

# Hatch Time Graphing

**Grade Level: 4-8**

## Lesson Overview

When you see eggs in a bird's nest in the spring, do you ever wonder how long it takes them to hatch? What about chickens—do their eggs take the same length of time to hatch as that of the doves in your yard? Students will practice graphing skills as they compare the incubation period of ten different birds.

## Student Objectives

1. Locate information from both charts and graphs.
2. Demonstrate computation skills to answer problems.
3. Decide which type of graph would be best to use for information given.
4. Use new information to make up their own math problems.

## Materials

- ✓ Hatch Time Graphing worksheet
- ✓ graph paper
- ✓ graph and chart of incubation periods

## Vocabulary

- **fowl** - 1. bird. 2. domestic bird eaten for food.
- **gram** - metric unit of weight, about 1/28 of an ounce.
- **incubation** - hatching time for fowl; process of development of a fertile poultry egg within a shell.

## Background Information

- There are nearly 10,000 species of birds on Earth and each one lays eggs. From the smallest bee hummingbird egg to the biggest ostrich egg, birds create eggs in an infinite array of sizes, shapes, colors and patterns.
- Birds are hotter than mammals, with an internal temperature of 104 degrees Fahrenheit. No embryo can develop at such high heat, but since they lay eggs, birds can incubate their embryos outside their bodies. Birds also wait to incubate their hatch of eggs until they are all laid, manipulating hatching dates until the ideal time, typically when there is enough food available to feed the babies upon birth.

- Bird fertilization is much different than with mammals. After mating, females can store sperm for a few days up to a few months – until the female has collected enough food to enable her ova to amass a yolk big enough to transform into a chick. Only then will the egg be fertilized and begin the 24-hour journey to becoming a full-shelled egg.
- In order for the embryo to breathe, miniscule pores lead from the surface of the egg to the embryo's blood supply. However, this porousness comes with risks, such as bacterial infection from water. To combat this threat, the egg develops a microscopic protective layer as well as an albumen, a colorless second layer between the yolk and the shell – the “egg white.”
- The duckbill platypus is the only mammal that lays eggs and they have an incubation period of 12 days.

## **Procedure**

Have the students complete the Hatch Time Graphing Worksheet.

## **Extension Activities**

Students could research to find other hatching times and add to their graphs.

## **Additional Resources**

- <https://youtu.be/ozMPRSZ8Ykk> short video explanation of how chicks can break through the tough eggshell

## Standard

### ***Illinois Mathematics Standard***

CC.8.F.5 Use functions to model relationships between quantities. Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

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

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Name \_\_\_\_\_

## Hatch Time Graphing Worksheet

### Incubation Period for Various Types of Fowl

Fowl	Number of Days to Hatch
chicken	21
turkey	28
duck	28
goose	32
guinea fowl	28
dove	14
pheasant	26
quail	23
swan	34
parrot	28

Make a graph from the incubation period chart shown above. Use this graph to answer the questions. Show your work.

1. Which bird takes the longest to hatch? Which takes the least amount of time?
2. How much longer does it take the swan to hatch than the dove?
3. Name the birds that take the same amount of time to hatch as the turkey. Are there any other birds that you can match by their taking the same time to hatch?
4. How many weeks does it take for a chicken to hatch?

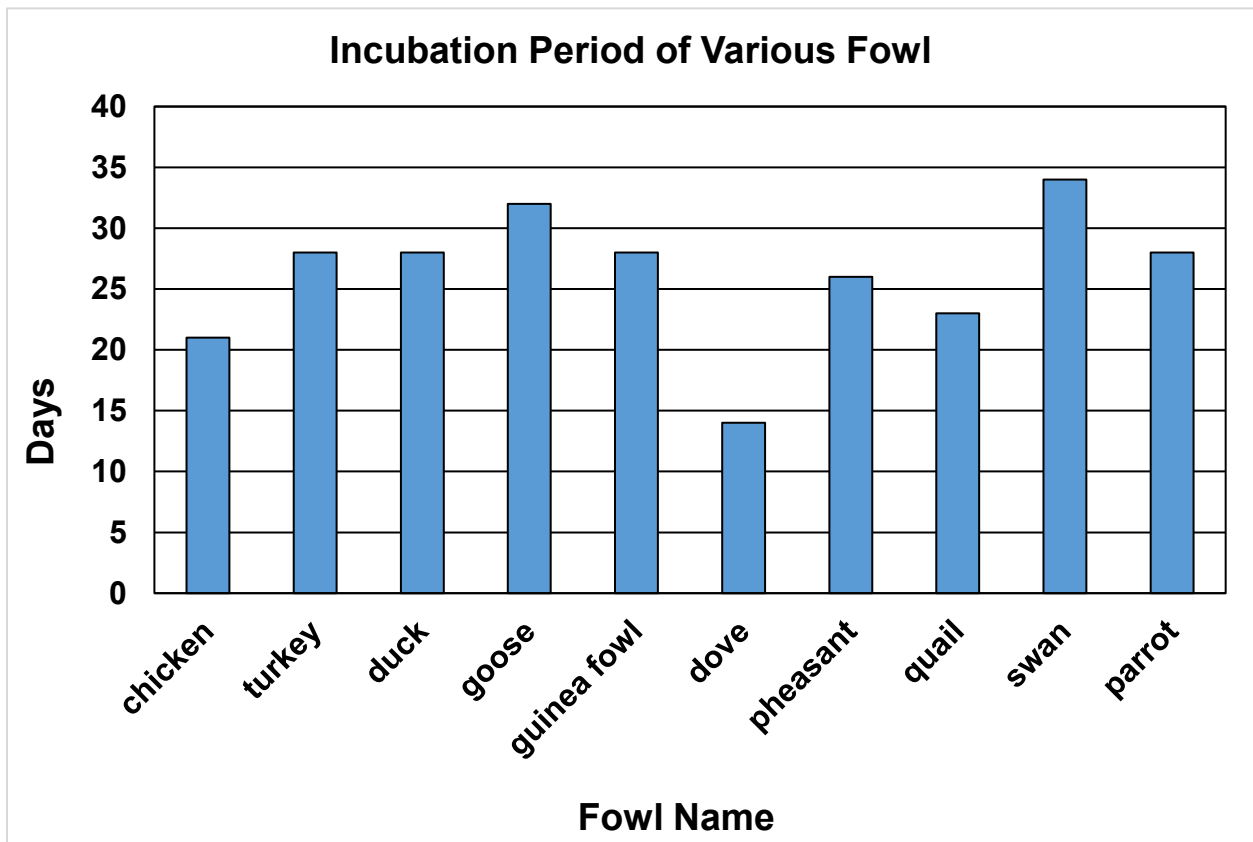
5. List the birds that take over four weeks to hatch.
  
6. If there are 365 days in a year, how many complete cycles will you have to hatch chicken eggs in one year?
  
7. An ostrich egg weighs 3.3 pounds and is the size of a medium cantaloupe, the Bee Hummingbird egg is the size of a small pea and weighs .02 ounces. How many Bee Hummingbird eggs would you have in one ounce?
  
8. If one egg weighs 9 grams, how much would eleven eggs weigh?
  
9. What type of graph did you make? Could you use a pie graph to show this information? Explain your answer.
  
10. Who would find the information on this graph very useful? Explain your answer.

**Extra Credit**

1. If one chicken lays 250 eggs per year, how many years will it take her to lay 2000? Show your work and explain your work.
  
2. Make up a problem of your own using the data on the graph.

## Graphing Worksheet

Make a graph from the incubation period chart. Use this graph to answer the questions. Show your work.



1. Which bird takes the longest to hatch? **swan – 34 days – longest**  
Which takes the least amount of time? **dove – 14 days – shortest**
2. How much longer does it take the swan to hatch than the dove?  
 **$34 - 14 = 20$  days**
3. Name the birds that take the same amount of time to hatch as the turkey. Are there any other birds that you can match by their taking the same time to hatch?  
**turkey – 28 days duck, guinea fowl, parrot - No other matches can be made.**
4. How many weeks does it take for a chicken to hatch?  
**21 days ( $21/7 = 3$ ) 3 weeks**

5. List the birds that take over four weeks to hatch.  
**4 weeks = 28 days; goose – 32 days, swan – 34 days**
  
6. If there are 365 days in a year, how many times can you hatch chicken eggs?  
**17 complete cycles;  $365/21 = 17$**
  
7. An ostrich egg weighs 3.3 pounds and is the size of a medium cantaloupe, the Bee Hummingbird egg is the size of a small pea and weighs .02 ounces. How many Bee Hummingbird eggs would you have in one ounce?  
**50 eggs;  $.02 \times 50 = 1.0$  ounce**
  
8. If one egg weighs 9 grams, how much would eleven eggs weigh?  
**9 grams  $\times$  11 = 99 grams**
  
9. What type of graph did you make? Could you use a pie graph to show this information? Explain your answer.  
**Bar graph – no because pie graphs total 100%**
  
10. Who would find the information on this graph very useful? Explain your answer.  
**Poultry farmer or teacher considering in-class incubation**

### **Extra Credit**

1. If one chicken lays 250 eggs per year, how many years will it take her to lay 2000?  
**8 years;  $2000/250 = 8$**
  
2. Make up a problem of your own using the data on the graph.  
**Answers will vary.**