

Grade 5 Lesson Package



heart healthy kids™
volume 2

Jeunes cœurs en santé™

volume 2



OVERVIEW OF LESSON PACKAGE FOR GRADE 5

General Information

STRUCTURE OF THE UNIT

This unit consists of an introduction and five student lessons in Black Line Master format (BLM 1-5).

CONTENTS OF THIS PACKAGE

- Teacher Guide Pages, including Tips and Answers
- Photocopiable Student Lessons, BLM 1-BLM 5
- Photocopiable Circulation Game, BLM 6
- Photocopiable Heart Talk Glossary, BLM 7
- Photocopiable Heart Fact Page BLM 8

STRUCTURE OF STUDENT LESSONS

1. Each Student Lesson is provided in BLM format.
2. Each lesson is organized around the following headings:
 - Warm-up
 - Are you Ready?
 - Get Set
 - Go!
 - Cross the Finish Line
3. Each Go! section involves the student in an activity or in making something: a model, a picture, a chart. In most cases, what students make can be taken home to share with their families.
4. The unit is are very much self-contained. Students should be able to progress through each lesson with minimal teacher guidance. It is suggested that a class discussion follow each lesson to wrap up any student questions.

YOU DON'T NEED TO BE AN EXPERT

All the information you and your students really need is either in this package or in the box. There's no need for the teacher to do extra research. At the same time, there is plenty of opportunity for students to do extra research.

YOU DON'T NEED SPECIAL MATERIALS

You won't have to prepare or scrounge for materials. Most activities don't require anything more than pens, pencils, paper and tape. Everything else you'd need at

school is in the box. And there are numerous opportunities for children to share activities with family by taking the lesson page home and interacting with adults.

YOU DECIDE HOW MUCH CLASS TIME TO USE

Children need not do the entire unit to benefit. It's well worth while to do, say, the introduction and one or two of the lessons you think your students would most enjoy. If you choose to do all five lessons, you might decide to do one a day for a week, or one a week for a month.

The time required will depend on your objectives. Each lesson can stand on its own, if necessary. Or, the unit can be enhanced to become the theme of a multidisciplinary study.

YOU DON'T NEED A LOT OF PREPARATION TIME

We've tried to keep this teacher guideline as concise and concrete as possible, so you won't have to wade through page after page to get to the heart of the matter. We've avoided jargon, and chosen the simplest possible language and the tightest possible format. The same is true of the Student Lessons. Note that Tips and Answers are provided. To save space, the answers are written as simply as possible. You may want your students to answer in full sentences.

THE LESSONS ARE MEANT FOR INDEPENDENT WORK

The five lessons are designed to help students learn how to learn from reference materials, from reading, from working together to answer questions, from connecting the learning that takes place from one lesson to the next.

INTRODUCING THE UNIT

See page 3 of this Teacher Guide for a suggested introduction.

OVERVIEW OF LESSON PACKAGE FOR GRADE 5

Contents at a Glance

	<i>Topic</i>	<i>Teacher Guide</i>
Overview of Grade 5 Lesson Package	General Information	page 1
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What You Don't Know About Your Heart...	Introduction to lessons	page 3

<i>Student Lesson</i>	<i>BLM</i>	<i>Title</i>	<i>Topic</i>
Lesson 1	BLM 1	<i>Circulation Game: Rules</i>	Structure and Function of the heart
Lesson 2	BLM 2	<i>Rule 1: Eat Good Food</i>	Nutrition for a healthy heart
Lesson 3	BLM 3	<i>Rule 2: Breathe Clean Air</i>	Air (oxygen) for a healthy heart
Lesson 4	BLM 4	<i>Rule 3: Move Your Body</i>	Exercise/fitness for a healthy heart
Lesson 5	BLM 5	<i>Emergency! Help for an Unhealthy Heart</i>	Using the 911 Emergency Service
	BLM 6	<i>Circulation Game: Picture B</i>	Goes with Lesson 1
	BLM 7	<i>Heart Talk Glossary</i>	Goes with all Lessons
	BLM 8	<i>Handy Heart Facts</i>	Goes with all Lessons

Curriculum Expectations

Students will:

LESSON 1.

- describe the basic structure and function of the major organs in the respiratory and circulatory systems (Sc. & Tech -- Life Systems)

LESSON 2.

- describe the types of nutrients in foods (Sc. & Tech -- Life Systems)
- interpret nutritional information to make healthy food choices (Sc. & Tech -- Life Systems; H & PE -- Healthy Living)

LESSON 3.

- explain how the health of human beings is affected by environmental factors e.g. smoking (Sc. & Tech -- Life Systems)

LESSON 4.

- explain the importance of daily physical activity (Sc. & Tech -- Life Systems)
- describe the cardiorespiratory component of physical fitness and relate to an appropriate physical activity (H & PE -- Active Participation)

NOTE: Based on the Province of Ontario's Curriculum Expectations

H & PE: Health and Physical Education, The Ontario Curriculum Grades 1-8

Sc & Tech: Science and Technology, The Ontario Curriculum Grades 1-8

Teacher’s Guideline – Grade 5

INTRODUCTION *What You Don’t Know About Your Heart Now Could Hurt You Later*

Teacher Preparation: Make copies of BLM 7 and BLM 8 – one each per student. These are helpful for the introduction,

Do or Say	Ask	Elicit
Pull the stethoscope out of the box	Does anybody recognize this?	It’s a stethoscope
Swing it	What’s it for?	Listening to the heart
Choose a student “volunteer”	Show me how to use it	Get student to place earpieces in your ears, disc on own chest
Have student place stethoscope disc their chest	What’s that sound?	Heartbeat
Say: Yes, I hear it. Gee, it’s noisy!	How does the heart make all that noise?	From pumping blood (from pushing blood around)
It sounds as if you people already know a few things about the heart.	Where is your heart? What does it do? Where does the blood go? What does the blood do?	It’s in your chest. It pumps your blood. Everywhere. It keeps you alive.

In this unit, you’ll learn some of what you don’t already know about the heart.

- In Lesson 1, you’ll play a game to learn the rules that control the movement of blood everywhere in the body. To help out, you’ll get a copy of a Heart Glossary. [Pass out the photocopies now, during the introduction.] That’s like a minidictionary of heart talk. You’ll also get a page of Handy Heart Facts. [pass out the photocopies now.] The great thing is, you don’t have to learn everything at once. And when you have a glossary and fact sheet handy, you don’t have to memorize a lot of stuff. There are also lots of posters with helpful information.
- In Lessons 2-4, you’ll learn about the “Big Three” rules for heart health. The rules themselves couldn’t be simpler: 1. Eat, 2. Breathe, 3. Move. But you need to learn what they mean.

- In Lesson 5, you’ll learn how to help people whose hearts got hurt by what they didn’t know, and make a Personal Emergency Chart for your home.

You’ll be working in groups of three. [ASSIGN THE GROUPS IN YOUR USUAL MANNER. WE RECOMMEND ONE HIGH ACHIEVER, ONE LOW ACHIEVER, AND ONE FROM THE MIDDLE OF THE PACK.] Get together now with the rest of your group, and spend a little time looking at the materials that are available to help you with this unit. GIVE OUT PHOTOCOPIES, SHOW THEM WHERE POSTERS ARE. We’ll start on Lesson 1 [IN TEN MINUTES, AFTER RECESS, AFTER LUNCH, TOMORROW, MONDAY]

Answers to Questions for Grade 5 Lesson 1

The Circulation Game

Teacher Preparation: Make copies of BLM 1 and BLM 6, one per group. See Student Worksheet for detailed instructions.

WARM UP

The cardboard won't be needed if students' desks are scratch resistant.

GET SET

Taping the pages down has two advantages:

- It is the only way to keep them from getting mangled with three students in charge.
- It allows all three students to consult all three pages at once.

GO!

The Guru should be a good reader, and the Coach should be competent, but the Game Official does not have to be a good reader.

4. Picture B is a simpler version of Picture A.

- What's missing in B?

Nearly all of the small parts are gone. What's there does not look realistic.

- What's the same in B?

It has L, S, and H printed on it.

- Use Box C to identify the body parts in B.

L = lungs; S = stomach; H = heart.

5-10. Emphasize that the pen tips must stay on the paper until the rules say it can be lifted off.

CROSS THE FINISH LINE

12. Picture B now has a lot of winding red and blue lines inside it. Get the Glossary Guru to help find the "official" name for these lines. Look to see if you can find lines like this on your body.

13. Picture B stands for your circulatory system.

- a) What do you think circulatory means?

Something that goes around and around.

- b) What do you think system means?

Things that work together.

- c) Does the Glossary agree with you?

The words might not be the same, but the ideas should be.

14. According to the Glossary,

- a) What body part pumps your blood around your circulatory system?

The heart

- b) What body part(s) carry your blood around your circulatory system?

The blood vessels (arteries, veins).

- c) Where does the blood pick up food?

Near (but not in) the stomach.

- d) What does food do for your heart?

Supplies building materials and energy. Your body?

The same.

- e) Where does the blood pick up oxygen?

From the lungs.

- d) What does oxygen do for your heart?

Gets energy out of the power food (carbohydrates).

- Your body?

The same.

STUDENT WORKSHEET GRADE 5 LESSON 1

The Circulation Game

THE CIRCULATION GAME: HERE ARE THE RULES

Did you know that you have a miracle liquid inside your body? It's your blood, and it keeps you alive. But it can't do that all by itself. It needs assistance from other body parts. In this game, you will use red and blue ink to find out how busy blood really is.

WARM-UP

- Work in a group of three. Choose one person for each of these three jobs: (1) Coach (2) Game Official (3) Glossary Guru.
- If your table or desk is not scratch-proof, tape a piece of cardboard over it.

ARE YOU READY?

Each group needs three photocopies:

- 1) This "Here are the Rules" Page for the Coach
- 2) A Circulation Game Page for the Official Rules
- 3) A Heart Talk Glossary Page for the Guru

- masking tape
- red pen or pencil
- blue pen or pencil
- ordinary pencil

GET SET

1. Tape the copies to your desk like this:

- | | | |
|---------------|--------------|------------------|
| 1. Rules Page | 2. Game Page | 3. Glossary Page |
|---------------|--------------|------------------|

2. On the Game Page, locate Picture A, Picture B, and Code Box C. (Don't let Picture A make you nervous. You won't have to memorize it.)

3. Glance at the Glossary.

GO!

- Get the Coach to read these "rules" aloud.
- Get the Guru to keep an eye on the Glossary.

- Let the Game Official use the pens first. (The Coach and the Guru will each get a turn.)
 - Make sure everyone agrees on what to do.
4. Picture B is a simpler version of Picture A.
 - What's missing in B?
 - What's the same in B?
 - Use Box C to identify the body parts in B.
 5. Blood picks up oxygen in your lungs, so start there. Place the red pen inside the lungs on Picture B. Draw a red line from the lungs to the heart's top right corner. Without lifting the pen, "pump" the blood:
 - Into the heart's bottom right corner.
 - Out of the heart and over to the nearest hand.
 - Back to flow beside the stomach but not inside it.
 - Down the nearest leg to the foot.
 - Back up and down the other leg.
 6. Blood picks up food near the stomach. But the blood has now gone about halfway around the body. So it has given up half of its oxygen and food. It has also picked up waste from the body parts it has visited. To show this, change pens from red to blue.
 7. Without lifting the pen, push the "blue" blood:
 - Up the leg and the empty side of the body.
 - Out the empty arm to the hand.
 - Back to the neck, up and around the head.
 - Back down to the top left corner of the heart.
 8. Don't lift the pen. Continue the blue line down to the heart's bottom left corner, then "pump" it up to the lungs. The lines will cross. That's okay.
 9. The lungs lead to the outside air, so now the blood can pick up fresh oxygen. You're back to the start! So it's time to change pens from blue to red again.

10. The red ink stands for the same blood. It's loaded with fresh oxygen and ready for another trip. But probably won't follow exactly the same path until it gets back to the heart's bottom left corner.

- Trace a new path through the same body parts.
- Don't lift the red pen until the blood has gone about halfway around the body. Then change to a blue pen.
- Keep circulating the inky blood through the circuit until you get back to the heart's bottom left corner.

11. • Let the Guru use the pens to repeat steps 5-10.
• Let the Coach use the pens to repeat steps 5-10.

CROSS THE FINISH LINE

12. Picture B now has a lot of winding red and blue lines inside it. Get the Glossary Guru to help find the "official" name for these lines. Look to see if you can find lines like this on your body.

13. Picture B stands for your **circulatory system**.

- a) What do you think **circulatory** means?
- b) What do you think **system** means?
- c) Does the Glossary agree with you?

14. According to the Glossary,

- a) What body part pumps your blood around your circulatory system? _____

- b) What body part(s) carry your blood around your circulatory system? _____

- c) Where does the blood pick up food? _____

- d) What does food do for your heart? Your body? _____

- e) Where does the blood pick up oxygen? _____

- f) What does oxygen do for your heart? Your body? _____

Answers to Questions for Grade 5 Lesson 2

Eat a Variety of Foods

Teacher Preparation: Make copies of Student Worksheet 2 (BLM 2).

WARM UP

Show the Nutrition poster from the toolbox. Ask how students can share it so each group has a turn. Provide a copy of Canada's Food Guide to Healthy Eating for each group.

GET SET

1. What are nutrients?

Nutrients are the components of food that help us grow, give us energy and keep us healthy.

2. Foods contain six main nutrients: Carbohydrate, Protein, Fat, Vitamins, Minerals and Water. Using your Glossary, write out a definition for each nutrient.

Carbohydrate - the body's primary and fastest source of energy.

Protein - it's primary function is growth and maintenance of body tissues including heart muscle.

Fat - has many functions including providing energy, protecting and insulating the body and organs, transporting some vitamins, slowing the digestion of a meal

and helping in the formation of some hormones.

Vitamins - help the body use protein, fat and carbohydrate for energy and also play a role in body maintenance, growth and reproduction.

Minerals - have many functions including being part of every cell in the body and playing a role in water balance. Water - a basic component of all foods and is essential to life.

3. What are Calories?

The basic unit of measurement for the energy value of food and energy needs of the body.

GO!

4. Which nutrients are important for good health?

- Enter on the chart, using Canada's Food Guide to Healthy Eating, a food example for each nutrient.

5. Expand the chart using food examples from the Nutrition Poster, Canada's Food Guide to Healthy Eating and from foods that you eat everyday.

<i>Nutrients</i>	<i>Carbohydrate</i>	<i>Protein</i>	<i>Fat</i>	<i>Vitamins</i>	<i>Minerals</i>	<i>Water</i>
Examples from Canada's Food Guide to Healthy Eating	Grains, Vegetables and Fruit, Legumes Other Foods-honey, sugar	Animal Foods-milk, meat, cheese, eggs	Other Foods-oil, salad dressings, margarine snack foods Meat & Alternatives Milk Products Crackers	Foods from all four food groups	Foods from all four food groups	Water, liquid foods, such as juice, soup
Examples from the poster	as above	...	...	...	...	...
Examples from foods you eat everyday	as above	...	...	...	...	...

Answers to Questions for Grade 5 Lesson 2 (Cont'd)

Eat a Variety of Foods

CROSS THE FINISH LINE

6. Use the Glossary to help you find the nutrient(s) that:

a) helps build and repair heart muscle and other body tissues

protein

b) supplies energy for all body parts

protein, fat, carbohydrates

c) is needed for good health, but excess amounts can harm health

fat

d) is essential to all body fluids

water

e) helps the body use protein, fat and carbohydrates for energy

vitamins

f) measurement of energy

calories

7. Food needs to be broken into small bits before your body can use it.

a) Where do you think this happens?

In or near the stomach.

b) How do the bits get to your body cells?

The blood picks them up and carries them.

8. Plaque can build up in your blood vessels.

a) How can this plaque hurt your heart?

The heart has its own arteries that bring the blood and oxygen it needs for energy to do its work. If those arteries get blocked, the heart muscle can't work. That would be a heart attack.

b) How is plaque like tooth plaque?

Both kinds of plaque are sticky and hard to get off.

c) Can you prevent plaque the same way you can prevent tooth plaque?

No. You can't floss or brush plaque inside of your arteries.

9. a) What is a heart attack?

A heart attack happens when heart muscles can't get enough food and oxygen. Some muscle cells die or get damaged so they can't pump.

b) What is a stroke?

Explain how not eating a healthy variety of food could cause a stroke.

A stroke happens when the brain can't get enough food and oxygen. Then some brain cells die or get damaged so they can't send signals to the rest of the body.



STUDENT WORKSHEET GRADE 5 LESSON 2

Eat a Variety of Foods

WARMUP

Working in groups of three. You will need: your Game Page, your Glossary Page, a Nutrition poster and a copy of Canada's Food Guide to Healthy Eating. (Note: When a word's in **bold print**, you can look it up in the Glossary.)

ARE YOU READY?

There are three "big rules" for heart health. Food comes first because (a) food contains the materials needed to build healthy **heart muscle**, (b) food contains the **energy** needed to let your heart pump blood constantly, (c) the food you pick now can prevent future **stroke** or **heart attack**.

GET SET

1. What are **nutrients**?
2. Foods contain six main nutrients; **carbohydrate**, **protein**, **fat**, **vitamins**, **minerals** and **water**. Using your Glossary, write out a definition for each nutrient.
3. What are **Calories**?

GO!

4. Which nutrients are important for good health?
 - Enter on the chart, using Canada's Food Guide to Healthy Eating, a food example for each nutrient.
5. Expand the chart using food examples from the Nutrition Poster, Canada's Food Guide to Healthy Eating and from foods that you eat everyday.

<i>Nutrients</i>	<i>Carbohydrate</i>	<i>Protein</i>	<i>Fat</i>	<i>Vitamins</i>	<i>Minerals</i>	<i>Water</i>
Examples from Canada's Food Guide to Healthy Eating						
Examples from the poster						
Examples from foods you eat everyday						

CROSS THE FINISH LINE

6. Use the Glossary to help you find the nutrient(s) that:

- a) helps build and repair heart muscle and other body tissues
- b) supplies energy for all body parts
- c) is needed for good health, but excess amounts can harm health
- d) is essential to all body fluids
- e) helps the body use protein, fat and carbohydrates for energy
- f) measurement of energy

7. Food needs to be broken into small bits before

your body can use it.

- a) Where do you think this happens?
 - b) How do the bits get to your body cells?
8. Plaque can build up in your blood vessels.
 - a) How can this plaque hurt your heart?
 - b) How is plaque like tooth plaque?
 - c) Can you prevent plaque the same way you can prevent tooth plaque?
 9.
 - a) What is a heart attack? Explain how not eating a healthy variety of foods could cause a heart attack.
 - b) What is a stroke? Explain how not eating a healthy variety of foods could cause a stroke (brain attack).

Answers to Questions for Grade 5 Lesson 3

Breathe Clean Air

Teacher Preparation: Make copies of Student Worksheets 3 and 6.

WARM UP

Show the Smoking poster from the toolbox. Ask how students can share it so each group has a turn.

GET SET

1. You've breathed air all your life. What does clean air mean to you?

Answers will vary.

How to Build a Model of a Human Lung

- Fold a piece of paper as many times as possible. More than 5 is difficult.
- Unfold ...count ... Or multiply

5 folds gives 32 compartments (2x2x2x2x2) or 2 times itself five times.

What do the Parts of the Model Mean?

- The unfolded paper is a simple model of a human lung. The lung has millions of tiny compartments.
- The paper stands for the lung's thin walls.
- The clean side stands for the lung's inner surface, where the compartments trap clean air.
- The paper has a red grid on the back. Lung compartments have blood vessels on the back.

2. According to the glossary, what is oxygen?

It's a material found in air. The cells need it to extract energy from their "fuel" by "burning" blood sugar. [Similarly, Candle flames need it to keep burning.]

GO!

3. No special tips.
4. Use the instructions in the box below to construct a simple model of a human lung.

How to Operate a Model of a Human Lung

Expand and contract your model lung again. How many compartments will let oxygen through?

Half or 16 in a 32-compartment model lung.

How many can't?

The other half.

CROSS THE FINISH LINE

5. Get the Glossary Guru to help you find out how blood fresh from the lungs differ from blood that has just gone back to the lungs in:
 - a) oxygen?

Fresh blood has more.

- b) waste?

Fresh blood has less.

- c) colour?

Fresh blood is bright red, "used" blood is dark red.

6. a) Compare hidden fat to second hand smoke. How are they alike?

Both are harmful.

- Different?

It's easy to detect smoke with your senses. It's hard to detect hidden fat with your senses.

- b) Compare chips and chocolate to second hand smoke. How are they alike?

Both can affect the heart. Both contain harmful materials.

- Different?

Sometimes you can't help but inhale second hand smoke, because you have to breathe, even if the air isn't very clean. With less healthy food, you have a choice. You don't have to eat it.

7. Even when a smoker inhales completely clean smoke-free air, the blood can't pick up a full load of oxygen. Use what you learned from your paper model to explain why.

Half the compartments are blocked with tar. So the lung can only get half as much oxygen from a lungful of air.

8. A change in breathing patterns can help a smoker get more oxygen by taking in more air. (a) How would breathing more deeply help?

The lung would take in more air and therefore more oxygen. [KIDS THIS AGE WON'T LIKELY RECOGNIZE THAT THERE WOULD ALSO BE MORE SURFACE AREA FOR GAS EXCHANGE.]

b) How would breathing faster help?

The smoker could get more lungfuls of air each minute.

c) Why might smoking eventually cause a heart attack?

The heart has to work harder to get enough oxygen.

9. Look at Picture B. What could happen if:

a) Your feet don't get enough oxygen? They'll get tired faster because the cells can't get enough energy out of their food.

b) Your heart doesn't get enough oxygen?

It will get tired faster because the muscle can't get enough energy out of its food.

d) Your feet get harmful materials from second hand smoke along with the oxygen?

The smoke could harm the blood vessels. [THIS QUESTION AND THE NEXT MAY LEAD TO SOME IMAGINATIVE ANSWERS. PERHAPS THE WORST COMPONENT OF SMOKE IS CARBON MONOXIDE – IT'S POISONOUS.]

e) Your heart gets the harmful materials along with the oxygen?

THE DIRT IN THE AIR COULD CONTAIN MATERIALS THAT MAY POISON OR HARM THE HEART AND KEEP IT FROM WORKING PROPERLY.



STUDENT WORKSHEET GRADE 5 LESSON 3

Three Big Rules for Heart Health. Rule 2: Breathe Clean Air

WARM UP

Keep working in your group of three. You will need: a piece of paper, a red pen, an ordinary pencil, your Game Page, your Glossary Page, and a Smoking poster. (Note: If a word's in **bold print** you can look it up in the Glossary.)

ARE YOU READY?

There are three "big rules" for heart health. Breathing clean air is important because:

- a) breathing brings air into your lungs, and air contains **oxygen**.
- b) without oxygen, **carbohydrate foods** cannot give up their **energy**.
- d) without oxygen **cells** cannot "burn" **blood sugar**.

How to Build a Pretend Lung

- Place a piece of paper flat on your desk.
- Scribble a grid of red lines on one side.
- Fold the paper in half, as many times as possible.
- Unfold the paper, and count the compartments (or multiply it out faster).

What do the Parts of the Model Mean?

- The unfolded paper is something like a lung. But a lung has millions of tiny compartments.
- The paper stands for the lung's thin walls.
- The clean side stands for the lung's inner surface, where the lung compartments trap clean air.
- The paper has a red grid on the back. Lung compartments have blood vessels on the back.

GET SET

1. You've breathed air all your life. What does clean air mean to you? _____

2. According to the glossary, what is **oxygen**?

GO!

3. Take turns inhaling and exhaling deeply to expand and contract your lungs. Can you:
 - a) Feel your own lungs expand and contract?
 - b) See expansion and contraction in others?
4. Use the instructions in the box below to make a simple model of a human lung.

How to Operate a Model of a Human Lung

- Grip the paper by its ends, clean side facing you. Squeeze the ends inward to contract the model lung. Pull them out to expand the model lung.
- When a real lung expands, air presses into the thin walls. Oxygen pushes into the blood vessels.
- Imagine oxygen pushing through the thin paper of your model. Imagine it pushing into the grid of red lines on the back. That's how your lungs work.
- Draw a pencil X in every second compartment. X stands for tar from tobacco smoke.
- Expand and contract your model lung again. How many compartments will let oxygen through? How many can't?

CROSS THE FINISH LINE

5. Get the Glossary Guru to help you find out how blood fresh from the lungs differs from blood that has just gone back to the lungs, in (a) oxygen? (b) waste? (c) colour?
6. a) Compare hidden fat to second hand smoke. How are they alike? Different?
b) Compare unhealthy hidden fat foods to second hand smoke. How are they alike? Different?
7. Even when a smoker inhales completely clean smoke-free air, the blood can't pick up a full load of oxygen. Use what you learned from your paper model to explain why.
8. A change in breathing patterns can help a smoker get more oxygen by taking in more air.

- a) How would breathing more deeply help?
- b) How would breathing faster help?
- c) Why might smoking eventually cause a heart attack?
9. Look at Picture B. What could happen if:
 - a) Your feet don't get enough oxygen?
 - b) Your heart doesn't get enough oxygen?
 - d) Your feet get harmful materials from second hand smoke along with the oxygen?
 - e) Your heart gets harmful materials along with the oxygen?

Answers to Questions for Grade 5 Lesson 4

Move Your Body

Teacher Preparation: Make photocopies of Student Worksheet (BLM 4). Check that all stethoscope parts fit together.

WARM UP

Show the Physical Activity poster from the box. Discuss how students can share it so each group has a turn.

GET SET

1. You've been moving your body all your life. What does physical activity mean to you?

Answers will vary.

2. According to the glossary, what is fitness?

THE GLOSSARY SPLITS PHYSICAL FITNESS INTO TWO PARTS: FITNESS AND CARDIOVASCULAR FITNESS.

Together, they mean joints that bend freely, strong muscles that can work a long time, plus heart lung and blood vessels that can deliver oxygen-rich blood to muscles at a fast rate for a long time.

GO!

3. Use the instructions in the box to investigate your own heartbeat and pulse.

How to Use a Stethoscope

A Substitute Stethoscope for Home Use

If you suspect that some of your female students are uneasy about having another student hold the stethoscope disc on their chests, you may wish to turn the entire lesson into an at-home activity. Or you may wish to ask students to bring towel tubes from home. They are amazingly effective, and the user's hand need not touch the subject's body.

How to Take Your Own Pulse

Taking a wrist pulse involves a long learning curve. Turn palm face up, place 2 fingers (not thumb) on wrist. Press down gently on wrist until you feel your heartbeat.

My Heartbeat Chart

Beats per minute with stethoscope _____

Pulse when I wake up in the morning _____

Pulse when I'm sitting in school _____

Pulse before I start walking _____

Pulse after walking briskly for 5 min _____

Pulse after resting for 5 min _____

Pulse after running for 1 min _____

Pulse after resting for 5 min _____

Pulse before I start watching TV _____

Pulse after watching TV for 30 min _____

Pulse range for my age group _____

Am I inside the range? _____

CROSS THE FINISH LINE

4. Do you have to tell your heart to beat faster when you run?

No

Explain why or why not.

The heart has a pacemaker that controls the heartbeat automatically.

5. Whose heart beats faster: (Heart Facts Page)

a) An older human or a younger one?

Younger.

b) A very fit person or a fairly fit person?

A fairly fit person.

6. Running around makes your heart beat faster and work harder. How can that be good for you? Like all muscles.

The heart is made of muscle, and muscles gets stronger when they work harder.

7. An athlete's heart beats much slower than yours when resting. What's good about that?

The athlete's heart may do less work over time.

8. a) What is your favourite physical activity?

Answers will vary.

b) Estimate how much time you spend being active.

They'll have to estimate because they probably don't measure that time nearly as closely as they measure TV time. Hardly any parent complains because a child is getting too much exercise.

c) How much time do you spend watching TV?

They'll likely know almost exactly because the TV guide sets the time out in half-hour blocks, and because how much may be an issue with their parents.

d) People who sit a lot have poor cardiovascular fitness. Explain why.

People who sit a lot hearts don't have to do much work to keep them seated in front of the TV, so their heart muscle gets weak. It can't deliver anything quickly.

9. From the poster, list the advantages of being physically active.

(i) more blood to your muscles; (ii) you have more energy (iii) heart muscle gets stronger with exercise; you have more fun; you feel good about yourself; you sleep better; you will have a healthy body weight.

Did you know about all of them?

PROBABLY NOT.

STUDENT WORKSHEET GRADE 5 LESSON 4

Three Big Rules for Heart Health. Rule 3: Move Your Body

WARM UP

Keep working in your group of three. You will need: a watch or clock with a second hand, alcohol swabs, stethoscope, your Heart Facts page, your Game Page, your Glossary Page, and a Physical Activity poster. (Note: If a word is in **bold print** you can look it up in the Glossary.)

ARE YOU READY?

The third “big rule” for heart health is the one every baby knows, but a lot of adults seem to forget. Move! It’s essential for **fitness**, which is essential for a healthy heart. Like all muscles, your heart gets stronger when you work it harder. In fact, measuring your **heartbeat** is a good way to evaluate fitness.

GET SET

1. You’ve been moving your body all your life. What does physical activity mean to you?
2. According to the glossary, what is **fitness**?

GO!

3. Use the instructions in the box to investigate your own heartbeat and pulse. Others can help with the timing, but you should listen to your own heart beat and take your own pulse. (Note: People your age are at different stages of growth. There is a lot of difference from one person to another. This is natural and normal.)

How to Use a Stethoscope

- If there is only one stethoscope for the class, plan how you will share it so everyone gets a turn.
- Use the alcohol swabs to clean the earpieces.
- Press the metal disc firmly against your chest. You’ll probably hear your heart right away.
- Move the disc around until the sound is loudest. Do you hear the lubDUB? Count lubDUBs for one minute. Write the number in the heartbeat chart.

A Substitute Stethoscope for Home Use

- Use a paper towel tube to listen to your family’s heartbeats. Then let them listen to yours.

How to Take Your Own Pulse

- Your pulse tells you how fast your heart is beating without a stethoscope. Turn your palm face up on your wrist. Press gently until you feel a throbbing. Count the number of beats in a minute.
- Over the next few days, fill in the chart on the right.

My Heartbeat Chart

Beats per minute with stethoscope _____

Pulse when I wake up in the morning _____

Pulse when I’m sitting in school _____

Pulse before I start walking _____

Pulse after walking briskly for 5 min _____

Pulse after resting for 5 min _____

Pulse after running for 1 min _____

Pulse after resting for 5 min _____

Pulse before I start watching TV _____

Pulse after watching TV for 30 min _____

Pulse range for my age group _____

Am I inside the range? _____

CROSS THE FINISH LINE

4. Do you have to order your heart to beat faster when you run? Explain why or why not.
5. Whose heart beats faster: (Heart Facts Page)
 - a) An older human or a younger one?
 - b) A very fit person or a fairly fit person?
6. Running around makes your heart beat faster and work harder. How can that be good for you?
7. An athlete’s heart beats much slower than yours when resting. What’s good about that?

8. a) What is your favourite physical activity?
b) Estimate how much time you spend being active.
c) How much time do you spend watching TV?
d) People who sit a lot have poor cardiovascular fitness. Explain why.
9. From the poster, list the advantages of being physically fit. Did you know about all of them?

Answers to Questions for Grade 5 Lesson 5

Making the Most of the 911 Emergency Service

Teacher Preparation: Make photocopies of Student Worksheet (BLM 5). Borrow a phonebook from school or photocopy the emergency pages.

WARM UP

Show students the phone book. How will they share it so every group gets a turn?

GET SET

1. According to the glossary, what is a heart attack?

Death or damage to muscle so heart can't pump blood to rest of body; caused when clogged arteries block oxygen-rich blood from reaching heart..

2. According to the glossary, what is a stroke?

Death or damage to brain cells so brain can't send orders to rest of body; caused when clogged arteries block oxygen-rich blood from the heart.

GO!

3. If your community does not have a 911 service, students should discuss how they can get help otherwise.

<i>What the Operator Might Ask</i>	<i>How Would You Answer?</i>
What is your name? etc.	Kids are often kept surprisingly ignorant of family health matters. Good observation skills can't replace facts on a chart posted beside the telephone.

CROSS THE FINISH LINE

Discuss these questions as a class.

This suggestion is made because a group of three may not have sufficient collective experience to make good suggestions. In an entire class, at least a few students are likely to have had some family experience with heart attacks or strokes, or other medical emergencies such as asthma.

4. a) One of the symptoms of a stroke may be a sudden, extremely severe headache. Explain why the head would be affected.

The arteries to the head are blocked, so the head would not get enough food and oxygen.

b) Is a headache always a sign of a stroke?

No. Some people (including kids) get migraines, which are very painful, but not the sign of a stroke.

c) Would a person having a stroke always be able to describe what was happening?

No. Often, a stroke affects the part of the brain that controls speech.

d) How could you guess from a person's behaviour that a stroke might be happening?

The person's face might look surprised, or puzzled. The eyes might look as if they can't focus. An arm or a leg might suddenly go limp. The person might fall as a result.

5. a) You might expect chest pain to be the first sign of a heart attack. Why?

The heart is in the chest, and it is the first place where damage occurs.

b) In many cases, the first sign is actually a puzzling pain in the arm or shoulder. Often the person with the pain won't admit that it could mean a heart attack is starting. How could you tell an adult like this why it is NOT a good idea to "wait awhile and see"?

In fact, the onset of a heart attack often inspires a great sense of (i) fearfulness in the patient (ii) denial that this may be "the big one" and it stands to reason that a heart which is not pumping properly is not sending enough blood to the brain, so it's not surprising if the person is not thinking clearly. Students may wonder why a heart attack may cause a pain in the arm. This is an example of referred pain, and likely beyond them for now. Tell them to ask a nurse or doctor.

6. a) Normally, you would not give personal information to a stranger over the phone. Why is it okay to give it to a 911 operator?

You have to trust somebody in an emergency, and your community has provided a service that works hand in hand with police, fire service, and hospitals. If you can't trust 911...who can you trust?

b) What would you do if the operator asked you to unlock the front door, or leave the house?

You should always do what the operator says. The paramedics can't get in easily if the door is locked. If the operator thinks there is a gas leak in the house, anyone who can still move should get out promptly. But don't ever hang up the phone until the operator tells you to. The operator may want you to keep reporting on the patient's condition.

7. At first, the adults you live with might not want to give you the information you need for your Personal Emergency Chart.

a) Explain why not.

They might have been brought up to think of their age as a kind of secret. Elderly folks especially think of some illnesses as shameful or embarrassing.

b) Explain why they should.

Because every responsible family member should be able to help all the others. The adults like to think they'll always be in control, but they are much more likely to have a heart attack or a stroke than kids are.

b) Explain how you could convince them.

Make them watch an episode of '911' on TV and discuss as a family.

8. Sick or injured people who appear unconscious may still be able to hear. But they won't be able to let you know that they hear you. Why is it important for you to keep talking to the person until help arrives?

The sick person is probably frightened. In fact, a sense of doom is a common symptom of an oncoming heart attack. The sound of a familiar voice that says help is coming can keep the sick person from panicking.

STUDENT WORKSHEET GRADE 5 LESSON 5

Emergency! Help an Unhealthy Heart – Call 911

WARM UP

Keep working in your group of three to help each other make Personal Emergency Plans. You will need a phone book and your thinking caps.

ARE YOU READY?

There may be no reason to expect an heart emergency at your home. But that's the way of emergencies – no one expects them. And kids often wind up in charge. The patient will be frightened enough, so it will be important for you to keep your cool. A pre-decided plan can help you do that. And a plan that works for a heart emergency will work for any emergency.

GET SET

1. According to the glossary, what is a **heart attack**?
2. According to the glossary, what is a **stroke**?

GO!

3. Check the phone book to find out if your community has a 911 emergency service. Use the left side of the box below to help you think about the questions a 911 operator might ask. Use the right side to start designing a Personal Emergency Chart to keep by the phone at home.

<i>What the Operator Might Ask</i>	<i>How Would You Answer?</i>
What is your name? (First and last).	Your name:
What is the street address?	My street address:
The nearest large intersection?	The nearest major intersection:
Who is sick or hurt? (First and last name.)	Do you know the last names of all adults at your home?
How old is the sick or hurt person?	Do you know how old everyone is?
Is the person awake? Collapsed? Breathing?	How could you tell if a collapsed person is breathing?
How long has the person been sick or hurt?	If you weren't there at the start, just say "I don't know."
What was he/she doing just before?	If you weren't there at the start, just say "I don't know."
Has anything like this happened before?	Do you notice the health of the adults in your home?
Is the person taking any medication?	How can you find out what medicine your adults need?

CROSS THE FINISH LINE

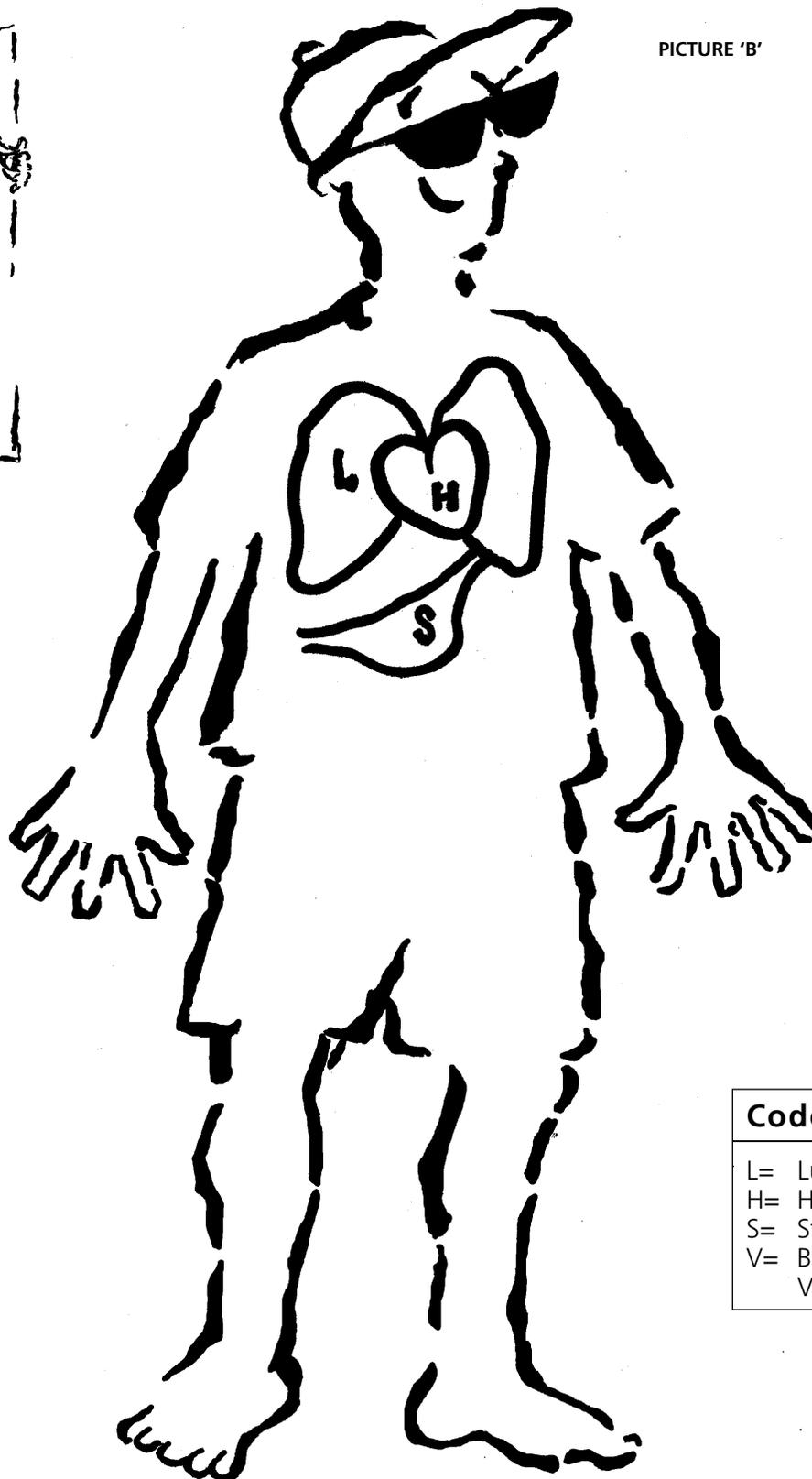
Discuss these questions as a class.

4. a) One of the symptoms of a stroke may be a sudden, extremely severe headache. Explain why the head would be affected.
 - b) Is a headache always a sign of a stroke?
 - c) Would a person having a stroke always be able to describe what was happening?
 - d) How could you guess from a person's behaviour that a stroke might be happening?
5. a) You might expect chest pain to be the first sign of a heart attack. Why?
 - b) In many cases, the first sign is actually a puzzling pain in the arm or shoulder. Often the person with the pain won't admit that it could mean a heart attack is starting. How could you tell an adult like this why it is NOT a good idea to "wait awhile and see"?
6. a) Normally, you would not give personal information to a stranger over the phone. Why is it okay to give it to a 911 operator?
 - b) What would you do if the operator asked you to unlock the front door, or leave the house?
7. At first, the adults you live with might not want to give you the information you need for your Personal Emergency Chart.
 - a) Explain why not.
 - b) Explain why they should.
 - c) Explain how you could convince them.
8. Sick or injured people who appear unconscious may still be able to hear. But they won't be able to let you know that they hear you. Why is it important for you to keep talking to the person until help arrives?

CIRCULATION GAME PICTURE



PICTURE 'A'



PICTURE 'B'

Code Box	
L=	Lungs
H=	Heart
S=	Stomach
V=	Blood Vessels

GRADE 5 HEART HEALTHY GLOSSARY

active play: See aerobic exercise

aerobic exercise: Any game, activity, or exercise that makes your body take in extra air

arteries: Tubes that carry blood away from heart

blood sugar: The fuel that all cells run on; it comes from carbohydrates and is carried in the blood

blood vessels: Tubes that carry blood around body (see arteries, capillaries, veins)

blood: Liquid containing red blood cells

brain attack: See stroke

Calories: A basic measurement for the energy value of food and energy needs of the body

capillaries: Very narrow veins and arteries

carbohydrate: The body's primary and fastest source of energy

cardiovascular fitness: Heart, lungs, and blood vessels are able to deliver oxygen-rich blood to muscles at a fast rate for a long time

cells: Tiny building blocks that make up all body parts: skin, bones, lungs, heart, and other muscles

chamber: Room-like compartment in heart, with two door-like openings to let blood in and out.

circulatory system: Includes a heart to pump blood and a network of tubes called blood vessels

energy: Provides body heat or makes things move

exercise: Any activity that makes muscles move

fat: Has many functions including providing energy, protecting and insulating the body and organs, transporting some vitamins, slowing the digestion of a meal and helping in the formation of some hormones. Fat is needed for good health but too much can harm health

fitness: Joints bend freely; muscles are strong and can work a long time (see cardiovascular fitness)

food: Edible materials containing carbohydrates, proteins, fats, and other useful materials

fresh blood: Blood fresh from lungs is high in oxygen, low in wastes, and bright red in colour

heart: Muscular pump with four hollow chambers; upper chambers collect blood coming into heart; lower chambers pump blood forcefully away

heart attack: Clogged arteries block oxygen-rich fresh blood from reaching heart muscle, damaging muscle which then can't pump blood to rest of body

heartbeat: Repeated pumping action of heart; or sound made by that action, or the beats per minute

lungs: Hollow, thin-walled pouches inside chest; lined with blood vessels that absorb oxygen from air

minerals: Have many functions including being part of every cell in the body and playing a role in water balance

muscle: Body part that exerts force by contracting (getting shorter and thicker) and lets go by relaxing

nicotine: Active (and addictive) ingredient in all tobacco, including so-called "smokeless" tobacco

nutrients: The components of food that help us grow, give us energy and keep us healthy

oxygen: Material found in air, needed to extract energy from fuel; cells use it to "burn" blood sugar

pacemaker: Small bundle of cells in heart; it creates electric signals to control heartbeat automatically

plaque: Mix of dead cells and fat; sticks to arteries (like tooth plaque on teeth); blocks blood

protein: Primary function is growth and maintenance of body tissues including the heart muscle.

pulse: Rhythm of heartbeat felt in wrist or throat

red blood cells: Solid, saucer-shaped cells, that pick up oxygen at lungs, and deliver it all over body

second-hand smoke: Mix of tobacco smoke exhaled by smoker plus smoke given off from the ends of burning cigarettes, cigars, or pipes

stomach: Part of the body system that breaks food into bits small enough for blood to carry

stroke: Clogged arteries block oxygen-rich blood from reaching the brain, which then can't send orders to rest of body (also called brain attack)

tar: Given off in hot tobacco smoke; gathers into sticky brown blobs when it cools in lungs

tobacco: Plant with nicotine-containing leaves that users smoke, chew, or sniff

used blood: Blood on its way back to lungs is low in oxygen, high in wastes, and dark red in colour

veins: Tubes that carry blood back to heart

vitamins: Help the body use protein, fat and carbohydrate for energy and also play a role in body maintenance, growth and reproduction

water: A basic component of all foods and is essential to life

GRADE 5 HANDY HEART FACTS

How much blood?

An adult's body holds about five liters (5 L) of blood.

Length of blood vessels

If stretched out – 96,000 km – enough to go around the world nearly four times!

Sample heart rates:

- mouse – 850 beats per minute
- newborn human – 140 beats per minute
- average for your age group – 70 - 100 beats per minute
- average adult – 60 - 100 beats per minute
- athletes as low as 40
- elephant – 35 beats per minute

How many red blood cells?

About 25 trillion (2,500,000,000,000) in an adult's body.

Size of red blood cells

This line is about 1 cm long: ___ 1250 red blood cells could fit along its length.

Smallest blood vessels

The smallest capillaries are so thin that red blood cells have to fold up to pass through.

Biggest blood vessel

That's your aorta. It is the main tube from your heart to the rest of your body. Use your forefinger and thumb to form a circle that's 2.5 cm across on the inside. That's the size of the opening inside an adult's aorta.

Size and shape of heart

To make a simple model of your heart, make a fist with your left hand. Cup your right hand around it. That's about the size and shape of your heart, no matter how big or small you happen to be.

Your heart has two sides

Each side of your heart has two hollow compartments, with walls made of muscle. The muscle pushes your blood through these compartments by squeezing repeatedly.

Your heart has four compartments

If you could look inside your chest at your own heart, you would see four compartments. Pause now to look at the simplified picture in BLM 9. The top compartments are both weak. They only have to push blood into the bottom compartments. The bottom left compartment is the strongest. It has to push blood out to the farthest parts of your body. The bottom right compartment is not as strong. It only has to push blood out to the lungs, not nearly as far away from the heart.

Why are the LEFT-hand compartments on the RIGHT side of the picture?

Looking at a picture of a heart is like looking at the front of another person's body. To test this idea, get a partner to stand facing you with both hands held up in the air. Now, clap your partner's left hand. Which of your hands was easiest to clap with? Now clap your partner's right hand. Which hand was easiest to use this time?

Why the heart goes lub DUB

If you listen to a heartbeat, you hear lub DUB, lub DUB. The lub sound is longer but softer. The DUB sound is shorter but louder. Both sounds are caused by the shutting of flaps that let blood in and out of the heart. The lub sound is made when both bottom compartments squeeze at the same time, and the IN-flaps slap shut. This prevents the blood from flowing backward. The DUB sound is made when both bottom compartments relax or let go at the same time, and the OUT-flaps slam shut. Again, this prevents the blood from flowing backward.

How many lub DUBs?

About 100 000 a day, on average.

HOW THE HUMAN HEART WORKS

In real life, the human heart has many parts. But you do not need to memorize all the parts to understand how the heart works. Just check out this simplified picture as you read the Handy Heart Facts on BLM 7.

SIMPLE MODEL OF THE HEART

