

THE SEARCH IS ON

Scientists have inquiring minds. They are always searching for answers. Over time, science has developed a general way of doing investigations and looking for explanations about happenings in the universe. This is called the scientific method or steps to scientific inquiry.

THE DROPPED EGG INVESTIGATION

As Kiko and Thomas were carrying eggs into the house from the grocery store, a huge clap of thunder struck just outside their door. They were so shocked that they both dropped the eggs. Some eggs stayed in the containers, others dropped out. Some fell on the carpet, others landed on the wooden kitchen floor. They were surprised that all the eggs did not break. Many eggs still in their containers and eggs on the carpet were unbroken. This accident made them curious about what might cause some eggs to break when falling, while others did not break. They guessed that eggs falling on carpet or staying in their containers were less likely to break than eggs flying out of their containers onto a hard floor.

They decided to investigate. They realized that the height from which the eggs dropped and the force of the drop might affect the results. So they chose a precise distance for the drop and decided to let the eggs go gently, with no throwing force. They planned to drop eggs for four different kinds of landings. They thought they should drop enough eggs to avoid chance results. They also planned to do the investigation twice, in two trials, to see if results were similar. They gathered measuring tools, eggs, egg containers, and a sheet to protect the carpet. They planned to drop 12 eggs for each kind of landing. With two trials, there would be a total of 24 eggs dropped in each way. They measured a spot exactly 5 feet off the floor, and marked that spot on the wall. Then they made a table for tallying the results.

Finally they were ready. Kiko stood on a stool and held her arm out level with the mark. She dropped 12 eggs in a carton onto the carpet, and 12 eggs in a carton onto the wooden floor. Next, she dropped 12 eggs, one at a time, onto the carpet. Last, she dropped 12 eggs, one at a time, onto the floor. While she dropped eggs, Thomas kept a tally of the number of eggs broken in each of the four groups. When they finished this trial, they repeated the whole process. They showed their results by creating a summarizing table.

Kiko and Thomas cleaned up their mess and reviewed their results. They came to the conclusion that eggs dropped onto a soft surface in an egg container were the least likely to break. Eggs dropped in the container onto a wooden floor were more likely to break. Just about as likely as this, however, were eggs dropped out of the container onto carpet. The most likely of all to break were eggs dropped outside of a container onto the hard floor. They believed these results showed that the carpet and the containers gave enough protection to the eggs to keep them all from breaking.

After the investigation, they still wondered about breaking eggs. They wanted to know why some eggs didn't break at all, on the carpet, and even on the hard floor. They wondered if eggs in the center of the cartons were more protected than those on the ends. They wondered whether different materials of cartons would make a difference in the number of eggs broken. They got busy planning some more investigations.

Read this report on the Dropped Egg Investigation. Then answer the questions about the inquiry process on page 33.



Use with page 33.

Name _____

Egg-Drop Method	Trial # 1 Number of Eggs Broken	Trial # 2 Number of Eggs Broken	% of Total Eggs Broken in 2 Trials
Eggs in Container, Dropped on Wood Floor	11	9	41.6%
Eggs in Container, Dropped on Carpet	1	2	6.2%
Eggs Dropped on Wood Floor Out of Container	22	24	95.8%
Eggs Dropped on Carpet Out of Container	13	11	50%

Read the investigation described on page 32. Then review the steps in scientific inquiry below. Use the questions to make a record of how these scientists used the process of scientific inquiry.



1. OBSERVE: *What observation led to an experiment?*

2. ASK QUESTIONS: *What question(s) did they want to answer?*

3. HYPOTHESIZE: *What was their hypothesis?* _____

4. PLAN AND CARRY OUT AN INVESTIGATION: *What plan did they follow?*

5. USE TOOLS TO GATHER AND ANALYZE DATA: *How did they collect the data?*
What tools and supplies did they use? _____

6. ANALYZE AND INTERPRET DATA: *What were the results?*

7. PURPOSE EXPLANATIONS: *What explanation did they give for the results?*

8. COMMUNICATE RESULTS: *How did they show or share the results?*

9. OFFER OTHER QUESTIONS OR IDEAS: *What other questions or ideas did they offer?*

10. MATHEMATICS: *How did they make use of math in their process?*

Use with page 32.

Name _____