



Chapter 3

Vegetables

Vegetables are the parts of plants that people eat including roots, tubers, bulbs, stems, leaves, fruits, flowers, seeds and sprouts. Some examples of vegetables are carrots, cucumbers, celery, and lettuce. Most Americans do not eat the variety or amount of vegetables that they need for healthy living. For this reason, it is important to learn about the nutrition and science of cooking vegetables.

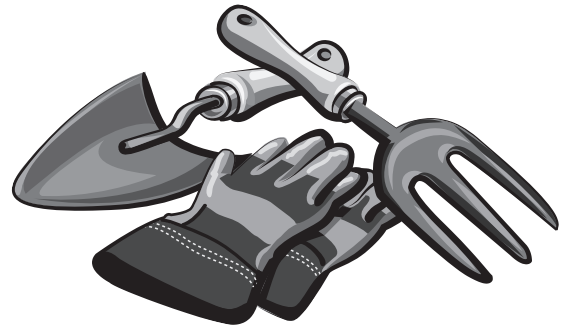
Enjoy taking a trip to vegetable paradise!

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Growing It!



Did you know that you can grow a garden in an egg carton?

You can grow some vegetables indoors using just an egg carton. Green leafy vegetables are some of the easiest things to grow indoors. Plant leaves that can be eaten are called **leafy vegetables**.

Romaine lettuce, iceberg lettuce and spinach are three common green leafy vegetables. The darker the color, the more **vitamins** and **minerals** they have. Our bodies need vitamins and minerals to grow big and strong. For example, romaine lettuce is darker than iceberg lettuce. The darker color means that it has more vitamins and minerals than iceberg lettuce.

In the winter, it is too hard to grow some plants outside. But, you can grow vegetables indoors with the right seeds, soil and an egg carton! Growing vegetables indoors can be tricky. Before planting your vegetables you need to find the right soil. When growing vegetables, it is important to check if the soil is acidic or basic. These refer to the **pH** of the soil. The pH is based on a scale from 0-14. **Acidic** soil has a pH ranging from 0 to 6. **Basic** soil has a pH ranging from 8 to 14.

Spinach, for example, needs a neutral soil to grow. This means that it needs a neutral pH. Neutral soil has a pH of 7. Spinach wants to grow in soil that lands right in the middle of the pH scale!

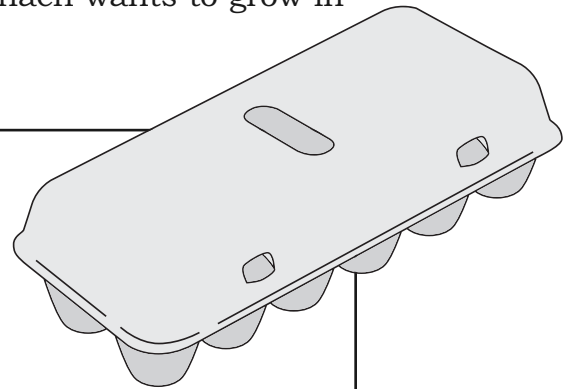
DOODLE BUGS

Draw a box around the name for plant leaves that can be eaten.

Circle a green leafy vegetable in the reading.

Can you think of another kind of leafy vegetable? Write it below.

In the reading, underline the sentence that tells you the number scale used to find pH.



MATHEMATICS INVESTIGATIONS: Finding the Balance



Each group will need:

- 1 can/plastic container
- 1 scoop of soil
- ½ cup vinegar

- 1 can/plastic container
- 1 scoop soil
- ½ cup water
- ½ cup baking soda
- 1 plastic spoon



Things to know:

Spinach needs neutral soil

Neutral pH = in the middle

Your teacher will give each group a container of soil. First, your group will calculate a neutral pH. Then your group will predict if your soil is acidic or basic. After, your group will test your prediction by adding items to their soil. Once the soil has been tested, you will record your answers on the number line to find out whether or not your soil is acidic or basic.

Neutral pH _____ (Divide 14 by 2)

Prediction: _____

Test for a Base

1. Measure ½ cup of vinegar with a ½ cup measuring cup.
2. Pour vinegar into the soil.
3. Watch for bubbling or fizzing.
4. If it bubbles or fizzes, your soil is basic.
5. Record your answer.
6. If nothing happens it is time to test for acidity.

	Yes	No
Bubbling		
Fizzing		

MATHEMATICS INVESTIGATIONS: Finding the Balance (continued)



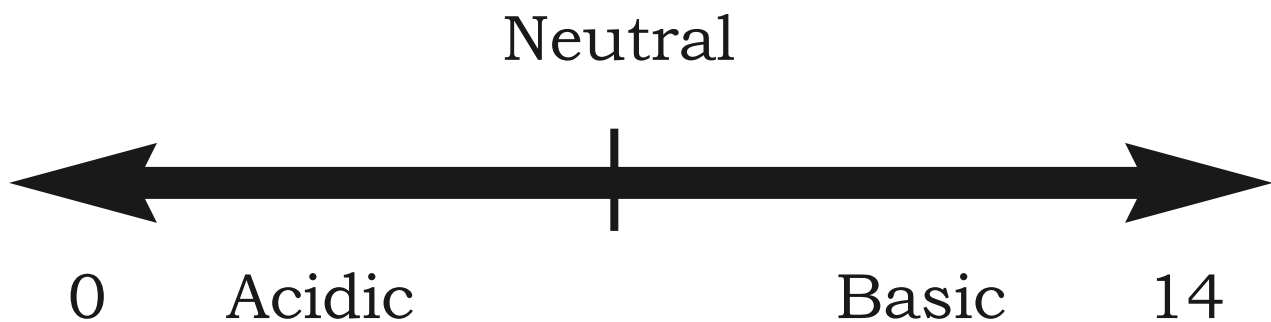
Test for Acidity

1. Measure $\frac{1}{2}$ cup water with a $\frac{1}{2}$ cup measuring cup.
2. Pour water into a fresh container of soil.
3. Mix well with plastic spoon.
4. Measure $\frac{1}{2}$ cup of baking soda with $\frac{1}{2}$ cup measuring cup.
5. Pour baking soda into the water and soil mixture.
6. Watch for bubbling or fizzing.
7. If it bubbles or fizzes, your soil is acidic.
8. If nothing happens, your soil is neutral.
9. Record your answer.

	Yes	No
Bubbling		
Fizzing		

Record your final answer

1. Record the pH of your soil on the number line.
2. Circle whether or not your soil was acidic, basic or neutral on the number line.
3. Now that you know how to find the perfect soil for spinach, you are ready to grow your own spinach at home.



MATHEMATICS INVESTIGATIONS:
Finding the Balance (continued)

1. **Is this the right pH environment for your spinach to grow?** (Circle one)

Yes

No

2. **Why or why not?**

3. **Was your prediction correct?** (Circle one)

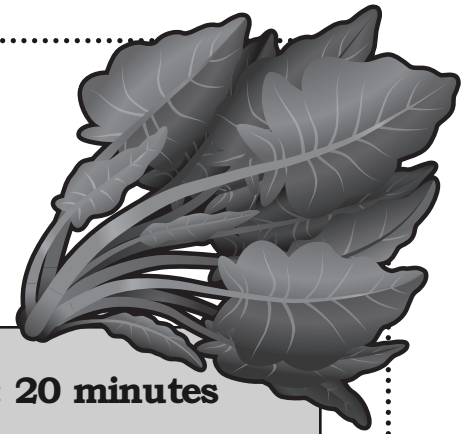
Yes

No

4. **Why or why not?**



FUN WITH FOOD: **Growing Spinach**



You will need:

1 cardboard or styrofoam egg carton
1 package of spinach seeds
Neutral soil

PREP TIME: 20 minutes

Water
Help from an adult

You will investigate and observe how spinach changes throughout its life cycle. Observe the spinach growing, record its growth and describe how it survives. Each week include an average of how much water (cups) and sunlight (hours) your spinach was given.

1. Place enough soil in your egg carton to fill each section $\frac{3}{4}$ full.
2. Plant 1-2 spinach seeds in each section of your egg carton.
3. Cover seeds with soil.
4. Only use enough soil to fill each section.
5. Water your seeds.
6. Only use enough water to moisten the soil.
7. Place by a window.
8. Be sure to give your spinach plenty of water and sun daily.
9. Watch your spinach grow!

Fun Fact

Spinach is high in many vitamins and minerals! It only takes 2 cups of spinach to fulfill your recommended daily need for Vitamin A and K.

FUN WITH FOOD:
Growing Spinach



Record and draw your observations

Week 1 _____

____ cups of water ____ hours of sunlight

Week 2 _____

____ cups of water ____ hours of sunlight

Week 3 _____

____ cups of water ____ hours of sunlight

Week 4 _____

____ cups of water ____ hours of sunlight

Week 5 _____

____ cups of water ____ hours of sunlight

Proficiency Questions

Circle the best answer:

- 1. What are leafy vegetables?**
 - a. plants with a hard skin
 - b. plant leaves that can be eaten
 - c. plant stems that can be eaten
 - d. none of the above
- 2. ____ green vegetables have more vitamins and minerals.**
 - a. light
 - b. yellow
 - c. dark
 - d. none of the above
- 3. If a plant needs a basic soil, which pH would be best?**
 - a. 10
 - b. 7
 - c. 2
 - d. none of the above
- 4. If you add $\frac{3}{4}$ cup of water to your soil to test the acidity, how much baking soda would you use if you wanted to make sure you had a 1 to 1 ratio of water to baking soda?**
 - a. $\frac{1}{4}$ cup
 - b. $\frac{1}{2}$ cup
 - c. $\frac{3}{4}$ cup
 - d. none of the above
- 5. Which of the following is correct?**
 - a. $\frac{1}{4}$ cups + $\frac{3}{4}$ cups = 4 cups + $\frac{4}{3}$ cups
 - b. $\frac{1}{2}$ cups + $\frac{1}{2}$ cups = 1 cup
 - c. $\frac{2}{3}$ cups + $\frac{3}{4}$ cups = $\frac{3}{2}$ cups + $\frac{4}{3}$ cups
 - d. none of the above