HARVEST OF THE MONTH PRESENTS...

FREE! Harvest of the Month — Network for a Healthy California

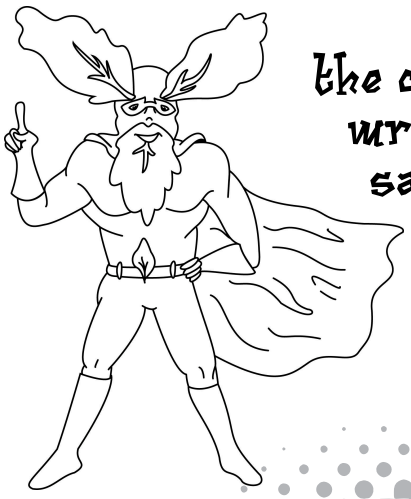
HARVEST HEROES!

APPROVED BY THE COMICS CODE AUTHORITY

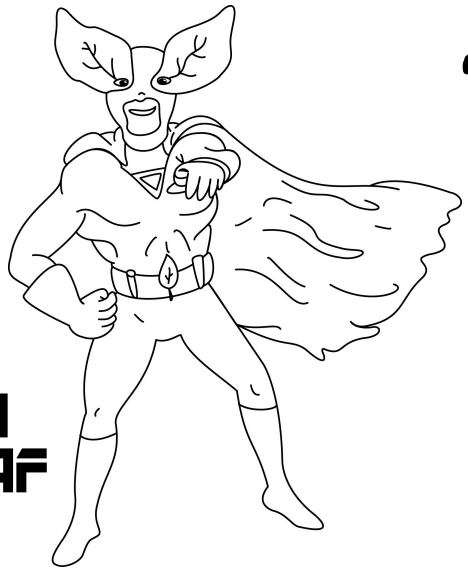
MAR 2008

GRADES 9–12

LADY RED VEINS



the crinkly urinkly savoy



CAPTAIN FLAT LEAF

Introducing this month's heroes...

THE SPECTACULAR SPINACH!

Spinach hero illustrations © Andrew Ho 2008

OH NO! SO MANY GOODIES IN SPINACH! BUT SO LITTLE TIME!

SAY WHAT?!! POPEYE WASN'T JUST ACTING?

HOLD UP... THERE'S DIFFERENT KINDS?!! ISN'T SPINACH JUST A GREEN LEAF?

This material was created and approved as an extension to the Harvest of the Month tool kit developed by the *Network for a Healthy California.*

LEARN MORE INSIDE!

Montebello Nutrition Services

THIS MATERIAL WAS FUNDED BY USDA'S FOOD STAMP PROGRAM THROUGH THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH, NETWORK FOR A HEALTHY CALIFORNIA. THESE INSTITUTIONS ARE EQUAL OPPORTUNITY PROVIDERS AND EMPLOYERS. THE FOOD STAMP PROGRAM PROVIDES NUTRITION ASSISTANCE TO PEOPLE WITH LOW INCOME. IT CAN HELP BUY NUTRITIOUS FOODS FOR A BETTER DIET. FOR INFORMATION ON THE FOOD STAMP PROGRAM, CALL (323) 727-4542. CONTRACT # 06-55103.

CHAMPIONS for CHANGE — Network for a Healthy California

TABLE OF CONTENTS

WHO ARE THESE GUYS?!!

- THE SPINACH FAMILY TREE. PAGE 1
- TOP SECRET INFO. PAGE 2-3
  - WHO IS THIS HERO?
  - A LITTLE HISTORY...
  - WHEN IS SPINACH "IN SEASON"?
  - DID YOU ALSO KNOW?
  - SPINACH POWERS

ACTIVITIES.

- CALIFORNIA CONTENT STANDARDS PAGE 4
- DOUBLE BUBBLE MAP® & CIRCLE MAP® PAGE 5-6
- I'VE GOT THE POWERS! (+ KEY) PAGE 7-9
- POPEYE... THAT'S ONE SMART SAILOR MAN. PAGE 10
- HOW CAN I EAT THEE? LET ME COUNT THE WAYS...(+ KEY) PAGE 11-12
- RECIPE MATH. (+ KEY) PAGE 13-14
- SPINACH EQUIVALENTS. (+ KEY) PAGE 15-17
- MAKE YOUR OWN SPINACH HERO. PAGE 18-20

EXPERIENCE THE TASTE...

- TASTE TEST! PAGE 21
- USE YOUR SENSES. PAGE 22
- ZIPPY RECIPES (SPINACH DIP, WRAP-N-GO) PAGE 23-24
- PARENT NEWSLETTERS (ENGLISH & SPANISH) PAGE 25-26

EVALUATION & TIME LOG...

- EVALUATION PAGE 27
- TIME LOG & INSTRUCTIONS PAGE 28-29

FUNDING OF THIS PROGRAM REQUIRES BOTH TYPES OF DOCUMENTATION... THANK YOU!!!

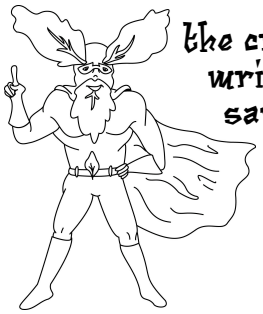
THIS MATERIAL WAS FUNDED BY USDA'S FOOD STAMP PROGRAM THROUGH THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH, NETWORK FOR A HEALTHY CALIFORNIA. THESE INSTITUTIONS ARE EQUAL OPPORTUNITY PROVIDERS AND EMPLOYERS. THE FOOD STAMP PROGRAM PROVIDES NUTRITION ASSISTANCE TO PEOPLE WITH LOW INCOME. IT CAN HELP BUY NUTRITIOUS FOODS FOR A BETTER DIET. FOR INFORMATION ON THE FOOD STAMP PROGRAM, CALL (323) 727-4542. CONTRACT # 06-55103.

THE SPECTACULAR SPINACH!

THE SPINACH FAMILY TREE.

CAPTAIN FLAT LEAF

- "CAPTAIN FLAT LEAF" is my name... it's my smooth leaves that brought me all my fame...
- Unlike the savoy spinach seen at right... my leaves are flat with no wrinkle in sight... the "Spinach Force Three" may look gentle, but diseases know they're not so polite... all types of spinach have carotenoids which helps prevent the presence of the Phantom of Bad Eyesight!
- I'm shaped like a shovel, which is just like a spade... my color is dark green , much like a powerful grenade...
- Since I'm so smooth, I'm easier to clean... because chewing on dirt is rather obscene!
- Heard of baby spinach? It comes from the smallest leaves of flat leaf spinach plants... make a salad out of us to make your taste buds so happy they'll dance!



the crinkly wrinkly savoy

- I'm the "CRINKLY WRINKLY SAVOY"... my curly, crunchy leaves you love to enjoy...
- I've been around for over 2,000 years... I guess with all my wrinkles, my age really appears!
- Along with my fellow "Spinach Force Three"... with our phytochemicals we love to take down the overlord of ill health, Dr. Disease!
- Lumpy and bumpy at the grocery store you see us sold in fresh bunches... with a very rich spinach flavor and a texture that crunches, it is with our slightly bitter aftertaste that we throw our health punches...
- Make sure all fresh spinach is carefully washed since we're grown with a sandy soil underneath..... because who likes to find a bunch of grit in their teeth?!!!

LADY RED VEINS

- They call me "LADY RED VEINS"... my very core has a unique wine-colored stain...
- I'm rounder in shape than Captain Flat Leaf... but I also have skin smoother than you'll believe... but when you eat any of the Spinach Force Three... much Vitamin C, magnesium, and folate you receive!
- For your body, the job of a spinach is to be your defender... the servants of Dr. Disease, they can't help but surrender... they can't handle the intensity of my powerful red center... (not to mention it's also pretty tender!)
- What's that you say, our variety you've never seen?... Well, we're actually not as popular in your everyday cuisine... next time you're at the grocery store look for us hidden inside a bag of "mixed greens"... and what makes it nice is that we'll already be clean!

Spinach hero illustrations © Andrew Ho 2008

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

TOP SECRET INFO.

WHO IS THIS HERO?

- Vegetables can be categorized into 1 of 8 groups according to the part of the vegetable that is eaten - spinach belongs in the "leaf" group.
- Spinach has small and medium leaves that are bright to dark green, thick, soft, and oval to arrow-shaped with green stems. Both the leaves and stems are edible.
- Spinach varieties are classified by leaf type: savoy (curly leaf), flat (smooth leaf) and semi-savoy (slightly curly leaves). Taste test will include the savoy and flat-leaf varieties.
- Red spinach, a type of flat leaf spinach, is distinguished by leaves with an attractive red center.
- Baby spinach comes from the smallest leaves of flat leaf spinach plants.

A LITTLE HISTORY...

Over 2,000 years ago in Persia (now Iran) , spinach was first cultivated. It made its way to China in the 7th century, when the king of Nepal sent it as a gift. Spinach was eventually brought to Europe in the 11th century, when it was introduced to Spain by the Moors (Muslims). In fact, spinach was known as "the Spanish vegetable" in England.

By 1806, spinach had become a popular vegetable and was listed in American seed catalogs. In the 1920's the U.S. pushed spinach commercially, with Popeye the Sailorman cartoon being a great advocate for spinach consumption. Cooks would commonly boil it down to a flavorless, gray-green mush. Fortunately, almost 100 years later, more appealing ways of preparing spinach are available!

WHEN ARE THEY "IN SEASON"?

While spinach is a cool weather crop, it is actually harvested all year in the north central (Monterey, San Benito, Santa Clara, and Santa Cruz Counties) and south central (Santa Barbara and Ventura Counties) areas of our state. An annual plant, spinach grows best in cool, damp weather, and in rich, moist soil.

The advantages of buying California-grown fruits and vegetables are: they are fresher, more affordable, and environmentally friendly, since the pollution created from the out-of-state transportation of produce is reduced. Check the grocery store to see if it's "CA-grown."

DID YOU ALSO KNOW ?

- California is the leading producer of fresh and processed spinach in the U.S.
- After Popeye made his debut in 1929, spinach became the 3rd most popular children's food after turkey and ice cream. Today more than 94% of Americans associate spinach with Popeye.
- Annual consumption of spinach jumped 66% from 1992 to 2002. This is mostly due to the availability of pre-cut, bagged spinach.
- Spinach provides iron and calcium, BUT, it also contains a compound called oxalic acid, that binds to the minerals, lowering the usable amount of these minerals by your body. Oxalic acid is also responsible for the weird feeling on your teeth after eating spinach since it combines with the calcium in your saliva!

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

TOP SECRET INFO.

SPINACH POWERS

Look at all the goodies that make spinach so spectacularly powerful... now why would you say "no" to these?!!

PHYTOCHEMICALS!

- Pronounced "fight-o-chemicals," these substances are produced by plants to help protect themselves from insects and other pests.
- The good news is these beneficial substances not only protect plants, they also protect humans. Phytochemicals can strengthen your body against diseases like cancer and heart disease!

VITAMIN C !

- Helps fight infection, heal cuts, and prevent bruising.
- Necessary for the production of collagen, the connective tissue that stabilizes bone, muscle and other tissues in the body.
- Serving as an antioxidant, Vitamin C plays a potential role in fighting disease by protecting your cells against the effects of free radicals. Free radicals can damage cells, playing a possible role in heart disease, cancer and other diseases. Antioxidants like Vitamin C may help prevent, and possibly reverse the cell damage caused by free radicals.
- 2 cups of raw spinach have nearly 20% of the Recommended Daily Allowance (RDA).

Folate!

- Also referred to as "folic acid," this B vitamin, has shown to play an important role in helping prevent birth defects.
- It also helps manufacture DNA required for all your rapidly growing cells.
- Spinach is the richest plant source containing folate. 2 cups of raw spinach have almost 1/3 of the RDA.

CAROTENOIDS!

- Typically, these are the yellow-orange pigments in fruits and vegetables. However, in spinach, the pigment chlorophyll conceals these colors.
- Our bodies convert carotenoids into vitamin A.
- Vitamin A plays an important role in promoting good vision, especially night vision.
- Vitamin A also helps boost your immune system.
- Carotenoids themselves help protect against heart disease and cancer.
- There are more than 600 carotenoids. Of these, 450 have been identified. Spinach contains the carotenoids BETA CAROTENE, LUTEIN, and ZEAXANTHIN.
- The darker the green color of a leafy green vegetable (like spinach) is, the more beta carotene they contain.
- 2 cups of raw spinach provide roughly 22% of the RDA for Vitamin A.

MAGNESIUM!

- This mineral helps convert our food into energy.
- Magnesium is also needed to relax muscles after they contract.
- Helps keep the rhythm of heartbeats.
- 2 cups of raw spinach have 11% of the RDA for magnesium.

FIBER!

- Helps keep energy levels steady.
- Lends a mighty hand to your intestines to prevent constipation.
- May also lower cholesterol levels.
- 2 cups of raw spinach provides about 2 grams of fiber.

THIS MATERIAL WAS FUNDED BY USDA'S FOOD STAMP PROGRAM THROUGH THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH, NETWORK FOR A HEALTHY CALIFORNIA. THESE INSTITUTIONS ARE EQUAL OPPORTUNITY PROVIDERS AND EMPLOYERS. THE FOOD STAMP PROGRAM PROVIDES NUTRITION ASSISTANCE TO PEOPLE WITH LOW INCOME. IT CAN HELP BUY NUTRITIOUS FOODS FOR A BETTER DIET. FOR INFORMATION ON THE FOOD STAMP PROGRAM, CALL (323) 727-4542. CONTRACT # 06-55103.

THE SPECTACULAR SPINACH!

CALIFORNIA CONTENT STANDARDS.

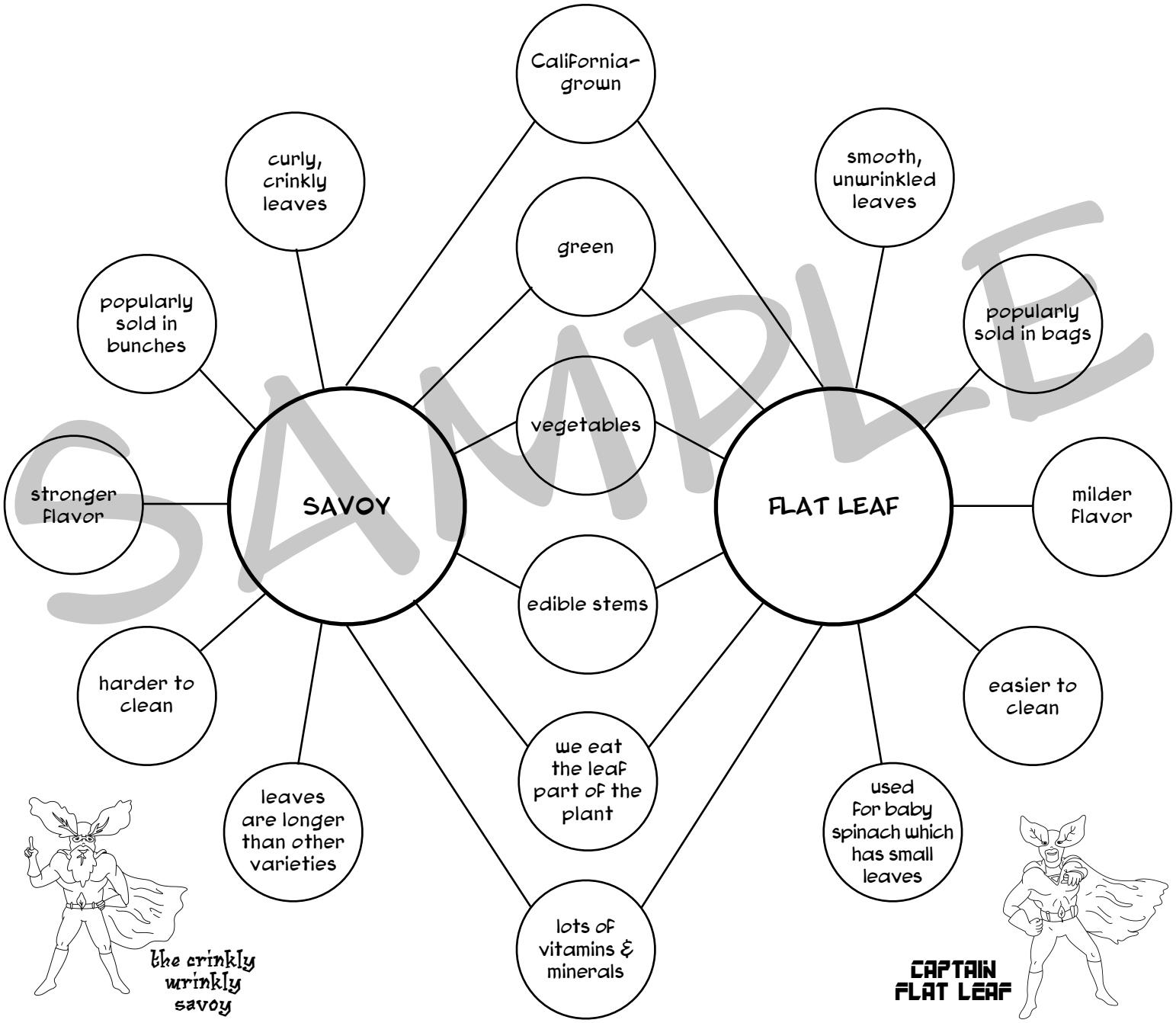
ACTIVITY	CONTENT STANDARDS grades 9 &10	grades 11 & 12
Double Bubble Map®	• Writing Strategies 1.2 • Literary Response & Analysis 3.2	• Reading Comp 2.2
I've Got The Powers!	• Writing Strategies 1.1, 1.2	• N/A
Popeye... That's One Smart Sailor Man.	• Writing Applications 2.1	• Writing Applications 2.1
How Can I Eat Thee?	• N/A	• N/A
Recipe Math.	• N/A	• N/A
Spinach Equivalents.	• Algebra 1 3.0, 4.0, 5.0	• Algebra 1 3.0, 4.0, 5.0
Make Your Own Spinach Hero.	• Writing Strategies 1.1, 1.2	• N/A
Taste Test!	• Writing Strategies 1.1	• Writing Strategies 1.5
Use Your Senses.	• Writing Strategies 1.1, 1.2	• Writing Applications 2.1 (c)
Recipes	• N/A	• N/A

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

DOUBLE BUBBLE MAP®: THE SPINACH FAMILY

Following is an example of characteristics to include if students were to draw their own Double Bubble Map® to compare and contrast the savoy and flat leaf spinach varieties. Any two varieties can be compared, or students can compare and contrast another vegetable, leafed or not, with spinach.



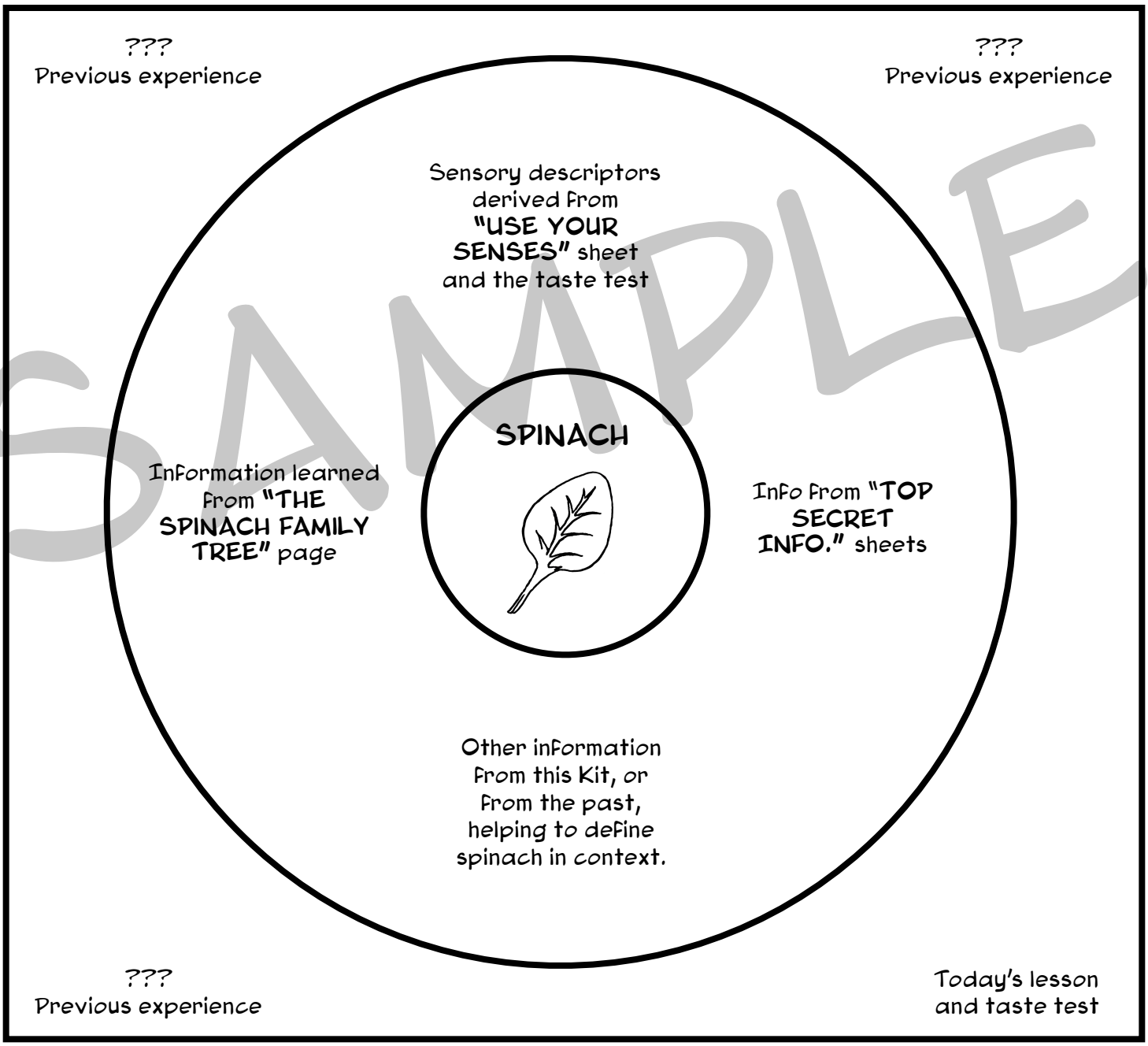
SAMPLE

THIS MATERIAL WAS FUNDED BY USDA'S FOOD STAMP PROGRAM THROUGH THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH, NETWORK FOR A HEALTHY CALIFORNIA. THESE INSTITUTIONS ARE EQUAL OPPORTUNITY PROVIDERS AND EMPLOYERS. THE FOOD STAMP PROGRAM PROVIDES NUTRITION ASSISTANCE TO PEOPLE WITH LOW INCOME. IT CAN HELP BUY NUTRITIOUS FOODS FOR A BETTER DIET. FOR INFORMATION ON THE FOOD STAMP PROGRAM, CALL (323) 727-4542. CONTRACT # 06-55103.

THE SPECTACULAR SPINACH!

CIRCLE MAP®

Possible ideas to include in the Formation of a Circle Map® about spinach. The examples provided are obviously not exhaustive and are given to help illustrate and define spinach...



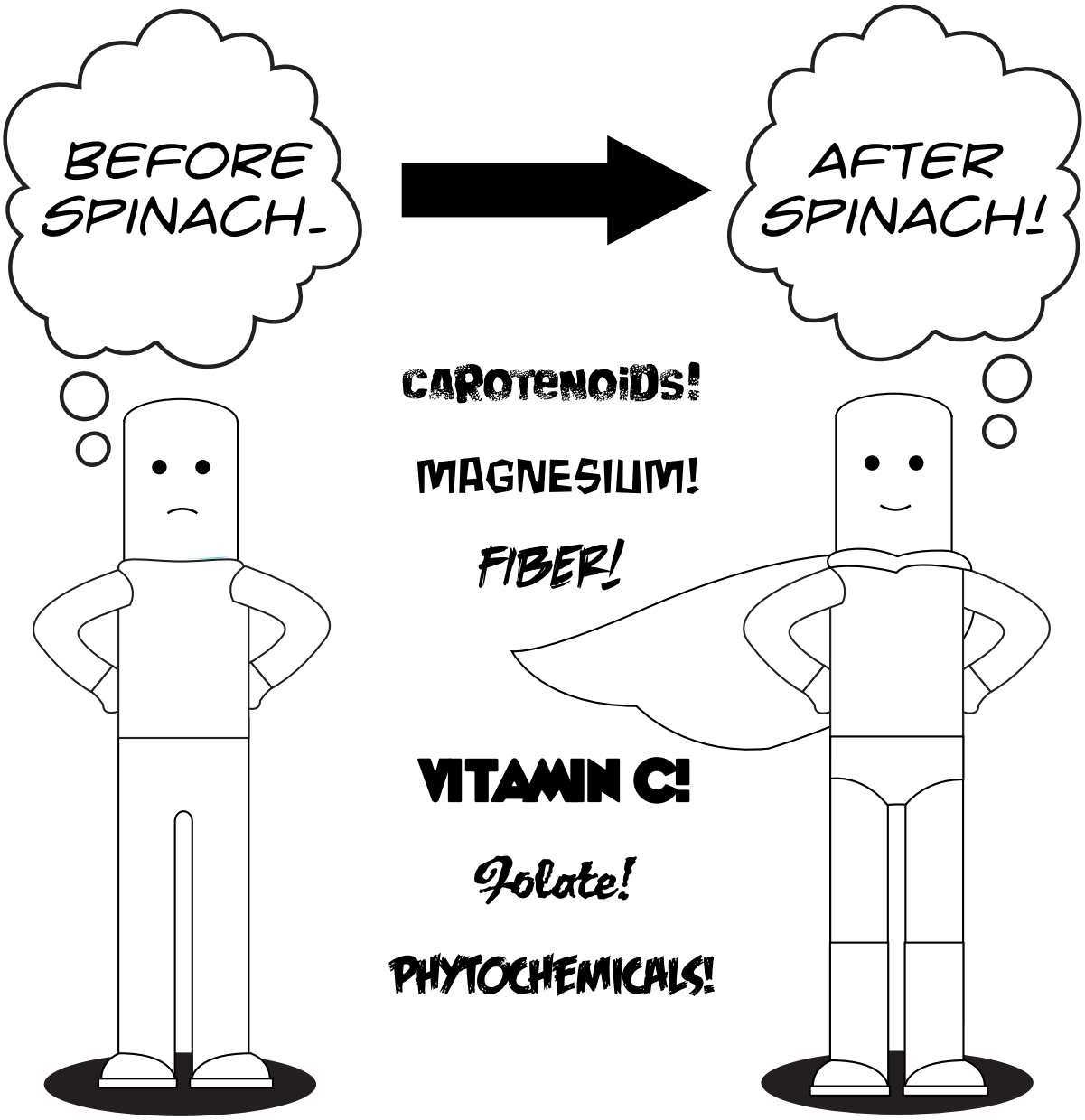
SAMPLE

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

I'VE GOT THE POWERS!

Have you ever seen Popeye before and after eating spinach? It's like, whoa! So what do you suppose happens to your body after eating vegetables like spinach? Use the following page to describe the effect of the spectacular powers of spinach on *YOUR* body...



This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

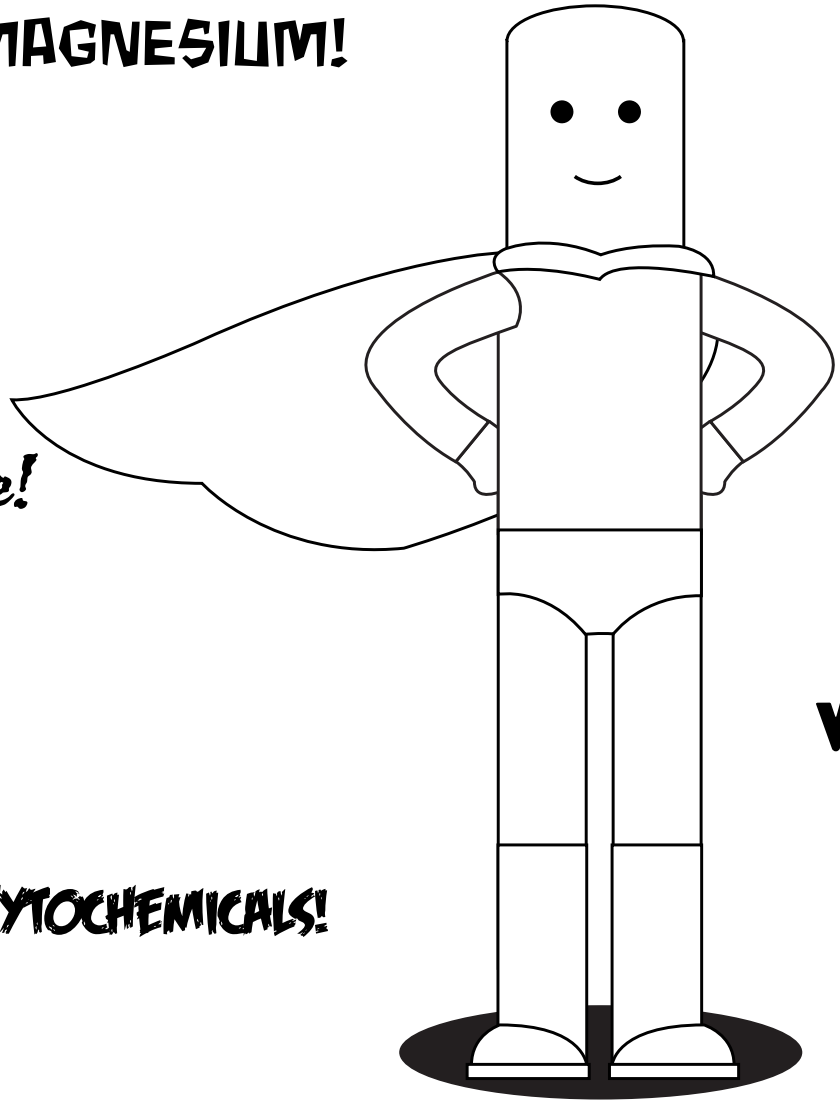
THE SPECTACULAR SPINACH!

I'VE GOT THE POWERS!

What are the effects of the spectacular powers of spinach on *YOUR* body? Using the "Spinach Powers" from the "Top Secret Info." page for help, draw a line from the "power" listed below to the area of your body that the power affects, and draw in the body part as well. Then, under each power, describe what it does.

CAROTENOIDS!

MAGNESIUM!



FIBER!

Folate!

VITAMIN C!

PHYTOCHEMICALS!

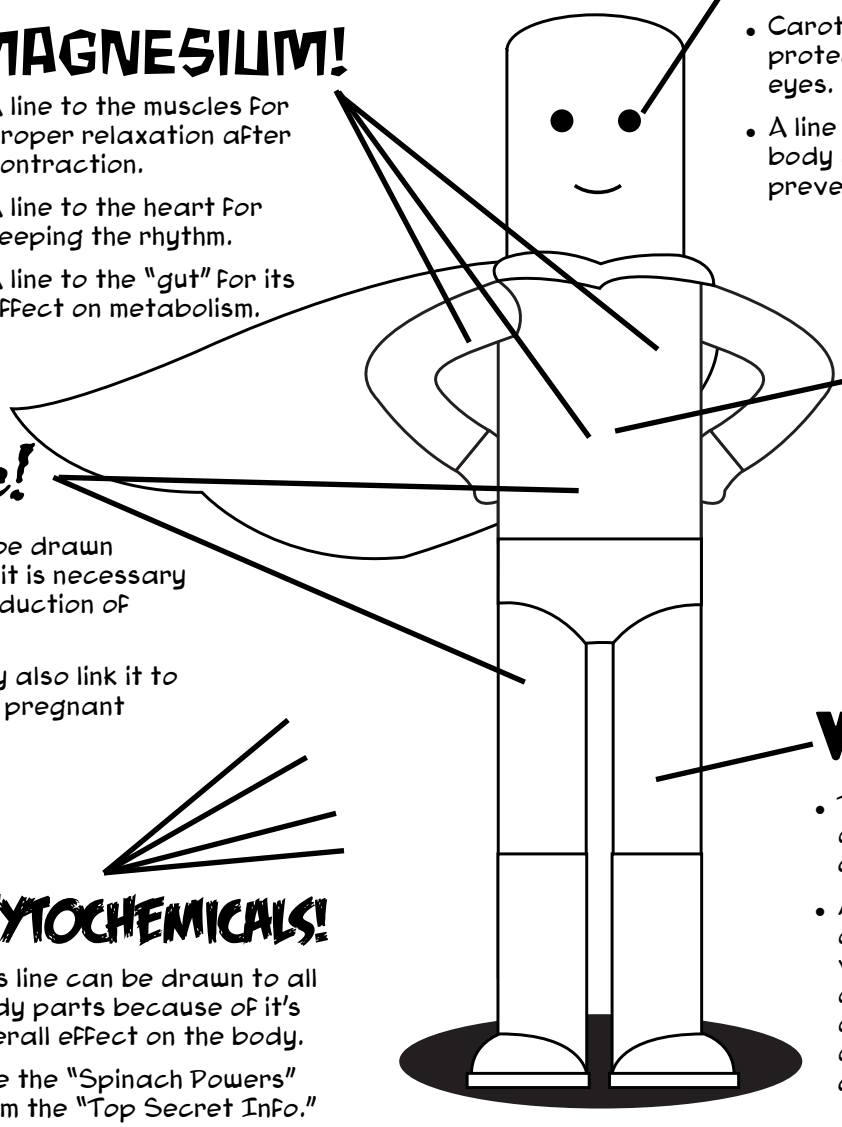
This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

KEY

I'VE GOT THE POWERS!

What are the effects of the spectacular powers of spinach on *YOUR* body? Using the "Spinach Powers" from the "Top Secret Info." page for help, draw a line from the "power" listed below to the area of your body that the power affects, and draw in the body part as well. Then, under each power, describe what it does.



CAROTENOIDS!

- Carotenoids play a huge role in protecting the health of our eyes.
- A line can also point to the entire body due to its disease-preventing potential.

MAGNESIUM!

- A line to the muscles for proper relaxation after contraction.
- A line to the heart for keeping the rhythm.
- A line to the "gut" for its effect on metabolism.

FIBER!

- This line can be drawn to the "gut" area because of fiber's positive influence on making one "regular," and for it's effect on satiety.

Folate!

- This line can be drawn anywhere as it is necessary for the reproduction of cells
- Students may also link it to the belly of a pregnant woman.

VITAMIN C!

- This line can be drawn to anywhere there might be a cut or bruise.
- A line could essentially be drawn anywhere since vitamin C is necessary for the development of collagen, and also functions as an antioxidant, protecting our cells.

PHYTOCHEMICALS!

- This line can be drawn to all body parts because of it's overall effect on the body.
- See the "Spinach Powers" from the "Top Secret Info." page for more information.

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

POPEYE... THAT'S ONE SMART SAILOR MAN.

Popeye the Sailor Man... this dude was amazing AND a genius. He would get tremendous strength from spinach because he knew all about its powers. Although he is a cartoon, and the benefits of spinach are a tad bit exaggerated in his adventures, there is actually a lot of truth in spinach's effect on his body.

So what was going on? We all know what was happening on the outside of his body, but what was happening on the inside? Based on your understanding of the powers of the spectacular spinach, describe all the things you think would happen from the instant that spinach hit his stomach. (Do you think spinach has anything to do with the fact that he's now 79 years old and still doesn't wear glasses?) Include something about all the powers listed on the "Top Secret Info." page...

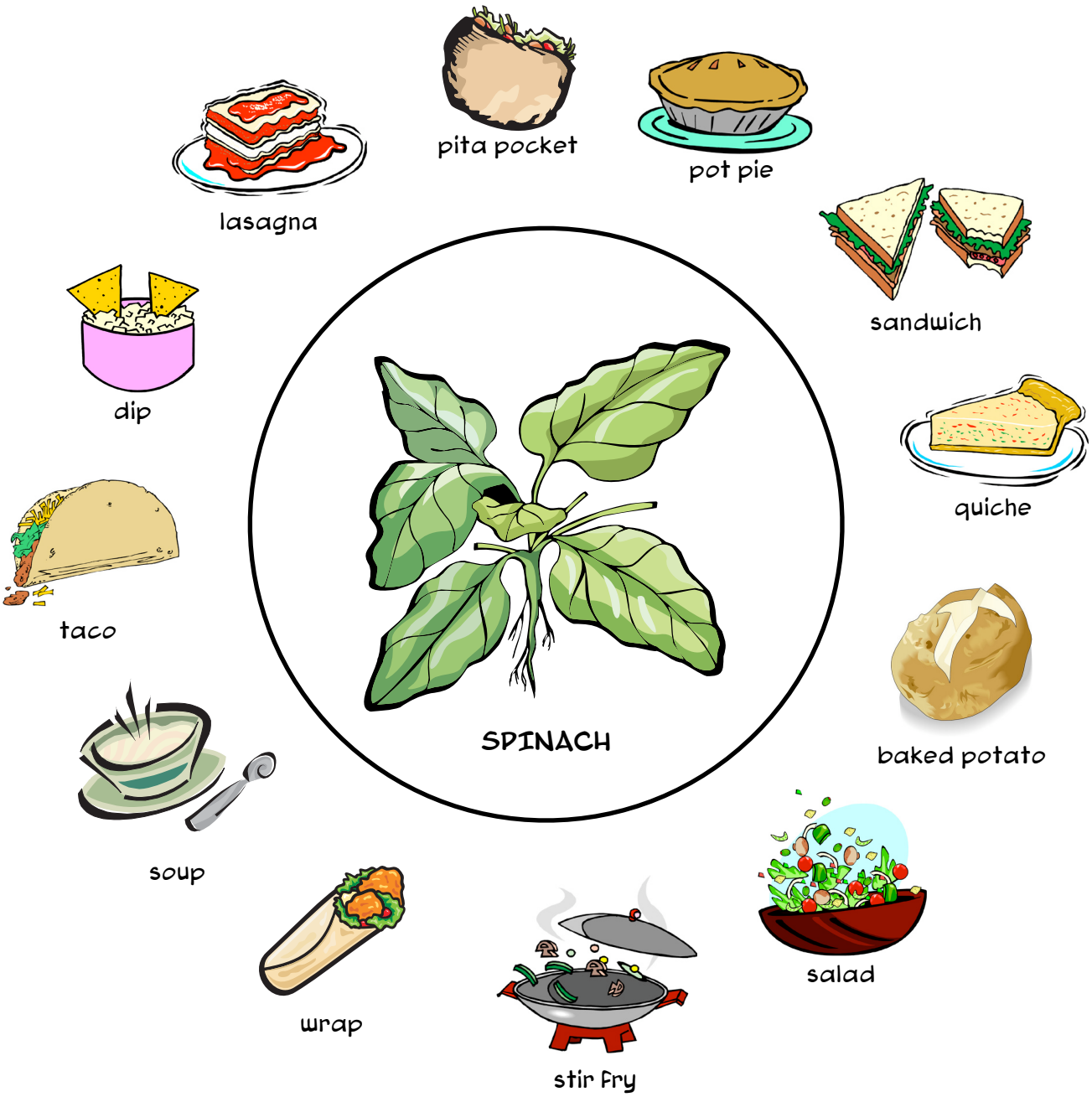
Popeye illustration © Steve Rolston 2003

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

HOW CAN I EAT THEE? LET ME COUNT THE WAYS...

There are many different ways to eat spinach. Out of the food products shown below, which ones do you think spinach can be used? Circle the foods and discuss your answers. Can you think of other ways to eat spinach?



This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

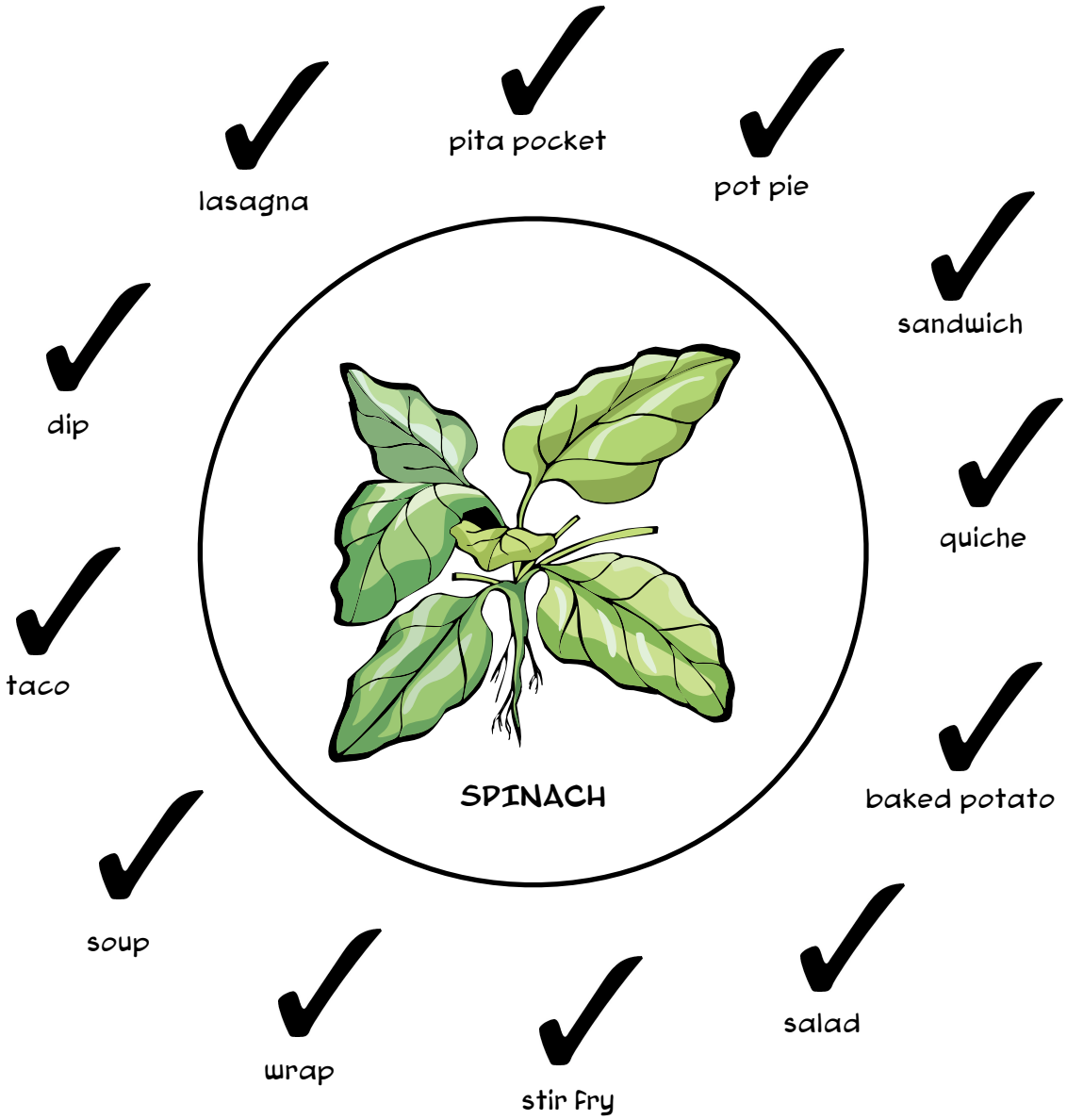
THE SPECTACULAR SPINACH!

KEY

HOW CAN I EAT THEE? LET ME COUNT THE WAYS...

Truth is, spinach can be used in ALL the foods listed in this exercise! Are there other ways students have seen spinach? In a quesadilla? Stuffed inside some chicken breasts? Pureed into some ice cream? Well, maybe not that last one, but there are many ways to eat it other that just plain 'ol canned or frozen! (And not that there's anything wrong with that of course...).

A Tree Map® can be utilized to categorize the foods based on the form of spinach they think would be used: fresh or cooked.



This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

RECIPE MATH.

Answer the questions below about the recipe... then make it!

"RUBIES AND GREENS"
Preparation time: 10 minutes
Serves: 6
Cups of Fruits and Vegetables per Serving: 2

Ingredients:

Salad
¾ cups well washed, chopped savoy spinach
2 cups well washed baby or flat leaf spinach leaves
1 ¼ cups well washed red spinach leaves (or a spring mix that may/may not have red spinach leaves)
3 cups sweet cherries*, pits removed
2 ½ cups sliced cucumber
½ cup finely diced red onion

Salad Dressing
⅓ cup orange juice
2 tablespoons olive oil
2 tablespoons honey
½ teaspoon salt
Ground black pepper to taste

Whisk together orange juice, oil, honey, salt and pepper; set aside. In large bowl, combine salad ingredients. Toss with salad dressing and serve immediately.

* If fresh cherries aren't available, try frozen ones, or select another fresh fruit substitute.

1. How many total cups of spinach are needed to complete the "Rubies and Greens" recipe?
ⓐ 3 ½ cups ⓑ 4 cups ⓒ 2 ¼ cups ⓓ 2 ¾ cups

2. Let's say based on your age, gender, and physical activity level, MyPyramid recommends you have 4 ½ cups of fruits vegetables total per day. If you had 1 serving of this recipe, how many more cups minimum would you need?
ⓐ 1 ¾ cups ⓑ 2 cups ⓒ 2 ¼ cups ⓓ 2 ½ cups

3. If you needed to serve 12 people, how many more cups of red spinach would you need?
ⓐ 1 cup ⓑ 1 ¼ cups ⓒ 2 cups ⓓ 2 ½ cups

4. If you were to make the recipe for 3 people, how many cups of savoy spinach are needed?
ⓐ 3 ½ cups ⓑ 4 cups ⓒ 2 ¼ cups ⓓ 2 ¾ cups

5. What percent of the salad (not including the dressing) contains spinach?
ⓐ 40% ⓑ 50% ⓒ 75% ⓓ 90%

6. If you added 2 more cups of spinach to the recipe, what fraction of the salad would be spinach?
ⓐ ¼ ⓑ ⅓ ⓒ ½ ⓓ ⅔

Source: Produce for Better Health Foundation, www.fruitsandveggiesmorematters.org

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

KEY

RECIPE MATH.

Answer the questions below about the recipe... then make it!

"RUBIES AND GREENS"
Preparation time: 10 minutes
Serves: 6
Cups of Fruits and Vegetables per Serving: 2

Ingredients:

Salad
¾ cups well washed, chopped savoy spinach
2 cups well washed baby or flat leaf spinach leaves
1 ¼ cups well washed red spinach leaves (or a spring mix that may/may not have red spinach leaves)
3 cups sweet cherries*, pits removed
2 ½ cups sliced cucumber
½ cup finely diced red onion

Salad Dressing
⅓ cup orange juice
2 tablespoons olive oil
2 tablespoons honey
½ teaspoon salt
Ground black pepper to taste

Whisk together orange juice, oil, honey, salt and pepper; set aside. In large bowl, combine salad ingredients. Toss with salad dressing and serve immediately.

* If fresh cherries aren't available, try frozen ones, or select another fresh fruit substitute.

1. How many total cups of spinach are needed to complete the "Rubies and Greens" recipe?
ⓐ 3 ½ cups ● 4 cups ⓒ 2 ¼ cups ⓓ 2 ¾ cups

2. Let's say based on your age, gender, and physical activity level, MyPyramid recommends you have 4 ½ cups of fruits vegetables total per day. If you had 1 serving of this recipe, how many more cups minimum would you need?
ⓐ 1 ¾ cups ⓑ 2 cups ⓒ 2 ¼ cups ● 2 ½ cups

3. If you needed to serve 12 people, how many more cups of red spinach would you need?
ⓐ 1 cup ● 1 ¼ cups ⓒ 2 cups ⓓ 2 ½ cups

4. If you were to make the recipe for 3 people, how many cups of savoy spinach are needed?
ⓐ ½ cup ⓑ ¾ cup ● 1 cup ⓓ 2 cups

5. What percent of the salad (not including the dressing) contains spinach?
● 40% ⓑ 50% ⓒ 75% ⓓ 90%

6. If you added 2 more cups of spinach to the recipe, what fraction of the salad would be spinach?
ⓐ ¼ ⓑ ⅓ ● ½ ⓓ ⅔

Source: Produce for Better Health Foundation, www.fruitsandveggiesmorematters.org

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

SPINACH EQUIVALENTS.

Spinach can be purchased in 3 different forms: fresh, frozen, and canned. Frozen and canned spinach are pretty much the same in terms of volume because they are both cooked forms of spinach. But what if you have a recipe that calls for frozen spinach and all you have is fresh spinach? Or it says you need ounces, but all you have is cups. How do you know how much to use?!! Ahhhhhh!

The reason it's so tricky is because spinach is mostly water, 91% to be exact. Therefore, when it is cooked, it *really* shrinks. In a matter of minutes, 1 whole pound of fresh leaves can be reduced to about 1 cup of the cooked product. Now you see it... now you don't. How do you know how much fresh spinach to use?!! Ahhhhhh!

Using the following conversion chart, solve the problems on the next page...

SPINACH EQUIVALENTS

1 lb. fresh = 1 cup cooked

5 oz. frozen = 1 lb. fresh

15 oz. can = 1 ½ cups cooked

10 oz. bag fresh = 6 cups fresh leaves

4 cups of fresh leaves = 6 oz. bag fresh

6 cups fresh leaves = 1 ¼ cups cooked

1 ¼ cups cooked = 2/3 cup cooked & squeezed dry

5 oz. FROZEN spinach = 1 pound of FRESH spinach

EXTENSION: Have students create a Bridge Map® of the spinach equivalencies.

Spinach illustrations © Irene Carole Piongzon 2008; spinach conversion chart from gourmetsleuth.com

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

SPINACH EQUIVALENTS.

Use the "SPINACH EQUIVALENTS" conversion chart to help solve the following:

1. Your uncle's super-duper spinach dip recipe calls for 7 ½ oz. frozen spinach and of course, all you have is the fresh stuff. How many cups of fresh spinach should you use?

ⓐ ½ cup ⓑ 1 cup ⓒ 1 ¼ cups ⓓ 1 ½ cups

2. You're making a spinach lasagna recipe and it calls for "10 oz. of frozen spinach, thawed and chopped." How many cups of fresh spinach should you cook in order to substitute?

ⓐ 1 ¾ cups ⓑ 2 cups ⓒ 2 ¼ cups ⓓ 2 ½ cups

3. For a neighborhood party, you decide to make spinach quiche. This large recipe calls for 3 cups of spinach, cooked and squeezed dry. How much cooked spinach do you need to start off with before you squeeze it dry? *(What's quiche? Quiche, pronounced "keesh" is a dish baked in an unsweetened pie crust shell... kind of like a pie, but filled with a combination of egg, cheese, vegetables, and/or meats).*

ⓐ 3 ¾ cups ⓑ 4 cups ⓒ 4 ¼ cups ⓓ 4 ½ cups

4. In the above "quiche" problem, how much fresh spinach do you need to start with?

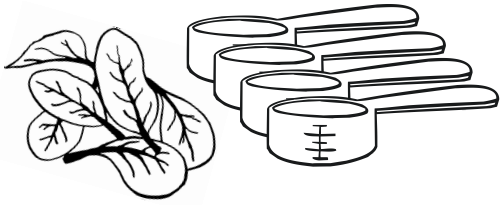
ⓐ 17 cups ⓑ 18 cups ⓒ 19 cups ⓓ 20 cups

5. The "Rubies and Greens" spinach salad recipe calls for 2 cups of fresh flat leaf or baby spinach leaves. How many of these salads could you make with a 10 oz. bag?

ⓐ 1 ⓑ 2 ⓒ 3 ⓓ 4

6. A spinach soup recipe requires 2 cups of cooked, chopped spinach. You find out the grocery store is out of frozen and fresh spinach, and all they have is canned. How many 15 oz. cans do you need to buy?

ⓐ 1 ⓑ 2 ⓒ 3 ⓓ 4



6 oz. bag of FRESH spinach = 4 cups of FRESH leaves

Spinach illustrations © Irene Carole Piongzon 2008

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

SPINACH EQUIVALENTS.

KEY

Use the "SPINACH EQUIVALENTS" conversion chart to help solve the following:

1. Your uncle's super-duper spinach dip recipe calls for 7 ½ oz. frozen spinach and of course, all you have is the fresh stuff. How many cups of fresh spinach should you use?

ⓐ ½ cup ⓑ 1 cup ⓒ 1 ¼ cups ● 1 ½ cups

2. You're making a spinach lasagna recipe and it calls for "10 oz. of frozen spinach, thawed and chopped." How many cups of fresh spinach should you cook in order to substitute?

ⓐ 1 ¾ cups ● 2 cups ⓒ 2 ¼ cups ⓓ 2 ½ cups

3. For a neighborhood party, you decide to make spinach quiche. This large recipe calls for 3 cups of spinach, cooked and squeezed dry. How much cooked spinach do you need to start off with before you squeeze it dry? *(What's quiche? Quiche, pronounced "keesh" is a dish baked in an unsweetened pie crust shell... kind of like a pie, but filled with a combination of egg, cheese, vegetables, and/or meats).*

ⓐ 3 ¾ cups ⓑ 4 cups ● 4 ¼ cups ⓓ 4 ½ cups

4. In the above "quiche" problem, how much fresh spinach do you need to start with?

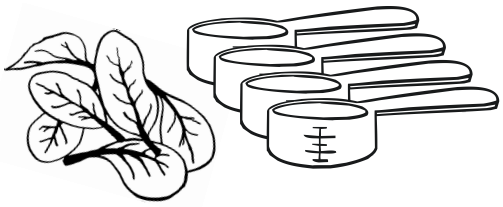
● 17 cups ⓑ 18 cups ⓒ 19 cups ⓓ 20 cups

5. The "Rubies and Greens" spinach salad recipe calls for 2 cups of fresh flat leaf or baby spinach leaves. How many of these salads could you make with a 10 oz. bag?

ⓐ 1 ● 2 ⓒ 3 ⓓ 4

6. A spinach soup recipe requires 2 cups of cooked, chopped spinach. You find out the grocery store is out of frozen and fresh spinach, and all they have is canned. How many 15 oz. cans do you need to buy?

ⓐ 1 ⓑ 2 ● 3 ⓓ 4



6 oz. bag of FRESH spinach = 4 cups of FRESH leaves

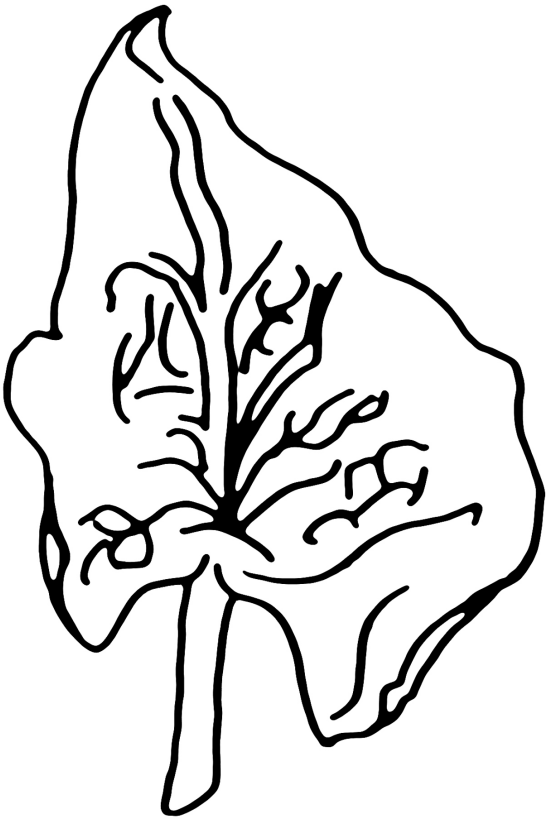
Spinach illustrations © Irene Carole Piongzon 2008

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

MAKE YOUR OWN SPINACH HERO.

Based on what you've learned about the various "spectacular" spinach varieties, draw your own super hero using the savoy spinach below as a base, or by drawing your own from scratch. Make sure the spinach you draw contains all their characteristics that make the savoy what it is. Don't forget to represent all their powers as well... after all, what would a super hero be without their powers?!! And lastly, give your hero a name for goodness sakes!



Spinach illustration © Irene Carole Piongzon 2008

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

MAKE YOUR OWN SPINACH HERO.

Based on what you've learned about the various ~spectacular~ spinach varieties, draw your own super hero using the flat leaf spinach below as a base, or by drawing your own from scratch. Make sure the flat leaf spinach you draw contains all their characteristics that make it what it is. Don't forget to represent all their powers as well... after all, what would a super hero be without their powers?!! And lastly, give your hero a name for goodness sakes!

Spinach illustration © Irene Carole Piongzon 2008

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

MAKE YOUR OWN SPINACH HERO.

Based on what you've learned about the various ~spectacular~ spinach varieties, draw your own super hero using the red leaf spinach below as a base, or by drawing your own from scratch. Make sure the red leaf hero you draw contains all their characteristics that make the red leaf what it is. Don't forget to represent all their powers as well... after all, what would a super hero be without their powers?!! And lastly, give your hero a name for goodness sakes!

Spinach illustration © Irene Carole Piongzon 2008

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

TASTE TEST!

TOOLS:

1.) *spinach*
   - raw and steamed versions of the savoy and flat/smooth leaf spinach varieties
   - a raw version of the baby spinach

2.) *low-fat ranch dressing*
   The raw spinach can be combined with a small amount of low-fat ranch dressing

3.) *writing utensils*

4.) *blank sheet of paper, and the* "Use Your Senses" *activity sheet*

ACTIVITY:

- Review proper hand washing procedures and have students wash their hands.
- Allow students to taste the raw spinach (with and without the ranch), having them describe the color, texture, smell, sound and flavor. Repeat with the steamed spinach.
- Do they feel like there's a residue on their teeth? That's because of the oxalic acid in spinach! See "Did You Also Know" on the "Top Secret Info." page for more details.
- Ask them to note the similarities and differences between the varieties as well. These can be illustrated through the use of a Double Bubble Map® or Venn diagram.

SPINACH NOTES:

- The savoy variety has crinkly, dark green, curly leaves and is usually sold fresh in bunches. The texture is rough and it has a very distinct taste. The bouncing, firm, dark leaves of savoy spinach have a stronger "iron" flavor with a very slight bitter aftertaste and a crunchy texture. The attractive leaves are five to six inches long and appreciated by chefs for their aesthetic appeal and very rich spinach flavor.

- The flat/smooth leaf, which is unwrinkled and oval or spade-shaped, has a milder taste than the savoy; it is more delicate and better suited to salads than its curly leafed counterpart. Part of it's popularity is due to it's ease in cleaning in comparison to the savoy. This variety is commonly used for canned and frozen spinach, as well as for soups, baby foods and other processed foods.

- Baby spinach is picked from the smallest leaves of flat leaf spinach plants and has a sweeter taste than the spinach it didn't get the chance to grow up and be.

- While not provided in this taste test (or even commonly seen at the grocery store), red spinach is similar to the flat leaf spinach. Their leaves are round and green, have thicker stems, but are popularly characterized by their red center. With a tender texture, the flavor of this variety is somewhat sweet. You may want to try and find some pictures using the "Google Images" search engine to help students conceptualize it.

Spinach illustrations © Irene Carole Piongzon 2008

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

USE YOUR SENSES

		SAVOY	FLAT LEAF	BABY
	Color			
	Size			
	Shape			
	Other			
	Sound			
	Texture			
	Taste			
	Smell			

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

ZIPPY RECIPE: SPINACH DIP

MATERIALS
If made ahead of time, only plates, spoons, napkins.
If made in class, add measuring cups, plastic knives, plastic cutting boards, and bowl(s) to the list.

INGREDIENTS
1-10 oz. package frozen chopped spinach, thawed and drained
1 ½ cups fat-free (or low-fat) sour cream
1 cup fat-free mayonnaise
1-4 oz. package dry vegetable soup mix
1-8 oz. can water chestnuts, finely chopped
3 green onions, finely chopped
1-2 lb. bag of baby carrots

MAKING THE RECIPE
1. Defrost spinach overnight in the refrigerator. Drain liquid and wrap the spinach in paper towels. Squeeze the spinach to remove excess water.
2. In a medium bowl, stir together spinach, sour cream and soup mix.
3. Add finely chopped water chestnuts and green onions.
4. Cover and refrigerate for at least 2 hours.
5. Serve with baby carrots for dipping.

SAFETY PRECAUTIONS
Review procedures for proper hand washing.

Makes 20 taste tests (3 T each)

EXTENSION:
Have students create a Flow Map® to sequence the steps needed to make this recipe.

CAPTAIN FLAT LEAF

Source: Network for a Healthy California - Merced County Office of Education

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.

THE SPECTACULAR SPINACH!

ZIPPY RECIPE: WRAP 'N GO.

MATERIALS
Plates, plastic knives, napkins, cutting knife, small bowls (to divide cream cheese)

INGREDIENTS
1 bunch of spinach
1 package of whole wheat tortillas, or for something more colorful, try sun-dried tomatoes tortillas
1-8oz. container light herb cream cheese

SAFETY PRECAUTIONS
Have students wash their hands and review safety precautions for using knife.

MAKING THE RECIPE
1. Have students work in groups to assemble wraps (5 students per wrap).
2. Assign each student in the group a task: one gathers supplies, one spreads cream cheese on tortilla wrap, one adds spinach on wrap and rolls it, one cuts wrap into five pieces like a pin wheel, and one collects trash.
3. Assist students with cutting the wraps if necessary.

Makes 30 taste tests

EXTENSION:
Have students create a Flow Map® of the steps needed to make this recipe.

Source: Network for a Healthy California - Monrovia USD

This material was funded by USDA's Food Stamp Program through the California Department of Public Health, Network for a Healthy California. These institutions are equal opportunity providers and employers. The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. For information on the Food Stamp Program, call (323) 727-4542. Contract # 06-55103.