

## A Brighter Smile From Mining

## Everything Is Made Of Something

If you can see it, touch it,  
taste it, smell it, or hear it,  
It's from our Natural Resources.

## Rocks In Your Mouth

### Science

What minerals are found in toothpaste? (Activity on Page 2) Which brands can you find that do not contain fluoride? Where does fluoride come from? What does it look like in its raw form? Read about or research fluoride. Find out the fluoride content of the drinking water in your area. What are the benefits of fluoride?

### Health

Discuss dental hygiene and the beneficial ingredients of toothpaste. Draw, cut out pictures, or bring examples of a variety of toothbrush designs. List benefits of each design. Have a dentist or hygienist visit the class. —More on page 3.

### Math

Survey class on brands of toothpaste used. Chart or graph the information.

### P.E.

Stomp and squirt contest. Use toothpaste and butcher paper. Estimate and measure distance.

### In the Olden Days . . .



- Toothbrush was wool moistened with honey or a twig with the end smashed and softened first by biting on it.
- Toothpaste was powdered bones of mice.
- Toothpicks were porcupine quills.
- Teeth didn't last very long.

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Language Arts: Read "Ira Sleeps Over." Let students bring PJs & toothpaste.  
Social Studies: What was used before toothpaste was "invented."



### Dig A Little Deeper A Bright Smile

#### From Toothpaste and Minerals

Toothpaste cleans your teeth and keeps them healthy.



The cleaning is done with abrasives (from rocks) that rub the plaque away. Abrasives are minerals like **silica**, **limestone**, **aluminum** oxide (also used in sandpaper), and various **phosphate** minerals.

Fluoride, used to reduce cavities, comes from a mineral called fluorite. It is sometimes changed into stannous fluoride (**tin** fluoride).

Most toothpaste is made white with **titanium** dioxide which comes from minerals called **rutile**, **ilmenite**, and **anatase**. Titanium dioxide also is used to make white paint.

The sparkles in some toothpaste come from **mica**, a mineral common in many rocks.

The toothbrush and tube holding your toothpaste are both made of plastics that come from petroleum (petrochemicals) and other minerals.

For more information about minerals in society, go to:  
Mineral Information Institute, [www.mii.org](http://www.mii.org)

**Math:** Survey class on brands used, chart or graph. **Health:** Discuss dental hygiene & special ingredients. **P.E.:** Stomp & squirt contest, use toothpaste & butcher paper.

Science: What minerals are found in toothpaste. Read about or research fluoride. Compare fluoride content in various brands.

### Language Arts

Read "Ira Sleeps Over". Have students bring toothpaste and toothbrush and PJ's. More ideas on page 4.

### Social Studies

What was used before toothpaste and toothbrushes were invented? Did people really use a twig?

### Read More About It

*Dental Care*, Life Guides Series, by Brian R. Ward, 1986 Franklin Watts

*Smile! How to Cope with Braces*, by Jeanne Betancourt, 1982, Alfred A. Knopf, Inc.

*Arthur's Loose Tooth*, by Lillian Hobar, 1985

*Alligator's Toothache*, by Diane DeGroat, 1977

*The Princes' Tooth Is Loose*, (K-1st), by Harriet Ziefert, 1990

*My First Dentist Visit* (K), by Julia Allen, 1987



## Care of Teeth and Gums

### 1. A Good Diet

Eat well-balanced meals which include a variety of foods and provide nutrients needed by teeth and gums.

Eat fewer sugary foods. Bacteria in the mouth digest sugar and produce an acid. This acid dissolves tooth enamel, forming a cavity.

### 2. Cleaning The Teeth

Brush after every meal. Use dental floss once a day. This removes the plaque. Plaque is a sticky film made of saliva, food particles and bacteria.

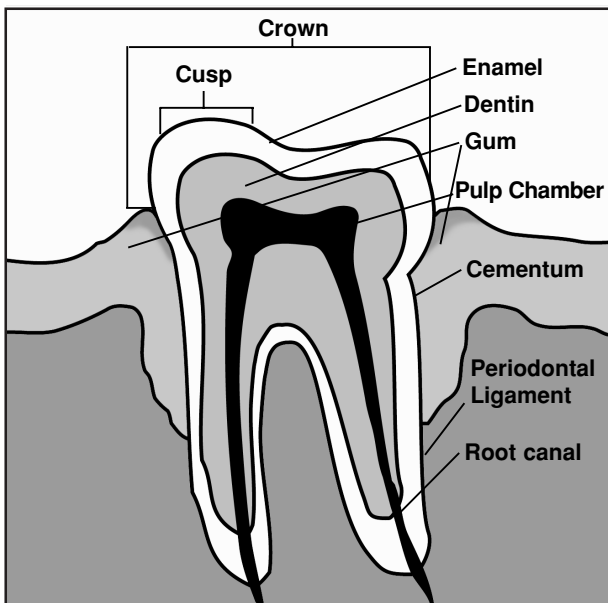
### 3. Dental Check-ups

Have a dental check-up at least once a year. A check-up and teeth cleaning will help prevent diseases of the teeth and gums.

#### Ages at Which Teeth Usually Appear

Deciduous Teeth	Lower Teeth	Upper Teeth
Central Incisors	6 months	7 months
Lateral Incisors	7 months	9 months
Canines	16 months	18 months
First Molars	12 months	14 months
Second Molars	20 months	24 months

Permanent Teeth	Lower Teeth	Upper Teeth
Central Incisors	6-7 years	7-8 years
Lateral Incisors	7-8 years	8-9 years
Canines	16 months	18 months
First Premolars	10-12 years	10-11 years
Second Premolars	11-12 years	10-12 years
First Molars	6-7 years	6-7 years
Second Molars	11-13 years	12-13 years
Third Molars	17-21 years	17-21 years



## Parts of a Tooth

*Crown*—visible part of a molar tooth.

*Cusp*—projections in a molar tooth.

*Root*—extends into the bone of the jaw.

*Pulp*—innermost layer of a tooth. Made up of connective tissues, blood vessels and nerves. Two parts:

1. pulp chamber—lies in crown of tooth
2. root canal—lies in root. Blood vessels and hole at the tip of the root.

*Dentin*—hard, yellow substance surrounding the pulp. It makes up most of the tooth. Dentin is harder than bone. Made up of mineral salts, water and also has some living cells.

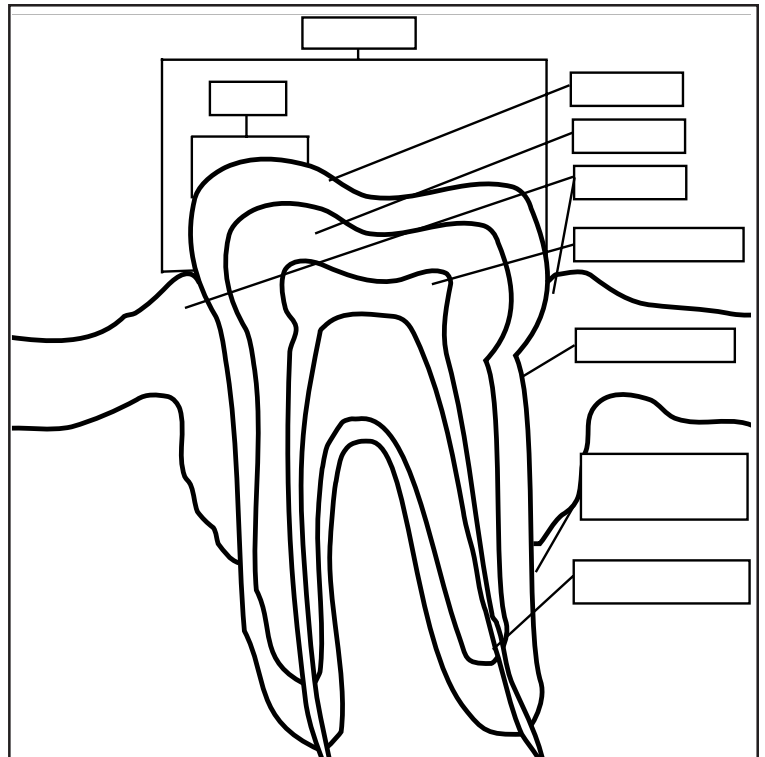
*Enamel*—outermost covering of tooth. It is the hardest tissue in the body. Made up of calcium phosphate and small amount of water, It is white and transparent. Fluoride in toothpaste chemically replaces some of the water in the enamel making the tooth decay resistant.

*Cementum*—overlies dentin in the root of the tooth. It is about as hard as bone. It is made of mineral salts and water.

*Periodontal Ligament*—Made of small fibers. It anchors the tooth and serves as a shock absorber during chewing.

### A Cut-and-Paste Activity

Use old magazines. Look for pictures of healthy foods that are good for you. Cut out the pictures and paste them on a piece of construction paper.



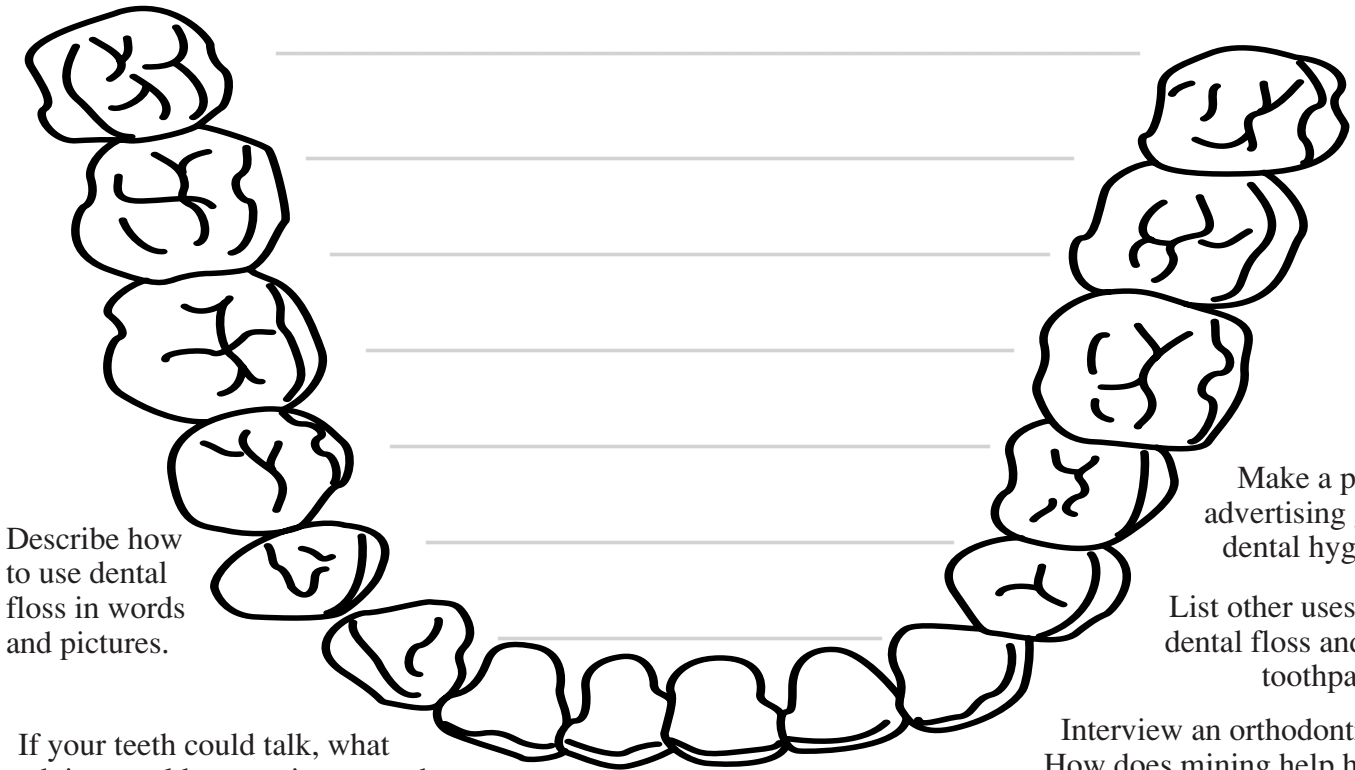
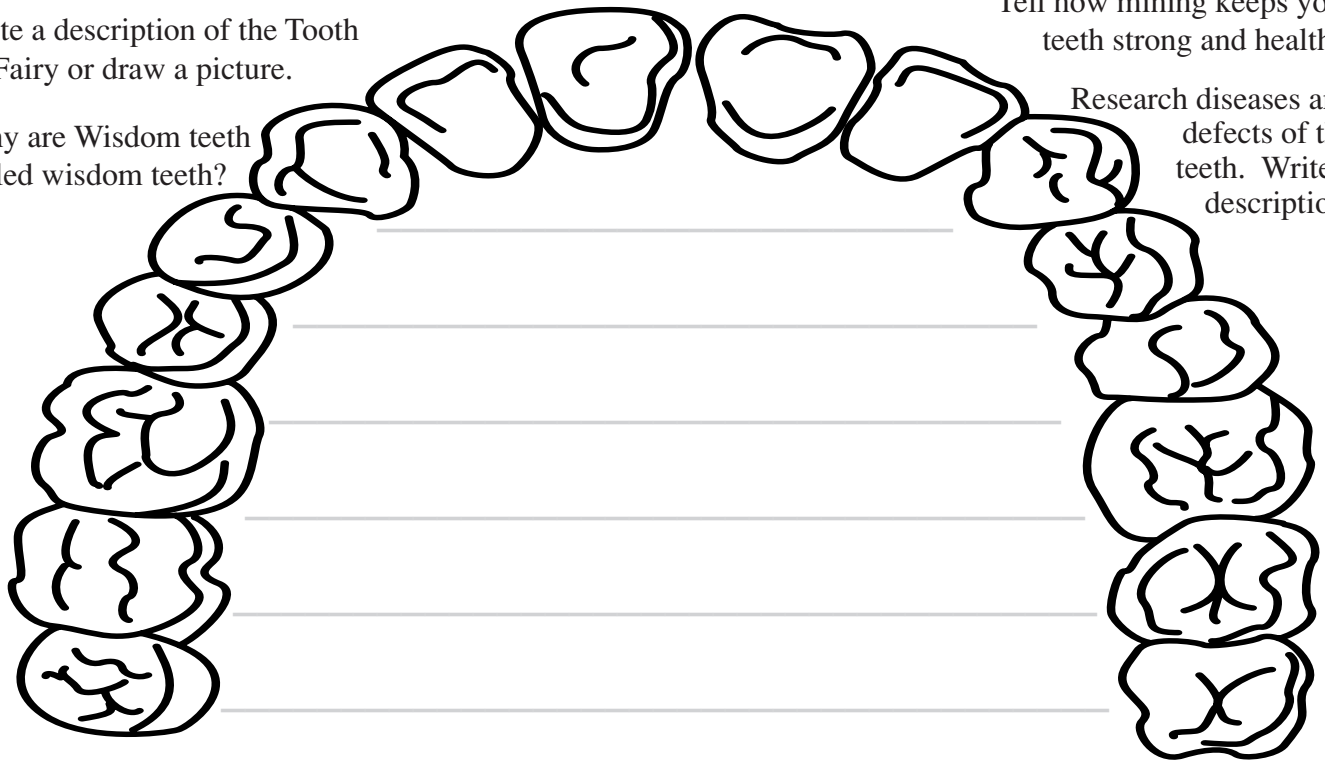
Name \_\_\_\_\_

Tell how mining keeps your teeth strong and healthy.

Write a description of the Tooth Fairy or draw a picture.

Research diseases and defects of the teeth. Write a description.

Why are Wisdom teeth called wisdom teeth?



Describe how to use dental floss in words and pictures.

Make a poster advertising good dental hygiene.

List other uses for dental floss and/or toothpaste.

If your teeth could talk, what advice would your primary teeth give to your secondary teeth?

Interview an orthodontist. How does mining help him do his job?

Draw a picture of a visit to the dentist or write about a visit to the dentist.

Find out what minerals are used to make the instruments the dentist uses.

Identify the teeth.  
What is their purpose?

Which teeth do you have now?  
Which of your teeth are healthy?