



# Science Project Plans

## THE HUMAN BODY

These project plans are designed to be used with the accompanying resource sheets. Please note – A CD does not accompany this resource pack. All resources are provided below.

### Science Project 1: Scintillating senses (Key Stages 1 and 2)

**Aims of the lesson:** To be able to list the five senses and explain the parts of the body that go with each sense.

**Activity:** Begin this lesson by reading a book about the five senses with the class and ask the pupils to make a poster and label the five senses. Next, deal with each sense separately.

#### Taste

Have the pupils cut pictures from magazines of items they could eat. Then take a piece of paper and fold it in half, draw a line down the middle and ask the pupils to write 'Things we like to eat' on one side and 'Things we do not like to eat' on the other side. Ask them to stick pictures on the appropriate sides and discuss which side has more.

#### Hearing

Have the pupils cut pictures from magazines of items that make noise. Then take a piece of paper and fold it in half. Draw a line down the middle and ask the pupils to write 'Things they like to hear' on one side and 'Things they do not like to hear' on the other side. Glue pictures on the appropriate sides. Take the children to the playground, have them close their eyes, listen to the various sounds and then describe what they hear.



#### Smell

Have the pupils cut pictures from magazines of items that smell. Then take a piece of paper and fold it in half. Draw a line down the middle and ask the pupils to write 'Things we like to smell' on one side and 'Things we do not like to smell' on the other side. Glue pictures on the appropriate sides.

#### Sight

Have the pupils cut pictures from magazines of items they like and dislike. Then take a piece of paper and fold it in half. Draw a line down the middle and ask the pupils to write 'Things we like' on one side and 'Things we do not like' on the other side. Glue pictures on the appropriate side. Have the pupils play the game 'I Spy' and describe various items in the room or on the playground. Place a blindfold on each child and let others lead him/her around the room. Let the pupils look through pieces of coloured cellophane, binoculars, magnifying glass, telescope, kaleidoscope, etc.

#### Touch

Make a mystery bag of items. The pupils place their hand in the bag and describe what they are touching. The other pupils guess what they are touching. Have pupils touch/feel various textured items such as sandpaper, velvet, lotion, oil, etc.

Once all the separate senses have been explored and investigated, ask the pupils to review the information they gathered in small groups.

**Plenary:** As an extension to a study of the five senses, ask the class to investigate how animals use their senses. The **Science Project 1** folder on the accompanying CD includes some information on animals' senses and a copy of the illustration of a human eye shown opposite.





## Science Project 2: Terrific teeth (Key Stages 1 and 2)

**Aims of the lesson:** To learn about human teeth and find out the function of different teeth.

**Activity:** Pupils should learn that humans have teeth – molars for chewing, canines for tearing, incisors for cutting – and that teeth help us to eat and that the shape of the teeth makes them useful for different purposes. Begin this activity by reviewing the information sheets located in the **Science Project 2** folder on the accompanying CD-ROM. The sheets cover milk teeth, the parts of a tooth and the functions of teeth. These information sheets can be read as a whole class. Then carry out the following activities.

### 1. Make a tooth model

Using toothpicks and marshmallows, tell the class they are going to make a tooth model. Assign some students to flatten marshmallows for incisors, flatten and clip corners of the marshmallows for the canines and indent the molars by pressing a paper wad in the middle. Attach them in the correct order: three molars on the side on the ends, one canine on each side and four incisors across the front. Let dry and use the model to point out how food can get stuck in ridges

and spaces. The page opposite shows an illustration of a tooth, showing its component parts. This illustration could be displayed for whole-class discussion. A copy of this illustration is located in the **Science Project 2** folder on the CD.

### 2. 'My Teeth' Chant

Recite this poem with the class.

My front teeth are for biting.  
My bottom teeth are for munching.  
My pointed teeth are for tearing.  
My back teeth are for crunching!  
My incisors are for biting.  
My bottom teeth are for munching.  
My canines are for tearing.  
My molars are for crunching!

Once these fun activities have been completed, ask the pupils to describe which of their milk teeth they have left and let them use a mirror to look at their teeth. Next, present children with examples of teeth. Ask them to describe the teeth and say where they are found in the mouth and what makes them suitable for their purposes (e.g. incisors are sharp for cutting). When describing teeth, pupils should use as many of the proper words for teeth as possible. Ask the class if they know the meaning of Cementum, Crown, Dentin, Enamel, Gums, Nerves, Pulp and Root. The **Science Project 2** folder on the accompanying CD includes a tooth glossary sheet detailing the meaning for all of these words. Finally, ask the pupils what foods they think might damage their teeth (such as sugary sweets) and explain why, in the evening, they should not eat after cleaning their teeth before going to bed.

**Plenary:** As an extension to this activity, ask the class to analyse the different foods found in their lunches and list what is good for their teeth and why.







## Science Project 3: Parts of the body (Key Stages 1 and 2)

**Aims of the lesson:** To develop an understanding that humans have bodies with similar parts.

**Activity:** Begin this lesson by playing 'Simon Says' with the class, with the emphasis on naming parts of the body. Then ask the pupils to locate and name parts of the body using drawings and labels. The **Science Project 3** folder on the accompanying CD has a copy of the activity sheet given opposite. This sheet asks the class to name the different parts of the human body using a given word list. Additionally, the CD offers two software-based interactive teaching tools to help pupils learn how to label the different parts of the body and label some of the human body's internal organs. There are many other activities that can be used to revise the parts of the body, including the following:

### Body art

Trace around each pupil's body on large paper. Let the pupil add details with paint or markers. Then invite the class to glue facial features cut from magazine pictures on paper plates to create faces. Provide yarn for hair and help the class trace around their hands and feet. Let them add colourful nails, rings, or other decorations.

### How does your body work?

Ask questions that encourage the class to explore how parts of their bodies work. Here are some suggestions:

- What are some things you can do with your fingers? With your toes?
- What parts of your body can you touch with your elbow? With your chin?
- What parts of your body bend? What parts don't bend?
- What parts of your body can you use to lift something? To paint a picture? To bounce a ball?

### Bandage the bear

Set out a teddy bear along with strips of gauze or white cloth. Give your class directions for using the strips to bandage different parts of the bear's body. Alternatively, let the pupils give you directions for bandaging the bear.



### Body mirrors

Invite the pupils to choose partners and stand facing each other. Have one partner be the 'mirror partner'. As the other partner follows directions you give for moving different parts of the body, have the 'mirror partner' copy the movements exactly. Then let the partners trade places and follow another set of directions that you give.

### Funny bodies

Make a transparency of body parts. Colour the eyes, hair, and clothing with a permanent felt pen. Cut them out and place them in an envelope for safekeeping. Make a set of these pictures for each pupil. Distribute a piece of paper and the copies of the body parts to the pupils. Place the transparency pieces of the body and face parts on the overhead and ask two pupils to come up and assemble them. Tell the pupils that you are now going to make a new body from these parts. Create a funny body with parts in the wrong place. Tell them to rearrange their body parts to make a new body which is different from the one you did.

Encourage them to make each body different from their neighbour's so they can see how many different ways there are to rearrange the body.

**Plenary:** As an extension to this activity, ask the class to make up their own song about the human body.

To help pupils learn how to label the human body correctly, see the Label the Body diagram below.





## Science Project 4: Healthy eating (Key Stage 2)

**Aims of the lesson:** To learn what a healthy diet is and the importance of eating healthily, and to assess their own eating habits.

**Activity:** Begin this project by asking the pupils to list what they consider to be healthy foods and what they consider to be unhealthy foods in a table like the one here:

Healthy foods	Unhealthy foods
fruit	cream cake

Then ask them to list what they eat over a course of one day and bring their lists to school. (Care must be taken with this as some pupils' home circumstances may dictate their diet). Demonstrate how to chart each meal. (For example, if a pupil ate cereal for breakfast, write the header 'Breakfast' on the board; below it write 'cereal,' 'milk,' and anything they might put in the cereal, such as a fruit.) Talk about serving sizes e.g. if a pupil ate bread, how much did they eat? Write the amounts of each food eaten on the chart. Give students some time in class to chart the foods they have already eaten that day.

Returning to the lesson the following day, ask pupils to compare the foods they ate with those they listed as health or unhealthy the day before. Then ask the class to compare the foods they ate with the food pyramid shown opposite. This pyramid offers guidance on how much of different types of foods we should eat each day. Explain to the class that the shape of the food pyramid shows the proportions that various food groups should contribute to the total diet. Food groups at the wide base of the pyramid, such as bread, cereal, rice and pasta, are supposed to be eaten in greater amounts than foods

near the top. Fats, oils and sweets are at the top of the food pyramid, and are supposed to be consumed sparingly. The **Science Project 4** folder on the CD includes a list of recommended servings and how much a serving roughly equates to. How well did their food intake match the pyramid? How much food did they eat from the group at the top of pyramid?

There are six groups of food on the pyramid. These are:

- Group 1 – Fats, oils and sweets
- Group 2 – Meat and beans
- Group 3 – Dairy products
- Group 4 – Fruits
- Group 5 – Vegetables
- Group 6 – Starchy foods

Ask the class to list as many examples as they can think of in each food group. The **Science Project 4** folder on the CD has a selection of illustrations of foods belonging to each of these groups. Finally, have the class devise a healthy menu for a day, making sure that the menu meets the guidelines given in the food pyramid.

**Plenary:** As an extension to this activity, ask each pupil to bring in a recipe of a favourite food that is healthy and part of a well-balanced diet. With the help of the pupils, compile the recipes into a class cookbook. If possible, plan a class lunch and have pupils bring in samples of their favourite foods.





# The Human Body

## Science Project 1: Scintillating Senses

Key Stage 1 & 2





# Amazing animal senses

Some animals have developed amazing adaptations to their environments. Here are some examples of how some animals sense the outside world.

## Ants

- Can detect small movement through 5 cm of earth.

## Bats

- Can detect warmth of an animal from about 16 cm away.
- Can find food (insects) up to 18 feet away.
- Can hear frequencies between 3,000 and 120,000 Hz.

## Butterflies

- Have hairs on their wings to detect changes in air pressure.
- Using vision, the butterfly *Colias* can distinguish two points separated by as little as 30 microns. (Humans can distinguish two points separated by 100 microns.)

## Cats

- Have a hearing range between 100 and 60,000 Hz.

## Dogs

- Can hear sound as high as 40,000 Hz.

## Falcons

- Can see a 10 cm object from a distance of 1.5 km.
- Have visual acuity 2.6 times better than human.
- Can see sharp images even when diving at 100 miles/hr.

## Fly

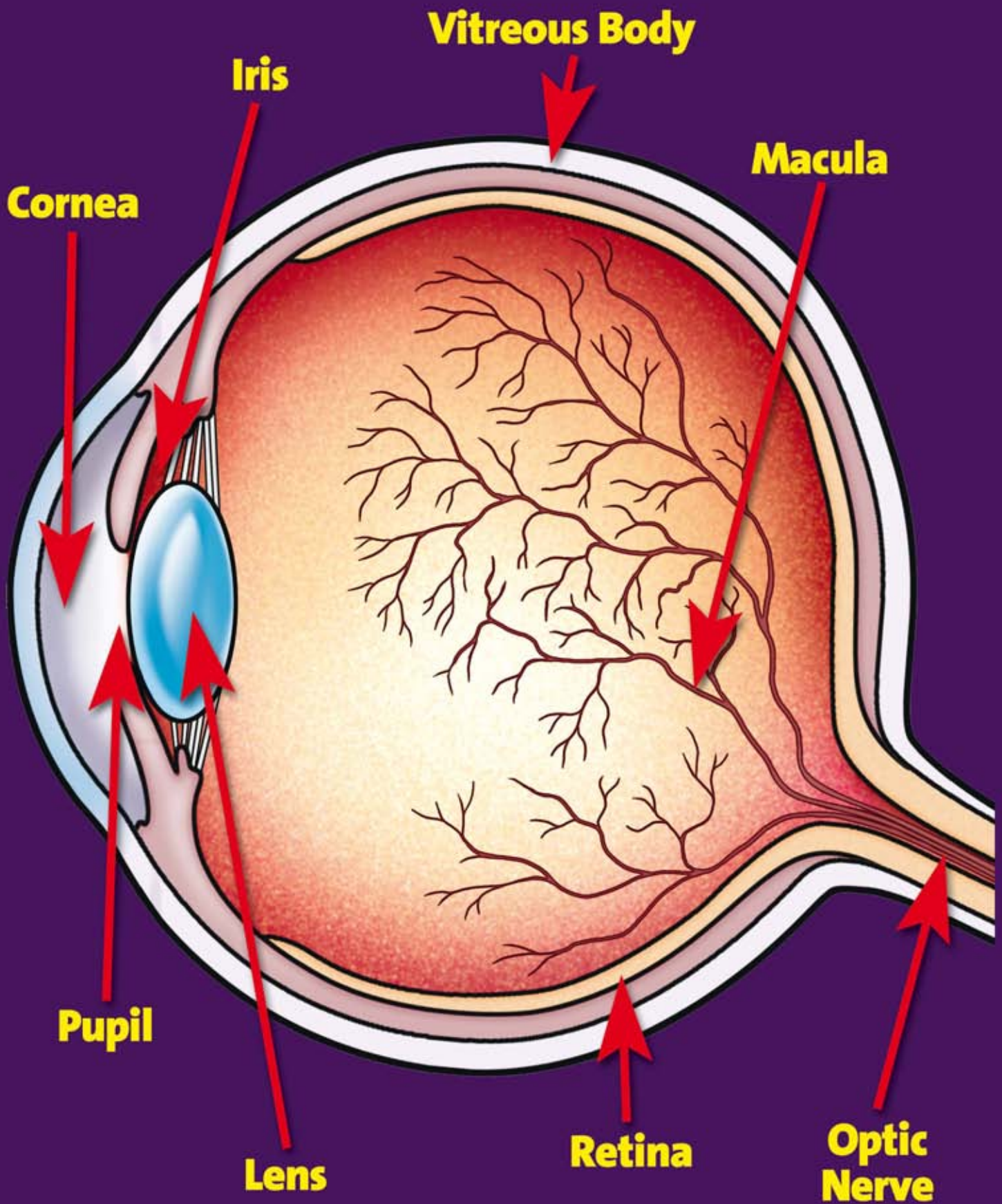
- Each eye has 3,000 lenses.
- Blowflies taste with 3,000 sensory hairs on their feet.

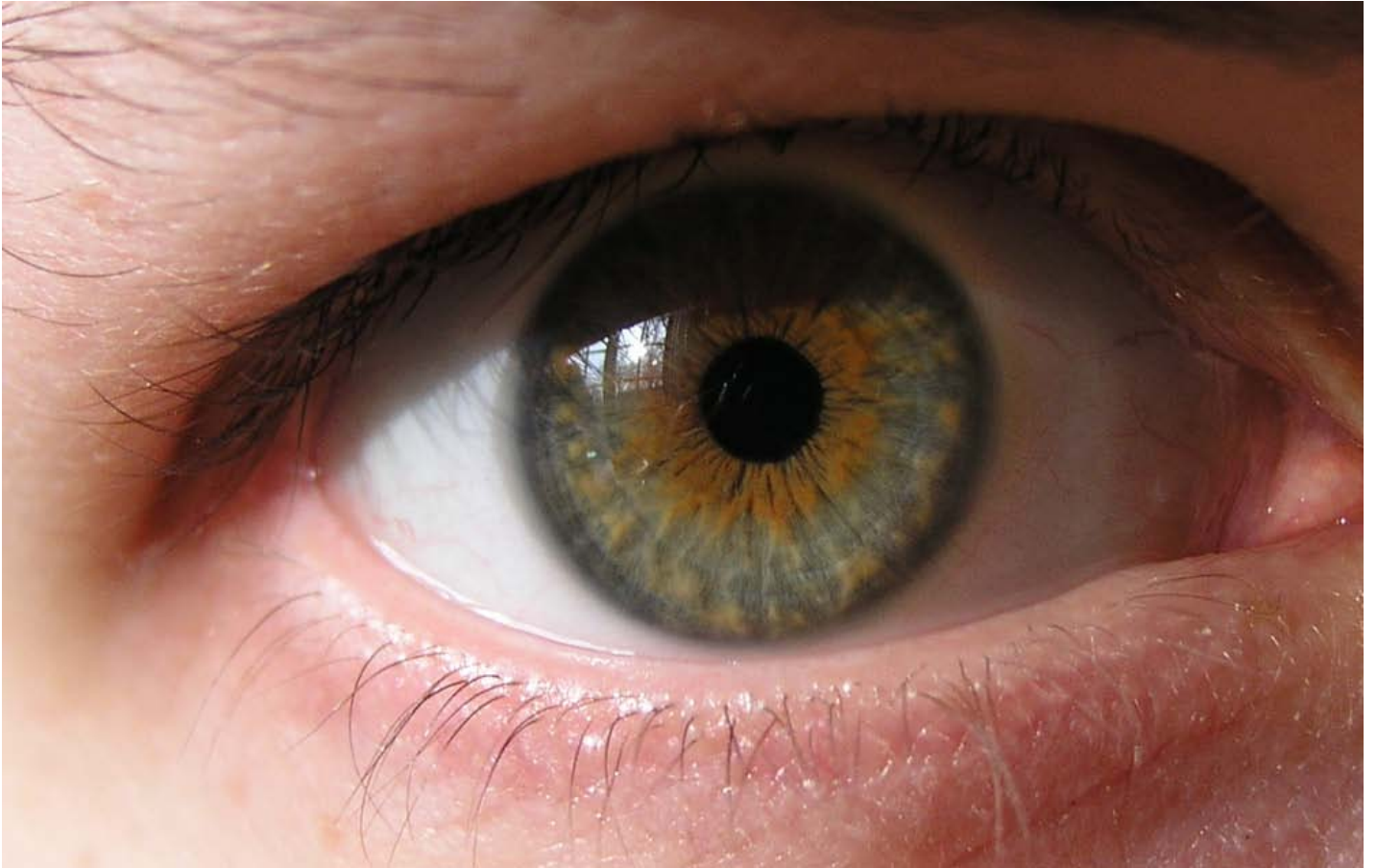
## Pig

- Tongue contains 15,000 taste buds. For comparison, the human tongue has 9,000 taste buds.



# The human eye









# The Human Body

## Science Project 2: Terrific Teeth

Key Stage 1 & 2





## Information sheet: Functions of teeth

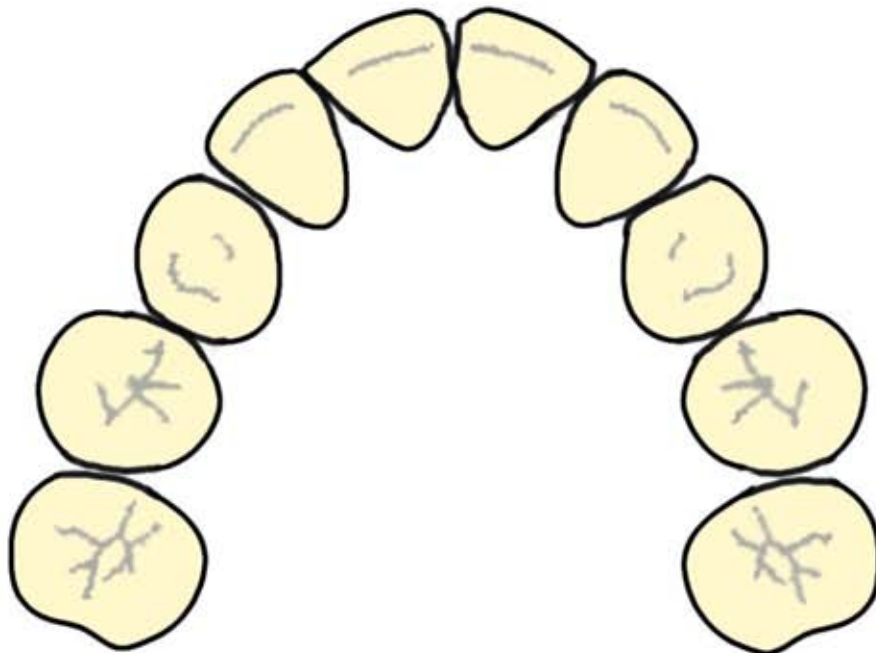
Your teeth look different from one another because they are designed to do different things.

The **Incisors** are the teeth in the very front. They're the sharpest teeth, built to cut food and shaped to shovel the food inward.

The **Canine** teeth are in the corners of your mouth. Because they're meant for grasping and tearing food, they have very long roots.

**Premolars** are located just behind your Canine teeth. Premolars have a more flat chewing surface because they're meant for crushing food.

The **Molars** are the last teeth towards the back of your mouth. Molars are much bigger than the Premolars and have bigger, flatter chewing surfaces because their job is to chew and grind the food into smaller pieces.



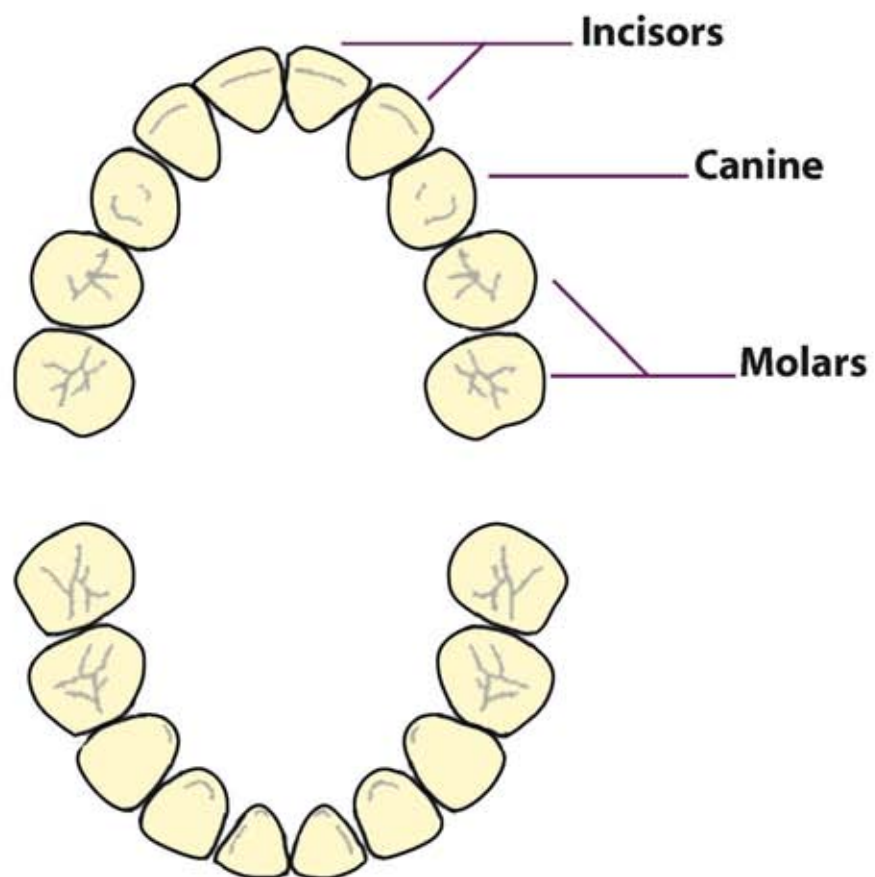




## Information sheet: Milk teeth

What's the difference between milk teeth (sometimes called baby teeth) and permanent teeth? At between six and ten months of age, most infants begin to get their milk teeth. The central incisors (front middle teeth) usually come in first, and then teeth begin appearing on either side and work their way back to the second molars.

By the time a child has reached three years old, most of the milk teeth should be present. The process begins to repeat itself when the child is about seven years old. The central incisors fall out first and are replaced by permanent teeth. By the age of 21, most people have all of their permanent teeth.



**First teeth, sometimes called 'Baby Teeth'**



# Information sheet: Parts of a tooth

A tooth is basically made up of two parts: the crown and the root.

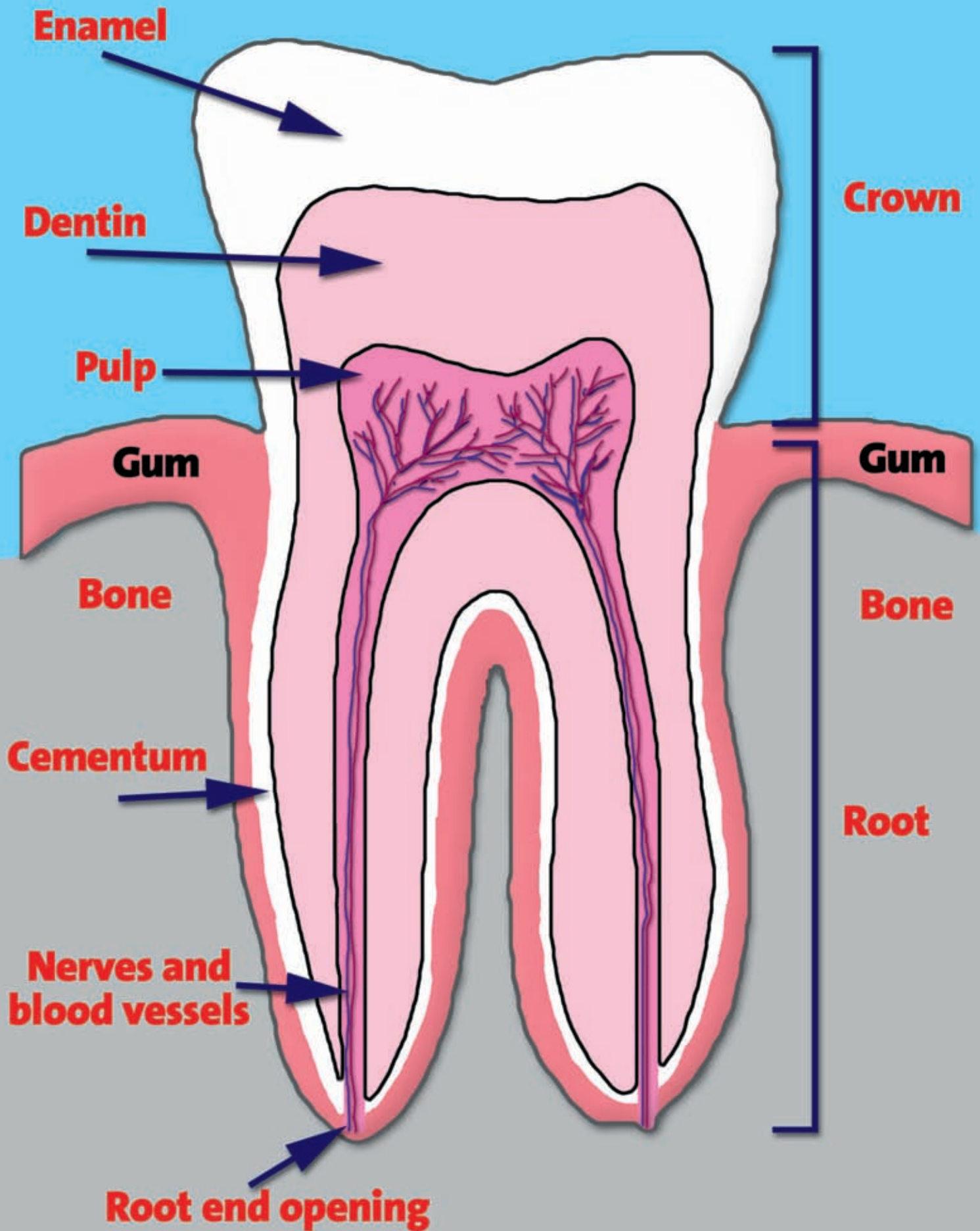
- The **crown** is what you see when you smile or open your mouth. It's the part that sits above your gum line.
- The **root** is below the gum line. It makes up about 2/3rds of the tooth's total length.

Four different tissues make up each tooth.

- The **enamel** is the durable, white covering. Enamel protects the tooth from the wear and tear of chewing.
- **Dentin** supports the enamel on your teeth. It's a yellow, bone-like material that is softer than enamel and carries some of the nerve fibres that tell you when something is going wrong inside your tooth.
- The **pulp** is the centre of the tooth. It is a soft tissue that contains blood and lymph vessels and nerves. The pulp is how the tooth receives nourishment and transmits signals to your brain.
- **Cementum** is what covers most of the root of the tooth. It helps to attach the tooth to the bones in your jaw.



# Tooth anatomy





# Tooth glossary

## **Cementum**

A layer of tough, yellowish, bone-like tissue that covers the root of a tooth. It helps hold the tooth in the socket. The cementum contains the periodontal membrane.

## **Crown**

The visible part of a tooth.

## **Dentin**

The hard but porous tissue located under both the enamel and cementum of the tooth. Dentin is harder than bone.

## **Enamel**

The tough, shiny, white outer surface of the tooth.

## **Gums**

The soft tissue that surrounds the base of the teeth.

## **Nerves**

Transmit signals (conveying messages like hot, cold, or pain) to and from the brain.

## **Pulp**

The soft centre of the tooth. The pulp contains blood vessels and nerves; it nourishes the dentin.

## **Root**

The anchor of a tooth that extends into the jawbone. The number of roots ranges from one to three.





# The Human Body

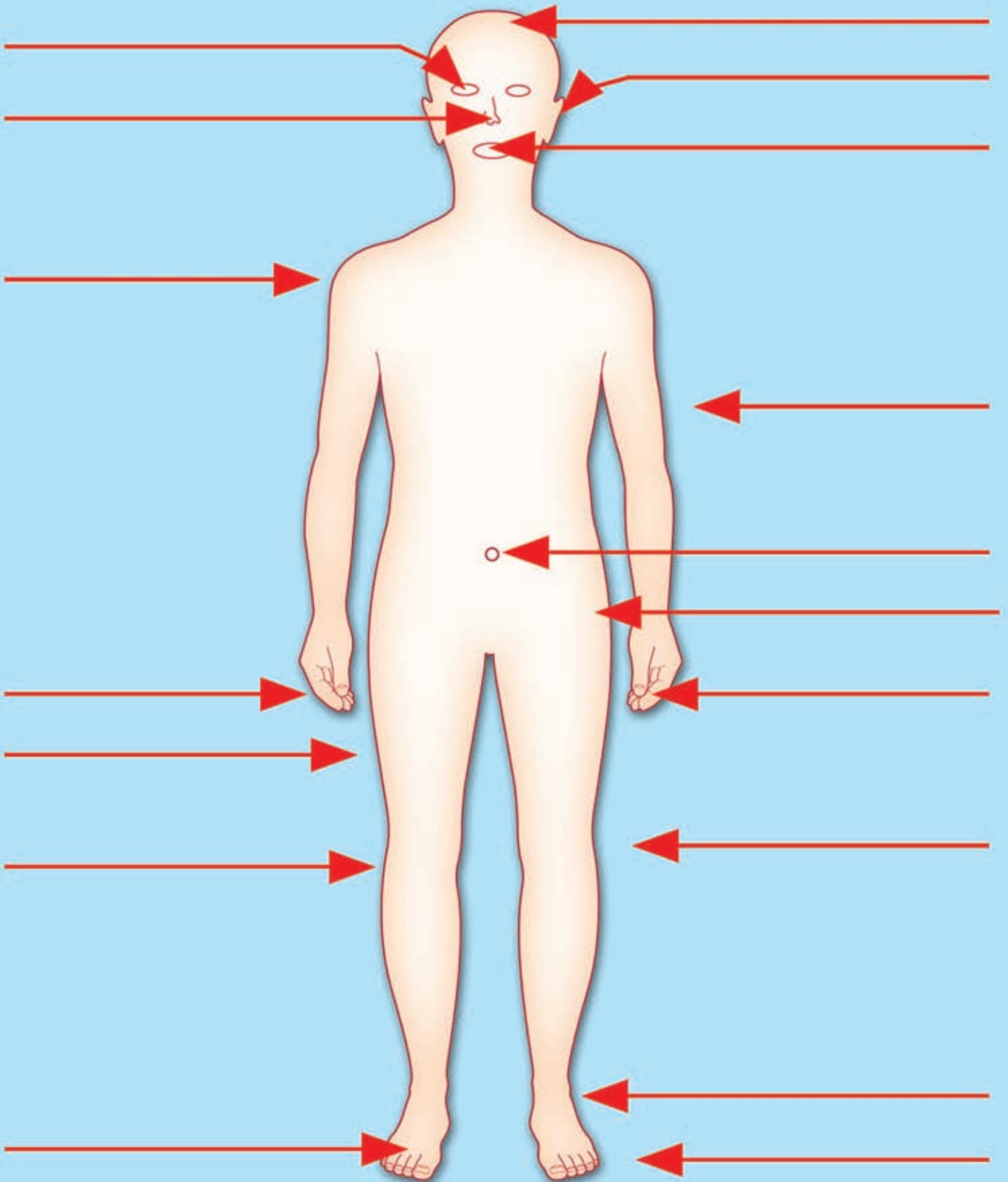
## Science Project 3: Parts of the Body

Key Stage 1 & 2



# Label the body diagram

Label the human body diagram using the word list below.



ankle  
fingers  
knee  
thigh

arm  
foot  
leg  
toes

belly button  
hand  
mouth

ear  
head  
nose

eye  
hip  
shoulder



# The Human Body

## Science Project 4: Healthy Eating

Key Stage 2







# Information sheet: Servings

(Note, these serving sizes refer to the Americanised 'cups' as a unit of weight – we have kept this in as it is easier for a child to visualise amounts by using 'cups' to measure servings.)

## **Bread, grain, cereal and pasta**

At the base of the food pyramid, you'll see the group that contains breads, grains, cereals and pastas. One serving of this group can be:

- 1 slice of bread
- 1/2 cup of rice, cooked cereal or pasta
- 1 cup of ready-to-eat cereal

## **Vegetables**

Vegetables are rich in nutrients. The food pyramid suggests 3 to 5 servings of vegetables each day. One serving of vegetables can be:

- 1 cup of raw vegetables
- 1/2 cup of other vegetables, cooked or raw

## **Fruit**

The food pyramid suggests 2 to 4 servings of fruit each day. One serving of fruit can be:

- One medium apple, orange or banana
- 1/2 cup of chopped, cooked or canned fruit
- 3/4 cup of fruit juice

## **Beans, eggs, lean meat and fish**

Meat, poultry and fish supply protein, iron and zinc. The food pyramid suggests 2 to 3 servings of cooked meat, fish or poultry. Each serving should be between 2 and 3 ounces. The following foods count as one ounce of meat:

- One egg
- 2 tablespoons of peanut butter
- 1/2 cup cooked dry beans
- 1/3 cup of nuts

## **Dairy products**

Products made with milk provide protein and vitamins and minerals, especially calcium. The food pyramid suggests 2 to 3 servings each day.

## **Fats and sweets**

Fats and sweets in the top of the food pyramid should comprise the smallest percentage of your daily diet. The foods at the top of the food pyramid should be eaten sparingly because they provide calories but not much in the way of nutrition.

# The food pyramid

