

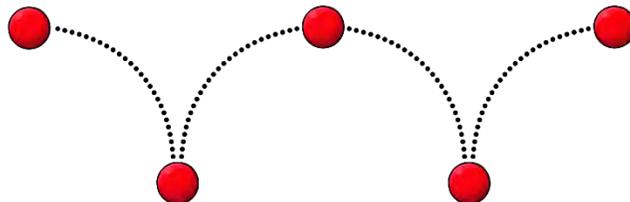
# LESSONS & MATERIALS

## Cranberry



## Learning Project

**Hands on lesson plans in Science, Technology, Engineering, Art and Mathematics (STEAM) to increase agricultural literacy.**





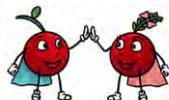
## **CRANBERRY STEAM LESSONS PLANS**

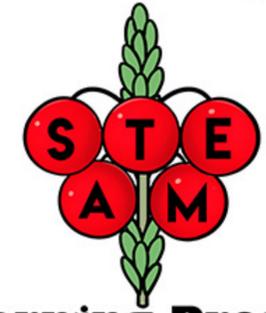
The Cranberry STEAM Learning Project is a newly formed Steering Committee representing Wisconsin's cranberry industry and youth education. Using a grant awarded from the proceeds from the 2018 Wood County Farm Technology Days, numerous educational kits have been assembled to teach traditional and non-traditional students about Wisconsin's state fruit, the Cranberry.

Lessons have been developed to engage students in Science, Technology, Engineering, Art and Math (STEAM). In addition to original lessons, our Cranberry STEAM lesson plans have been derived from existing plans that have been altered and enhanced to include Ag-literacy components. With these resources volunteers, teachers, and other agricultural advocates will help our youth better connect where food comes from, teach them about healthy eating and provide fun educational experiences.

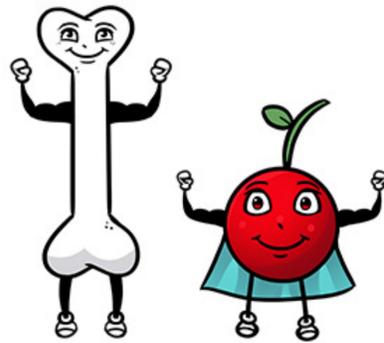
The Steering Committee is working in partnership with the Ag in the Classroom program. The Cranberry STEAM Learning Project's teaching resources and lesson plans will be available to educators across the country through this amazing platform. Ag in the Classroom's program seeks to work within existing curricula to provide basic information on the nation's largest industry: agriculture. The Steering Committee is excited to make Cranberries a part of this!

The Cranberry STEAM Learning Project Grant was written by the Cranberry STEAM Education Steering Committee, Co-Chairs Heidi Slinkman (Gaynor Cranberry Co.) & Pamela Verhulst (Cranberry Industry Consultant).

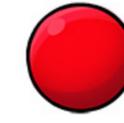




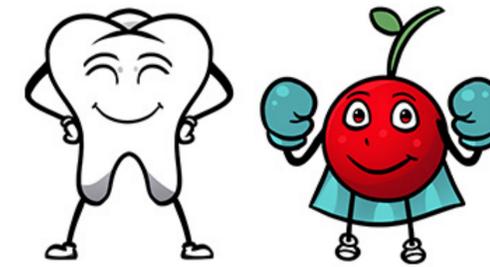
**STRONG BONES**



**HEART  
HEALTHY**



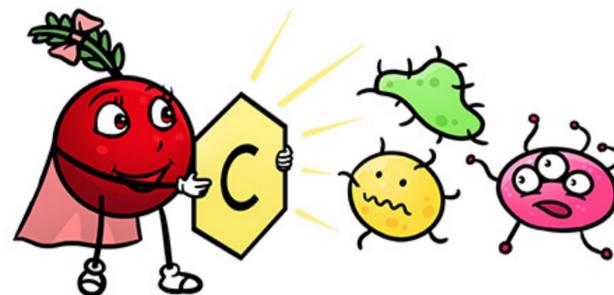
**FIGHTS ORAL  
PROBLEMS**



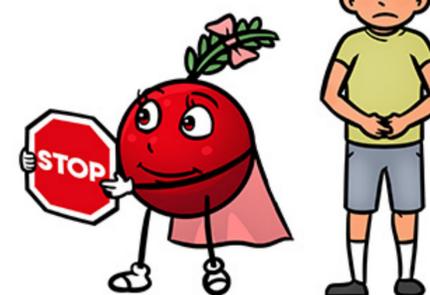
# **CRANBERRIES & Healthy Kids**

## **A NUTRITIOUS SUPERFOOD**

**BOOST IMMUNITY AND  
REDUCES CANCER  
RISKS**



**PREVENTS STOMACH AND  
URINARY TRACT  
PROBLEMS**



# Easy Ways to Boost your Favorite Foods

## With Cranberries



● Put a handful of **FRESH CRANBERRIES** in a smoothie



● Sprinkle **DRIED CRANBERRIES** on top of oatmeal or cereal



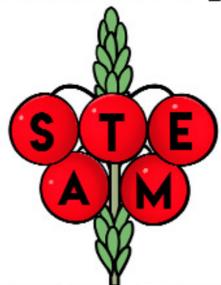
● Top a cracker and cheese with **CRANBERRY SAUCE**

● Add **FRESH OR DRIED CRANBERRIES** to your favorite cookies or muffins

● Create a colorful trail mix with **DRIED CRANBERRIES**



Cranberry



Learning Project

Publication made possible with funding provided by the  
2018 Wood County Farm Technology Days Show



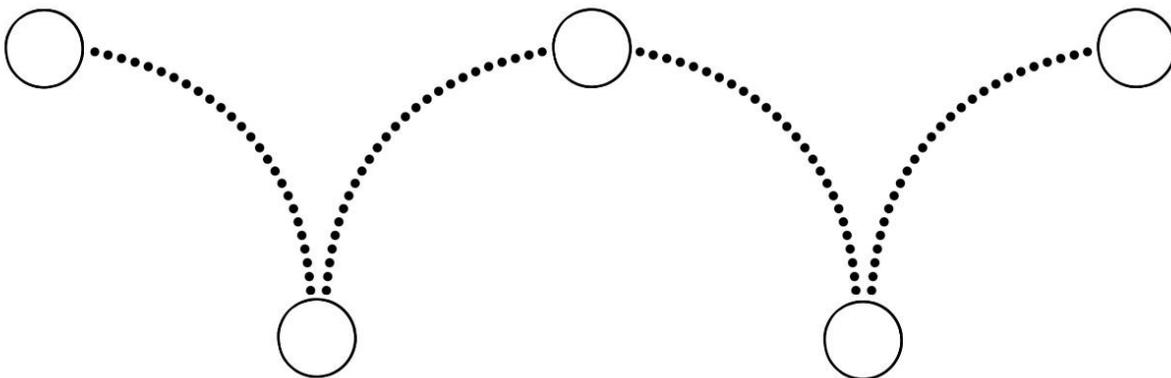
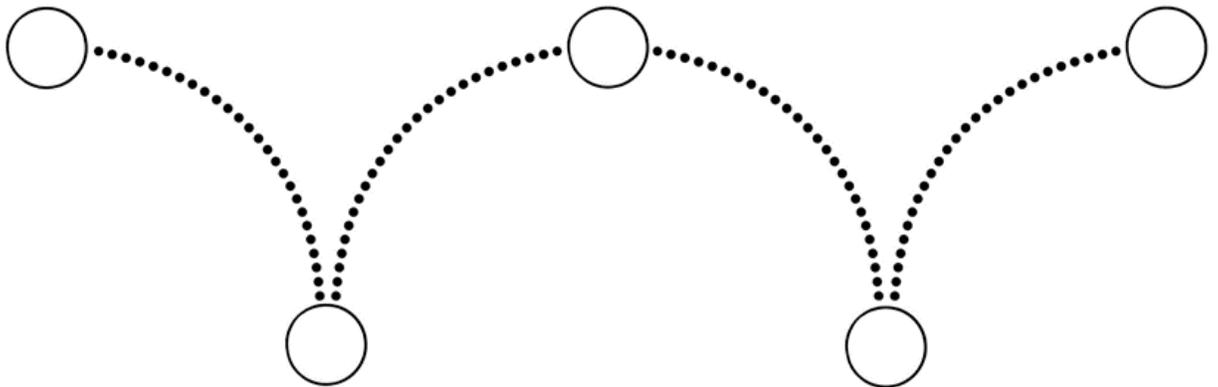
# BOUNCING CRANBERRIES

Did you know that Cranberries can bounce?

Cranberries have four air chambers inside of them. Having air inside them, like a ball, gives them the ability to bounce!

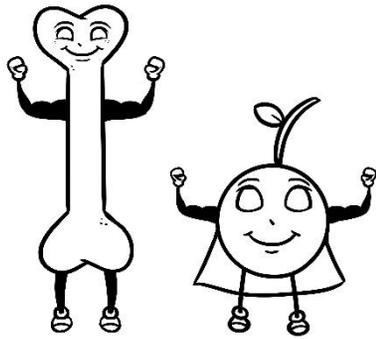
Cranberry growers use a bounce test to see if their fresh cranberries are good or not. Squishy or soft cranberries do not bounce.

## Color the bouncing Cranberries

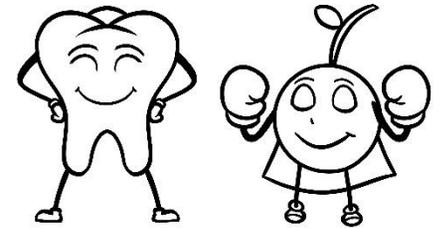


# Cranberries & Healthy Kids

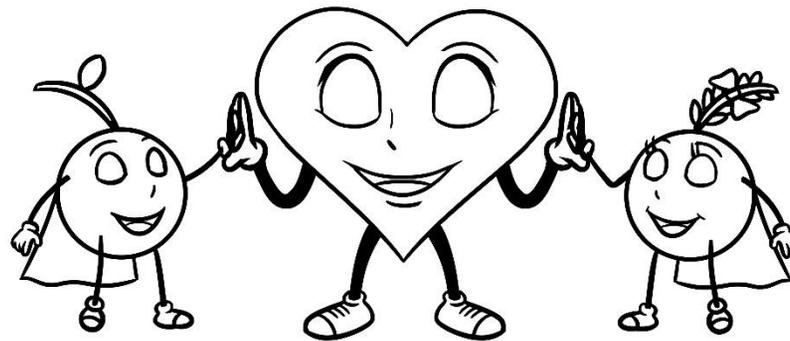
## A NUTRITIOUS SUPERFOOD



Strong Bones

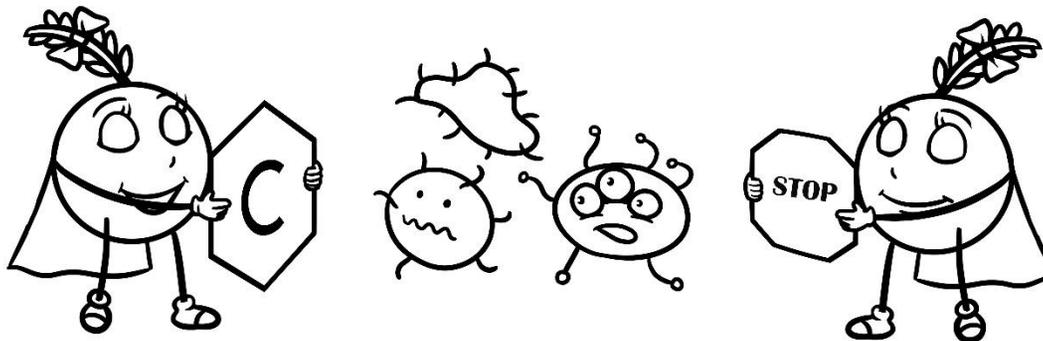


Fights Oral Problems



Heart Healthy

Boost Immunity  
and Reduces  
Cancer Risks



Prevents Stomach  
and Urinary Tract  
Problems





# CRANBERRY DEVELOPMENT

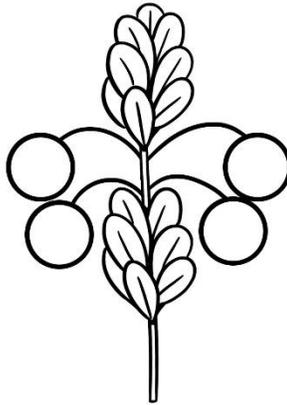
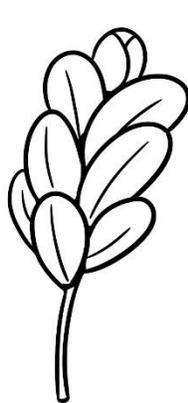
Did you know that cranberries do not grow in water?

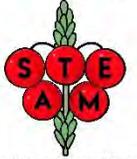
Cranberries grow on tiny woody plants called vines that stand about 6 inches tall. They grow in well drained sandy soil, not water.

Did you know that cranberries are not always red?

In the spring, the cranberry vine has green leaves. Then pink flower buds and flowers open. After being pollinated by bees they grow into tiny green berries. The tiny green berries then start to swell and turn pink. Finally, after several weeks of growing they turn red and are ready to be harvested. The vines slowly turn purple as they prepare to rest or go dormant for winter.

**Color the different plant stages of a cranberry.**

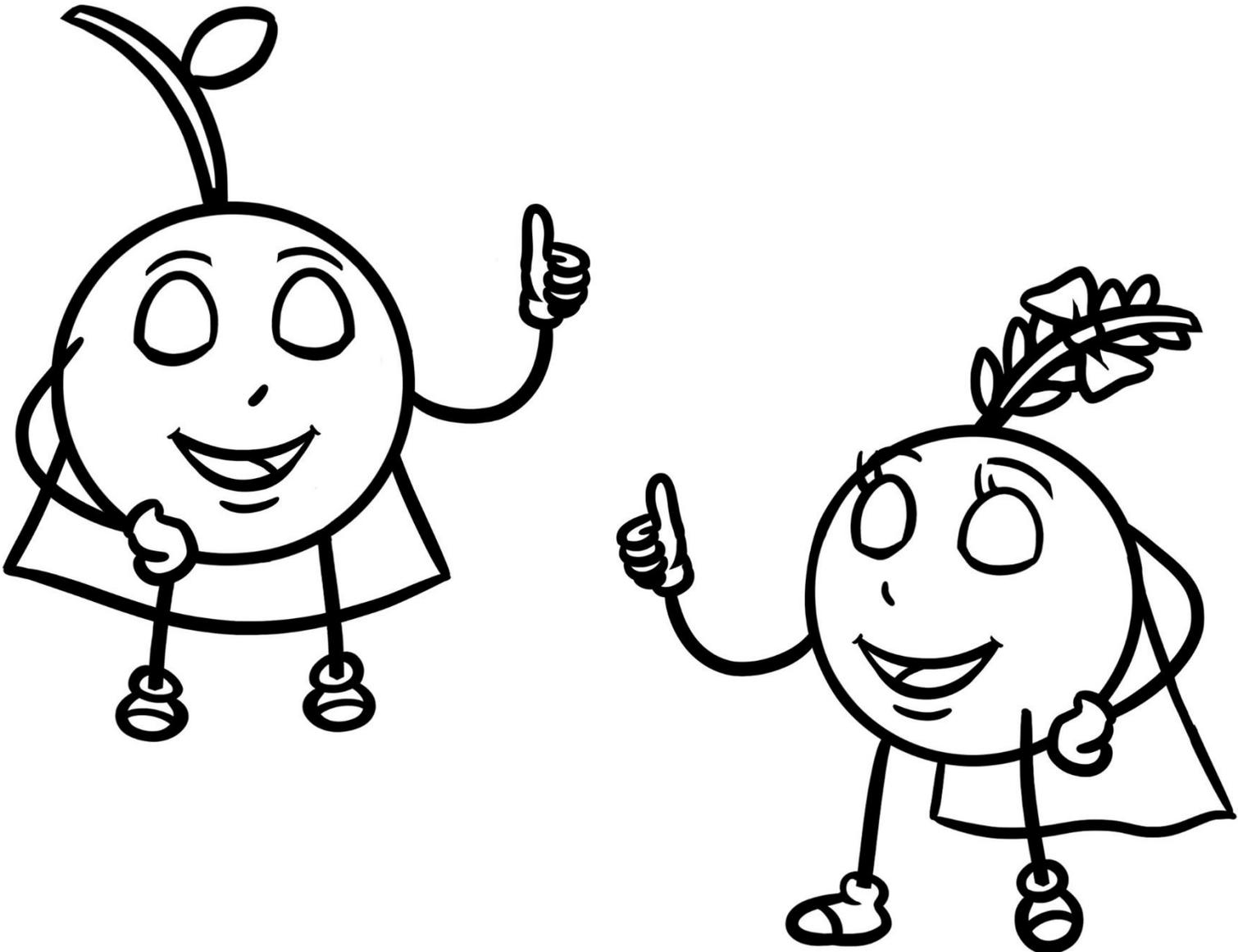




# CRANBERRIES A SUPERFRUIT

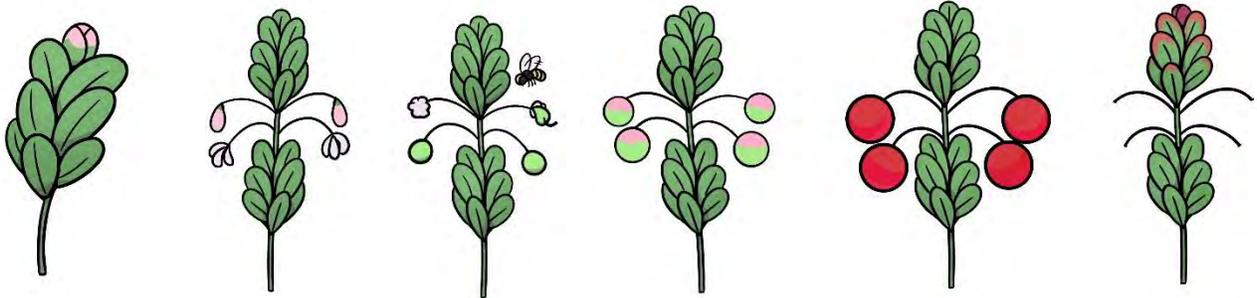
Cranberries are superfruits! A superfruit is fruit that is deemed "super" by nutrition scientists. They are packed with antioxidants, fiber, vitamins, minerals, and other nutrients that can help you live longer, look better, and prevent disease.

**Color the Superfruit Cranberries below.**



# BUDS AND BERRIES

## THE DEVELOPMENT OF A CRANBERRY



Most people believe that Cranberries grow in water, but that isn't true. Cranberry plants or vines, grow in well-drained sandy fields called beds. The beds have a soil layer made from clay, gravel, peat and sand. Cranberries are woody perennial plants which means they can grow year after year, like a bush or tree. The same plants can produce cranberries for over 50 years!

How do these tiny berries continue to grow each year? It takes 16 months to grow the red berries that you see in the grocery store or on your plate. It all starts with a bud. A bud is a young plant part that will grow into leaves and flowers. In the spring as the weather warms up, the buds start to stretch out, growing stems with leaves and flowers. Once the light pink flowers start to open, Cranberry growers rent honey bees or buy bumblebees to pollinate the flowers.

After the flowers are pollinated, they will start to develop into tiny green berries. The berries will grow bigger as each day passes.

Next, the berries slowly start to blush or turn pink. As the fruit continues to grow, the berries turn more and more red. Above the berries, on top of the stem, a new bud is growing for next season.

Once the berries are red, Cranberry growers fill the Cranberry beds with water and gently remove the berries from the vines using a harvest machine. The grower only removes the berries and not the new buds.

After working so hard growing fruit, the cranberry vines need to rest. Their leaves will start to turn colors (just like maple and oak trees) and the plant will prepare to rest or go dormant for the winter. Cranberry growers will cover the vines with water that will freeze into a blanket of ice protecting the new buds during the cold winter.

The following spring the Cranberry vines will start to grow all over again, starting with their tiny bud.

**Cranberry**



**Learning Project**

# 16 MONTH CRANBERRY GROWTH CYCLE BUDS TO BERRIES

**June**  
Stems with leaves  
and flowers emerge.



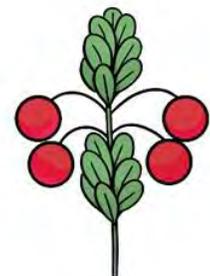
**July**  
Pollination & fruit  
development.  
New buds initiated.  
Growth cycles are  
overlapping.



**August**  
Berries grow larger  
and start to turn  
pink.  
Bud development.



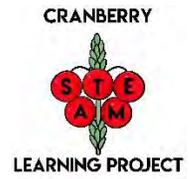
**September-October**  
Berries mature and  
are ready for  
harvest.  
Bud development.



**April-May**  
Buds that were  
developed in July  
of the previous  
year, start to  
grow.



**November-March**  
Buds are left on  
the uprights.  
Cranberry plants  
enter dormancy  
and fulfill chilling  
period.



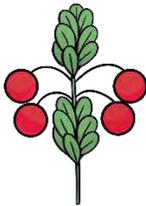
Name: \_\_\_\_\_



# BUDS AND BERRIES

## The Development of a Cranberry Worksheet

Directions: Draw a line from the photo to the plant stage description.



Honey, Bumble and Native bees pollinate the flowers.



The Cranberry vines are ready to rest or go dormant for the winter.



The berries are ready for harvest.



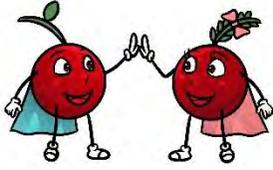
Buds start to grow into leaves and flowers.



The light pink flower buds open.



The berries grow larger each day and start to blush or turn pink.



## THE DIRT ON CRANBERRY SOIL



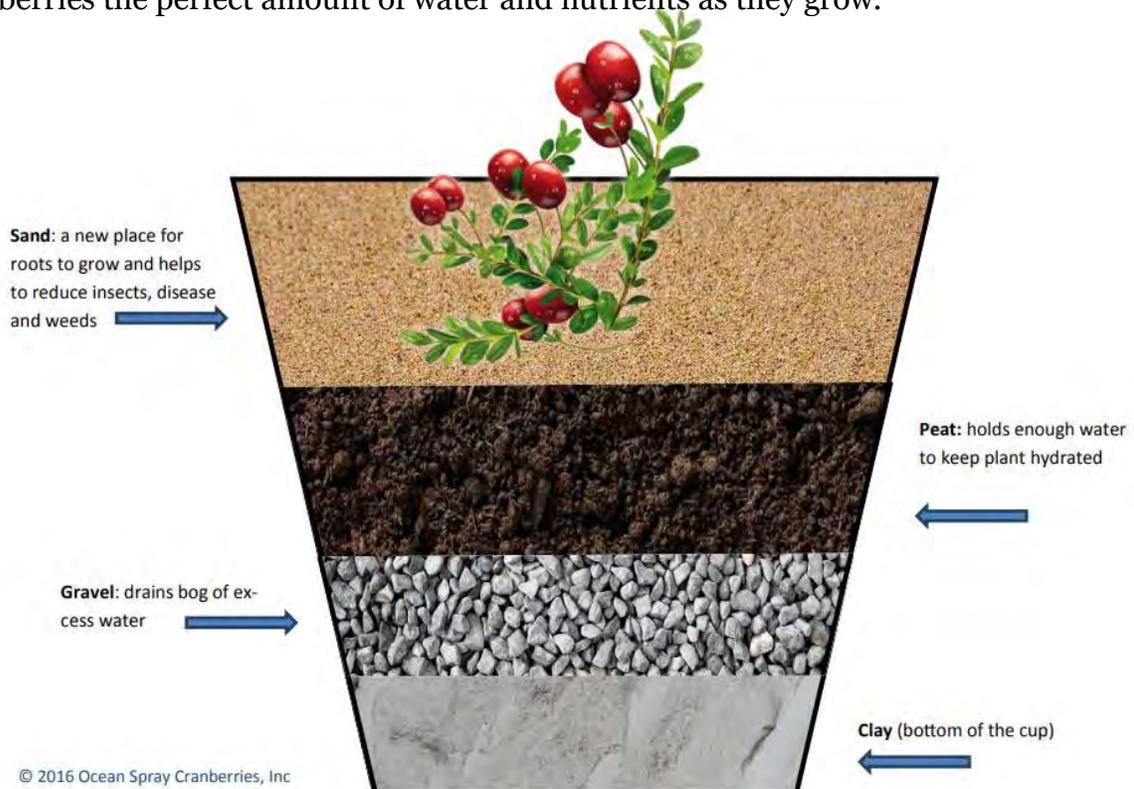
Every fall, Wisconsin cranberry growers share pictures of red berries floating in water on social media and with television reporters. These images lead people to believe that cranberries grow in water. While cranberries need ample water for production the fact is cranberries grow in well-drained soil.

### Here is the “dirt” on cranberry soil:

Cranberries have evolved to grow in low laying, acidic soil. When cranberries were first cultivated growers expanded on the areas that they were already growing. During early cultivation the beds’ soil consisted of peat, gravel and clay. The peat, gravel and clay were originally deposited by glaciers more than 10,000 years ago.

It wasn’t until the 1800s that Captain Henry Hall, a Revolutionary War veteran and a cranberry grower from Massachusetts, noticed that sand blown in from the nearby dunes helped cranberry vines grow faster. Cultivation of the cranberry began in 1816 as Captain Hall began transplanting cranberry vines and spreading sand on them. When others heard of Hall’s technique, it was quickly copied. In the early 1850’s commercial cranberry cultivation came to Berlin, WI.

Cranberries are still grown on a sand, peat, gravel and clay soil profile today. With the onset of irrigation systems and mechanical fertilizer equipment, growers can give the cranberries the perfect amount of water and nutrients as they grow.



**Sand:** a new place for roots to grow and helps to reduce insects, disease and weeds



**Peat:** holds enough water to keep plant hydrated



**Gravel:** drains bog of excess water



**Clay (bottom of the cup)**





# CRANBERRY SOIL PROFILE

## EDIBLE CUP

### Student Guide



### Materials for Yogurt or Pudding Cup

- 1/4 cup dried cranberries
- 1/4 cup finely crushed graham crackers
- 1/4 cup crushed Oreo cookies
- 1/4 cup coarsely crushed vanilla wafers
- 1/2 cup yogurt or pudding

### Materials for Oatmeal Cup

- 1/4 cup dried cranberries
- 2-4 Tablespoons cinnamon and brown sugar
- 1/4 cup chocolate chips
- 1/4 cup granola
- 1/2 cup cooked oatmeal

### Directions:

1. Use oatmeal, yogurt or pudding as your *clay layer*.
2. Add granola or crushed vanilla wafers as your *gravel layer*.
3. Sprinkle chocolate chips or crushed Oreo cookies as your *peat layer*.
4. For the *sand layer* use cinnamon and brown sugar or finely crushed graham crackers.
5. Finally, top your soil profile with dried cranberries to represent the cranberry plants.

**Cranberries**

**5**

**Sand**

**4**

**Peat**

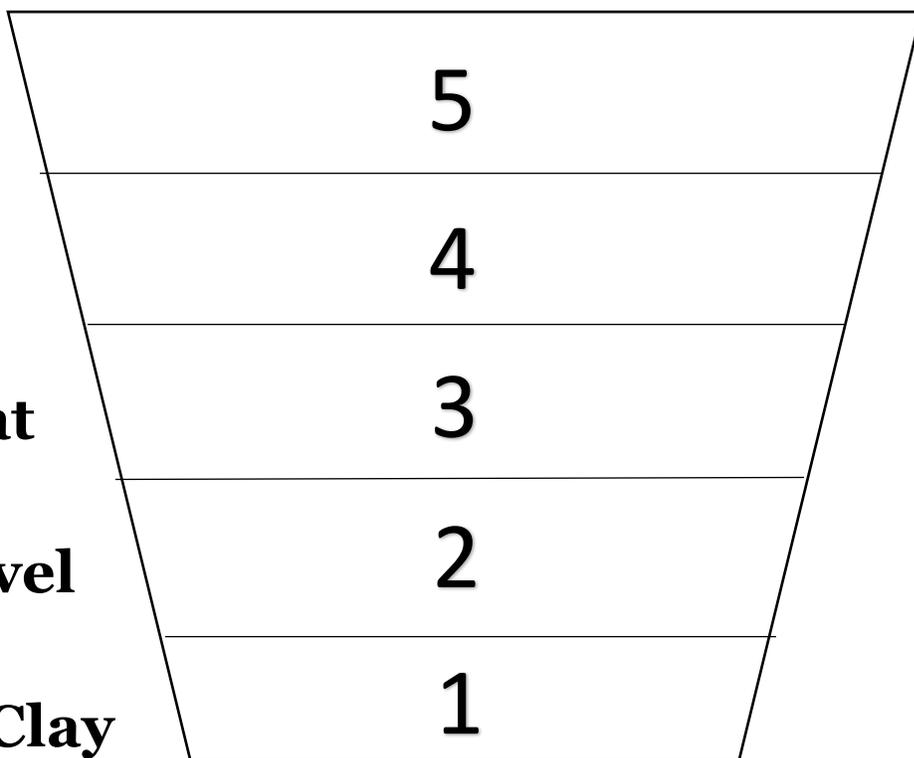
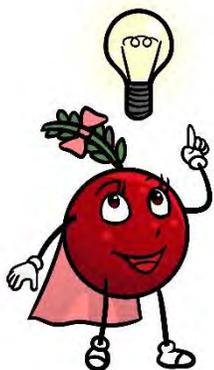
**3**

**Gravel**

**2**

**Clay**

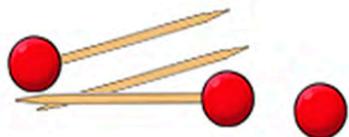
**1**



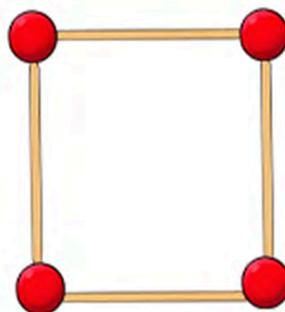
# 2D



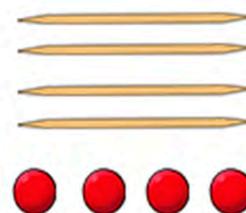
## CRANBERRY STRUCTURES



## BUILD A SQUARE



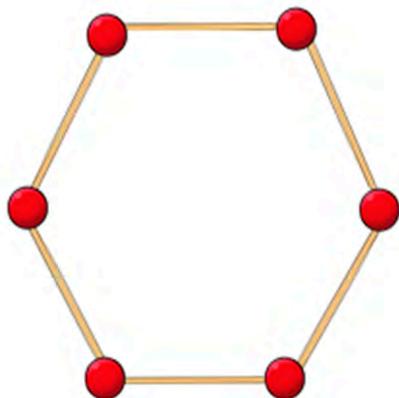
### Materials



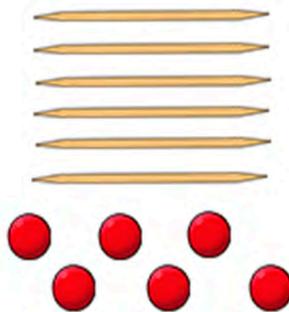
\_\_\_\_\_ EDGES

\_\_\_\_\_ VERTICES

## BUILD A HEXAGON



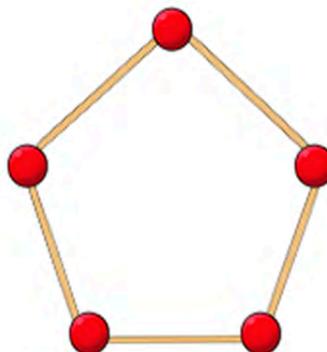
### Materials



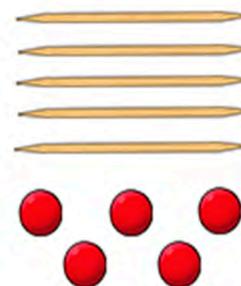
\_\_\_\_\_ EDGES

\_\_\_\_\_ VERTICES

## BUILD A PENTAGON



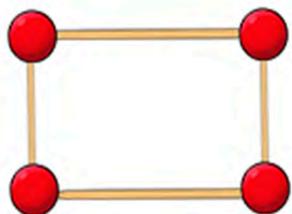
### Materials



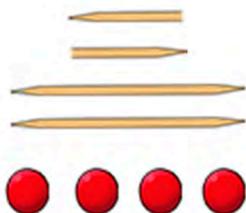
\_\_\_\_\_ EDGES

\_\_\_\_\_ VERTICES

# BUILD A RECTANGLE



## Materials



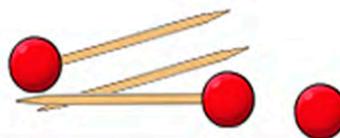
\_\_\_\_\_ EDGES

\_\_\_\_\_ VERTICES

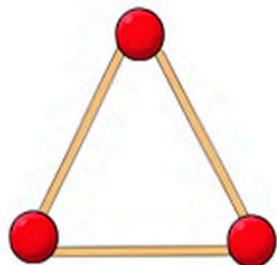


# 3D

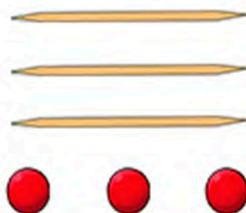
# CRANBERRY STRUCTURES



# BUILD A TRIANGLE



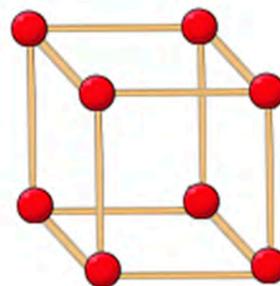
## Materials



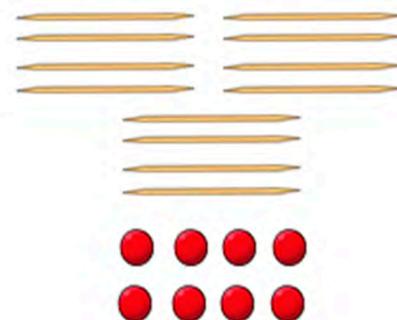
\_\_\_\_\_ EDGES

\_\_\_\_\_ VERTICES

# BUILD A CUBE



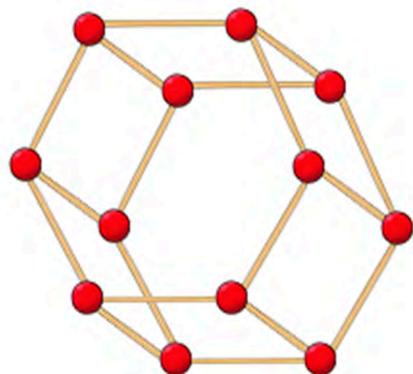
## Materials



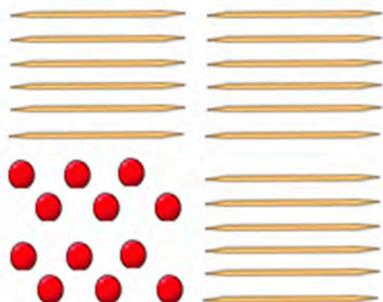
\_\_\_\_\_ EDGES

\_\_\_\_\_ VERTICES

# BUILD A HEXAPRISM



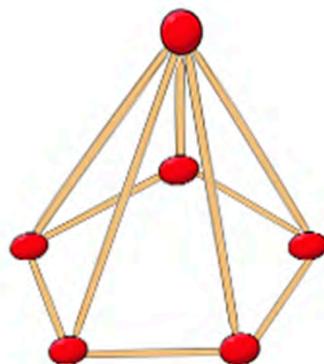
## Materials



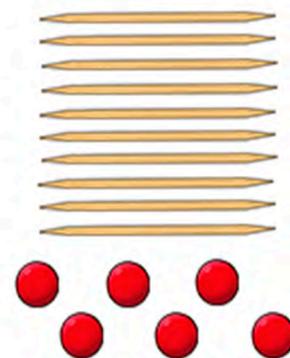
\_\_\_\_\_ EDGES

\_\_\_\_\_ VERTICES

# BUILD A PENTAGONAL PYRAMID



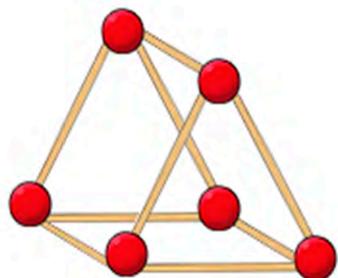
## Materials



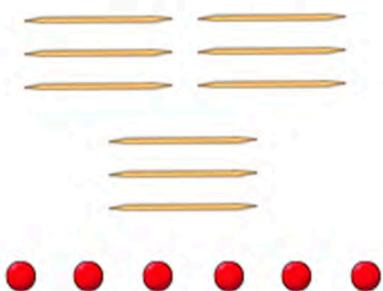
\_\_\_\_\_ EDGES

\_\_\_\_\_ VERTICES

# BUILD A TRIANGULAR PRISM



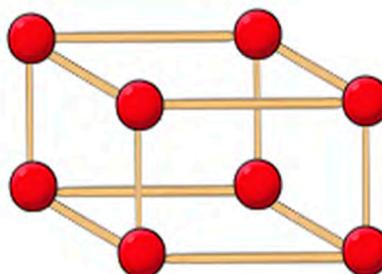
## Materials



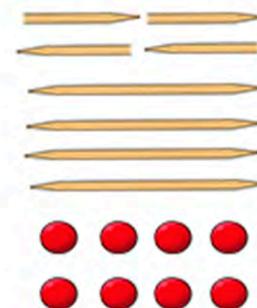
\_\_\_\_\_ EDGES

\_\_\_\_\_ VERTICES

# BUILD A RECTANGULAR PRISM



## Materials



\_\_\_\_\_ EDGES

\_\_\_\_\_ VERTICES



# DO CRANBERRIES SINK OR FLOAT?

## Educator's Guide

### Materials

- Fresh Cranberries (3-5 berries per student or group)
  - Clear plastic cups (1 per student or group)
  - Pencil
  - Butter knife/Plastic knife
  - Ink or Paint for stamping
1. Hand out the Do Cranberries Sink or Float Worksheet. Have the students quietly write down their own Hypothesis and Theory why Cranberries sink or float. After everyone is finished have a class discussion on what they think and why.
  2. Have the students fill their clear plastic cups half full of water. Or have them walk to stations where you have already set the cups up.
  3. Give each student 3 Fresh Cranberries to test their Theory. Explain the importance of multiple trials. Once the class discovers that the Cranberries float have another class discussion why they think they float.
  4. After the discussion, cut open some Cranberries and show the students that the centers of the Cranberries contain hollow air chambers. Explain this is the reason why they float. Compare them to beachballs or innertubes for a reference.
  5. Lastly, have the students complete their worksheets. Use paint or ink for the students to stamp the inside of a cut Cranberry on the worksheet.

Name: \_\_\_\_\_



# DO CRANBERRIES SINK OR FLOAT?

Hypothesis (Sink or Float?)

---

---

Theory (Why?)

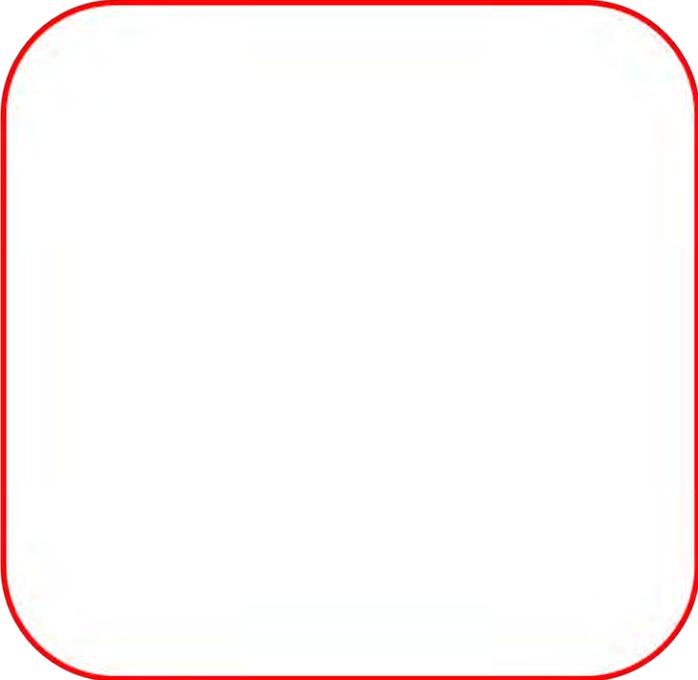
---

---

---

---

Conclusion: Explain what you discovered during the experiment.  
Stamp the inside of a Cranberry in the box.



---

---

---

---

---

---

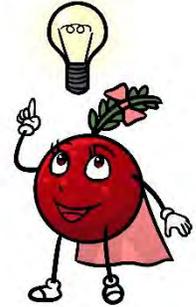
---

---

# WHY CRANBERRIES FLOAT

## An Introduction to Density

### Educator's Guide



### Materials

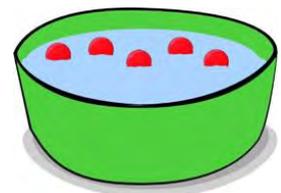
- 1 Cup of Fresh Cranberries
- Water
- 1 large tote or bowl
- 2 Styrofoam Balls that are of noticeably different sizes
- Rubber ball of similar size as one of the above Styrofoam Balls
- 5 small objects that sink or float (use other produce, classroom objects, objects from nature, etc.)

### Instructions

1. Use the first two paragraphs on the provided “Why Objects Float” discussion page and the below examples as an introduction.
  - An explanation of density to young elementary-school children can begin with discussion on weight, especially why two objects of the same size might have different weights. \*If your students are ready for Mass then use Why Objects Float Upper Elementary\*
    - Hold up the Styrofoam ball and the rubber ball and ask the class to guess which ball would be lighter. Allow a student or two (or the entire group, for small classes) to feel each of the balls for themselves. Explain that the

Styrofoam ball has less mass once they've understood that it's lighter.

- Next, introduce the concept of volume to describe the size of objects.
    - Hold up two Styrofoam balls of noticeably different sizes. Ask the class which ball takes up more space. Explain that the larger ball takes up more space and, therefore, has a higher volume.
  - Third, you can show them why some objects sink in water and others float, laying the foundation for the understanding of density.
    - Show the students a Cranberry and 5 additional objects.
2. Hand out the Float or Sink worksheet. Have the students record the name of the objects and whether they think the object will sink or float on the prediction worksheet.
  3. Test each object by placing it in the tote of water and have the students record the results.
  4. Have a discussion why the students think some objects floated while other objects sank.
    - a. Test theories: cut objects open, weigh them, etc.
  5. Read the last paragraph on the discussion page “Why Objects Float” and have the students complete the comprehension questions.

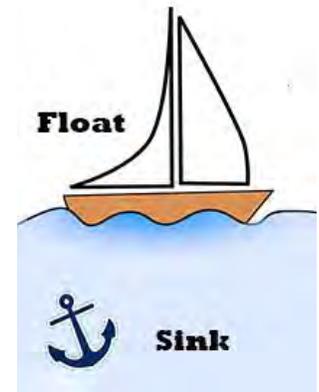




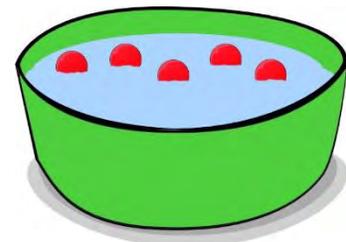
## Why Objects Float

Whether an object sinks or floats does not depend on how big or small the object is. It does not depend on how much it weighs or what shape it is. Whether an object sinks or floats depends on its **density**.

**Density** is a measure of how tight or loose the particles that make up an object are. Objects *more dense* than water **sink**, while objects that are *less dense* than water **float**.



A beachball and bowling ball can be used as an example of **density**. The beachball is bigger than the bowling ball, however when put in water the beach ball will float while the bowling ball will sink. This is because the particles that make up the bowling ball are tightly packed together, but the inside of the beachball is filled with air. Use a Cranberry and marble as a visual. In the same way, a Cranberry floats because there is air inside of it. Cranberries are less dense than water which allows them to float.



# Why Objects Float (Upper Elementary)



Whether an object sinks or floats, in water, does not depend on its **Mass**, **Weight** or **Volume**. Whether an object sinks or floats depends on its density.

**Density** is the amount of matter in a given volume. Objects *more dense* than water sink, while objects that are *less dense* than water float. **Density** is a physical property of an object. **Density** can be calculated if you know an object's Mass and Volume.

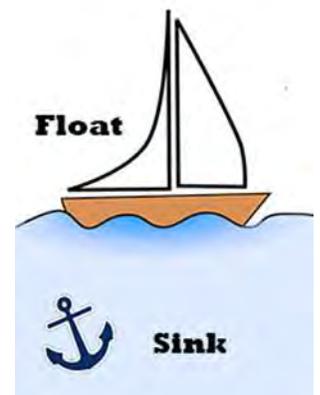
**Density = Mass / Volume**

**Mass** is a measurement of how much matter is in an object.

\*An object will have the same mass whether on the moon, in outer space or on earth. Mass stays the same.

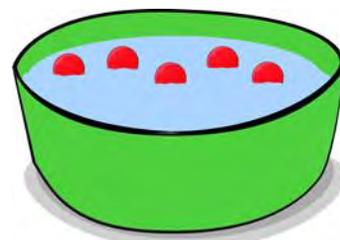
**Weight** is the measure of the pull of gravity on an object.

\*An object's weight will change depending on the pull of gravity. Objects will weigh less on the moon than on Earth because the pull of gravity is less on the moon.



**Volume** is the amount of space that an object takes up.

A beachball and bowling ball can be used as an example of **density**. The beachball has more **volume** than the bowling ball, however when put in water the beach ball will float while the bowling ball will sink. This is because the particles that make up the bowling ball have more **mass** than water, but the inside of the beachball is filled with air which has less **mass** than water. Use a Cranberry and marble as a visual. In the same way, Cranberries float because there is air inside of them making them less dense than water.



Name: \_\_\_\_\_



## Sink or Float



Directions: List each object. Make a Hypothesis or prediction about whether it will sink or float. Then, observe and record what happens.

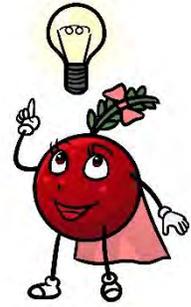
<b>Object</b>	<b>Hypothesis (Prediction) Sink or Float</b>	<b>Observations (Actual) Sink or Float</b>

**Granberry**



**Learning Project**

Name: \_\_\_\_\_



## Why Objects Float

What makes an object sink or float?

---

---

---

What is density?

---

---

---

Why do Cranberries float?

---

---

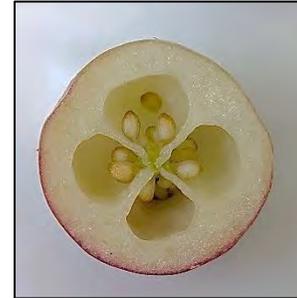
---



# WHY DO CRANBERRIES FLOAT?

## The Biology

The secret to why Cranberries float lies in the cranberry's inside. If you cut a cranberry open, horizontally, you will find four air chambers in its center. The air chambers are why cranberries can float in water.



From an evolutionary view, fruits are usually colorful and sweet in order to attract animals to eat them and distribute their seeds. Most wild animals do not eat cranberries because of their tart taste, so how was this fruit able to survive and thrive?

Cranberries have adapted to grow in lowlands near water sources. When the fruit is mature it falls off the vine. When water levels rise the berries float in the water and are transported by the water to new locations. Inside the fruit are tiny seeds that will begin to grow in their new location. No help is required from animals for the seeds to be dispersed.

Growers use this adaptation to harvest the mature fruit still today. Growers will gently remove the Cranberries from their vines using a harvest machine. The berries will drop into a flooded bed and be moved to a corner of the bed where they are elevated into a truck for processing.

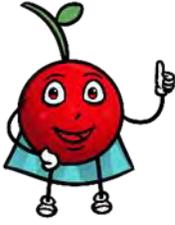


In addition to the berries' ability to float the vegetative part of the plant also has made some adaptations. Cranberries grow on vines that have a trailing growth habit. This stem growth is referred to as runners. In good growing conditions with a consistent food source the plant can run or grow across the land spreading 1 to 2 feet during a season. From the runners or long stems new roots and shoots can emerge from each node. As new shoots emerge more berries are produced, continuing the cranberry population.

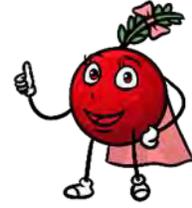
The runners work so well for expanding cranberry populations that the cranberry industry uses this technique for propagation, today. Growers mow the tops of the cranberries off, pick them up into bales

(similar to bales of hay) and move them to a new location. Once at the location growers spread the cut vines evenly across a prepared bed or field. Using a modified disk, the cuttings are gently planted. Irrigation is in place to water the cuttings and new roots and shoots begin to grow. After around 3 years the vines will be established and producing enough berries to harvest.





# CRANBERRY RAFT ENGINEERING CHALLENGE



## Educator's Guide

### Materials (for a classroom up to 30 Students)

- 100 count toothpicks
- 1-pound fresh cranberries
- 3-4 pieces of construction paper
- 60 pennies
- Scissors
- Water
- 1 large tote or bowl

### Cranberry Raft Engineering Challenge

1. Hand out the Cranberry Raft Engineering Challenge instructions and My Design planning sheet to each student.
2. Review the definition of Density.
  - a. Optional: Use the Lesson Plan Why Cranberries Float
3. Allow the students 10 minutes to plan individually.
4. Divide students into groups of 3-5.
5. Give each group a Group Design planning sheet.
6. Allow each group 10 minutes to review individual plans and to plan a group design.
7. Give the groups the materials listed on the Cranberry Raft Engineering Challenge Instructions. The groups will have 30 minutes to construct their rafts. Have time reminders to help the groups stay on task.

- a. Remind the groups to design their rafts to be able to hold the pennies for Challenge #2.
8. After 30 mins the group will come to the front of the class and test their raft by placing it in the water. If the raft floats the group has completed challenge #1. Next, on the floating boat the group will then add one penny at a time. The group that can hold 10 pennies will have successfully completed challenge #2.
9. Optional: Re-build. Allow groups 5-10 minutes to make modifications to try to complete the challenges.
10. Last, have the students complete the reflection page at the end of the activity.

## **Additional Activities**

### **Cranberry Fictional Story**

1. After completing the Cranberry Raft Engineering Challenge have the students write and illustrate a story.

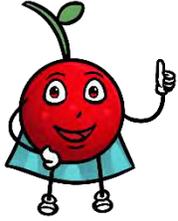
Suggested story topics:

- A Cranberry Raft Adventure
- How to Build a Cranberry Raft

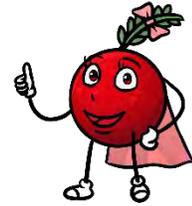
Suggested Parameters

- Write a Story about the Cranberry Raft using the new vocabulary words **Density** and **Buoyant**.





# CRANBERRY RAFT ENGINEERING CHALLENGE



## Student's Guide

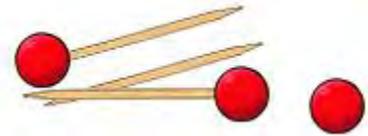
Challenge #1: Using what you know about density you will need to design and build a floating raft out of Cranberries.

Challenge #2: Design your raft strong enough to hold the weight of 10 pennies.

You may use only the materials listed below to construct one raft that can complete both Challenge #1 and Challenge #2.

### Materials

- **20 Toothpicks**
- **20 Fresh Cranberries**
- **1/2 Piece of Construction Paper**
- **Scissors**
- **10 Pennies**



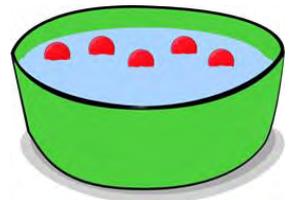
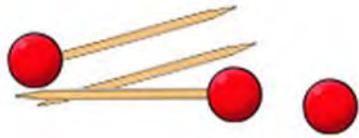
### Directions:

First, you will have 10 minutes to plan your design individually. Next, you will be divided into groups of 3-5. Then you will have 10 minutes to share your designs with your group and decide on a final design. Finally, your group will have 30 minutes to construct your raft. At the end of the time limit the **buoyancy** of your raft will be tested. If your raft floats you have completed Challenge #1.

Challenge #2 will then be immediately tested. Can your raft continue floating when 10 pennies are added to the top? Did you remember to build a place to put the pennies? A member of your group will add one penny at a time to your raft. If all 10 pennies are added and your raft is still floating, you have completed Challenge #2.

Name: \_\_\_\_\_

## Cranberry Raft Engineering Challenge Planning



How will you be sure that your raft will float?

---

---

---

How will you be sure the raft will float and hold pennies?

---

---

---

What problems could come up during construction?

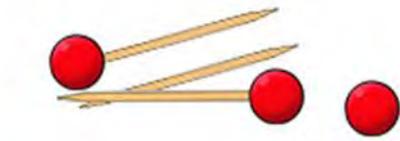
---

---

---

**Name:** \_\_\_\_\_

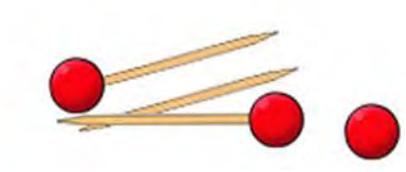
## **Cranberry Raft Engineering Challenge Planning**



**My Design:**

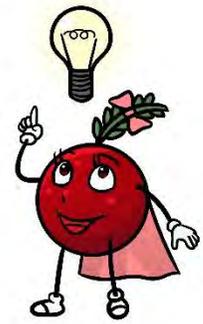
**Name:** \_\_\_\_\_

**Cranberry Raft Engineering Challenge Group Planning**



**Group's Design:**

Name: \_\_\_\_\_



## Cranberry Raft Engineering Challenge Reflection

What was your Challenge?

---

---

What was difficult for you during this challenge?

---

---

---

What did you learn?

---

---

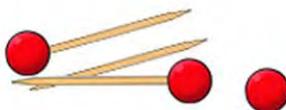
---

If you were to do the challenge again what would you do differently?

---

---

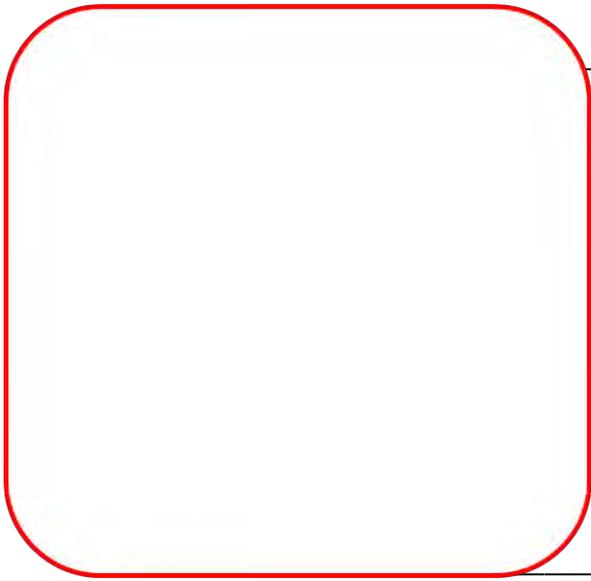
---



Title: \_\_\_\_\_

Author: \_\_\_\_\_

Illustrator: \_\_\_\_\_



\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

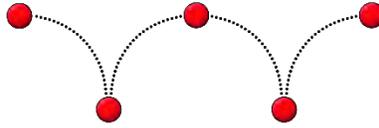
\_\_\_\_\_

\_\_\_\_\_



# BOUNCING CRANBERRY EXPERIMENT

## Educator's Guide



Divide the students into small groups of 2-4 and hand out their materials.

Have the students fill out the first question in their worksheet- hypothesis and theory.

Next, ask the students to conduct the experiment. They are discovering how many of their cranberries are fresh and firm and which ones are not. When you distribute the cranberries be sure to include bruised or soft berries. In addition, they are using their math skills to measure how high each berry bounces.

After the experiment have a discussion why the firm, fresh berries bounce. Why did some bounce higher than others? Was it their size? Shape?

After your discussion cut open a couple cranberries and discover four air chambers. These small pockets of air inside the berry and the firmness of the exterior cause the cranberry to bounce.

End the discussion by telling the students about a Cranberry Grower John Webb.

John Webb was a Cranberry Grower from New Jersey. One day while he was carrying a box of Fresh Cranberries down the steps of his barn, the box spilled! John noticed that all the firm, fresh cranberries bounced all the way down the stairs, but the bruised or rotten berries remained on the steps. It is unknown if he spilled the box intentionally or if it were an accident. However, this discovery was used to develop the bounce separators that are still used today to separate fresh fruit.

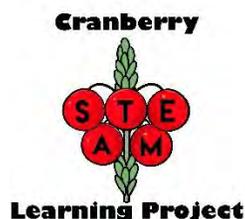
### **Additional Ag Literacy Lesson:**

Have the students write and illustrate a fictional story about Bouncing Cranberries.

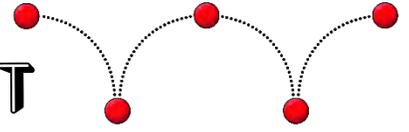
Guided Topics:

The Bouncing Berry's Big Adventure

How John Webb Discovered Berries Bounce

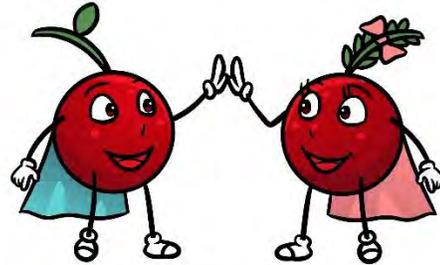


# THE BOUNCING CRANBERRY EXPERIMENT



Materials (for small groups of 2-4):

20 Fresh Cranberries  
2 Cups or Bowls  
1 Ruler  
Pencil  
Tape  
3 pieces of blank paper

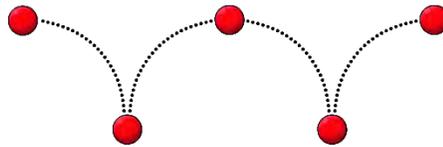


Directions:

1. Divide into groups of 2-4.
2. Tape 3 pieces of paper together, vertically. Carefully line the top of one piece of paper to the bottom of the next to create one long piece of paper.
3. Along the left edge of your long piece of paper you will draw your measuring line. Using your ruler draw a line 30 inches (or 75 cm) long. Start at the very bottom of your paper. Include measuring points!
4. Tape the measuring paper to the wall. Be sure that the bottom of your paper is to the floor.
5. Put 20 Fresh Cranberries in one cup or bowl. Have your second cup or bowl ready to place the Cranberries in after you conduct the bounce test.
6. Now it is time for the bounce test! Have one member of your group be the "dropper" and another member be the "recorder". Hold the Cranberry level to the 30-inch (75 cm) mark and drop it. The recorder will have to carefully watch how high the Cranberry bounces and mark it on the measuring paper. Write a small number 1 for the 1<sup>st</sup> Cranberry and continue numbering each Cranberry until all 20 are done.
7. Record your findings on the record keeping worksheet.

Name \_\_\_\_\_

# THE BOUNCING CRANBERRY WORKSHEET



Do you think all the Cranberries will bounce? Why?  
Hypothesis and Theory:

---

---

---

Record your Height Measurements:

Berry	Height	Berry	Height	Berry	Height	Berry	Height
1		6		11		16	
2		7		12		17	
3		8		13		18	
4		9		14		19	
5		10		15		20	

What was your highest measurement? \_\_\_\_\_

What was your lowest measurement? \_\_\_\_\_

What did you learn from this experiment?

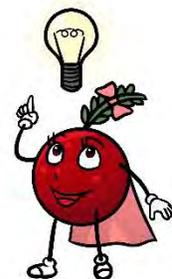
Conclusion:

---

---

---

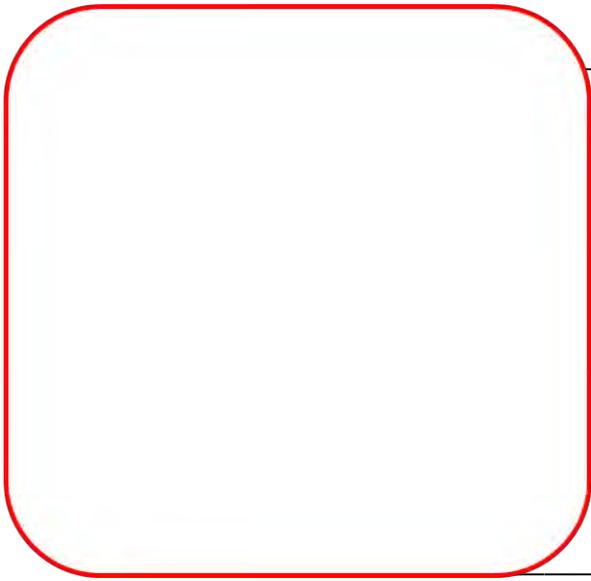
---



Title: \_\_\_\_\_

Author: \_\_\_\_\_

Illustrator: \_\_\_\_\_



\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_





Name: \_\_\_\_\_

## CRANBERRY TEN FRAMES

Directions: Read the Math Problem in the Super Cranberry's thinking bubble. Use two different Cranberry Colors (Green, Pink or Red) to show the problem on the Ten Frame. Write the number sentence with the sum on the lines.

4+3

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_


2+5

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_


5+3

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_


7+2

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_


6+4

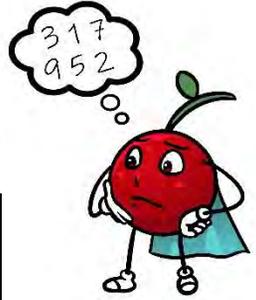
\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_


4+5

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_


Name \_\_\_\_\_

# CRANBERRY TEN FRAMES



Draw "Cranberries" in the ten frames to match the numbers on each of the Cranberries.





















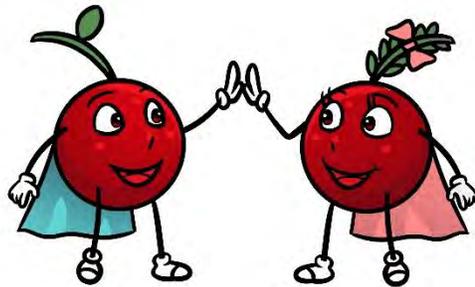








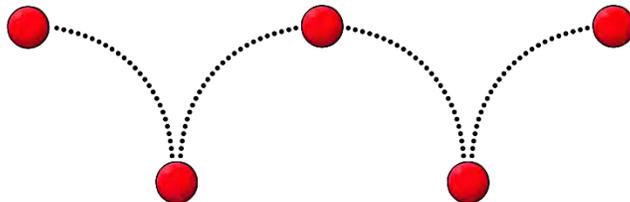




**Facebook.com/CranberrySTEAMLearningProject**



**CranberrySTEAMLearningProject@gmail.com**



**Publication made possible from funding provided by the Wisconsin  
Wood County Farm Technology Days Show.**