hierarchical value of their own card. They can only guess this by the way others react to them.

At the end of the 5 minutes, and still without having seen their own card, each player lines up according to the place they perceive they fall in the pecking order.

Finally, all players look at their cards and check to see how closely the line formed based on everyone's perceptions.

4. Ask students:

- How accurate was the pecking order? Did most of the players know where they should stand?
- Reflect on this experience and write in your journal. Did you correctly perceive where you stood in the pecking order? What did it feel like when people reacted to you the way they did? How does it feel to be in a position of higher or lower status?
- What examples can you find of how humans are similar and different from animals with regard to social dominance? Define the word "humane" and use it in your journal writing.

Eggstraordinary Fractions

Mathematics

Time: 25-30 minutes

Sunshine State/Common Core **Standards:**

MACC.3.NF.1.3: Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

Objective:

The student will be able to add and subtract fractions that look like eggs.

Materials:

Eggstraordinary Fractions Worksheet

Life Skills:

Problem Solving Critical Thinking

Activities:

Experience: Eggstraordinary Fractions

1. Have youth fill out the Fraction worksheet. Tell students: We know how to add fractions of things together to make a whole item or more than or less than a whole item. Use the pieces of eggs to see what fractions they make.

Answer Key

Name: _____


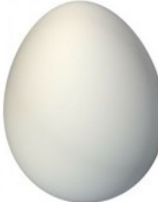

Eggstraordinary

Fractions




Directions: Add or subtract the eggs, or pieces of eggs to find the sum or difference.

1.  +  = 1

2.  +  = 1 1/2

3.  +  +  = 2

4.  -  = 1/2

5.  +  -  = 1

Name: _____




Eggstraordinary

Fractions




Directions: Add or subtract the eggs, or pieces of eggs to find the sum or difference.

1.  +  = _____

2.  +  = _____

3.  +  +  = _____

4.  -  = _____

5.  +  -  = _____

Egging Writing

Writing
minutes

Time: 35

Sunshine State/Common Core **Standards:**

LACC.3.W.1.3: Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

Objectives:

The student will be able to write a narrative story with details, transitional words, the use of sequences and in proper five paragraph format.

Materials:

Journal

Activity:

Life Skills:

Critical Thinking Planning/Organizing

Experience: Writing about our Eggs

1. Tell students: You have just been given an incubator and 15 chicken eggs. Write a story about the journey of a developing chick inside the egg. Be sure to include step by step information as well as your own creativity for this story.

Eggcellent Vocabulary

Language Arts

Time: 25-30 minutes

Sunshine State/Common Core Standards:

LACC.3.RL.2.4: Determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.

Objective:

The student will be able to research the definitions and write the word from embryology in a sentence.

Materials:

Life Skills:

Journals Dictionaries

Critical Thinking Recollection of Knowledge Research

Activities:

Vocabulary Assignment

Define the following vocabulary words and then write each one in a sentence.

1. Incubator
2. Pores
3. Embryo
4. Chalaza
5. Humidity
6. Temperature
7. Fertilize
8. Egg Tooth
9. Albumen
10. Hatch

Create An Egg

Science

Time: 50-60 minutes

Sunshine State/Common Core **Standards:**

SC.3.N.3.2. Recognize that scientists use models to help understand and explain how things work.

Objective:

The student will be able to recognize the parts of the egg and create a visual display with the help of a partner and provided materials.

Materials:

Journal pipe cleaners markers pens
glue pom poms Styrofoam etc...

Life Skills:

Critical Thinking Creativity Cooperation Teamwork

Activities:

Experience: Create An Egg

1. Similar to cell structure activities, students will take objects and create an egg. For example, a pom pom could be the yolk, pipe cleaners the shell, and so on. What we are going to do is take some of the craft pieces that we have in the classroom and create an egg from those pieces with your imagination.
2. Tell Students to: Get with a partner to do this project. It can look however they want as long as it follows the basics of what an egg is. Be sure and label all of the parts and be sure to put your names on your papers.

Questions:

1. What do you like best about your egg?
2. What did you and your partner want to use for the yolk?
3. What would you change about your egg?

Don't Count Your Chickens Before They Hatch

Mathematics/Science

Time: 45 minutes

Sunshine State/Common Core **Standards:**

MAFS.3.NF.1.1. Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.

SC.3.L.15.1. Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.

Objective:

The student will be able to recognize the number of eggs that are fertile and make predictions as to how many will hatch, then how many survive after hatching.

Materials:

Record of candled/fertilized eggs from journals

Life Skills:

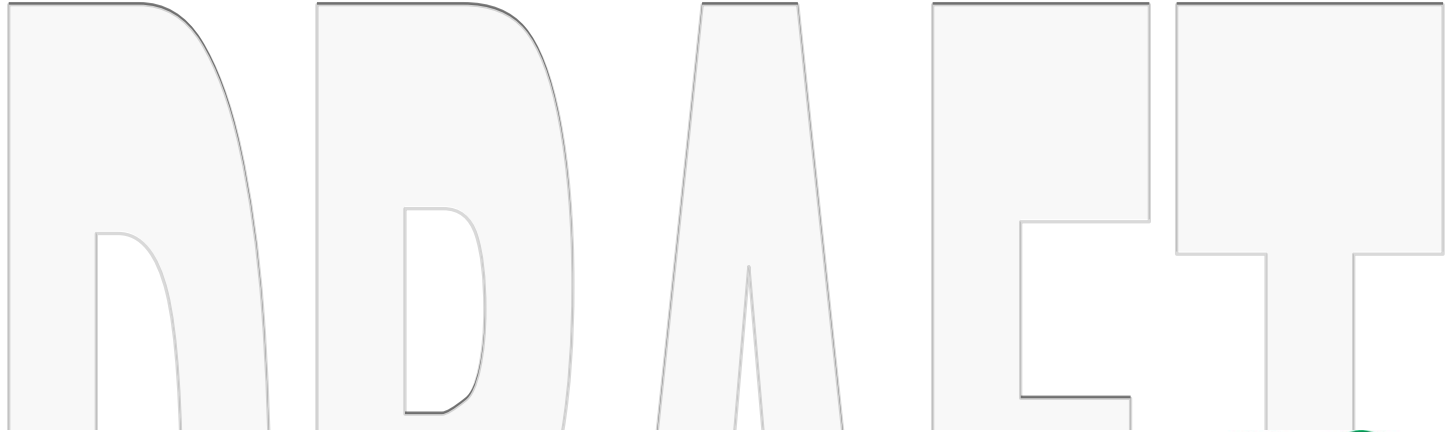
Data Collection Empathy

Activities:

1. Begin the discussion by asking students if they know why we say "Don't count your chickens before they hatch!" (Answers will vary). Explain that not all eggs will hatch in the incubator.
2. Also explain that some eggs will be fertile and some will be infertile (duds). Infertile eggs need to be removed from the incubator.
3. From there most of the eggs will develop. At a certain point some of those that have been developing will not continue to develop. This is because something was wrong with them. It may be that they had a disease or even that there was a temperature change and it killed the developing embryo.
4. Once chicks begin to hatch, there will be some eggs that do not hatch. There will also be chicks that hatch out that will not survive. Once again this is because there is something wrong with the chick and it is not strong enough for survival.
5. Have students make predictions on how many chicks they think will hatch.
6. Do some practice fraction examples on the board.

For example, if we have 22 eggs in our incubator and 17 hatch, what fraction did not hatch? $5/22$.

7. Using information from when we candled eggs, how many chicks do you think will hatch? How many do you think will survive after the hatch? How many were fertile in the beginning?



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