



AFTER THE VISIT, *in class or at home...*

POST-VISIT ACTIVITY

To get the most out of your **Secrets of the Heart** visit, here are some activities that students can do on their own, in teams or as a group. In each activity, students play a key role in their own process of discovery.

HAVE THE STUDENTS TRY TO THINK OF DIFFERENT EXPRESSIONS RELATING TO THE HEART, AND TO UNDERSTAND THEIR MEANING

Subjects covered: written English, oral English, reading comprehension

"Have you ever heard any expressions or songs with the word HEART in them?"

(You can have the children brainstorm and write all the expressions they come up with on the blackboard.)

"Search your memory, look in books, look in the dictionary, and ask friends or other people in your family. Write down all the expressions you can find. Then have fun reading them out loud, changing your voice to match the expression. You may be surprised to hear all the HEART has to say!"

Examples of expressions

To have a broken heart, a heartache; to have heartburn; at the heart of the action; to learn by heart; wear your heart on your sleeve; put your heart into something; have a heart attack; have open-heart surgery; a heart-to-heart talk.

Examples of song titles

"My Heart Will Go On" (Love theme from Titanic), "Achy-Breaky Heart", "I Left My Heart in San Francisco"...

READING EXPLORING FURTHER... SOME VOCABULARY AND SUGGESTED READING

The heart is an organ essential to life. It is an immensely strong muscle that manages to pump more than five litres of blood a minute, in adults, and three to four litres, in children. It sends the blood around the whole body, through the blood vessels.

TABLE SHOWING CHILDREN'S HEARTBEATS

AGE	Resting heart rate (beats per minute)	Average (beats per minute)
As of the 3rd month, in the mother's womb	110 to 160	140
From 0 to 1 week after birth	91 to 166	125
From 1 week to two months	107 to 179	145
From 3 to 5 months	106 to 186	141
From 6 to 11 months	109 to 169	134
From 1 to 2 years	89 to 151	119
From 3 to 4 years	73 to 137	108
From 5 to 7 years	65 to 133	100
From 8 to 11 years	62 to 130	91
From 12 to 15 years	60 to 119	85

HAVE THE STUDENTS USE THEIR MATHEMATICAL SKILLS TO MEASURE HEARTBEATS

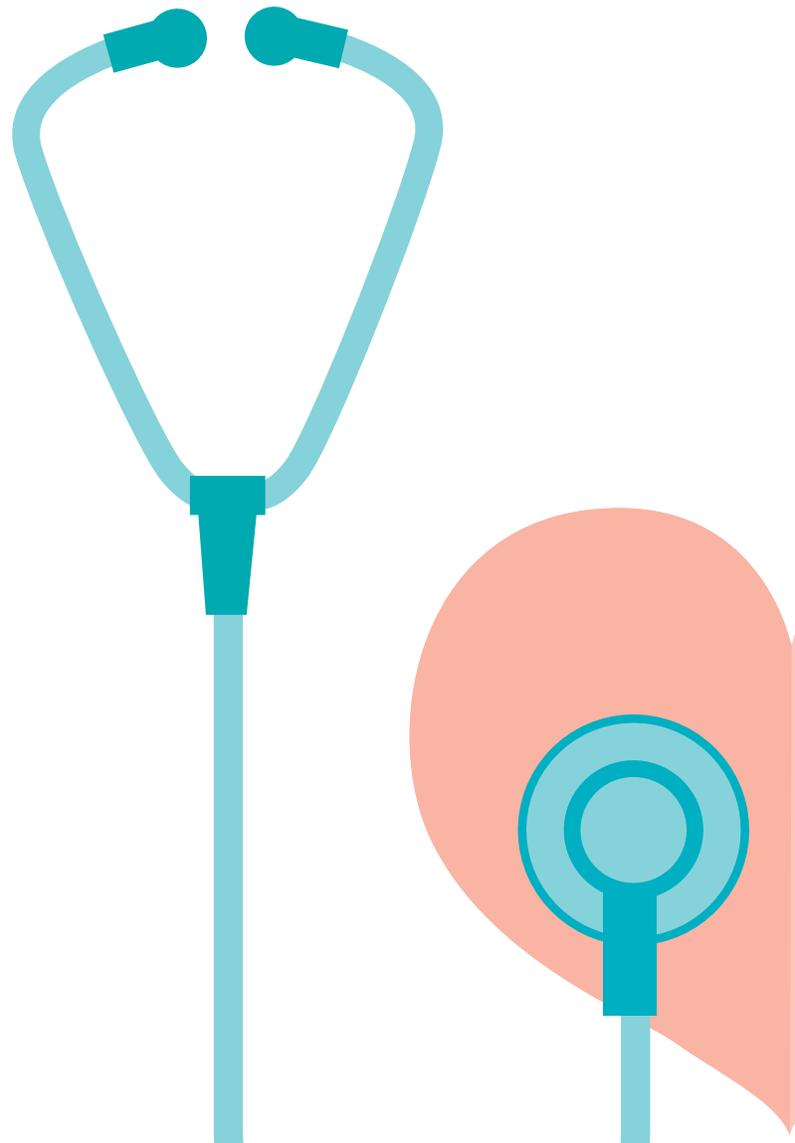
Subjects covered: science, technology, mathematics

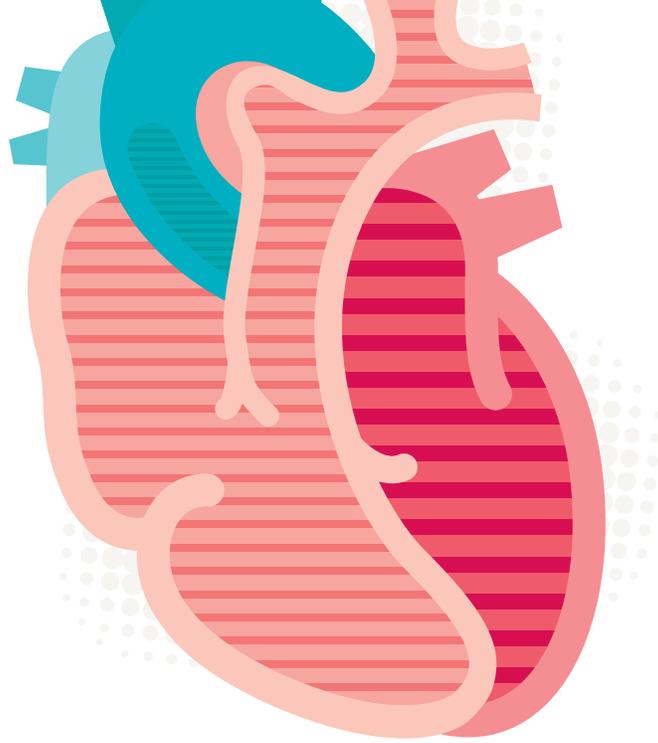
"When do you think your heart started beating?
How many times a day would your heart beat at rest?
Given your age, how many times has your heart
beaten since it started?"

(You can write the different hypotheses on the
blackboard or ask each student to note them on
a sheet of paper.)

"On about the 23rd day after conception, the heart
of a tiny baby in its mother's womb starts to vibrate,
and then to beat. As of that moment, it beats an average
of 150,000 times a day, at rest, until age 11." You can
add: "The mother carries the baby around in her womb
for nine months (40 weeks). How many days does that
represent? Now calculate how many times your heart
has beaten since it started, 8, 9, 10 or 11 years ago...
do your results match what you expected?"

"As of age 12, and until the end of your life, your
heart beats about 100,000 times a day at rest. This means
that a child's heart beats faster than a teenager's
or an adult's heart."





HAVE THE STUDENTS DO SOME CARDIOVASCULAR EXERCISE AND TAKE THEIR PULSE

Subjects covered: physical education and mathematics

“Have you ever counted how many times your heart beats a minute when you’re resting? How many? Or have you ever counted how many times your heart beats a minute after hard physical activity? How many? Do you think there might be any differences between people of the same age? Why would that be?”

(Ask the children to write their results and their hypotheses for the first two questions on a sheet of paper.)

“Let’s see if you’re right. First of all, where on our bodies should we try to take our pulse? On the wrist, on the neck or, in some cases, on the chest. The neck is often the best place to do it.”

(Show them exactly where to place their fingers, and ask them to try. The physical education teacher can help you.)

“Now, we’ll play some lively music, and I want you to skip around, jump up and down or dance for three minutes. As soon as the music stops, take your pulse for 10 seconds.”

(Count off the seconds and signal them to stop after 10 seconds.)

“Are you ready? Go!... Stop. Now start counting... Time’s up. Write down the number of heartbeats you counted, and multiply by six to get the result for a whole minute. Now let’s try it while you’re resting. Make yourselves comfortable and catch your breath. Relax and breathe normally. I’ll put on some relaxing music. I want you to rest for three minutes. When the music stops, take your pulse for 10 seconds.”

(Count off the seconds and signal them to stop after 10 seconds.)

“Is everybody calm? Relax... Now start counting. Time’s up. Write down the number of heartbeats you counted, and multiply by six to get the result for a whole minute. Is there a difference between your results and your answers to the first two questions? Did you all get the same results? Why? The more active we are, the faster our hearts beat. So the number of beats depends on how hard we work at the exercise. For instance, if you run, skate or bicycle as fast as you can, your heart can beat up to 195 to 215 times a minute. But did you know that the best time to tell who is in good shape is at rest? The better shape you are in, the slower your heart beats at rest. Why? Because when you are in good shape, your heart muscle becomes a bit bigger and stronger, so it takes fewer beats to send blood through your whole body. There’s another secret of the heart for you!”



HAVE THE STUDENTS *design an illustrated heart poster*

Subjects: see the possibilities below

"Are you ready to discover more Secrets of the Heart? Split up into teams of three, four or five and make a poster. Start by drawing the HEART at the centre of a big sheet of paper or Bristol board. Leave enough room to write around it. Each member of the team is to write a question in a different spot and then do some research to find the answer to his or her question and write it next to the question."

(You can ask your students to brainstorm on the subject of the heart.)

Each team may have a different number of questions, depending on how many the students come up with.

Once the posters are completed, hang them up in the classroom and invite each team to present its work. Afterwards, every student should have a better understanding of The Secrets of the Heart.

The poster can also serve as a starting point for reviewing your trip to the Science Centre, the post-visit activities and other enrichment activities.

For instance...

- **SCIENCE**
"What is the heart's role in the human body?"
- **TECHNOLOGY**
"What does a pacemaker do?"
- **MATHEMATICS**
"How many litres of blood does the heart pump in one minute? In one day?"
- **ENGLISH**
"Can you think of some expressions containing the word 'heart'?"
- **FRENCH**
"What would your heart say if it spoke French?"
- **HEALTH EDUCATION**
"What foods are good for your heart?"
- **PHYSICAL EDUCATION**
"How many times does the heart beat in a minute, on average, at rest? How many times when you are exercising hard?"
- **MORAL AND RELIGIOUS EDUCATION**
"What do we mean when we say someone has a good heart?"

3 *fun and educational* EXPERIMENTS

1 **Would you like to “see” your heart beating?**

“Take some modelling clay; make a flat disk and place it on your wrist. Now stick a toothpick in the clay and watch it move. What you are seeing is the movement of your blood vessels. The heart makes them move as it beats. The heart sends “beats” of blood through your blood vessels, called ‘arteries.’”

2 **Would you like to listen to a friend’s heartbeat?**

“Take an empty toilet paper roll, place it over your friend’s heart, and listen carefully. Try to say out loud what you are hearing. The very first stethoscope was invented by rolling up a sheet of paper into a tube!”

3 **Would you like to see how strong your heart is?**

“Take a tennis ball, and squeeze it as hard as you can in your fist. This is about how hard your heart has to work to pump blood through your whole body. The heart of a person at rest works twice as hard as a sprinter’s leg muscles!”

ABOUT JOBS AND TECHNOLOGY

What does a cardiologist do? (university level)

He or she is a medical specialist who identifies, diagnoses, treats and prevents heart diseases and circulatory problems.

What does a heart surgeon do? (university level)

He or she is a medical specialist who corrects and treats heart problems through surgery.

What does a surgical nurse do? (college level)

He or she assists the surgical team before, during and after an operation, to help the surgery go smoothly and ensure that the patient recovers quickly.

What does a nursing assistant do? (high-school level)

He or she provides hygienic care and sees to patients’ physical and psychological well-being, in keeping with the doctor’s orders.

What is a stethoscope?

It is a medical instrument used to listen to heartbeats.

What does a pacemaker do?

It stimulates the heart if it is beating too slowly.