

Supply and Demand in Egg Production

Grade Level: 3-5

Essential Skills: 1-4

NGSS: 3-5-ETS1-1

CCSS: SL.3.1/ SL.4.1/ SL.5.1,
SL.3.3/SL.4.3/SL.5.3, RI.3.7/
RI.4.7/ RI.5.7, 3.OA.A.3,
4.NBT.B.4, 5.NBT.B.7

NCSS: D2.ECO.3.3-5,
D2.ECO.10.3-5, D2.GEO.5.3-5

Time: One class period

Materials:

- Activity Sheet 1 - Farmers and Consumers grid
- 20 daily farm report cards

AITC Library Resources:

Check out these materials on our Lending Library:

Books

- *What's For Lunch?*
- *Inside an Egg*
- *Eggs! Life on the Chicken Farm*

Resources

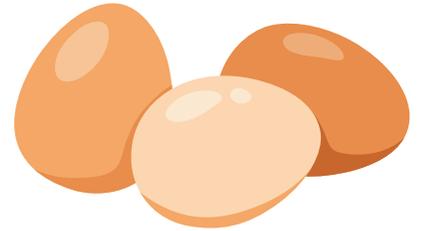
- Incubator

Description:

In this lesson, students are introduced to the concepts of supply and demand as it pertains to the school kitchen. Students will explore factors affecting egg production and how supply and demand influence the price and availability of eggs. Students will role-play as poultry farmers and egg consumers to analyze real-world scenarios, observe the impact on egg supply, and make suggestions to their school's kitchen staff.

Learning Goals:

1. Understand how supply and demand might impact egg prices.
2. Understand potential issues that may impact egg production.
3. Analyze how supply and demand affect school meals.

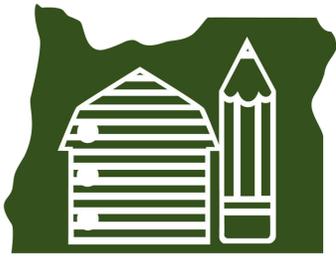


Vocabulary:

- **Supply:** How much of something is available. If farmers have lots of eggs, the supply is high.
- **Demand:** How much people want or need something. If many people want eggs, the demand for eggs is high.

Part 1: Introduction to Supply and Demand

1. Explain that today, students will learn about eggs, where they come from, and why their prices sometimes change. To begin, engage the students in the following discussion. Ask the students to list:
 - Different foods that require eggs as an ingredient (e.g., waffles, cakes, omelets). Emphasize how eggs are a key part of many meals.
 - Common consumers of eggs (e.g., bakers, chefs, families).
2. Read a book about eggs, such as *What's for Lunch? Eggs* by Claire Llewellyn. As you read the book, have students notice the steps eggs go through before reaching stores. Ask them to think about circumstances that might prevent chickens from laying eggs.
3. After reading the book, lead the students in discussion:
 - What are the different ways we enjoy eggs?
 - What factors might influence egg shortages?



Lesson to Grow

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SL.3.3/SL.4.3/SL.5.3, RI.3.7/
RI.4.7/ RI.5.7, 3.OA.A.3,
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4. Transition from the egg shortage discussion to clarify some vocabulary: Supply and Demand.

5. Conclude by explaining to students that if a lot of people want eggs but there aren't many available (i.e. egg shortages), the price might go up.

Part 2: Activity Set Up

1. Introduce the scenario: Sarah, a small poultry farmer in the farm-to-school program, has been running her smart farm for 5 years. A smart farm is a farm that uses computers to help take care of animals and plants. On Sarah's smart farm, special tools check if the chickens have enough food and water and if the coop is warm enough. The computer sends a report every day to show how the farm is doing.

Her farm produces 65 eggs weekly, and she supplies 60 of those eggs to the school kitchen. Today, we will look at one week (i.e., seven days) of daily reports from Sarah's farm to track egg production and see if she can meet the school's breakfast demand of 60 eggs per week.

Note to teacher: Explain that the school chef and kitchen staff have requested their class to track Sarah's one-week production to see if she produced enough eggs for their breakfast for next week.

2. Explain to students that they will work in groups (poultry farmers representing Sarah and consumers representing the school) to complete this activity.

3. Divide students into two or four groups, depending on age and class size:

- Poultry Farmers – Responsible for raising chickens to produce eggs
- Consumers – Those who buy eggs

Note: You will have two of each group if you decide to divide students into four groups (**see optional section for 4-group suggestion**).

4. Distribute game materials: Each of the students in the group(s) representing the farmers receive a poultry grid showing 24 chickens and 65 eggs (Sarah's production capacity). Each of the students in the group(s) representing the consumers receive the egg grid showing 60 eggs (the school's egg demand).

5. Shuffle 10 daily farm report cards per each farmer-consumer pair and place them in a deck, face down on the table. (If you are playing with four total groups, two farmer-consumer pairs, each pair gets 10 cards.)

To keep things organized, select a random farmer representative for the game. This individual will draw a card seven times (seven rounds) to represent one day. **Remember:** The school chef and kitchen staff have requested their class to track Sarah's one-week production.

6. Explain the daily farm report cards: These cards represent events that might affect egg production: **Red** cards for severe problems, **Orange** cards for mild issues, and **Green** cards for a perfect day. **Note to teacher:** Do not disclose the number of cards in each color group.

For this game, there are 20 cards (10 cards for each pair), but students in each farmer-consumer pair will only be drawing seven cards, one for each day of the week. In the deck, there are:

- 10 **red** cards, representing severe outbreak or disaster. Farmers lose 2 chickens and 4 eggs.
- 6 **orange** cards, representing mild issues, such as aging chickens or non-transmittable diseases. Farmers lose 2 eggs.
- 4 **green** cards representing no issues. Farmers gain 6 eggs.

Part 3: The Egg Supply Game

1. Begin the game and Round 1 by having the elected farmer representative draw one card from the top of the deck. The teacher reads the selected card aloud, describing the event affecting the farm. Before revealing the color, the teacher asks students to predict whether the farmer gains eggs or loses eggs/chickens. **Note:** There can only be egg gain, not chicken gains, because Sarah only has layers on her farm.

2. The teacher confirms the outcome and instructs students to update their grids accordingly. Consumers should adjust their grids by crossing out the chickens/eggs the farmers lose to reflect a reduction in supply. Alternatively, blank boxes are provided on the same grid to indicate eggs gained, an increase in supply. Set each selected card aside in a discard pile.

3. Repeat steps 1-2 for six more rounds for a total of seven rounds, representing one week.

4. Farmers and consumers count their remaining eggs. Compare the total to determine if Sarah's farm can meet the 60-egg breakfast demand at their school. Discuss whether Sarah's farm met the school's demand and what challenges arose.

5. Explain to the students that what the farmer group has left on their slip is the supply and what the consumer group has left shows a shortage in supply since the demand is 60 eggs. Explain that such a shortage typically results in increased prices.

Optional: Additional Challenge

The game is set up to result in lower supply so that students think about what happens when there are fewer eggs compared to demand. However, if the class is divided into four groups, teachers can remove some of the red cards from one poultry farmer/consumer stack of cards to increase the probability of a particular farmer group having more eggs (high supply/surplus) compared to demand.

Part 4: Wrap-up and Comprehension

1. Answer the comprehension questions and discuss with the class:
 - How did losing chickens affect the farm's egg supply? Encourage the farmer group to think like the farm owner (Sarah) and the consumer group to come up with suggestions for Sarah.
 - Ask the students what they would report to the school chef or kitchen staff about whether Sarah can supply enough eggs for next week's breakfast.
 - Encourage students to write down their suggestions on their poultry or eggs grid
2. Check for understanding of key concepts by asking:
 - What is demand? Answer: How much people want or need something. If many people want eggs, the demand for eggs is high.
 - What is supply? Answer: How much of something is available. If farmers have lots of eggs, the supply is high.
 - What are some things that can cause a low supply of eggs? Answer: Any of the issues on the red and orange daily report cards.
 - If we want more eggs than a farmer can supply, what typically happens? Answer: If a lot of people want eggs but there aren't many available (i.e., egg shortages), the price might go up.

Extension Activity

For older grades, teachers can shuffle cards and repeat the game to come up with a school district-wide egg supply and demand graph, calculate percentages of the egg demand Sarah's farm meets at their school and other schools, as well as the ratios of supply to demand in selected elementary schools in the school district.



Activity 1:

Poultry Grid - Farmers (Sarah)

Write a note to the school chef here. Explain why you may or may not meet the school kitchen's egg demand next:

Notes

