

The Cranberry Bounce Test



OVERVIEW: Ripe cranberries bounce! Farmers use this characteristic to separate unripe cranberries from ripe cranberries after harvest. In this lesson, students will test for the bounciness of a group of cranberries, estimating, observing, and separating the cranberries, and using fractions to record results.

GRADES: 3-5

OBJECTIVES: The student will be able to:

Write a paragraph explaining how cranberries are grown.

Write a paragraph explaining how cranberries are harvested.

Estimate the number of cranberries that will bounce based on a hypothesis.

Following directions, perform, observe, and record results of an experiment to see how many cranberries bounce.

Compare results to their estimates.

Record results as a fraction.

MATERIALS:

The book *From the Garden State to Your Plate, Farming Fruits and Vegetables in New Jersey*. A digital copy is available [here](#).

Cranberries: enough so that each group of three or more students to has 10 berries

One small piece of cardboard (4 inches x 6 inches or larger) for each group of students

2 blank pieces of paper for each group that they label “bounce” and “no bounce”

A foot-long ruler for each group

A copy of the Cranberry Bounce Worksheet *below* for each student

Optional: The book *Time for Cranberries* by Lisl H. Detlefsen

Optional: *The Cutts Brothers Cranberry Farm* video available [here](#).

PROCEDURE: Tell students today they are going to learn about one of New Jersey's top 10 crops: cranberries. Ask students what they know about cranberries. Read the two pages about cranberries in the book *From the Garden State to Your Plate, Farming Fruits and Vegetables in New Jersey*.

Optional: Read the book *Time for Cranberries* by Lisl H. Detlefsen. Students can also pass the book around, reading it together in small groups. Show the YouTube video *Cutts Brothers Cranberry Farm*.

Ask students what they have learned about how cranberries are grown. Ask students what they have learned about the process of harvesting cranberries.

Remind students that cranberries bounce. Farmers remove unripe cranberries from ripe cranberries by bouncing them on a machine called a separator or "bounce board." Explain that today students are going to test whether cranberries bounce with an experiment, using the hypothesis: *Fresh undamaged cranberries will bounce, others will not.* Explain or review the meaning of the word hypothesis as an educated guess.

Divide students into small groups of three or four. Have each group select 10 cranberries from a large bowl without looking at them. Give each group a piece of cardboard, a ruler, and two pieces of paper. Tell students to label the papers "bounce" and "no bounce."

Explain that one student will hold the ruler vertical to a desk. Another student will hold the cardboard level with the ruler so the cardboard is one foot above the desk. Another student will place one berry on the cardboard and then gently push it off.

Students observe whether the berry bounces. Berries that bounce should be placed on the paper labeled "bounce." Berries that don't bounce should be placed on the paper labeled "no bounce." Students should place the two result papers away from where they are doing their experiment, so they won't bump into them and spill their results. Remind students to rotate jobs so that everyone has a turn pushing the berries.

Tell students to record the result of each bounce test on the Cranberry Bounce Test Worksheet. Students should continue the experiment until all of their cranberries have been tested. Then students should complete the chart and answer the questions on the Cranberry Bounce Test Worksheet.

Teachers note: If students have not yet learned fractions, tell them to skip those questions on the chart.

EVALUATION: completed Cranberry Bounce Test Worksheet.



EXTENSIONS:

Repeat the experiment three or four more times at two-day intervals to see if the results change and ask students why this may happen.

Use the cranberries to do the NJAITC *Make a Cranberry Catapult* lesson available [here](#).

Do the lesson *Cranberry Graphing*, in which students taste different blends of cranberry juice and graph their favorites, available [here](#).

New Jersey Learning Standards

Math: 2.MD.D 3.NF 3.MD.B 4.MD, 4.NF.C 5.MD.B

Science: 2:LS2.A 3:LS1.B 4:LS1.A 5:LS2.A

Social Studies: 2: 6.1.2.Geo.GI.1; 6.1.2.EconEM.1,2; 6.1.2.EconNE.1
3-5: 6.1.5.GeoHE.2; 6.1.5.EconEM.1, 2

English Language Arts: 2:W.2.2,4,8 3:W.3.2.A-D, W.3.4,8 4:W.4.2.A-E, W.4.4,8
5: W.5.2.A-E; W.5.4,8

Name _____

Cranberry Bounce Test Worksheet

Hypothesis: Fresh, undamaged cranberries will bounce, unripe or damaged cranberries will not.

Think about the hypothesis. Observe your cranberries without touching them. Estimate how many will bounce and how many will not. Record your estimates on the chart below.

Label one paper *Bounce* and one paper *No Bounce*. One student holds the ruler so one end is flat on a desk and the other end is 12 inches in the air. Another student uses the ruler to hold the cardboard one foot off the desk. Another student should set one cranberry on the cardboard and then gently push it off the edge.

If the cranberry bounces, place it on the paper labeled *Bounce*. If the cranberry did not bounce, place it on the paper labeled *No Bounce*. Record the results of each cranberry test with tally marks on the chart. Keep the *Bounce* and *No Bounce* papers to the side so you don't bump them while doing the experiment.

Cranberry Bounce Chart	Results
Your estimate for how many cranberries will bounce	
Number of cranberries that bounced	
What do these cranberries look like?	
Number of cranberries that did not bounce	
What do these cranberries look like?	
Fraction of cranberries that bounced	
Fraction of cranberries that did not bounce	

Write a paragraph explaining what you have learned about how cranberries grow.

Write a paragraph explaining what you have learned about how cranberries are harvested.

Write a sentence explaining how farmers use the bounciness of cranberries during the cranberry harvest.