

FABULOUS FOOD DETECTIVES



Supplemental Activities Packet

This packet contains classroom activity suggestions and worksheets to reinforce concepts from the Playbook® story and to go beyond the story into the content areas of Language Arts, Math, Science, Social Studies, Art, Health, etc., as well as Character Development.

Activities range in age appropriateness and skill level so that teachers can choose activities that best suit their particular students. An Answer Key is provided on the last page.

REAL-LIFE FOOD DETECTIVES

Page 1 of 4



Kayley and Madison love following clues to make their inventions work. With BUD, they create a great useful tool for identifying whole foods and artificial foods. You don't have BUD to help you identify healthy foods, but you do have clues to help you figure it out! Reading food nutrition labels is an important way to help find out what's healthy and what's not. **Before you get started, remember that the simple fact that a food is packaged and has a label can be a warning sign that it is not natural or healthy. On the other hand, sometimes natural foods like packaged salads or carrots do have nutrition labels. So it is important to always read the label.**

Number of Servings

When you look at the Nutrition Facts on the sample label, first read the serving size and the number of servings in the package. Serving sizes are standardized to make it easier to compare similar foods; they are provided in familiar units, such as cups or pieces, followed by the metric amount, e.g., the number of grams.

Pay attention to the serving size, especially how many servings there are in the food package. In the sample label, one serving of the granola bars equals one bar. If you ate the whole package, you would eat four bars and four times the calories!

Check Calories

Calories provide a measure of how much energy you get from a serving of this food. However, the calorie section of the label can help you manage your weight (i.e., gain, lose, or maintain). A person can gain weight based on whether they burn more or less calories (expend more or less energy) than they eat. Remember: the number of servings you consume determines the number of calories you actually eat.

For example, there are 160 calories in one serving of these granola bars. How many calories from fat are there in ONE serving? Answer: 20 calories. What if you ate the whole package contents? Then, you would consume four servings, or 640 calories, and 80 calories would come from fat.

General Guide to Calories (based on 2,000 calorie diet)

- * 40 calories per serving is a **low calorie food**.
- * 100 calories per serving is a **moderate calorie food**.
- * 400 calories or more per serving is a **high calorie food**.

When you look at the Nutrition Facts label example, use the above General Guide to Calories as a reference.

There are two government agencies that regulate how food is labeled:

- The Food and Drug Administration, a division of the Department of Health and Human Services
- The Food Safety and Inspection Service, a division of the U.S. Department of Agriculture

Thanks to these agencies, the current food labels offer more complete, useful and accurate nutrition information than ever before.



SAMPLE NUTRITION LABEL

Page 2 of 4

Low Fat Chocolate Granola Bars

Nutrition Facts

Serving Size 1 bar

Servings Per Container 4

Amount Per Serving

Calories 160

Calories from Fat 20

% Daily Value*

Total Fat 2.5g **4%**

Saturated Fat 1g **5%**

Polyunsaturated fat 0g

Cholesterol 0mg **0%**

Sodium 20mg **1%**

Potassium 100mg **3%**

Total Carbohydrate 32g **11%**

Dietary Fiber 3g **12%**

Sugars 13g

Protein 2g

Vitamin A 0%

Vitamin C 0%

Calcium 2%

Iron 10%

Thiamin 15%

Niacin 10%

Vitamin B6 10%

Folate 10%

Vitamin B12 10%

* Percent daily values are based on a 2,000 calorie diet.
Your daily values may be higher or lower depending on
your calorie needs.

READING NUTRITION LABELS

Page 3 of 4

The Nutrients: How Much?

The Nutritional Facts sample label identifies some of the key nutrients that impact your health. Use the information on the food label to help limit those nutrients you want to cut back and to increase those nutrients you need to consume in greater amounts.

Limit These Nutrients

This section of the label shows Total Fat, Saturated Fat, Cholesterol, and Sodium, with quantities and % daily values per serving.

Most Americans generally eat too much of these types of nutrients. Watch your intake of these nutrients in this category. Eating too much fat, saturated fat, trans fat, cholesterol, or sodium may increase your risk of certain chronic diseases like heart disease, some cancers, or high blood pressure.

Important: Health experts recommend that you keep your intake of saturated fat, trans fat and cholesterol as low as possible as part of a nutritionally balanced diet.



Get Plenty of These Nutrients

This section of the label shows Dietary Fiber, Vitamin A, Vitamin C, Calcium, and Iron, with % daily values and quantity of dietary fiber per serving.

Most Americans don't get enough dietary fiber, Vitamin A, Vitamin C, calcium, and iron in their diets. Eating enough of these nutrients can improve your health and help reduce the risk of some diseases and conditions.



Quick Guide to % Daily Value (DV)

5% DV or less is low and 20% DV or more is high

The guide above tells you what % Daily Value is considered high and what is considered low. As the Quick Guide shows, 20% DV or more is high for all nutrients and 5% or less is low.

Example: Look at the amount of Total Fat in one serving listed on the sample nutrition label. Is 4% DV contributing a lot or a little to your fat limit of 100% DV? Check the Quick Guide to % DV. 4% DV does not exceed the maximum per serving recommendation, but what if you ate the whole package (four servings)?

You would multiply that amount by 4, which equals eating 16% of your daily allowance for Total Fat. This leaves you with 84% of your fat allowance (100%-16%=84%) for all of the other foods you eat that day, including snacks and drinks. It's good to consume your fat allowance from a variety of foods rather than from just one food. Because these granola bars are low in fat, they do not take up too much of your % Daily Value of fat if you eat only one.



ARE YOU A GOOD FOOD DETECTIVE?

Page 4 of 4

Directions: Use the Sample Nutrition Label (page 2) and the worksheets (pages 1 & 3) to answer the questions below.

1. How many servings are in the package of granola bars?

2. How many calories are in two servings? _____
3. How many calories from fat are in one serving? _____
4. Using the General Guide to Calories, what type of calorie food is the box of granola bars? _____
5. How many grams of fat are in one serving? _____
6. How many grams of sugar are in one serving? _____
7. How many grams of carbohydrates are in one serving of the granola bars? Is this high? _____
8. How many milligrams of cholesterol are in one serving?

9. What is the % Daily Value based on? _____
10. What % Daily Value of saturated fat does one serving of the granola bars provide? Is this high? _____
11. What % Daily Value of calcium does one serving of the granola bars contain? Is this high? _____





WHOLE FOOD HUNTING

The Zesty Chef teaches all about cooking with healthy whole foods. **Whole foods** are foods that are as close to natural as possible and have not been processed. They have no added artificial ingredients. Whole foods contain important nutrients for helping your body grow and stay healthy. Below are several types of whole foods that you should make sure to eat often.

Whole Grains: Whole grains contain nutrients such as unsaturated fats, protein, carbohydrates, vitamin E, fiber, B vitamins, and minerals. When grain is processed, the shell is removed, taking with it most of the nutrients. White bread, rolls, and most crackers and cereals are made with processed grains and do not provide the best nutrients.

Fruits and Vegetables: Fresh fruits and vegetables are whole foods and provide important vitamins and minerals. On the other hand, fruit juice sold in stores are NOT whole foods and can be less healthy even without added ingredients, because it naturally contains large amounts of sugar. Freshly squeezed juice does still contain nutrients, but it must be drank immediately or the nutrients are lost. Canned fruits and vegetables are also not considered whole foods because they lose much of their nutritional value from being processed.

How to Find Whole Foods: It can be difficult to find whole foods because many food companies make their products to look like they are made with whole grain when they are actually made with processed grain. If the ingredient list shows the words "**cracked wheat**," "**crushed wheat**," or "**graham flour**" it is a whole grain food. One example of an easy-to-find and delicious whole grain is **brown rice**.

Nuts and beans are good whole food choices. **Fresh meat, poultry or fish** are also whole foods, while products such as fish sticks or chicken nuggets are not.



Directions: It's your turn to be a food detective! Visit the following website (<http://www.netgrocer.com>) at home or at your school's library and find five different whole foods. A good place to start might be the section labeled "Natural and Organic" at the top of the page. Click on the product names to see the ingredient list, and read it to help you decide whether or not it is a whole food.

Next, find five different foods on the website that have artificial ingredients like the ones BUD discovers in **Fabulous Food Detectives**. Remember to leave the "Natural and Organic" section of the website before looking for these.

To record your findings, make a chart like the one shown below on a separate sheet of paper. Write the names of the 10 foods you found above, the ingredients that helped you decide whether they are whole foods or artificial foods, and how much the food is processed. (If the food is a fresh meat, fruit, or vegetable, it may be the fact that there are **no** extra ingredients that tells you it is a whole food.)

#	Food	Important Ingredients	Whole or Artificial?	How much is it processed?
1	Arnold Natural Whole Wheat Bread	Whole Wheat Flour	Whole	Processed, but contains high percentage of whole grain.

Source: <http://www.healthychild.com/whole-foods-nutrition-healthy-kids.htm>



WHAT'S IN CEREAL?

As you have learned from ***Fabulous Food Detectives***, whole foods naturally contain vitamins and minerals that are healthy for your body. Some non-whole foods have vitamins or minerals added to them to provide some of the value that was

lost in the processing or something that is not normally found in that food. These are called **fortified** foods. Breakfast cereal often contains **iron**, which is considered very important for keeping your body working correctly. Iron is commonly found in red meat and leafy green vegetables, but not everyone eats enough of those! The following experiment will show you that there is indeed iron in breakfast cereal.

You will need: 1 box of fortified cereal

Plastic bags

Warm water

Strong magnet

Follow these steps:

1. Pour 1 cup of cereal into a plastic bag and crush the cereal using your hands.
2. Pour the crushed cereal into another plastic bag. Fill this bag at least half full with warm water. Carefully seal the bag, leaving an air pocket inside.
3. Mix the cereal and water by softly shaking the bag until the mixture looks brown and soupy.
4. If possible, let the bag sit for 30 minutes to an hour.
5. Place the magnet on the outside of the plastic bag. Look closely at the edge of the magnet. You should see tiny black specks on the inside of the bag around the edges of the magnet. You found the iron!

Discussion: Answer the questions below on the lines provided.

1. Do you think there is a difference between getting your iron from fortified foods and getting it from foods which naturally contain iron? Is one option more healthy than the other?

2. Do you think it is possible to get too many nutrients from fortified foods?

TASTE-TESTING FOR HEALTH

Do you have a sweet tooth? If so, this is just a phrase that means you like sweet foods— but everyone knows that too much sugar is unhealthy! However, some types of sugar are better for you than others. Sugar comes from the Sugar Cane plant, and just like other grown foods, it can be processed or natural. Natural raw sugar contains beneficial minerals including Phosphorus, Calcium, Potassium, and Iron. The sugar you normally find in your home is white refined sugar. It has been stripped of its natural nutrients and harmful substances may have been added, such as Phosphoric Acid and Sulfur Dioxide.

It is important not to mistake brown sugar for raw natural sugar. Brown sugar is refined and molasses has been added, giving it the brown color. Research suggests that raw unrefined sugar is a better alternative to refined sugar than artificial sweeteners, which can have unhealthy side effects.



Sugar Cane Plant



Unrefined Raw Sugar



Refined Granulated



Brown Sugar

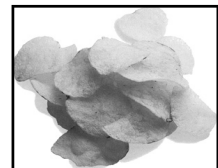
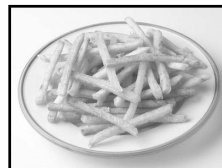
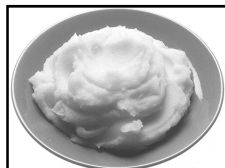
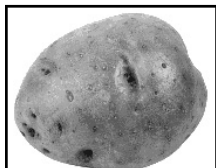


Powdered Sugar

Directions: For this experiment, taste the following types of sugar and see if they all taste sweet. Your teacher will provide samples of unrefined raw sugar, white refined sugar, brown sugar, and powdered sugar. Record your findings on a separate sheet of paper. Did the raw unrefined sugar taste as sweet as the refined sugar? You might have just found a delicious and healthier way to enjoy sweets!

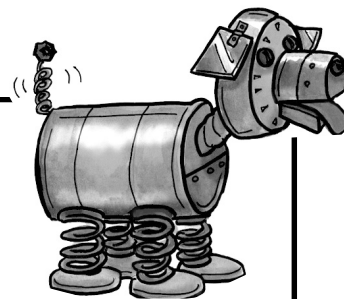
The potato is another example of a popular food that transforms from healthy to unhealthy during some processing and preparation. Fresh, raw potatoes contain a variety of vitamins and minerals, including Potassium, Iron, and even Vitamin C. Body builders sometimes eat raw potatoes and other plant foods. The potato skin is also a good source of fiber. While natural potatoes contain no fat or cholesterol and little sodium, many of the ways we prepare potatoes introduce these unhealthy contents.

Some of the nutrients are lost simply due to cooking. Frying and processing actually adds unhealthy additional ingredients. French fries and potato chips contain high levels of fat, as well as a chemical called acrylamide, which can be harmful to your health. This chemical forms when starchy foods like potatoes are cooked at high temperatures. It's best to stick to potatoes cooked with the skin and without oil.



Quick Tips for Identifying Processed Foods

- **Is it in a package with a label?** If so, this is a warning sign that it may not be a natural food. Read the label to see what is in it.
- **Can it be stored for long periods of time without going bad?** If yes, it may contain a preservative, an unhealthy artificial ingredient. Think about gummy fruit snacks, for example. Some may claim to be made with real fruit, but fresh fruit does not last forever! Fruit snacks contain preservatives so that they will still be edible after a long time.



FABULOUS VOCABULARY

Directions: Using the word bank below, write the letter of the correct word from ***Fabulous Food Detectives*** next to its definition below.

1. _____ used to kill unwanted pests and weeds
2. _____ collection of information stored in a computer
3. _____ a test designed to discover or prove something
4. _____ a spray used to kill bugs on crops
5. _____ the items that make a food or a meal when put together
6. _____ vitamins and minerals that your body needs
7. _____ thick lotion mixed with medicine that is used on the skin
8. _____ foods grown without using poisons to kill pests
9. _____ the result of something done in an experiment
10. _____ a person who studies or learns about science
11. _____ poisonous
12. _____ a food that is as close to natural as possible (Fresh vegetables and unprocessed grains are examples.)
13. _____ type of acid sometimes used in cooking; causes egg shells to become soft
14. _____ an example of an unhealthy artificial ingredient often added to manufactured foods
15. _____ pleasantly flavorful

A. ointment

B. ingredients

C. arsenic

D. toxic

E. database

F. reaction

G. scientist

H. experiment

I. zesty

J. organic

K. insecticide

L. whole foods

M. nutrients

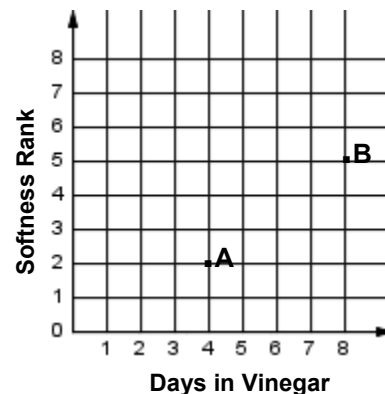
N. vinegar

O. high fructose
corn syrup

EXPERIMENTAL MATH

Part A: Answer the following questions using the graph to the right.

1. According to the graph, what softness rank does an egg shell have after 4 days in vinegar? _____
2. According to the graph, after how many days in the vinegar does an egg shell rank "5" on the softness scale? _____
3. Josh's experiment shows that the longer you leave an egg in vinegar, the softer the shell gets. After 7 days in vinegar, an egg shell ranks a "4" on the softness scale. Mark this point on the graph provided, and label it "C."
4. After 2 days in vinegar, an egg shell ranks a "1" on the softness scale. Mark this point on the graph and label it "D."



Part B: Solve the word problems and write the answers in the spaces provided.

1. BUD has 3,626 food ingredients in his database. If Kayley and Madison add 251 more ingredients to his database, how many ingredients are in BUD's database now?

$$\begin{array}{r} 3,626 \\ + 251 \\ \hline \end{array}$$

2. This year is the 21st annual Science Fair for Kayley and Madison's school district. Each year, an average of 2,452 students participate. How many students have participated in the school's annual science fair since the tradition began?

$$\begin{array}{r} 2,452 \\ \times 21 \\ \hline \end{array}$$

3. The Zesty Chef's stir fry includes 24 pieces of shrimp, 72 peanuts, 66 snow peas, 30 broccoli flowers, and 58 pieces of carrot. How many items are in the stir fry altogether? _____

4. The Zesty Chef's cookie recipe calls for 0.5 cups of brown sugar. Write 0.5 as a fraction.

_____ cup

5. The following set of numbers shows how many calories are in 8 different food and drink items: **31, 169, 3, 38, 165, 105, 169, and 64**. Find the mean, median, and mode.



Name_____



GETTING THE JOB DONE

Directions: Kayley, Madison, and Josh are supportive of each other as they prepare their Science Fair projects. Kayley and Madison work together to build BUD, and each of them have ideas on how to fix the problems they experience. Have

you ever worked on a project with a group or with a partner? Was it easy or difficult for everyone to decide what to do each step of the way? On the lines below, tell what project you worked on and how your group worked together. Write three positive things and three negative things about how well your group worked. Explain how your group could work better together to reach your goal or be more supportive of each other's ideas on the next project.

[illegible]

Name _____



YOU KNOW THE STORY

Directions: Answer the following questions about *Fabulous Food Detectives* on the lines provided.

1. What is the main part of BUD's body made out of? What is his tongue made out of?

2. What do the kids realize about Josh's apple when they discover it has traces of arsenic on it?

3. In Josh's experiment, why does the green egg have the softest shell?

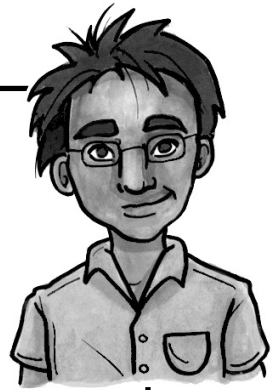
4. According to the story, are foods with **fewer** or **more** ingredients usually healthier?

5. Do Kayley and Madison plan all along for BUD to detect artificial foods? What does the answer to this question tell about the way science experiments work?

6. Do you think Kayley is a good big sister to Madison? Explain why or why not.

7. The Zesty Chef says that cooking is a science, too. What does he mean by this? How is cooking a science?

Name _____



SEARCH FOR THE WORDS

Directions: Find and circle the following words in the word search below.

DEXTROSE

ARTIFICIAL

BROCCOLI

BENZOYL

RAISINS

EXPERIMENT

FABULOUS

FRESH

APPLE

FLAN

FRUCTOSE

ENCYCLOPEDIA

SNACK

ARSENIC

LABEL

HEALTHY

PEROXIDE

ORGANIC

SYRUP

GRAPES

U	T	P	C	E	F	L	I	P	F	B	C	E	O	P	S	A	C	L	Z	A	A	O
R	E	E	I	R	I	A	R	T	R	R	C	S	A	N	S	U	L	L	S	F	C	N
A	E	N	I	E	H	C	E	N	U	O	S	S	E	S	A	P	P	L	E	A	E	R
A	S	N	X	X	T	F	E	Y	C	C	F	F	R	E	S	H	U	N	N	B	E	U
R	O	M	D	P	S	L	O	A	T	C	R	L	L	L	H	U	O	C	U	R	C	
A	E	R	E	E	Y	A	P	M	O	O	E	E	A	T	H	A	L	O	Y	L	U	R
E	A	P	X	R	R	N	Z	E	S	L	O	P	B	F	E	Z	S	T	C	O	R	A
R	R	P	T	I	U	F	Y	O	E	I	L	R	E	L	A	T	I	Y	L	U	A	S
I	S	E	R	M	P	I	A	R	B	T	A	M	L	M	L	E	O	R	O	S	I	O
S	E	R	O	E	N	O	E	E	L	C	D	I	A	R	T	G	R	A	P	E	S	C
N	N	O	S	N	L	S	S	P	U	S	B	L	D	C	H	O	H	D	E	I	I	X
O	I	X	E	T	S	L	F	L	O	A	K	C	A	A	Y	E	N	I	D	O	N	L
O	C	I	A	R	T	I	F	I	C	I	A	L	S	N	A	C	K	A	I	F	S	R
E	L	D	E	X	B	A	L	A	R	I	B	E	N	Z	O	Y	L	O	A	B	P	R
E	O	E	E	N	N	T	U	C	O	O	R	G	A	N	I	C	P	X	Y	S	T	B
E	F	Y	I	E	T	E	P	S	F	S	L	L	A	F	A	A	G	E	S	R	O	N

THE OTHER PIECE OF THE PUZZLE: EXERCISE

Eating healthy foods is not the only thing you should do to stay healthy! Exercising is also an important part of staying fit and it can be lots of fun! Playing sports and being active will leave you feeling positive and accomplished!

Kids who exercise often will:

- have stronger muscles and bones
- have leaner bodies and be less likely to become overweight
- decrease their risk of developing diabetes
- have healthier hearts
- possibly have lower blood pressure and blood cholesterol levels



How much exercise is enough? According to the American Academy of Pediatrics, kids of school age should not be inactive for more than 2 hours at a time. So don't just sit there! Kids your age should get at least 60 minutes of exercise most or all days of the week.

There are three elements of fitness: endurance, strength, and flexibility. Endurance is developed by aerobic activity. Some examples of aerobic activities are basketball, bicycling, ice skating, swimming, soccer, walking, and running. These are exercises that raise your heart rate and make your heart better able to pump the blood through your body. Strength is developed by exercises including push-ups, pull-ups, and stomach crunches. Climbing or handstands, which are fun ways to play, also build strength. Flexibility is gained by stretching. Sit on the ground with your feet straight in front of you and try to touch your toes. Do this once per day and see how much you improve and how quickly!

Calories and Exercise: When you eat, you take in calories from your food. When you exercise, you burn calories, which means you are using energy. If you burn more calories than you take in, you will lose weight, and if you burn less calories than you eat, you will gain weight. Your body burns calories simply by carrying on its normal functions, but it may not be enough to keep your body at your ideal weight. Make sure you balance a healthy diet with plenty of exercise to get in shape or stay fit.

Part A: On a separate sheet of paper, make a chart like the sample shown below, and track your physical activity for two weeks. For each day, fill in the exercises you did, the total time you spent exercising that day, and whether your activities included endurance, strength, or flexibility exercises.

Day	Type of Exercises	Total Exercise Time	Endurance, Strength, or Flexibility?
Sunday	tennis, shoulder stretches	60 min.	endurance, strength, flexibility
Monday	stomach crunches, jogging	45 min.	strength, endurance

Many schools across the country do not spend enough time on Physical Education activities. In traditional P.E. programs that focus on team sports, sometimes students are left out and do not get the exercise they need. However, several schools have started a new P.E. program which offers a variety of exciting activities. Kids can try inline skating, rock climbing, yoga, and even physical video games such as *Dance Dance Revolution™*. Some have exercise bikes hooked up to racing video games for a virtual reality experience. One fifth grade student who participates in this type of P.E. class says it is "just plain fun!"

Part B: Design your own P.E. Class!

Based on the above paragraph and your experiences with P.E. classes, what type of physical education class would you enjoy the most? If you were designing a P.E. class, which activities would you include? Explain why.

ANSWER KEY

FOR TEACHER USE ONLY



What's in Cereal?

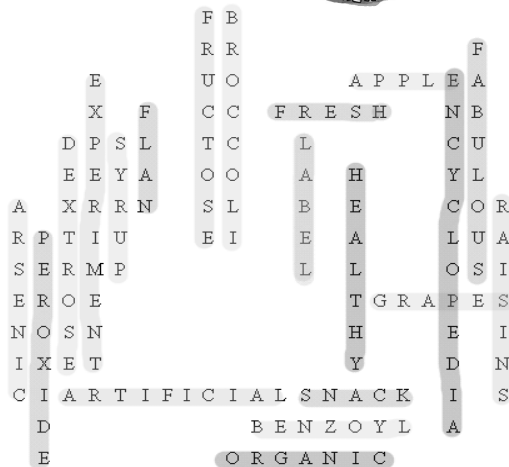
Teacher tips:

- * Total® cereal works best.
- * Warm water speeds up the dissolving process.
- * You will need a large neodymium magnet. These can be purchased from <http://www.stevespanglersscience.com>

Discussion Questions:

1. Yes, nutrients are best consumed from their natural sources, but eating fortified foods is still beneficial as long as you do not omit important food groups as a result.
2. If a fortified food contains too large of amounts of an added nutrient, your body may not be able to absorb all of it and the nutrients are wasted.

Search for the Words

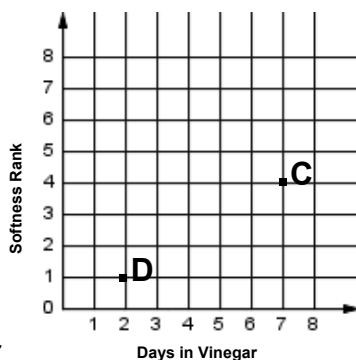


Experimental Math

Part A:

1. softness rank of 2
2. 8 days

3-4.



Part B:

1. 3,877 ingredients
2. 51,492 students
3. 250 items
4. 1/2 cup
5. mean=93, median=84.5, mode=169

You Know the Story

1. body– coffee can; tongue– red rubber ball
2. It was imported from outside the United States.
3. It has been in vinegar the longest, which dissolved its shell.
4. fewer
5. (Sample Answer) No. Kayley and Madison learn to expect the unexpected when trying science experiments. You don't always get the result you think you will.
6. (Sample Answer) Yes. Kayley is a good big sister because she includes Madison in her experiments and does not act like the boss because she is older.
7. (Sample Answer) Cooking can be considered a science because a cook needs to experiment to discover the right amount of each ingredient to make the food taste best.

Are You a Good Food Detective?

- | | |
|--------------------------|-------------------------------|
| 1. 4 servings | 7. 32 grams, no |
| 2. 320 grams | 8. 0 grams |
| 3. 20 calories | 9. 2,000 calorie per day diet |
| 4. moderate calorie food | 10. 4% DV, no |
| 5. 2.5 grams | 11. 2% DV, no |
| 6. 13 grams | |

Fabulous Vocabulary

- | | |
|------|-------|
| 1. C | 9. F |
| 2. E | 10. G |
| 3. H | 11. D |
| 4. K | 12. L |
| 5. B | 13. N |
| 6. M | 14. O |
| 7. A | 15. I |
| 8. J | |



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