



Brushing Experiment (Elementary)

This experiment demonstrates why brushing is important after eating sugary foods or drinking sugary beverages. It meets the National Science Education Standard F—Science in Personal and Social Perspectives.

Materials:

- 5 containers (per group)
- 5 hard-boiled eggs (per group)
- Water
- Bottle of soda (preferably cola)
- Bottle of grape juice
- Bottle of iced tea
- Bottle of red cranberry juice
- Labels
- Fluoride toothpaste
- Toothbrush (one per group)
- Handout
- Flip chart or whiteboard
- Spoons or egg dippers
- Crayons

Procedure:

1. Divide the class into groups of 3-4 students for the experiment. Each group will need 5 containers, 5 hard-boiled eggs, and 5 labels. Let students work together to label each container with a different type of drink.
2. Have students work together in groups to fill each container half-full with the appropriate beverage.
3. Explain that eggs will be used in the experiment to represent teeth. Have the students look at the eggs and record how they look before they are put into the containers.
4. Have a class discussion about what might happen to the eggs if they are left in the containers overnight. Students will record their predictions on their activity sheet. Have group members take turns carefully placing one egg into each container using a spoon or egg dipper.
5. Let the eggs sit overnight in the liquids in the containers.
6. On the following day, have students return to their groups to finish the experiment. Have students carefully take out the eggs using a spoon or egg dipper, one at a time, from their containers. Students will record their observations about the eggs on the activity sheet using crayons.
7. In a class discussion talk about what happened to the eggs. Have students offer suggestions of how to make the eggs white again. Offer the suggestion of brushing the eggs with toothpaste.
8. Model how to gently brush the egg with a toothbrush. Tell students to wash the toothbrush after each use.
9. Distribute toothpaste, toothbrush, spoon or egg dipper and a cup of water to each group. Let the students take turns to try to carefully brush off each type of sugary drink from the eggs. Make sure students clean the eggs by carefully placing the brushed eggs in water using a spoon or egg dipper.
10. In a class discussion, talk about what happened to the eggs once the toothpaste and toothbrush were used. Compare how brushing the sugary drinks off the eggs is like brushing your teeth. Have students describe why brushing is important to their health. Talk about sugar and why it can harm our teeth.
11. In groups, have students list healthy drink and food choices.





Name: _____ Date: _____

Brushing Experiment

Day 1

My eggs looked like this before I put them into the containers.

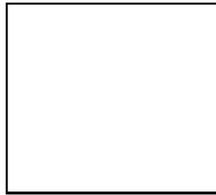
Egg in Water



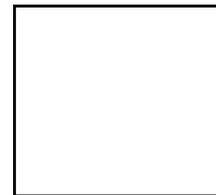
Egg in Soda



Egg in Iced Tea



Egg in
Grape Juice



Egg in
Cranberry Juice



What do you think will happen to the eggs? _____

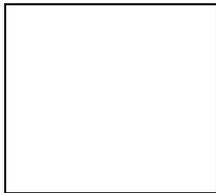
Day 2

After staying in their containers overnight, this is what my eggs look like.

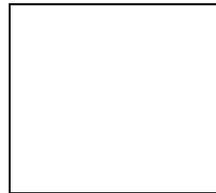
Egg in Water



Egg in Soda



Egg in Iced Tea



Egg in
Grape Juice



Egg in
Cranberry Juice



What happened to the eggs? _____

What did brushing the eggs do? _____

Why is it important to brush your teeth? _____



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Acid and Your Mouth (Middle School)

This experiment demonstrates how sugary foods mix with plaque in the mouth to create acid that can cause tooth decay. It meets the National Science Education Standard F—Science in Personal and Social Perspectives.

Materials:

- Litmus paper (with range of at least 5.0-7.5)
- Sugary foods, such as: candy, cake, brownies, pie, and cookies
- Water (either bottled or have cups available for each student)
- Activity Sheet

Procedure:

Day One

1. Have a class discussion about food and how different types of food affect teeth. Make sure to discuss sugary foods. Ask students what happens to their teeth if they eat sugary foods.
2. Explain that the students will be doing an experiment today to see how sugary foods affect their teeth. Divide the class into groups of 4-5 students for the experiment.
3. Give each student water to drink before the experiment to neutralize the pH in their mouths. Have each student test their mouth with litmus paper to find the starting pH level. Record on activity sheet.
4. Distribute one sugary snack to each group (check food allergies beforehand). Each group will only test one type of food. Let students predict which food will have the greatest effect on their teeth. Give each group a few minutes to eat their food.
5. Once the food is eaten, have the students test their mouths again using the litmus paper. Have the students record their pH levels every 5 minutes for the next 30 minutes. In groups, have the students discuss what the food is doing to their mouths.
6. Gather the class together for a group discussion to discuss how the food affected their mouth. Talk about acid attacks and how sugary foods mix with plaque in the mouth to produce acid that can cause tooth decay. Have a member from each group record their group's pH levels for the food they consumed on the whiteboard. Discuss which foods produced the most acid.

Day Two

1. Repeat this experiment. Have each group drink water after they eat the same food they had on day one. After every 5 minute interval (for 30 minutes), have the students drink water to see how it can affect the pH level in their mouths.
2. Record group findings as a class and discuss how water helps neutralize the mouth after eating sugary foods.
3. Discuss how food choices affect our oral health and talk about better food choices.



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Name: _____ Date: _____

Acid and Your Mouth

Starting pH level: _____ Which food will affect the pH level the most? _____

Type of food eaten: _____

What is happening to your mouth during this experiment? _____

	DAY ONE	Group Members pH Levels				
	Your pH Level					
1 st 5 min. interval						
2 nd 5 min. interval						
3 rd 5 min. interval						
4 th 5 min. interval						
5 th 5 min. interval						
6 th 5 min. interval						

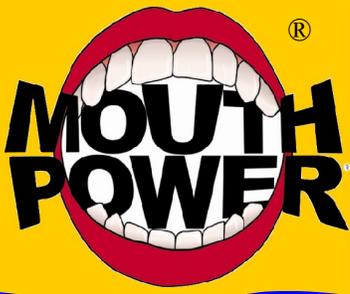
How might this affect your teeth? _____

According to class data, which food produced the most acid in the mouth? _____

How does drinking water after eating sugary foods affect your mouth? _____

	DAY TWO	Group Members pH Levels				
	Your pH Level					
1 st 5 min. interval						
2 nd 5 min. interval						
3 rd 5 min. interval						
4 th 5 min. interval						
5 th 5 min. interval						
6 th 5 min. interval						

What snack choices are good for your teeth? _____



The Future of Oral Health (High School)

This experiment demonstrates an oral health problem and looks to science to find ways to improve oral health. It meets the National Science Education Standard E—Understandings About Science and Technology and the National Science Education Standard G—Science as a Human Endeavor.

Materials

- Tissues or cotton balls
- Clock
- Computer with internet access or books, journals, and articles about oral health advances
- Beaker with water to demonstrate saliva production (at least 600mL)

Procedure

1. Show students 600mL of water and explain that this is the amount of saliva the human body produces daily. Have a discussion of saliva's uses. Explain that today the class will conduct an experiment to see what happens when a person produces less than optimal amounts of saliva.
2. Give each student two tissues or a few cotton balls to put in their mouths and leave them there for a few minutes. Have the students start and stop at the same time. Make sure they leave the tissues/cotton balls in their mouths for 1-2 minutes.
3. Have a class discussion about what happened to their mouths. Discuss the problem of dry mouth as a common condition in adults. Introduce Sjögren's Syndrome to the class. Ask students if they know of other types of oral diseases. Write responses on whiteboard.
4. Let students work in small groups to research an oral health disease (topics may include Sjögren's Syndrome, periodontal disease, and oral cancer). Make sure students find out the following information: symptoms of disease, causes of disease, and treatments.
5. Students will write a report about the oral disease they selected. They will present their findings to the class. Students may create PowerPoint presentations or visuals, time permitting.
6. After all reports are given, discuss ways to prevent some of these diseases. Have students think about how scientific advancements may cure some of these diseases.

Definition

- Sjögren's Syndrome is an autoimmune disease in which the body's immune system mistakenly attacks its own moisture-producing glands. Sjögren's is one of the most prevalent autoimmune disorders, striking as many as 4 million Americans. Sjögren's Syndrome affects patients with a wide range of varying symptoms from mild inconvenience to debilitating conditions that affect quality of life.



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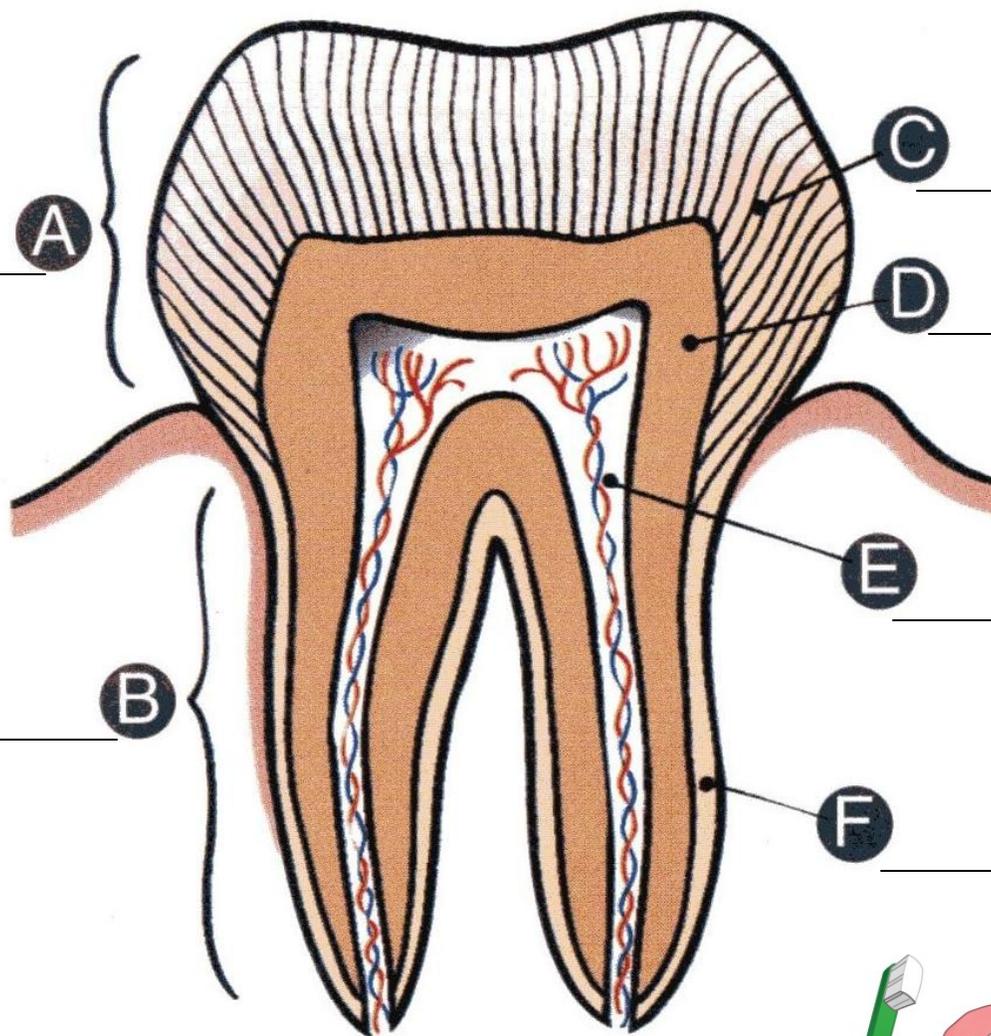


Name: _____ Date: _____

TOOTH ANATOMY

Label the parts of a tooth.

- | | | |
|----------|--------|------|
| cementum | enamel | pulp |
| crowns | dentin | root |



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TOOTH ANATOMY

Answer Key

Label the parts of a tooth.

cementum

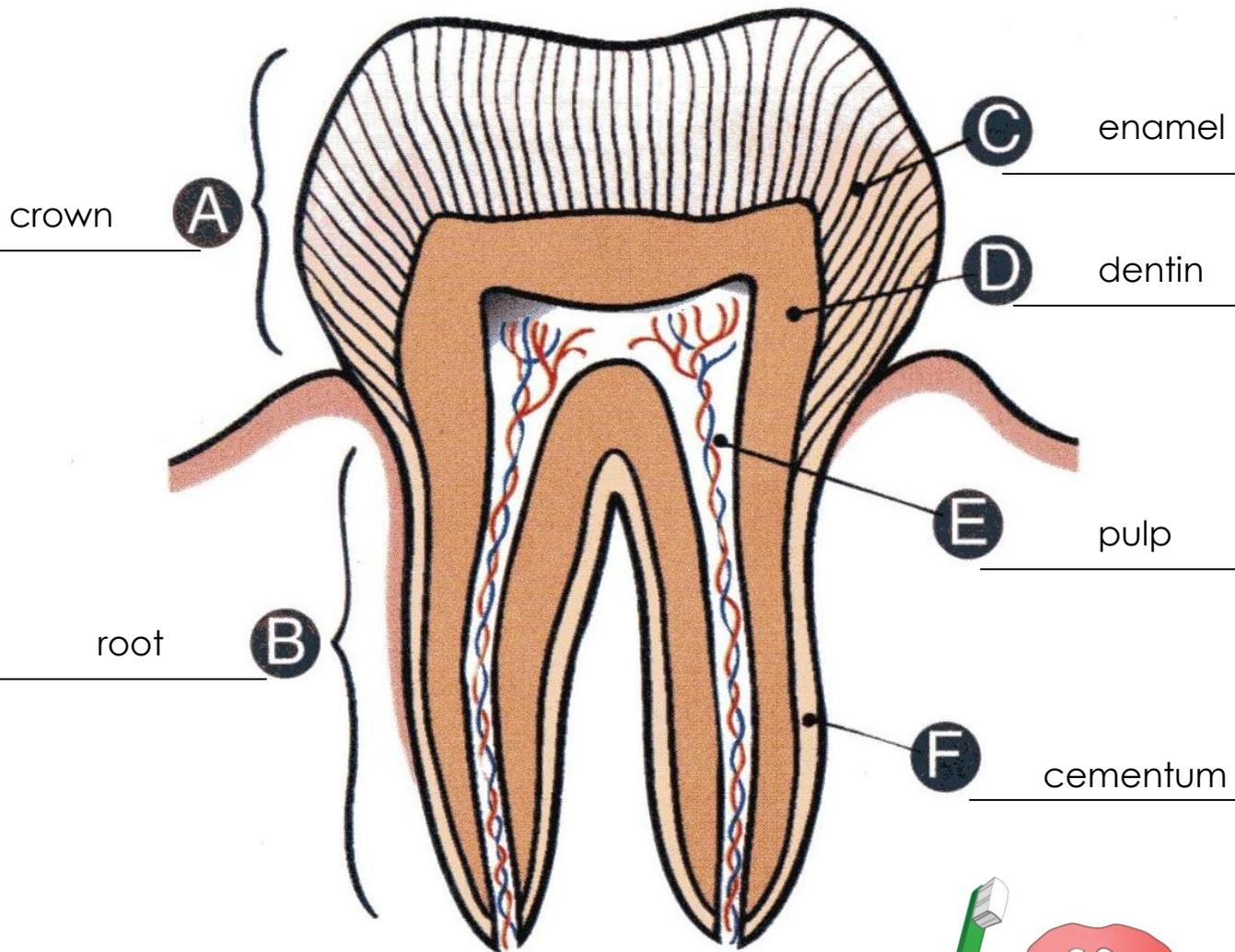
enamel

pulp

crown

dentin

root



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Name: _____ Date: _____

HEALTHY FOODS

People around the world eat different types of food. It is important that we eat a variety of foods to stay healthy. Fill in the chart below. Use the lists of foods to help you.

Fruits

- apple
- banana
- figs
- guava
- kumquat
- mango
- orange
- papaya
- persimmon
- passion fruit



Vegetables

- artichoke
- arugula
- broccoli
- carrot
- celery
- chayote
- daikon
- jicama
- kohlrabi
- potato



Meals

- gyro
- stir fry
- sushi
- hummus and pita
- taco
- burrito
- quesadilla
- tandoori chicken
- Tofu
- curry

Food to Eat

My favorite fruit: _____ Fruit I would like to try: _____

My favorite vegetable: _____ Vegetable I want to try: _____

My favorite meal: _____ Meal I want to eat: _____

My favorite ethnic food: _____ Ethnic Food I want to try: _____

Make sure to eat foods that have _____ to have healthy teeth and bones.

Try to limit sweets as they can cause _____ in teeth.



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Name: _____ Date: _____

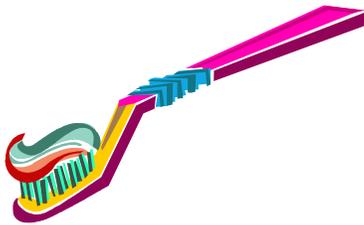
ORAL HYGIENE

Use the words in the box to fill in the blanks. Look at the pictures for clues.

floss
two

soft
one

plaque



1. I use a _____ bristled toothbrush when I brush my teeth.

2. I need to brush my teeth at least _____ times a day.



3. I use _____ to clean in between my teeth.

4. I need to floss my teeth at least _____ time each day.



5. Flossing removes _____ from my teeth.



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