

It's All About Me!

Grade Level or Special Area: First Grade

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Length of Unit: Seven lessons, about 9.25 – 10 hours total for the unit

I. ABSTRACT

Students will be introduced to the five major body systems. Through direct instruction and a variety of hands-on activities, students will learn the basic functions, as well as key components of each system. In addition, students will learn what causes their bodies to become ill, and how to prevent their bodies from becoming ill.

II. OVERVIEW

A. Concept Objectives

1. Students know and understand how the human body functions, factors that influence its structures and functions, and how these structures and functions compare with those of other organisms. (Colorado State Science Standard 3.3)
2. Students understand the impact of scientific and technological developments on individuals and societies. (Colorado State History Standard 4.1)
3. Students will develop an awareness of each body system.
4. Students will recognize how to keep healthy.

B. Content from the *Core Knowledge Sequence*

1. First Grade: Science: The Human Body, page 38
 - a. Skeletal system: skeleton, bones, skull
 - b. Muscular system: muscles
 - c. Digestive system: mouth, stomach
 - d. Circulatory system: heart and blood
 - e. Nervous system: brain, nerves
2. First Grade – Germs, Diseases, and Preventing Illness, page 38
 - a. Taking care of your body: exercise, cleanliness, healthy foods, rest
 - b. Vaccinations

C. Skill Objectives

1. Students will demonstrate an understanding of the skeletal system and its function through various hands-on activities and discussions.
2. Students will demonstrate an understanding of how the muscular system works through hands-on activities and discussions.
3. Students will demonstrate an understanding of the circulatory system and its function through various hands-on activities and discussions.
4. Students will demonstrate an understanding of the digestive system and its function through various hands-on activities and discussions.
5. Students will demonstrate an understanding of the nervous system and its function through various hands-on activities and discussions.
6. Students will demonstrate knowledge of the five senses of the human body through discussion.
7. Students will demonstrate an understanding of how germs affect the body through various discussions and an experiment.
8. Students will demonstrate an understanding, through discussion; of the roles some scientists have played in ridding of germs to stay healthy.
9. Students will demonstrate their understanding of five ways to stay healthy through discussion and hands-on activities.

III. BACKGROUND KNOWLEDGE

- A. For Teachers
 - 1. Seuling, Barbara. *From Head to Toe – The Amazing Human Body and how it Works*
 - 2. Meridith, Susan. *What Makes You Ill?*
 - 3. Royston, Angela. *What’s Inside? My Body*
- B. For Students
 - 1. Students should know what the five senses of the human body are from Kindergarten.

IV. RESOURCES

- A. Hirsch, Jr. E.D. *What Your Kindergartener Needs to Know (Revised Edition)* (Lesson Five)
- B. Hirsch, Jr. E.D. *What Your First Grader Needs to Know (Revised Edition)* (Lessons One-Seven)
- C. Rice, Judith. *Those Mean Nasty Dirty Downright Disgusting but...INVISIBLE Germs* (Lesson Six)
- D. Zonta, Pat. *Jessica’s X-ray* (Lesson One)
- E. Showers, Paul. *Hear Your Heart* (Lesson Three)
- F. Walker, Richard. *Muscles – How We Move and Exercise* (Lesson Two)
- G. Royston, Angela. *Digesting – How We Fuel the Body* (Lesson Four)
- H. Johnson, Jinny. *Skeleton – Our Body’s Framework* (Lesson One)
- I. Maynard, Jacqui. *I Know Where My Food Goes* (Lesson Four)
- J. Seuling, Barbara. *From Head to Toe – The Amazing Human Body and how it Works* (Teacher Background)
- K. Simon, Seymour. *The Brain – Our Nervous System* (Lesson Five)
- L. Silver, Donald M. and Wynne, Patricia J. *Easy Make and Learn Projects – Human Body* (Lessons Two-Four)
- M. Meridith, Susan. *What Makes You Ill?* (Teacher Background)
- N. Royston, Angela. *What’s Inside? My Body* (Teacher Background)
- O. Video - *Animated Classic Heroes* video - *Louis Pasteur*.
- P. Baskets of picture books and early reader books, on the topic of the body systems and caring for the body, should be made available for early finishers and for use during other periods
- Q. Sample Body Systems Posters have been included in Appendix P (there are many out there on the market, just make sure you have some visual representation of this topic in your room throughout the unit)
- R. Sample X-rays sent in from parents (see Lesson One, and Appendix A for sample letter)

V. LESSONS

Lesson One: The Skeletal System (two hours – split over two days)

- A. *Daily Objectives*
 - 1. Concept Objective(s)
 - a. Students know and understand how the human body functions, factors that influence its structures and functions, and how these structures and functions compare with those of other organisms. (Colorado State Science Standard 3.3)
 - b. Students will develop an awareness of each body system.
 - 2. Lesson Content
 - a. Skeletal System: skeleton, bones, skull

3. Skill Objective(s)
 - a. Students will demonstrate an understanding of the skeletal system and its function through various hands-on activities and discussions.

B. *Materials*

1. *What Your First Grader Needs to Know*
2. *Skeleton – Our Body’s Framework*, by Jinny Johnson
3. Sample x-rays (Appendix A – letter request)
4. Tent
5. Dog bones – 10 per child
6. White paint
7. 1 paintbrush per child
8. 1 paper plate per child
9. Example of completed x-ray project (Appendix B)
10. Glue
11. Black construction paper
12. White crayons
13. Bulletin board sign (Appendix C)
14. Completed “Shrinking Bones” experiments
15. Copy of “*Hey My Cranium*” (Appendix D)
16. Audio version of *Macarena* song (CD or cassette)
17. CD or cassette player (depending on what *Macarena* media)
18. Copy of *Body Book* for each student, pre-assembled (Appendix E - template)
19. Completed example of *Body Book* (see Appendix E-Template for cover and blank pages and F1-F5 for guidance in completing illustrations)
20. Skeletal System key for the student’s body book (Appendix F-1)
21. Optional Activity: My Shrinking Body (Appendix G)

C. *Key Vocabulary*

1. Skeleton – the supporting frame of the human body
2. Backbone (spine) – a set of bones protecting the spinal cord
3. Spinal cord – a long bundle of nerves located in the backbone
4. Tarsal Bones – one of the seven short bones in the ankle
5. Fibula – one of the bones of the lower leg (the fibula is the smaller of the two bones)
6. Tibia – one of the two bones of the lower leg (the tibia is the larger of the two and is also known as the shinbone)
7. Patella – also known as the kneecap, it is a small bone which is positioned over the knee joint
8. Femur – the long bone in the thigh and the longest bone in the human body
9. Pelvis – a basin-shaped structure that helps support the top of the body, made up of the two hip bones
10. Ribs – one of twelve pairs of bones that curve around from the backbone to the chest (together they form a bony cage that protects the heart and lungs)
11. Sternum – also called the breastbone, the sternum is a flat bone at the front of the chest to which most of the ribs are attached
12. Carpal Bone – one of the eight small bones in the wrist
13. Ulna – one of the two bones of the lower arm (the ulna is the longer of the two and lies on the outside of the arm)
14. Radius – one of the two lower arm bones (the radius is the shorter of the two and lies on the inside of the arm)
15. Humerus – the long bone in the upper part of the arm (it extends from the shoulder to the elbow)

16. Cranium – the top of the skull, the cranium is made up of eight bones that protect the brain
- D. *Procedures/Activities*
1. Refer to *Key Vocabulary* words above as needed throughout lesson.
 2. As children complete certain activities allow them to look through the body books supplied for them.
 3. **Day One:** Read the introduction to *The Human Body* on page 286 of *What Your First Grader Needs to Know*.
 4. Ask students the following questions: *Has anyone ever been camping? What do you use for shelter, or to sleep in, when you go camping?*
 5. Tell students that you have brought a tent to class today and you are going to put it together.
 6. Lay the tent out flat and pull up the center of it, only to let it go, so that it falls flat again.
 7. Say to students: *This tent does not look like it would be very comfortable to sleep in.*
 8. Allow students time to respond to your comment. If need be, lead students to state that the tent needs poles, or better yet, a frame to keep it up.
 9. Tell students that our body works the same way.
 10. Ask students: *Does anyone know what holds our body up? (bones) Other than holding our body up, does anyone know another job bones have? (protects organs) Does anyone know what organs are protected by our bones? (skull-brain, ribs-heart/lungs, backbone-spinal chord)*
 11. Invite students over to your designated reading area.
 12. Read *The Skeletal System* from *What Your First Grader Needs to Know* (pages 286-287).
 13. In addition show pictures of various bones from the book *Skeleton, Our Body's Framework*. (This book has nice, big, pictures of bones.)
 14. When finished, ask students: *Has anyone ever broken a bone? What was it like? What did you have to do to help it heal? What did your doctor do to help it heal? Does anyone know what is needed to have strong bones? (milk)*
 15. Using either your overhead, or white paper, show your students examples of x-rays that have been brought in, pointing out which bone it is that is in the x-ray and where the break is, if there is one.
 16. Now tell students that you wanted to take them to the hospital to get an x-ray, but you have decided to do it in the classroom.
 17. Show the students an example of completed x-ray project (Appendix B).
 18. Tell students that you are going to give each of them ten bones to paint white. (It is not important to paint the back, as it will not be showing once they have been glued on their paper.)
 19. Give each student ten bones, a paper plate, paint brush, and white paint.
 20. Before beginning, each student needs to write their name on the paper plate.
 21. Designate a spot for the students to place their bones to dry when finished.
 22. Tell students that the bones need to dry and the class will finish their x-ray the next day.
 23. Before handing the bones out, tell students you have something for them to work on upon completion of painting their bones.
 24. Tell students that together you will be making a book about their body.
 25. Show students a completed example of the body book (Appendices E, F1-F5).
 26. Instruct students to only color the cover of their books and that you will complete the other pages together.

27. The cover will be a self-portrait.
28. Tell students to take their time and do a nice job. They should show their hair color, eye color, clothes they are wearing, etc...
29. Allow time for students to paint and begin their body books. (You could have children color the back of the back page, time allowing. This would be the backside of their self-portrait.)
30. **Day Two:** Invite children over to your designated reading area.
31. Read *Jessica's X-ray*.
32. Now tell students they will finish making their x-ray.
33. Give the following instructions:
 - a. Before gluing anything you need to plan first.
 - b. First you will cut out the skull and place it at the top of the paper.
 - c. Then place the rest of the skeleton below the skull (show example - two bones – body, two bones – each arm, two bones – each leg).
 - d. Lift each piece and glue in place.
 - e. With a white crayon, write “*Your Name's X-ray*”. (i.e. Chris's X-ray)
 - f. Then you will carefully carry your project to the designated drying area.
34. Designate an area for the students to place their x-ray to dry.
35. Hand out black construction paper as well as their bones and a copy of the skull. (We hung completed projects with a sign that said “*Here's looking through you kid!*”)
36. Tell students that if they complete their x-ray and need to finish their self-portrait, this would be a good time. (Students who are finished with their self-portrait can enjoy “reading” basket books on the human body.)
37. When all students have finished, tell students that you are going to complete the first page of their books together.
38. Have students turn to the first blank page.
39. Use an overhead to model for students how to illustrate their skeletal system page. (Use Appendix F-1 as your guide.)
40. Draw the outline of the bones with a black crayon, then shade in around the bones with the black crayon, making it look like an x-ray.
41. On the back of the page, have students write: Skeletal System – 1. gives me shape 2. protects my organs
42. When students are finished, have them put their books away until needed.
43. Extension activities:
 - a. **“Hey My Cranium!”** – With the use of the audio version of “*Macarena*”, teach the names of the bones to your students (Appendix D).
 - i. Have students stand for this activity.
 - ii. Go through it a couple times prior to singing with the music.
 - iii. You, yourself, will have to practice with the music as there are numerous versions of this song.
 - iv. Sing it so that you say “*Hey my cranium!*” in the place of “*Macarena*”
 - b. **“My Shrinking Body”** – This is a fun activity to show students that they “shrink” during the day, only to grow taller overnight (the backbone constricts) (Appendix H).
 - i. Instruct students of what they are to do with their experiments.
 - ii. Ask children what they think will happen.
 - iii. Send the experiment and letter home to parents so that they can assist.

- iv. Collect and review results.
- c. **“Dry Bones”** – If you are fortunate enough to have a music teacher, this would be great to coordinate for your students to learn while going through this unit.
 - i. *“What Your First Grader Needs to Know”*, page 224
- E. *Assessment/Evaluation*
 - 1. Informal observations of children participating in discussions as well as following directions of various activities learning about the skeletal system.

Lesson Two: The Muscular System (1.25 hours)

- A. *Daily Objectives*
 - 1. Concept Objective(s)
 - a. Students know and understand how the human body functions, factors that influence its structures and functions, and how these structures and functions compare with those of other organisms. (Colorado State Science Standard 3.3)
 - b. Students will develop an awareness of each body system.
 - 2. Lesson Content
 - a. Muscular System: muscles
 - 3. Skill Objective(s)
 - a. Students will demonstrate an understanding of how the muscular system works through hands-on activities and discussions.
- B. *Materials*
 - 1. *What Your First Grader Needs to Know*
 - 2. *Muscles – How We Move and Exercise*, by Richard Walker
 - 3. Pre-assemble: attach one 3-foot string for each child, to a thick rubber band (average five children/strings per rubber band)
 - 4. 5-7 plastic containers of the same size and shape per group
 - 5. 5-7 paper cups of the same size and shape per group
 - 6. A preassembled *Muscle Maker*, page 57, *Easy Make and Learn Projects – Human Body*, for the teacher (optional: have one made one for each student; this would be a great project for a volunteer, if one is available; see procedure #38)
 - 7. Muscular System key for the student’s body book (Appendix F-2)
 - 8. Student copies of the *Body Book*

Key Vocabulary

 - 1. Muscle – any of the organs, composed of bundles of fibers, by whose contraction all bodily motion is affected
 - 2. Involuntary Muscles – muscles that are independent of conscious control
 - 3. Voluntary Muscles – muscles directed to move by conscious control
 - 4. Skeletal Muscles – muscles that move your bones
 - 5. Smooth Muscles – muscles that move your organs and vessels
 - 6. Cardiac Muscles – muscles that make your heart beat
- D. *Procedures/Activities*
 - 1. Refer to *Key Vocabulary* words as necessary throughout lesson.
 - 2. As children complete certain activities allow them to look through the body books supplied for them.
 - 3. Invite students over to your designated reading area.
 - 4. Tell students that now they know about the skeletal system; ask them if they know what moves their bones. Allow time for students to respond.
 - 5. Explain, or explain further if the answer was given, that our bones move because of our muscles.

6. Have students show you their muscles by flexing their biceps. Marvel at the size of those humungous muscles.
7. Tell students that today they will learn about the muscular system.
8. Read *The Muscular System*, page 288 of *What Your First Grader Needs to Know*.
9. Explain to students that all muscles are like rubber bands. All muscles pull. When they are not pulling, they are relaxed.
10. Use the *Muscle Maker* model to show students that muscles pull.
11. Explain that our body has three types of muscles: skeletal muscles, smooth muscles, and cardiac muscles.
12. Ask student: *What do you think skeletal muscles pull?* (bones) Have students make different expressions with their face. Each expression is made by moving skeletal muscles in their face. Have students make a frown with their face. Tell students that it takes 43 muscles in their face to make a frown. Now have students smile. Ask students how many muscles they think it takes to make a smile. Allow time for students to respond. Tell students that it only takes 17 muscles to smile, so if they do not want to tire their muscles they should smile more rather than frown.
13. Tell students that skeletal muscles are voluntary muscles. Since they can move them, they are called voluntary. Muscles used to move our legs and arms are voluntary muscles as well. Our brain tells these muscles to move.
14. Explain to students that smooth muscles move the organs in their bodies. These muscles help pump blood through their veins, moves their lungs when they inhale, and churns their food around in their stomachs during digestion.
15. Tell students that cardiac muscles make your heart beat. Have students put their hands on their chest to see if they can feel their heart beating. Each beat is happening because of muscles moving the heart. The heart is a big muscle.
16. Explain to students that smooth muscles and cardiac muscles move on their own so we call these involuntary muscles. These muscles move without you thinking about them.
17. Show students pictures of muscles from the book *Muscles – How We Move and Exercise*.
18. Tell students that you are going to do an activity to demonstrate how a muscle works and to show that muscles pull.
19. Ask students to recall what you said muscles are like. (rubber bands – step 8)
20. Show students the rubber band with the strings attached.
21. Call on a few students to come forward and help demonstrate how this activity will work.
22. Explain to students that the rubber band represents a muscle.
23. Ask students what all muscles do (pull).
24. Explain that each student will take a hold of one string and by pulling on the string, or relaxing them, they will be working like teams of muscles.
25. Explain that you are going to put containers and cups around on the floor for them to try and pick up.
26. Have students try to stack the containers/cups on top of each other. (Place some on their sides first, so that they have to lift them up before stacking them.)
27. Explain to students the importance of working as a team to complete this task.
28. With the help of your volunteers, demonstrate how to go about picking things up and stacking them.
29. Designate work areas by placing the “muscles” and containers around the room.
30. Divide students up into their groups, designating which area you would like them to go to.

31. Tell students that you will be walking around if assistance is needed and to be patient if you are talking with another group.
 32. Allow time for students to work successfully.
 33. Upon completion have students return to their seats.
 34. Ask students to pull out their body books and turn to the blank page following the skeletal system.
 35. Use an overhead to model for students how to illustrate their muscular system page. (Use Appendix F-2 as your guide.)
 36. On the back of the page have students write: Muscular System – 1. moves me 2. pulls my bones
 37. Upon completion, have students put away their books until further needed.
 38. **Extension activity:** *Muscle Maker*, page 57, *Easy Make and Learn Projects – Human Body*. These should be put together before handing out to students. Have them color the muscles and pull to show how a muscle works.
- E. *Assessment/Evaluation*
1. Informal observations of children participating in discussions as well as following directions of various activities learning about the muscular system.

Lesson Three: The Circulatory System (1.25 hours)

- A. *Daily Objectives*
1. Concept Objective(s)
 - a. Students know and understand how the human body functions, factors that influence its structures and functions, and how these structures and functions compare with those of other organisms. (Colorado State Science Standard 3.3)
 - b. Students will develop an awareness of each body system.
 2. Lesson Content
 - a. Circulatory System: heart and blood
 3. Skill Objective(s)
 - a. Students will demonstrate an understanding of the circulatory system and its function through various hands-on activities and discussions.
- B. *Materials*
1. *What Your First Grader Needs to Know*
 2. *Hear Your Heart*, by Paul Showers
 3. One preassembled *Have a Heart* for the teacher – *Easy Make and Learn Projects – Human Body*, by Donald Silver and Patricia J. Wynne (pages 66 – 69)
 4. Watch with a second hand
 5. An empty paper towel roll/toilet paper roll for each student
 6. 6 or 7 blood cards (Appendix H)
 7. Diagram of student positions for circulation activity, see Procedure #19 (Appendix I)
 8. Circulatory System key for the student’s body book (Appendix F-3)
 9. Student copies of the *Body Book*
- C. *Key Vocabulary*
1. Oxygen – gas in our air that we need to breathe in order to live
 2. Circulating – means going round and round
 3. Heartbeat – the regular contractions of the heart muscle
 4. Lungs – the organs used for respiration by absorbing oxygen and discharging carbon monoxide
- D. *Procedures/Activities*
1. Refer to *Key Vocabulary* words as necessary throughout lesson.

2. As children complete certain activities allow them to look through the body books supplied for them
3. Invite students over to your designated reading area.
4. Ask students to recall the name of the muscle they can feel beating in their chest (the heart).
5. Ask students if they know what the heart is doing each time it beats (pumping blood).
6. Tell students that today they will learn about the circulatory system.
7. Read *The Circulatory System*, from *What Your First Grader Needs to Know*, page 288.
8. Ask students what shape they think of after reading the definition of “circulating” (circle).
9. Tell students that our blood flows like a circle, hence the word circulating. It goes out through our arms and comes back. It goes up through our head and comes back. It goes down through our legs and comes back to the heart.
10. Now read *Hear Your Heart*, by Paul Showers. (This book has numerous activities to perform as you are reading through it.) Pre-read the book prior to reading it to your students. Have on hand “stethoscopes” (empty paper towel/toilet paper rolls) and a watch with a second hand to use for these experiments.
11. Upon completion, allow students to return to their seats.
12. Tell students that as we just read (in *Hear Your Heart*) the heart pumps blood in and out.
13. Ask students if they know why the heart pumps blood (to move blood through the body that has received oxygen from the lungs).
14. Ask students if they know what oxygen is (something we need to breathe).
15. Demonstrate to students how blood flows using the *Have a Heart* model.
16. Explain to students that the red yarn represents blood full of oxygen and that the blue yarn represents blood with very little oxygen. After the blood goes through the lungs, the heart pumps the blood with oxygen through the body. When it gets low on oxygen, it comes back to the heart to be pumped through the lungs.
17. Give specific examples of how the blood flows through the body. Use the *Have a Heart* model to show what happens when it returns to the heart. (i.e. Oxygenated blood flows from the heart to my arm. It then returns to my heart to get more oxygen. Oxygenated blood flows to my leg and then returns to my heart for more oxygen.)
18. Tell students that you are going to do an activity showing how the blood flows.
19. Use the diagram provided to help place students for this activity, but know that it will vary from classroom to classroom. Someone will be designated the heart, the lungs, the brain, arms, and legs (Appendix I).
20. Tell students that after the blood has been oxygenated from the lungs, the heart will pump the oxygenated blood throughout the body.
21. Once blood has circulated, it is depleted of oxygen, and returns to heart/lungs to receive more oxygen.
22. Hand to the student designated as the heart a “blood card”.
23. Have student hold up to show the class that one side has red blood and the other side has blue blood.
24. Tell students that like the diagram you just showed, the red blood shows that the blood has oxygen and the blue side shows that blood is low on oxygen.

25. Tell students that the *heart* student is going to hand the card to the *lungs* student with the blue side visible. Ask students why blood goes to the lungs (to receive oxygen).
 26. Tell students that the *lungs* will turn the card over so that the red side is visible and return it to the *heart*.
 27. Have the *heart* pass the oxygenated blood card to the *right arm*.
 28. Now tell students when the “blood card” reaches the end of the *arm*, this student will flip the card around so that the blue side is showing and then send it back to the *heart*. This shows that there is little oxygen in the blood and it needs to return to the *heart/lungs* so that it can get more.
 29. Once the card has returned to the *heart*, the *heart* will hand the card to the *lungs*, which will flip the card to the red side and return it to the *heart*.
 30. Start the process over again.
 31. Once students have a good rhythm going, add more cards instructing the *heart* to send one out to different areas (one card to the *right arm*, one card to the *right leg*, one card to the *brain*, etc...).
 32. It may get a little chaotic, but should illustrate what an amazing job the heart has.
 33. When finished, have students return to their seats.
 34. Have students turn to the next blank page in the *Body Book*.
 35. Use an overhead to model for students how to illustrate their circulatory system page. (Use Appendix F-3 as your guide.)
 36. On the back of the page have students write: Circulatory System – 1. My heart pumps blood around and around my body.
 37. Upon completion, have students put away their books until further needed.
- E. *Assessment/Evaluation*
1. Informal observations of children participating in discussions as well as following directions of various activities learning about the circulatory system.

Lesson Four: The Digestive System (1.25 hours)

- A. *Daily Objectives*
1. Concept Objective(s)
 - a. Students know and understand how the human body functions, factors that influence its structures and functions, and how these structures and functions compare with those of other organisms. (Colorado State Science Standard 3.3)
 - b. Students will develop an awareness of each body system.
 2. Lesson Content
 - a. Digestive System: mouth and stomach
 3. Skill Objective(s)
 - a. Students will demonstrate an understanding of the digestive system and its function through various hands-on activities and discussions.
- B. *Materials*
1. *What Your First Grader Needs to Know*
 2. *I Know Where My Food Goes*, by Jacqui Maynard
 3. *Digesting – How We Fuel the Body*, by Angela Royston
 4. One preassembled, and color coded, *Digestion Poster* for the teacher – *Easy Make and Learn Projects – Human Body*, by Donald Silver and Patricia J. Wynne (pages 74 - 75)
 5. Raw potatoes (some in chunks and some grated) - amount needed will depend on size of class and how you divide them up

6. Baby jars with lids – amount needed will depend on size of class and how you divide them up
 7. Water to fill each baby jar
 8. 1 paper plate per child
 9. 1 large straw per child
 10. Clock
 11. A copy of the *Digestion Poster* for each student, if desired.
 12. Digestive System key for the student's body book (Appendix F-4)
 13. Student copies of the *Body Book*
- C. *Key Vocabulary*
1. Digest – to convert food into forms that can be absorbed by the body
 2. Saliva – a mixture of mucous and fluid secreted by glands in the cheeks and lower jaws
- D. *Procedures/Activities*
1. Refer to *Key Vocabulary* words as necessary throughout lesson.
 2. As children complete certain activities allow them to look through the body books supplied for them
 3. Invite students over to your designated reading area.
 4. Ask students if they know what happens to food as they eat it. Allow time for students to respond.
 5. Tell students that you are going to introduce a new body system today. It is called the digestive system.
 6. Read *The Digestive System*, from *What Your First Grader Needs to Know*, pages 288 – 289.
 7. Reiterate to students that the digestive process begins in the mouth with the assistance of saliva.
 8. In addition, read *I Know Where My Food Goes*, by Jacqui Maynard.
 9. Display your copy of the *Digestion Poster* so that students can see it easily and walk them through the process.
 10. In addition, use *Digesting – How We Fuel the Body*, by Angela Royston, to show actual pictures of the organs.
 11. Tell students that the class is going to do an experiment to emphasize that the digestive process begins in the mouth.
 12. Divide students into groups of 3-5. (This will depend on how many jars you have to distribute.)
 13. Tell students that you are going to give each group two jars with water, and a paper plate with chunks of potatoes as well as two piles of grated potatoes. They will also receive a straw for each person in the group but it will be used for another experiment.
 14. Instruct students to wait for further directions once they have received their materials.
 15. Distribute materials.
 16. Instruct students to put the potato chunks in one jar and one pile of the grated potatoes in the other jar (saving the second pile for the next experiment).
 17. Instruct students to make sure the lids are on tight.
 18. Tell students that they are going to take turns shaking the jars for a total of 10 minutes. (You can decipher how often you would like them to pass the jars onto the next person in the group.)
 19. At the end of 10 minutes, have students observe their results.
 20. Allow time for discussion.

21. Ask students: *Where does the body begin to break down food?* (the mouth) *Why is chewing important?* (smaller bites are easier to dissolve)
 22. Now ask students: *Does anyone remember what food travels through after it leaves the mouth?* (the esophagus) *What pushes the food through the esophagus?* (muscles)
 23. Tell students to pick up their straw.
 24. Tell students that we are going to pretend that this is their esophagus.
 25. The same way that muscles squeeze food through the esophagus, we are going to do the same with our fingers.
 26. Instruct students to put a little bit of grated potatoes into one end of the straw.
 27. Using their fingers, have students squeeze the potatoes along by pinching the straw behind them until they come out at the other end of the straw, dropping it back onto the plate.
 28. Ask students: *Not only are smaller bites easier to dissolve, but why else would it be important to have smaller bites?* (food could get stuck in the esophagus) *What would happen if food was stuck in the esophagus?* (you could not breathe)
 29. With the use of the *Digestion Poster*, ask students: *Where does the food go after it passes through the esophagus?* (stomach)
 30. Continue with the rest of the process reiterating what happens in each organ.
 31. Teach students what ultimately happens to the food that has been processed. (*Nutrients are absorbed and the body gets rid of the waste.*)
 32. Pick up all materials from their experiments.
 33. Have students take out their *Body Books*.
 34. Have students turn to the next blank page.
 35. Use an overhead to model for students how to illustrate their digestive system page. (Use Appendix F-4 as your guide.)
 36. On the back of the page have students write: Digestive System – 1. food factory (breaks down food)
 37. Upon completion, have students put away their books until further needed.
- E. *Assessment/Evaluation*
1. Informal observations of children participating in discussions as well as following directions of various activities learning about the digestive system.

Lesson Five: The Nervous System (one hour)

- A. *Daily Objectives*
1. Concept Objective(s)
 - a. Students know and understand how the human body functions, factors that influence its structures and functions, and how these structures and functions compare with those of other organisms. (Colorado State Science Standard 3.3)
 - b. Students will develop an awareness of each body system.
 2. Lesson Content
 - a. Nervous System: brain, nerves
 3. Skill Objective(s)
 - a. Students will demonstrate an understanding of the nervous system and its function through various hands-on activities and discussions.
 - b. Students will demonstrate knowledge of the five senses of the human body through discussion.
- B. *Materials*
1. *What Your Kindergartener Needs to Know*
 2. *What Your First Grader Needs to Know*

3. *The Brain – Our Nervous System*, by Seymour Simon
 4. Rulers (one for each pair of students)
 5. Student copies of *Body Book*
- C. *Key Vocabulary*
1. Nervous System – the collective name for the brain, spinal cord, and nerves
 2. Spinal cord – a long bundle of nerves located in the backbone
 3. Nerve – a long fine thread that carries information around the body
- D. *Procedures/Activities*
1. Refer to *Key Vocabulary* words as necessary throughout the lesson.
 2. As children complete certain activities allow them to look through the body books supplied for them
 3. Invite students over to your designated reading area.
 4. Ask students if they remember learning about their five senses in Kindergarten.
 5. Ask students to recall their five senses (guide as necessary).
 6. Explain to students that they are able to use these senses because of another body system and today we are going to learn about it.
 7. Read *The Nervous System* from *What Your First Grader Needs to Know*, page 289.
 8. Emphasize that messages are sent to and from the brain.
 9. The book *The Brain – Our Nervous System*, by Seymour Simon, has great actual photos of the brain, spinal cord, and nerves. It even diagrams what parts of the brain are for leg movement, writing, etc. (show as time permits).
 10. Now tell students that you are going to do an activity to emphasize that messages are sent to and from the brain.
 11. Have students form a circle in the room by holding hands.
 12. Use the provided diagram to finalize the formation of the circle (Appendix J). Someone should be designated as the brain and someone as the mouth. The rest of the circle is designated as the nerves. (I like being the mouth because I like to be animated and the students love it.)
 13. Tell students that to demonstrate how messages are sent to and from the brain, we are going to pretend that we are part of the nervous system.
 14. Tell students that we are going to pretend that our foot was stomped on.
 15. The teacher is going to act like he/she stomped on the foot of whoever is at the end of the line.
 16. Once you do this that student needs to “send a message” to the brain by squeezing the student’s hand next to them. That student passes on the “message” by squeezing the student’s hand next to them and so on.
 17. Once the message reaches the brain, the brain needs to send a message to the mouth to let out a really loud yell. (This is where I like to be really animated and the more animated you are the bigger kick the children get out of it.)
 18. After you have done this a couple of times, ask students: *What sense are you using to send this message to your brain?* (touch) *If your foot was stomped on, would it normally take this long to get the message to your brain?* (no)
 19. Invite students to try and send their message to the brain quicker. (You could assign new students to the various roles if you would like.)
 20. Now tell students that you have an experiment that can help them understand better how quickly messages are sent to the brain.
 21. Tell students you are going to pair them up. Each student, and their partner, needs to get a ruler and space themselves out around the room.
 22. One student will hold the ruler at the 12” mark so that it hangs down.

23. Their partner will place their thumb and index finger at the bottom end, at the 1 inch mark. Their fingers should not touch the ruler.
 24. Tell students that the person holding the ruler is going to drop it straight down, without warning, and their partner is going to try and catch it.
 25. Have students check the number where they caught the ruler.
 26. The lower the number, the faster the message traveled from their brain to their hand to catch it.
 27. Ask students: *What sense did you use so that your brain knew to send a message to your hand?* (sight)
 28. Practice a few times to allow students to get a smaller number.
 29. Upon completion, have students return to their seats.
 30. Have students take out their body books.
 31. Have students turn to the next blank page.
 32. Use an overhead to model for students how to illustrate their nervous system page. (Use Appendix F-5 as your guide.)
 33. On the back of the page have students write: Nervous System – 1. sends messages to and from the brain
 34. Upon completion, collect books. (Assign grades and hand back prior to final assessment.)
- E. *Assessment/Evaluation*
1. Informal observations of children participating in discussions as well as following directions of various activities learning about the nervous system.
 2. Attention to detail, following directions and neatness in completing *Body Book*

Lesson Six: Germs (1.5 hours – split over two days)

- A. *Daily Objectives*
1. Concept Objective(s)
 - a. Students understand the impact of scientific and technological developments on individuals and societies. (Colorado State History Standard 4.1)
 2. Lesson Content
 - a. Germs, Diseases, and Preventing Illness
 3. Skill Objective(s)
 - a. Students will demonstrate an understanding of how germs affect the body through various discussions and an experiment.
 - b. Students will demonstrate an understanding, through discussion; of the roles some scientists have played in ridding of germs to stay healthy.
- B. *Materials*
1. *What Your First Grader Needs to Know*
 2. *Those Mean Nasty Dirty Downright Disgusting but...INVISIBLE Germs*, by Judith Rice
 3. Scrap pieces of construction paper – at least 5-10 pieces for each child
 4. Sample of completed germ project (Appendix K)
 5. *Animated Classic Heroes* video on *Louis Pasteur*.
 6. To show students first hand how germs grow, and what they look like, use an Ager experiment: go to < www.sciencestuff.com > to purchase the necessary materials; in the search catalog, type *nutrient ager*; click on #1. Science Stuff: Powder, Plates and Bottles (with your students, swab different things around the room like pencils, desk, water bottles, etc... I even sneezed into one, without covering my mouth, to show that germs spray when your mouth is not covered; germs will begin growing overnight; take note that not all germs grow the same;

there are different shapes, different colors, and grow at different paces; this is a great experiment to show students first hand how they grow; you can decide whether to begin this experiment the day you introduce germs, or set it up earlier so that they have grown by the time you begin this lesson (1/2 hour)). One Ager dish will be needed for each sample taken.

7. Microscopes (if you would like to look at the germs more closely)

C. *Key Vocabulary*

1. Germs – any new living substance that can develop into an organism
2. Vaccination – to inoculate with a vaccine as a preventive measure
3. Pasteurization – heating a liquid to kill harmful germs

D. *Procedures/Activities*

1. Refer to *Key Vocabulary* words as necessary throughout the lesson.
2. As children complete certain activities allow them to look through the body books supplied for them
3. Conduct experiment on growing germs at your convenience in the lesson plan. (See Materials Section #6 above.)
4. **Day One:** Invite students over to your designated reading area.
5. Tell students that now that we have gone through the body systems, we are going to talk about taking care of the bodies and the systems inside them.
6. Read *In Sickness and in Health* from *What Your First Grader Needs to Know*, page 290 – 291.
7. Ask students: *Has anyone ever been sick before? What did you do to get better? Has anyone ever had a vaccination before?*
8. Tell students that you have another book you would like to read to them. This book has pictures of germs, but they are not real pictures. Ask students: *What do you need to use to see germs?* (microscope) Read *Those Mean Nasty Dirty Downright Disgusting but...INVISIBLE Germs*, by Judith Rice. Emphasize to students that germs thrive in warm and wet areas.
9. After reading the story, tell students that they are going to now make their own germs.
10. Tell students that they can use the pictures in the book as a guide to how they would like to make theirs.
11. Tell students that you are going to put out scrap pieces of construction paper to use to make their germs.
12. Tell students to be creative in making their germs.
13. Tell students that when making their germs, they may not use scissors, but to tear with their hands only.
14. Show an example of a germ made using only scraps, torn pieces, and pieces folded accordion style (Appendix K).
15. Allow time for students to complete their germs.
16. See an example of a sign to hang with your germs (Appendix L).
17. As students finish, allow them to read basket books as their friends finish up.
18. **Day Two:** Tell students that you would like to read about a couple of scientists who accomplished a lot in keeping people from getting sick.
19. Read about Louis Pasteur and Edward Jenner, from *What Your First Grader Needs to Know*, pages 314 and 316.
20. To supplement your readings, show the *Animated Classic Heroes* video on *Louis Pasteur* (1/2 hour).
21. To help children remember Edward Jenner, teach them “*Jenner Jabs!*” While saying this, act like you are jabbing a shot into your arm. This will help students remember that he developed the first vaccination.

22. Reiterate that pasteurization means “to kill germs”.
 23. Ask children to go home and look for the word *pasteurization* on such items as milk and orange juice. Have students report back their discoveries.
- E. *Assessment/Evaluation*
1. Informal observations of children participating in discussions as well as following directions of various activities learning about germs.

Lesson Seven: Care of the Body (one hour)

- A. *Daily Objectives*
1. Concept Objective(s)
 - a. Students will recognize how to keep healthy.
 2. Lesson Content
 - a. Taking care of your body: exercise, cleanliness, healthy foods, rest
 3. Skill Objective(s)
 - a. Students will demonstrate their understanding of five ways to stay healthy through discussion and hands-on activities.
- B. *Materials*
1. *What Your First Grader Needs to Know*
 2. To help demonstrate proper hand washing, purchase a bottle of Glo Germs: go to < www.sciencestuff.com > to purchase the needed materials; in the search catalog, type *glo germs*; click on #1. Science Stuff, Glo Germs; you will need a UV light to do this experiment (we used the orange liquid kind); ask your school nurse if he/she has performed this experiment before, as they may already have a light, or at least access to one, for you to use; by using the UV light, you can show children where they missed when washing their hands
 3. *Healthy Me!* Book, pre-assembled. (Appendix M)
- C. *Key Vocabulary*
1. Germs – any new living substance that can develop into an organism
 2. Healthy – freedom from sickness or abnormal conditions
- D. *Procedures/Activities*
1. Refer to *Key Vocabulary* above as necessary throughout the lesson.
 2. Invite students over to your designated reading area.
 3. Having shown your students what germs look like when they grow, ask students what they think they can do to prevent germs from growing/spreading.
 4. Read *Take Care of Your Body* from *What Your First Grader Needs to Know*, page 291.
 5. In addition to the reading, have students come up with examples of: good foods/bad foods and types of exercise that are age appropriate.
 6. Complete experiment as time permits. (See Materials Section, #2 above.)
 7. Upon completion of this experiment, have students return to their seats.
 8. Explain to students that you have a book for them to complete to help remind them of how to care for their body.
 9. Pass out a copy of *Healthy Me!* to each student (Appendix M).
 10. Walk your students through the book explaining that on each page they are to fill in the missing letters as well as illustrate a picture of themselves doing what that page says.
 11. As children complete their books allow them to look through the baskets of body books supplied for them.
- E. *Assessment/Evaluation*
1. Informal observations of children participating in discussions as well as following directions of various activities learning about caring for the body.

2. Following directions, attention to detail, neatness in completing *Healthy Me* book.

VI. CULMINATING ACTIVITY: two days – 1.5 hours

- A. **Day One:** Guide students in completion of 2-column notes (Appendix N). Send home to study in preparation for assessment.
- B. **Day Two:** Administer the *Body Systems/Healthy Body* assessment (Appendix O).

VII. HANDOUTS/WORKSHEETS

- A. Appendix A: Letter for X-Ray Request (Lesson One)
- B. Appendix B-1: Example of X-Ray Project (Lesson One)
- C. Appendix B-2: Skulls for Skeleton Project (Lesson One)
- D. Appendix C: Sample Bulletin Board Sign for Skeleton Projects (Lesson One)
- E. Appendix D: Copy of “Hey My Cranium” (Lesson One)
- F. Appendix E: Template for “Body Book” (Lesson One)
- G. Appendix F-1: Illustration Guide for Skeletal System Page of Body Book (Lesson One)
- H. Appendix F-2: Illustration Guide for Muscular System Page of Body Book (Lesson Two)
- I. Appendix F-3: Illustration Guide for Circulatory System Page of Body Book (Lesson Three)
- J. Appendix F-4: Illustration Guide for Digestive System Page of Body Book (Lesson Four)
- K. Appendix F-5: Illustration Guide for Nervous System Page of Body Book (Lesson Five)
- L. Appendix G: My Shrinking Body (Optional Activity) (Lesson One)
- M. Appendix H: Blood Cards for Circulation Activity (Lesson Three)
- N. Appendix K: Germ Project Instructions and Example Diagram (Lesson Six)
- O. Appendix L: Sample Bulletin Board Sign – Germs (Lesson Six)
- P. Appendix M: Healthy Me! Book (Lesson Seven)
- Q. Appendix N: 2-Column Notes: Body Systems (Study Guide) (Lesson Seven)
- R. Appendix O: Assessment: Body Systems and Healthy Body

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Appendix A

Dear Parents,

Beginning next week, your child will begin learning about the human body. More specifically, they will learn about the skeletal, muscular, nervous, circulatory, and digestive systems, germs and how they make your body ill, as well as ways to take care of the body.

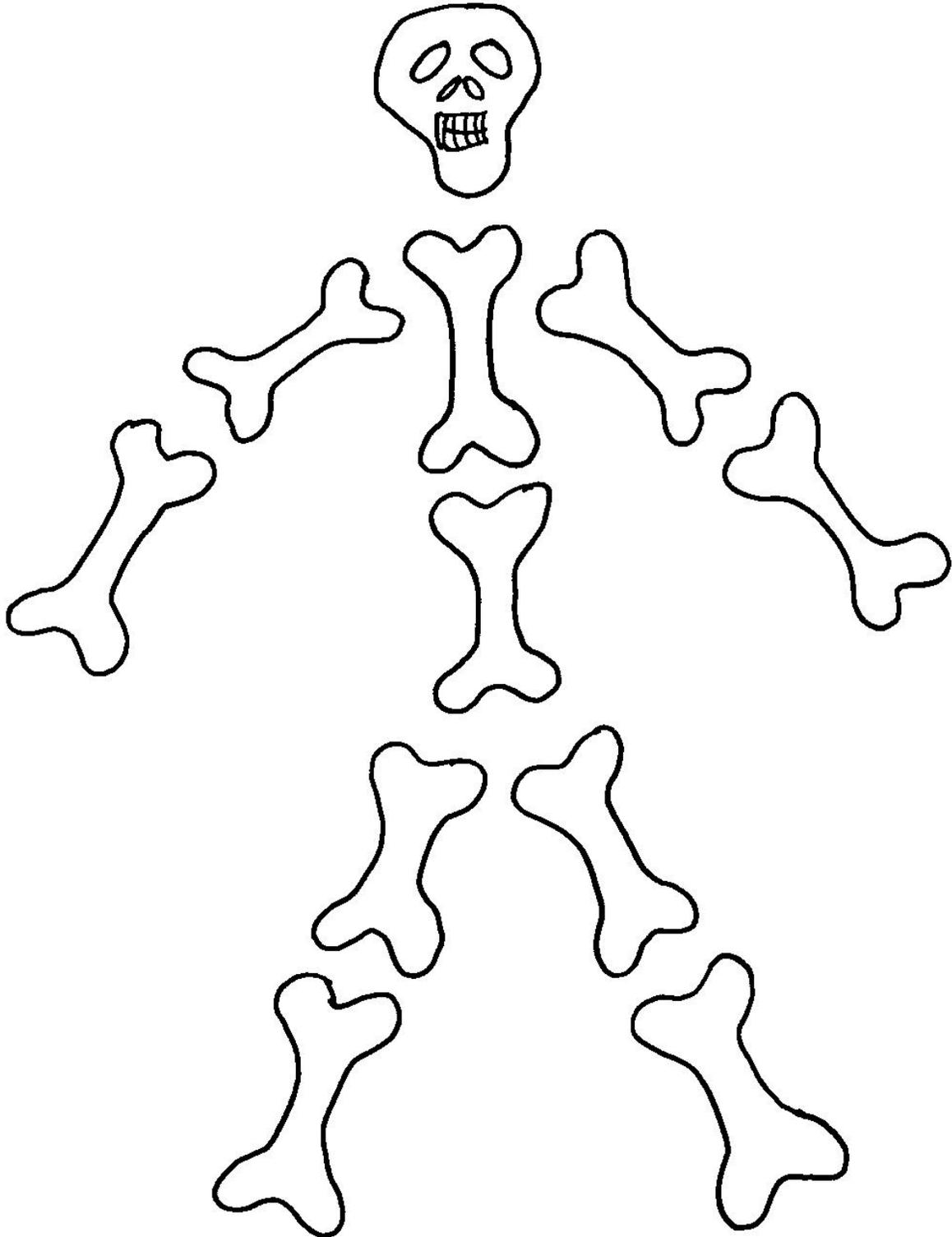
The first system that your child will be learning about is the skeletal system. I would like to show the class actual pictures of bones if possible. If anyone has an x-ray they would be willing to loan to the class, I would greatly appreciate it. Any x-rays will be great, even if they show something other than bones. (i.e. brain, heart)

Unless otherwise instructed, I will return the x-rays at the conclusion of this unit. Thank you very much.

Sincerely,

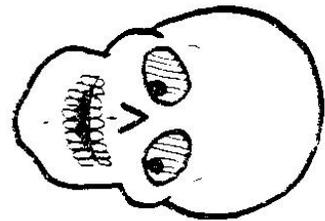
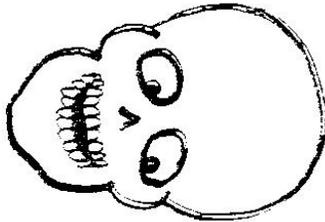
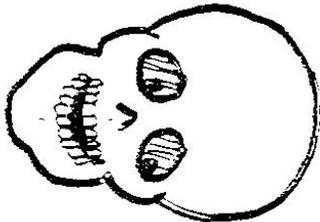
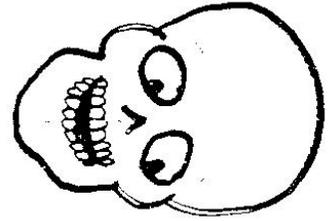
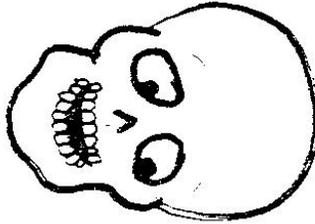
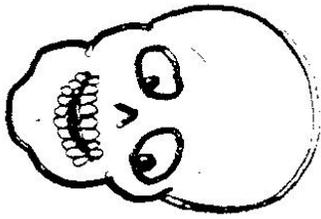
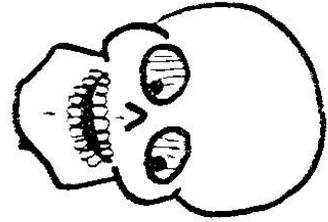
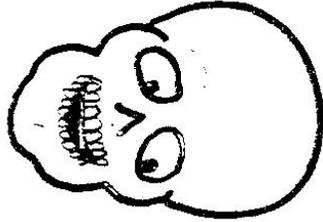
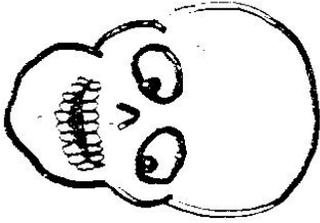
Appendix B-1

Example of X-Ray Project



Appendix B-2

Skulls for Skeleton Project



Appendix C

Sample Bulletin Board Sign for Skeleton Projects

Here's Looking
Through
You Kid!

Appendix D

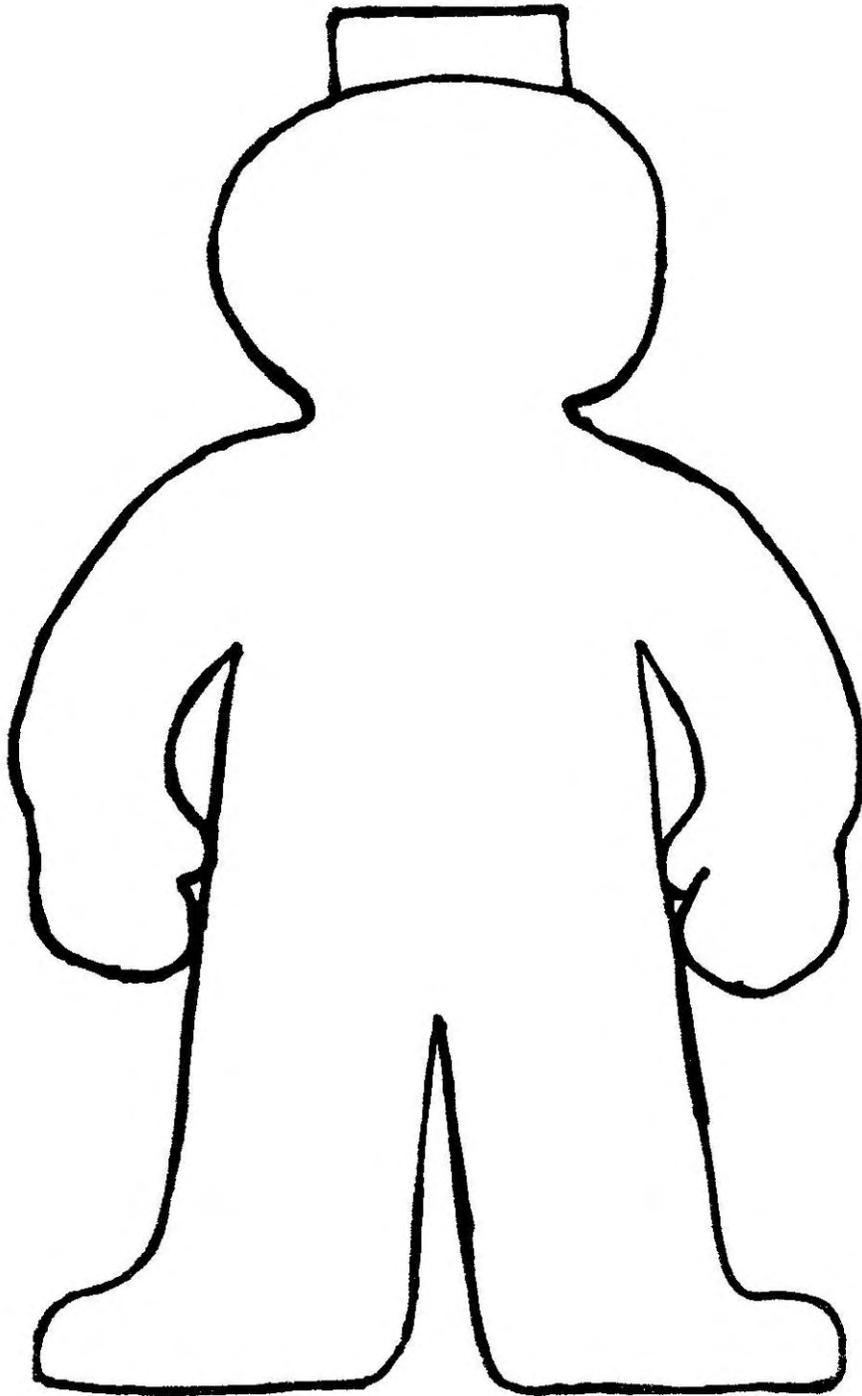
Hey, My Cranium!

(Sing along with
the "Macarena" song)

Tarsals-Fibula-Tibia-Patella
Femur-Pelvis-Ribs-Sternum
Carpals-Ulna-Radius-Humerus
Hey, my Cranium!

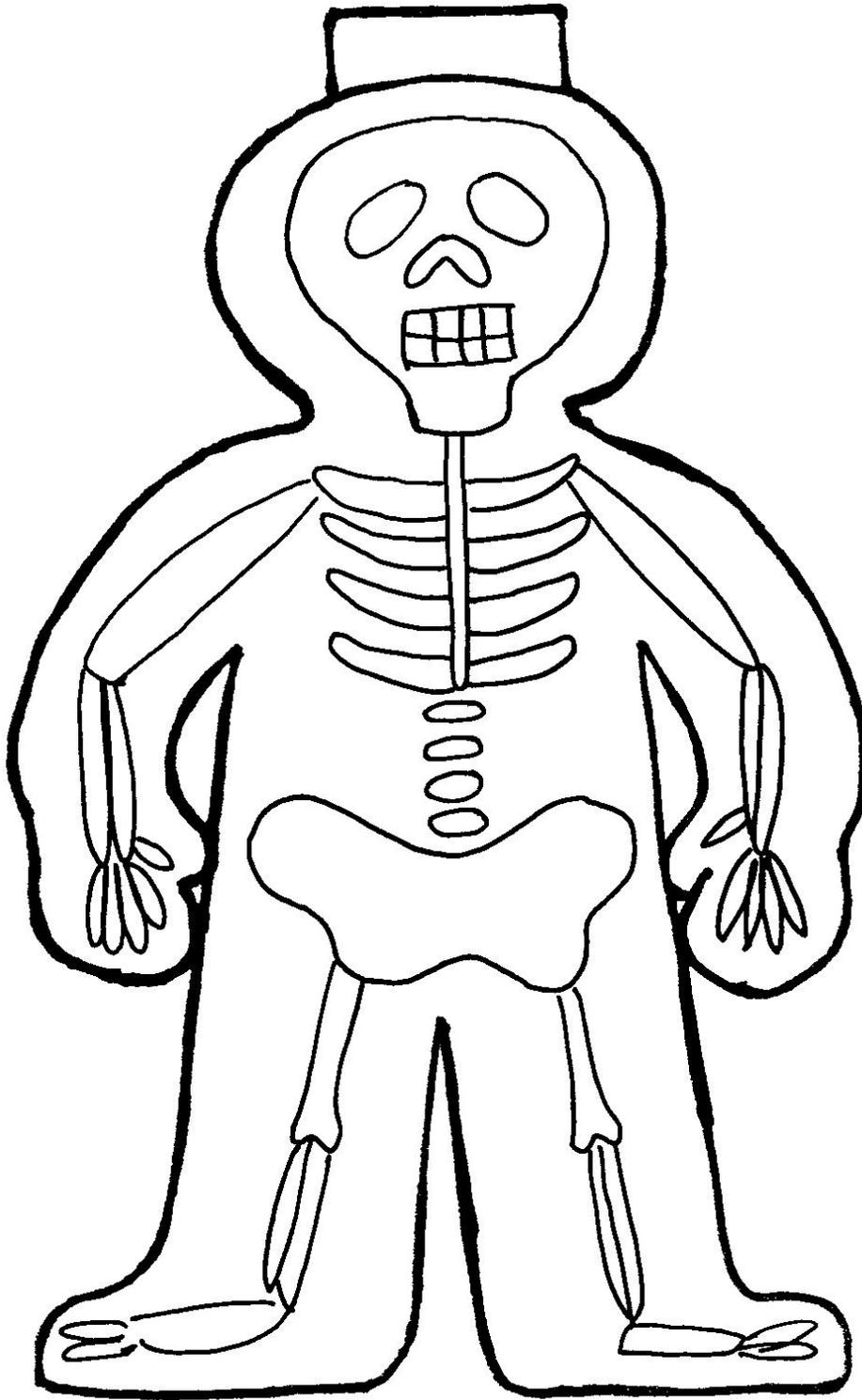
Appendix E

Make seven copies per student. (Enlarge to fit 8-1/2 x 11" paper.) Have a volunteer cut and pre-assemble into booklets. Staple at the top tab. (Teacher should make several overheads to use in modeling drawing of the systems in future lessons.)



Appendix F-1

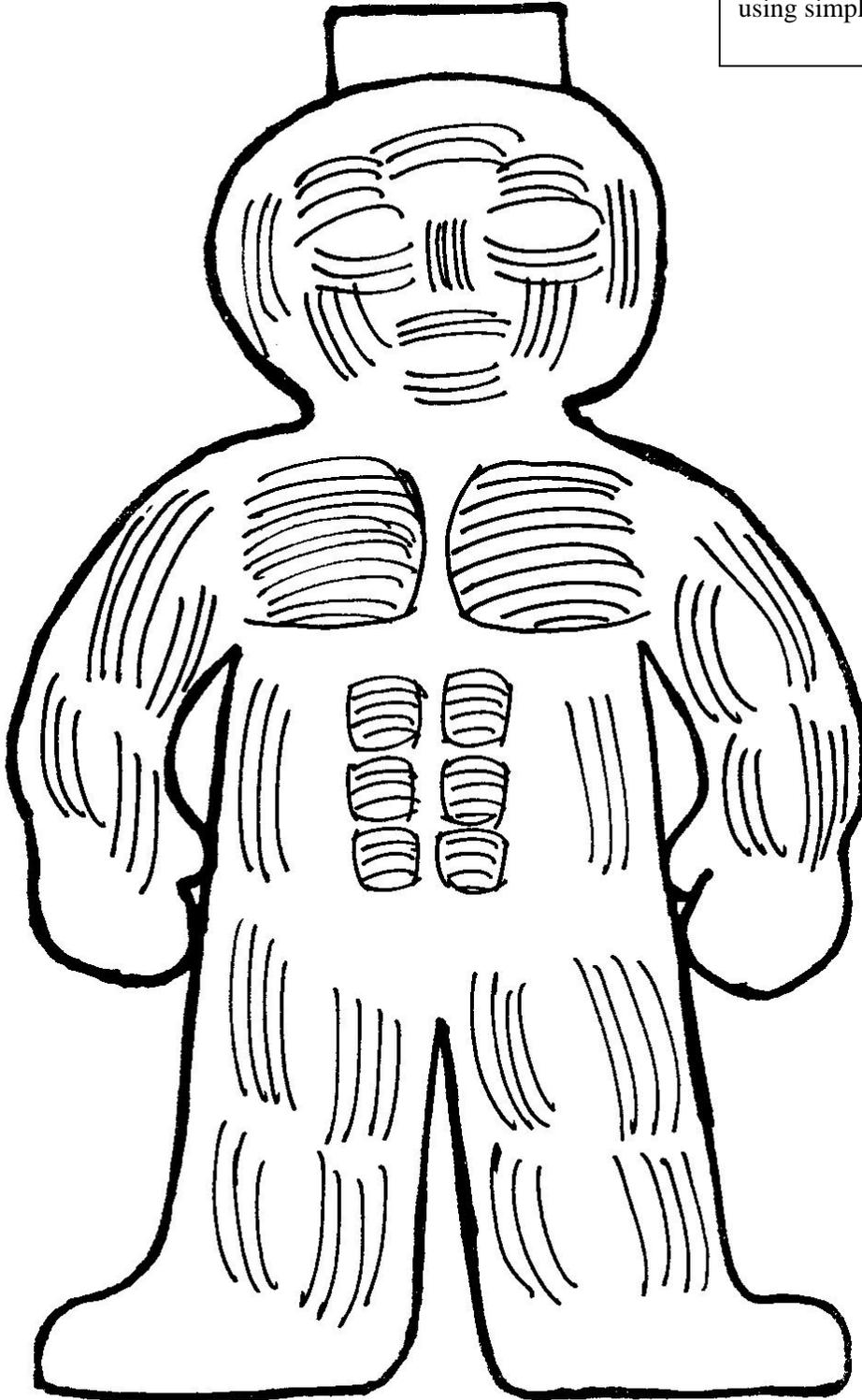
Guide for Completing Skeletal System Page of Body Book.



Appendix F-2

Guide for completing Muscular System page of Body Book.

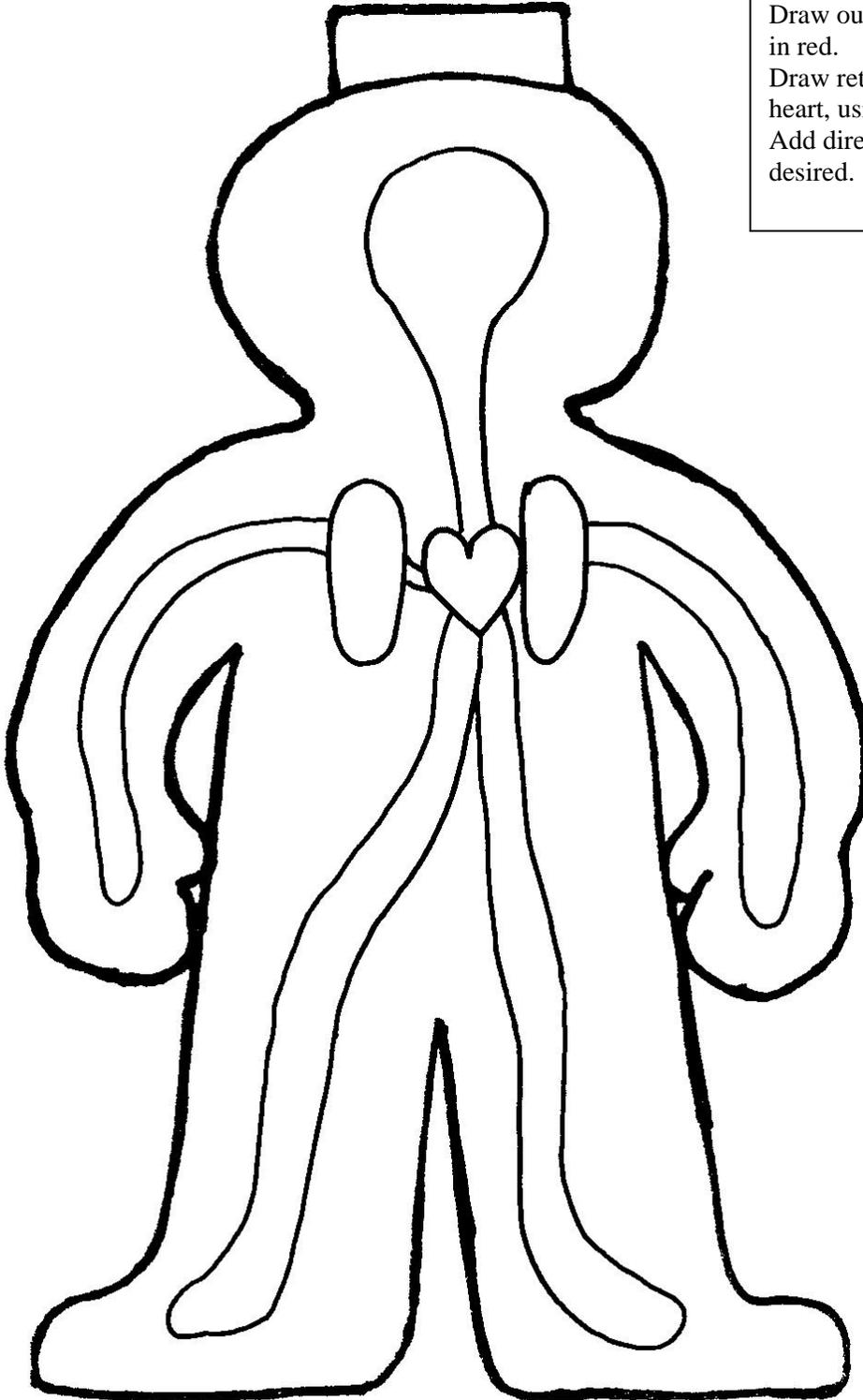
Directions for teacher modeling.
Draw muscles in template using simple red lines.



Appendix F-3

Guide for completing Circulatory System page of Body Book.

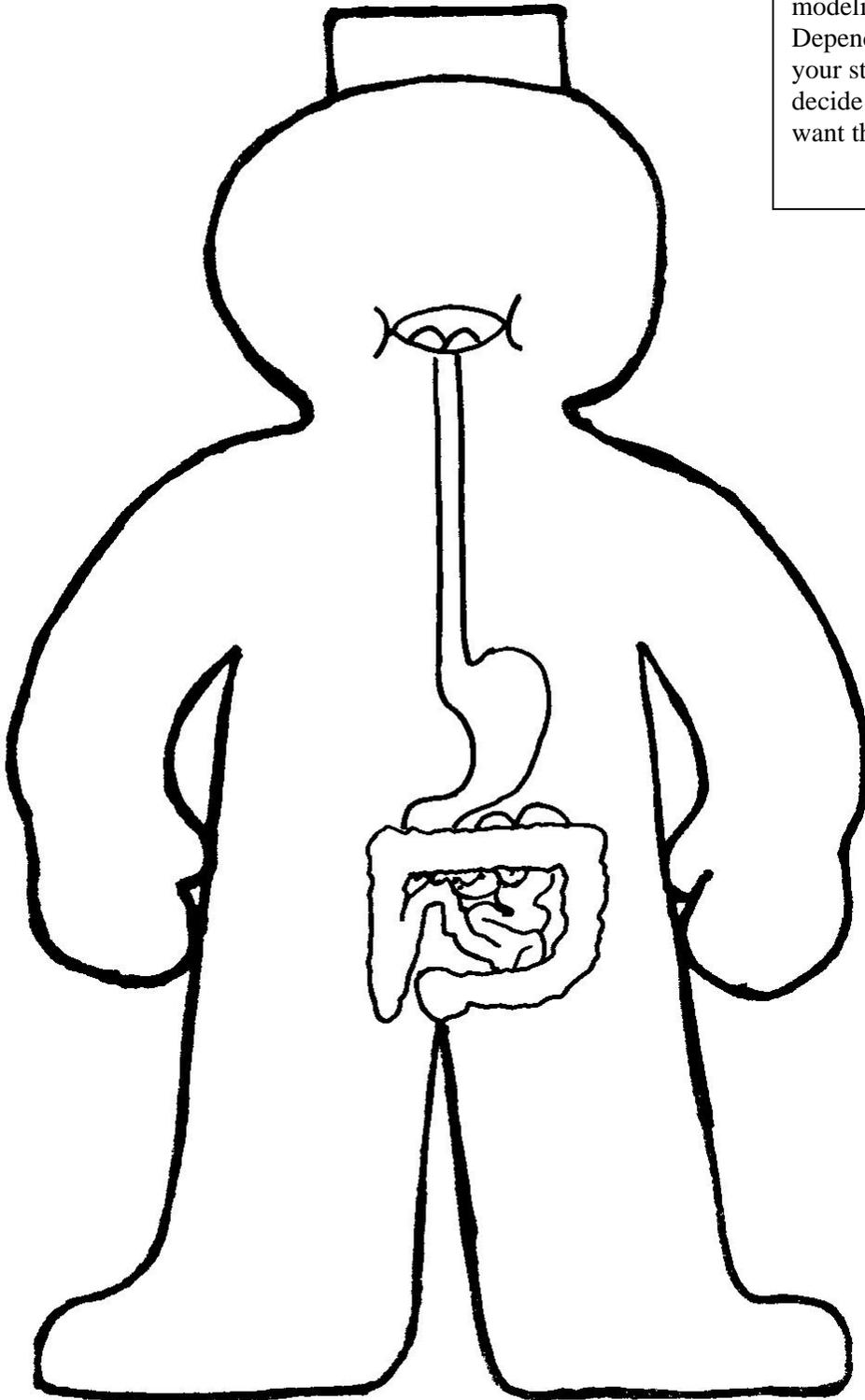
Directions for teacher modeling.
Draw outgoing blood veins in red.
Draw returning blood to the heart, using blue lines.
Add directional arrows as desired.



Appendix F-4

Guide for completing Digestive System page of Body Book.

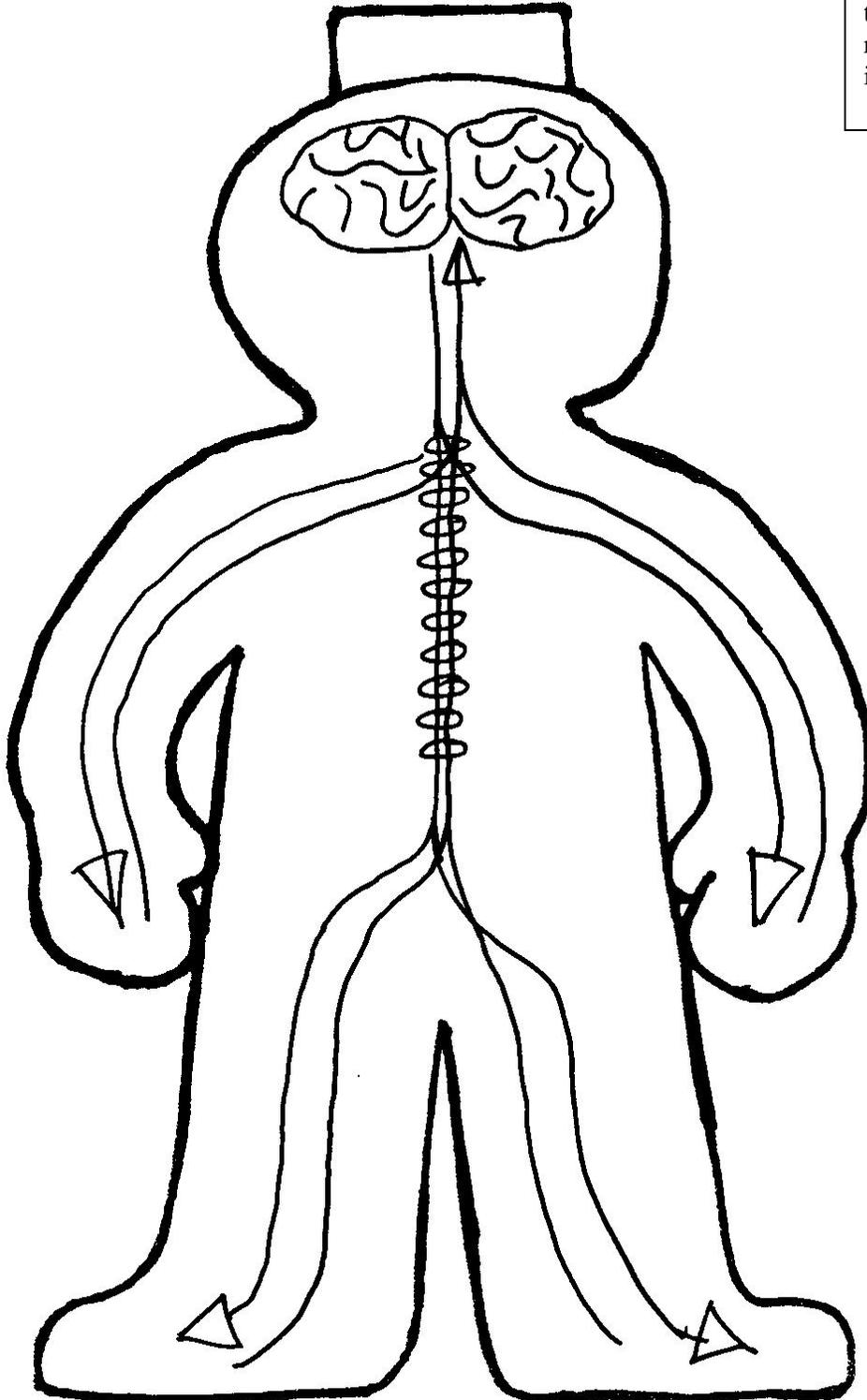
Directions for teacher modeling.
Depending on the ability of your students, you can decide how detailed you want this illustration.



Appendix F-5

Guide for completing Nervous System page of Body Book.

Directions for teacher modeling.
Choose two colors, other than red and blue, to represent outgoing and incoming messages.



Appendix G

Sample letter sent home for “My Shrinking Body” activity.

September 9, 2002

Parents/Guardians,

I need your assistance with an experiment. On **Tuesday** the class will be introduced to the **Skeletal System**. On **Wednesday** I will explain the experiment to the class. On **Thursday** the completed experiment will be due. This is just a fun experiment to go along with the **Skeletal System**, but a homework grade will be given for completion. I will talk about the spine and how it is the main supporter of the body. I will explain that at night while we are sleeping the vertebrae separate while we are lying down, but gravity pulls them together during the day when we stand or sit up. So, having now told you briefly what I am going to talk about, I need your help to measure your child. What I need you to do is:

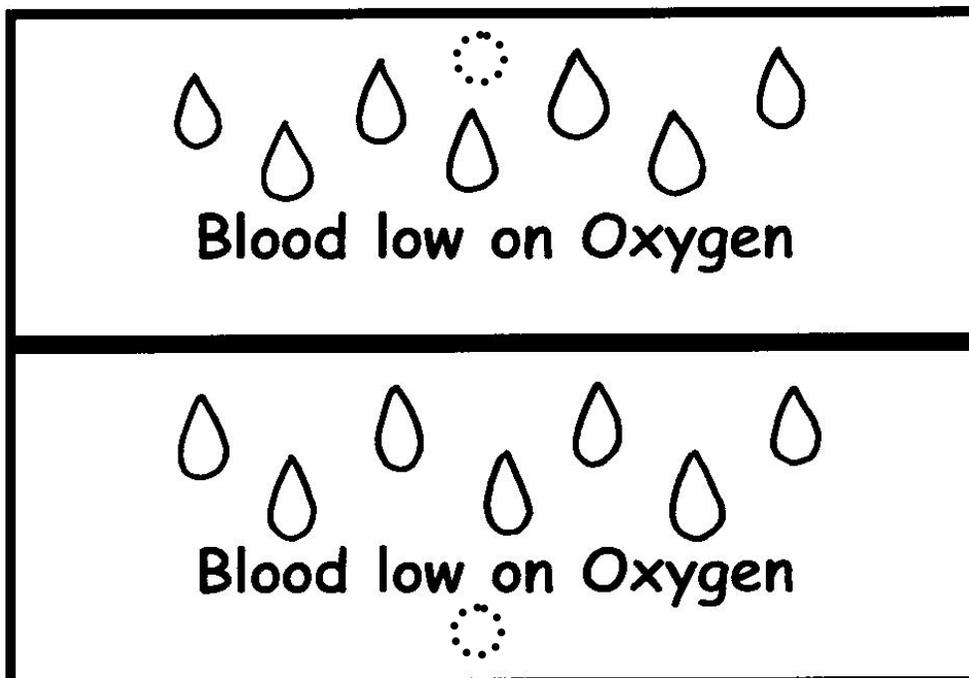
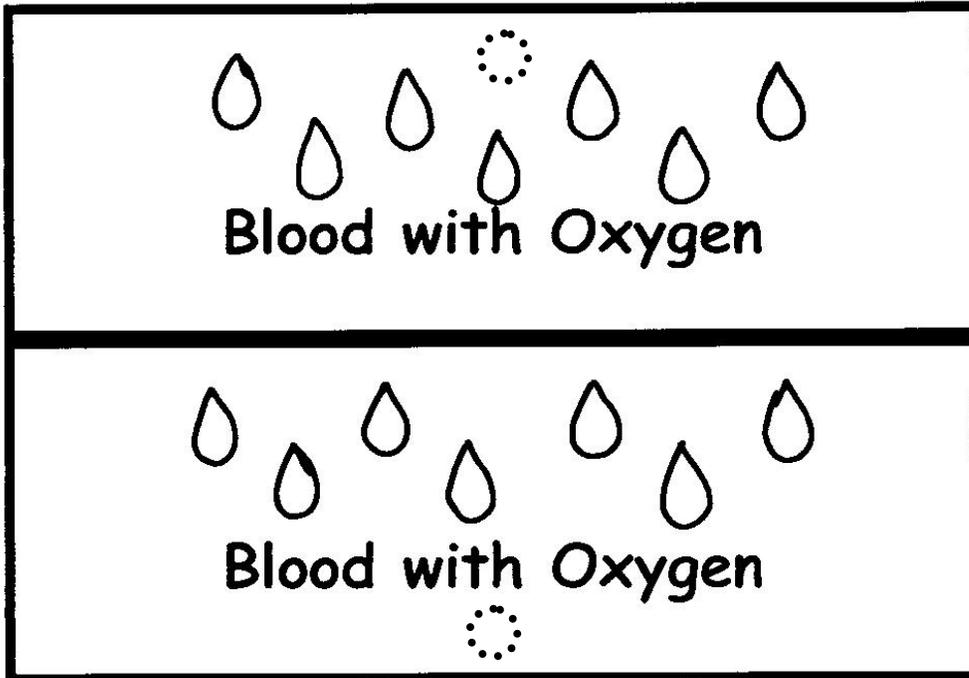
- ❖ On the day before the experiment, (**Tuesday**) hold a sheet of paper to the wall so that the top of their head is about even with the middle of the paper.
- ❖ Tape the paper to the wall.
- ❖ The next morning, as soon as you wake up, measure his/her height by standing against the wall with their head against the paper. Have he/she stand as straight as possible.
- ❖ Place a book on your child's head.
- ❖ Mark on the paper where the bottom of the book touches the paper. Write **MORNING** next to the mark.
- ❖ In the evening of that same day, measure their height again. Write **EVENING** next to the mark.
- ❖ Compare the morning and evening marks. The morning mark, in theory, should be a little higher than the evening mark.

Please make sure that he/she places this in their **Homework Folder** as soon as the evening marking is done. This must be returned on Thursday so that we can discuss our findings. Thank you for your support in making this a success.

Sincerely,
Mr. Todd

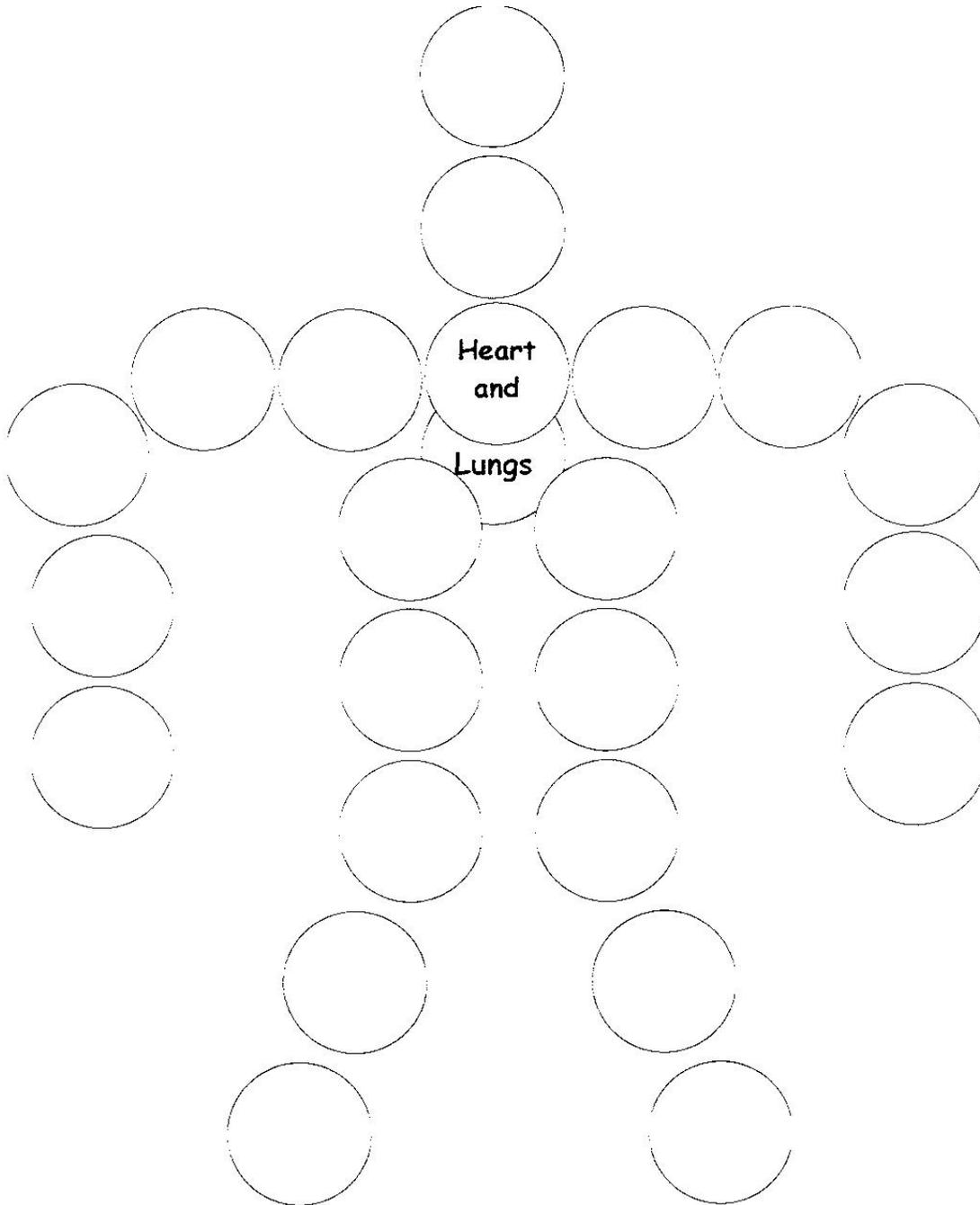
Appendix H

Copy cards front and back, so that one side is “Blood with Oxygen” and the other side is “Blood low on Oxygen”. Fold the cards in the middle. Affix self-sticking Velcro dots to each side to hold folded card together. Students will fold back the card, stick it together, and pass it showing the correct side to correlate the direction of blood flow.



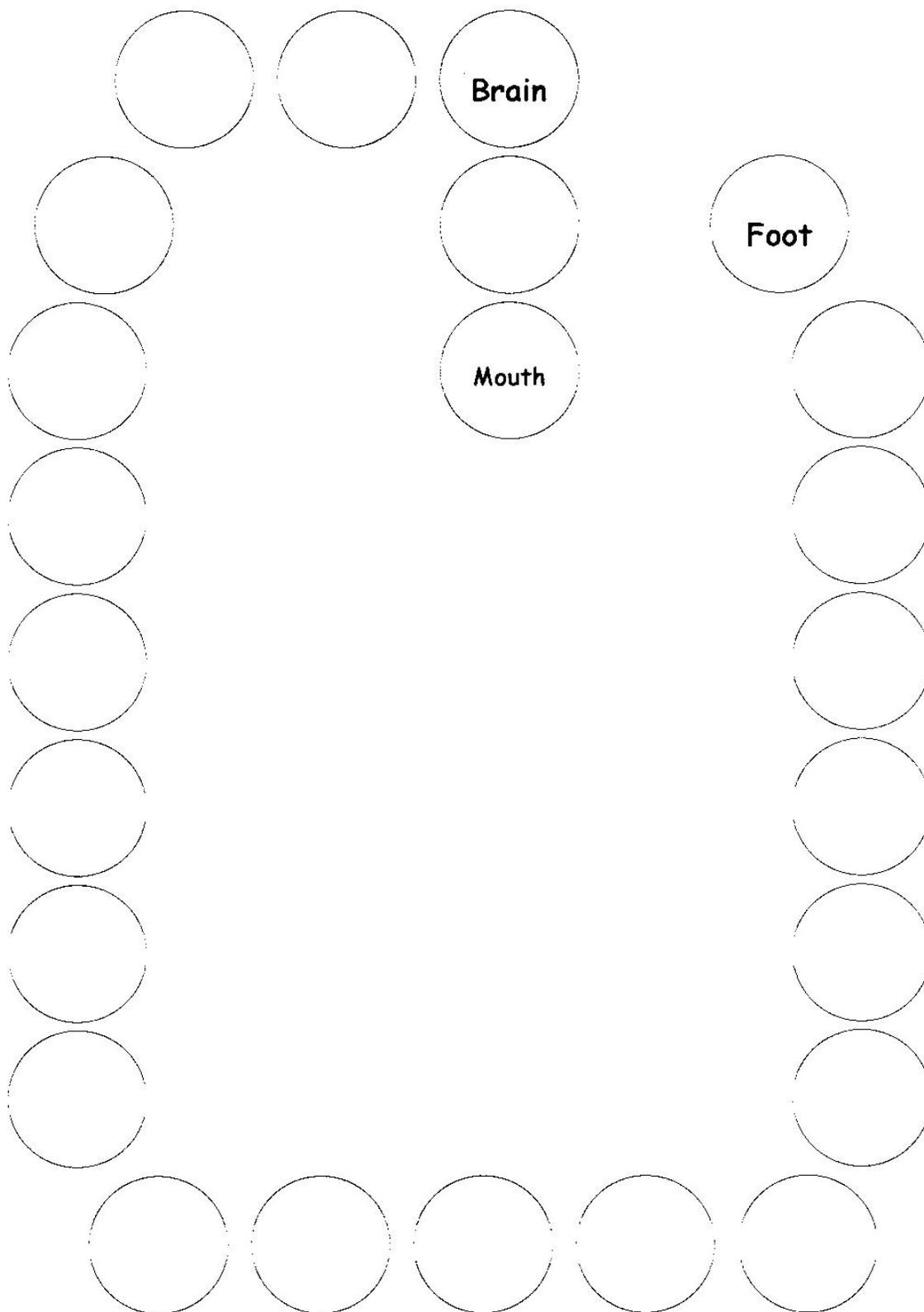
Appendix I

Diagram for circulation activity. Each circle represents a student.



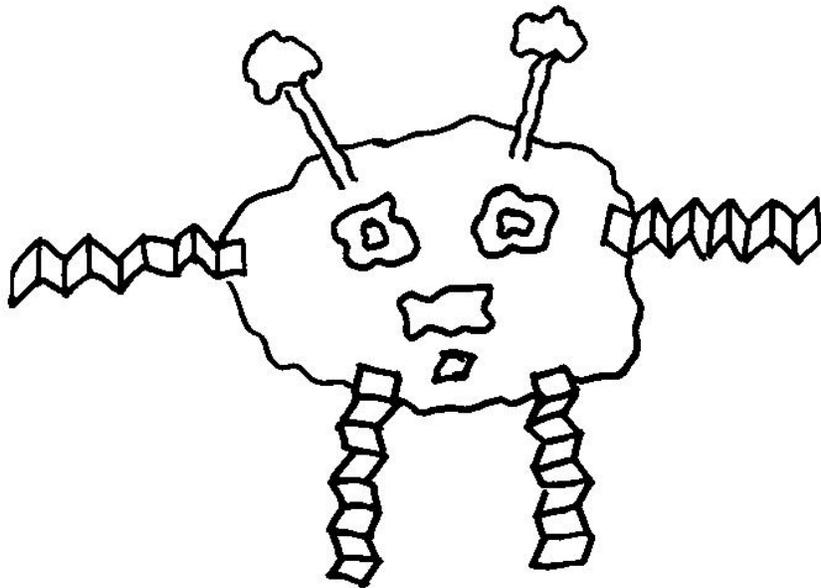
Appendix J

Diagram for nervous system activity. Each circle represents a student.



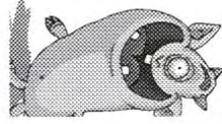
Make a Germ

Using scraps of construction paper and glue be creative in making your germ. Tear, or fold, various colors and shapes to make your creation. Be imaginative in making the eyes, tentacles, arms, legs, etc... **HAVE FUN!**

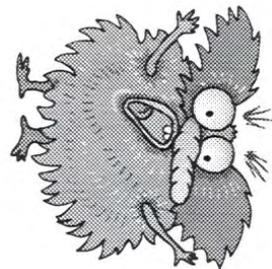
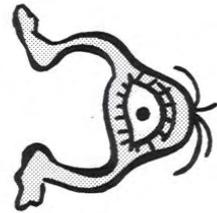


Appendix L

Sample Germ Poster

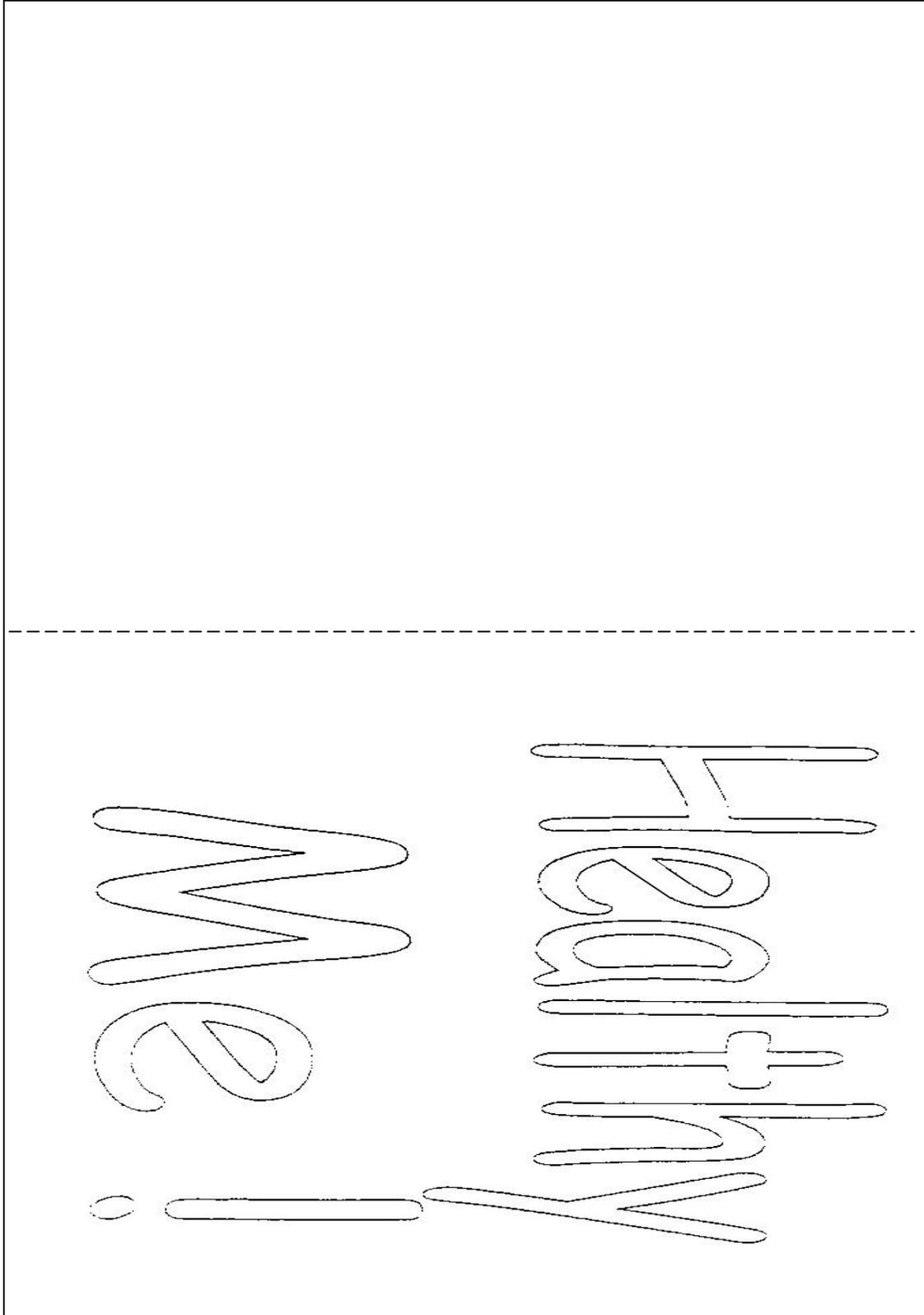


We're on the ground.
We're in the air.
We're GERMS
and we live everywhere!



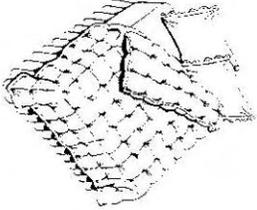
Appendix M-1

Copy Healthy Me! book pages, double sided...."I wash my hands." on one side...."I take baths!" on side two. Cover of book on one side of second sheet, and "I get lots of sleep." on side two of second sheet. (Enlarge to fill 8-1/2 x 11" paper.) Dotted line represents fold....booklet may not be scanned to scale.



Appendix M-2

I get lots of
s_l__p!i



Appendix M-3

<p>I get lots of exercise!</p> 	<p>I wa____ my h____ si</p> 
--	---

Appendix M-4

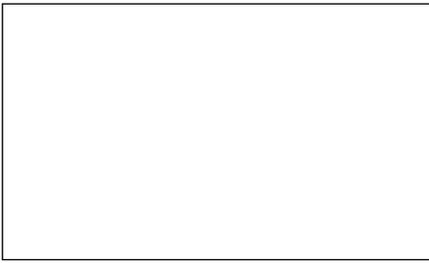
I take ba__si



I eat g__d food!

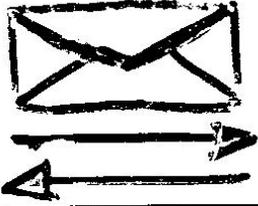


Appendix N-1

Body Systems	Function	Picture this..... (draw a picture clue)
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Appendix N-2

Key for 2-Column Notes

Body Systems	Use Your Words	Picture This
skeletal system	1. gives me shape 2. protects soft parts	
muscular system	1. moves me 2. pulls my bones	
nervous system	sends messages to and from the brain	
digestive system	food factory (processor)	
circulatory system	my heart pumps blood around and around my body	

Appendix O, page 1

Body Systems and Healthy Body Assessment

BODY SYSTEMS ASSESSMENT

Skeletal	Muscular	Digestive	Nervous	Circulatory
----------	----------	-----------	---------	-------------

1. Which body system helps us move? _____
2. Do muscles pull or push our bones? _____
3. Which body system gives us shape? _____
4. Which body system sends messages from the brain to all body parts?

5. Which body system helps the blood travel through our body?

6. Which body system is the food processor? _____
7. What does the word circulatory mean?
 - a. up and down
 - b. around and around
 - c. in and out
8. Where does the digestive process start?
 - a. in the stomach
 - b. in the mouth
 - c. in the intestines
9. What body part is the most important and controls the rest of the body?
 - a. heart
 - b. brain
 - c. skeleton
10. Which body system lets us use our five senses?
 - a. nervous system
 - b. circulatory system
 - c. muscular system

Appendix O, page 2

11. Circle the word or words if they describe a way to help keep our body healthy. X out the word, or words, if they do not help us to stay healthy. (9 points)

wash your hands

stay up late

exercise

get lots of sleep

take baths

eat lots of sugar

skip breakfast

eat healthy foods

share a toothbrush

12. Who is the scientist who discovered vaccinations?

a. George Washington

b. Edward Jenner

c. Louis Pasteur

13. What is a germ?

a. air

b. dirt

c. tiny living things

14. What tool do scientists use to see germs?

a. binoculars

b. telescope

c. microscope

15. What does the word "pasteurize" mean?

a. wash your dishes

b. heat a liquid to kill bad germs

c. brush your teeth

16. Who invented pasteurization?

a. Edward Jenner

b. Thomas Edison

c. Louis Pasteur

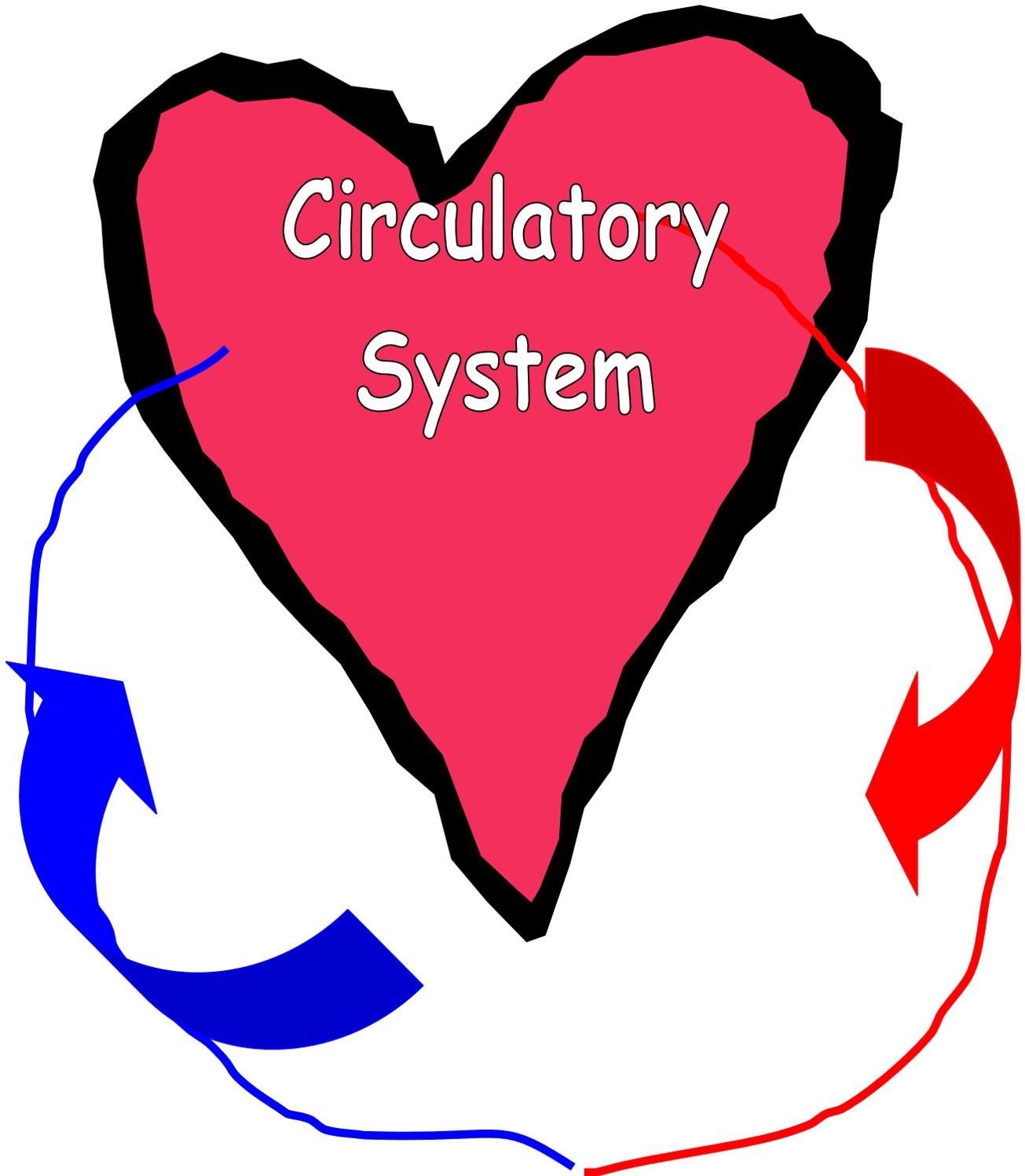
Assessment Key (Be sure to delete key before copying assessment)

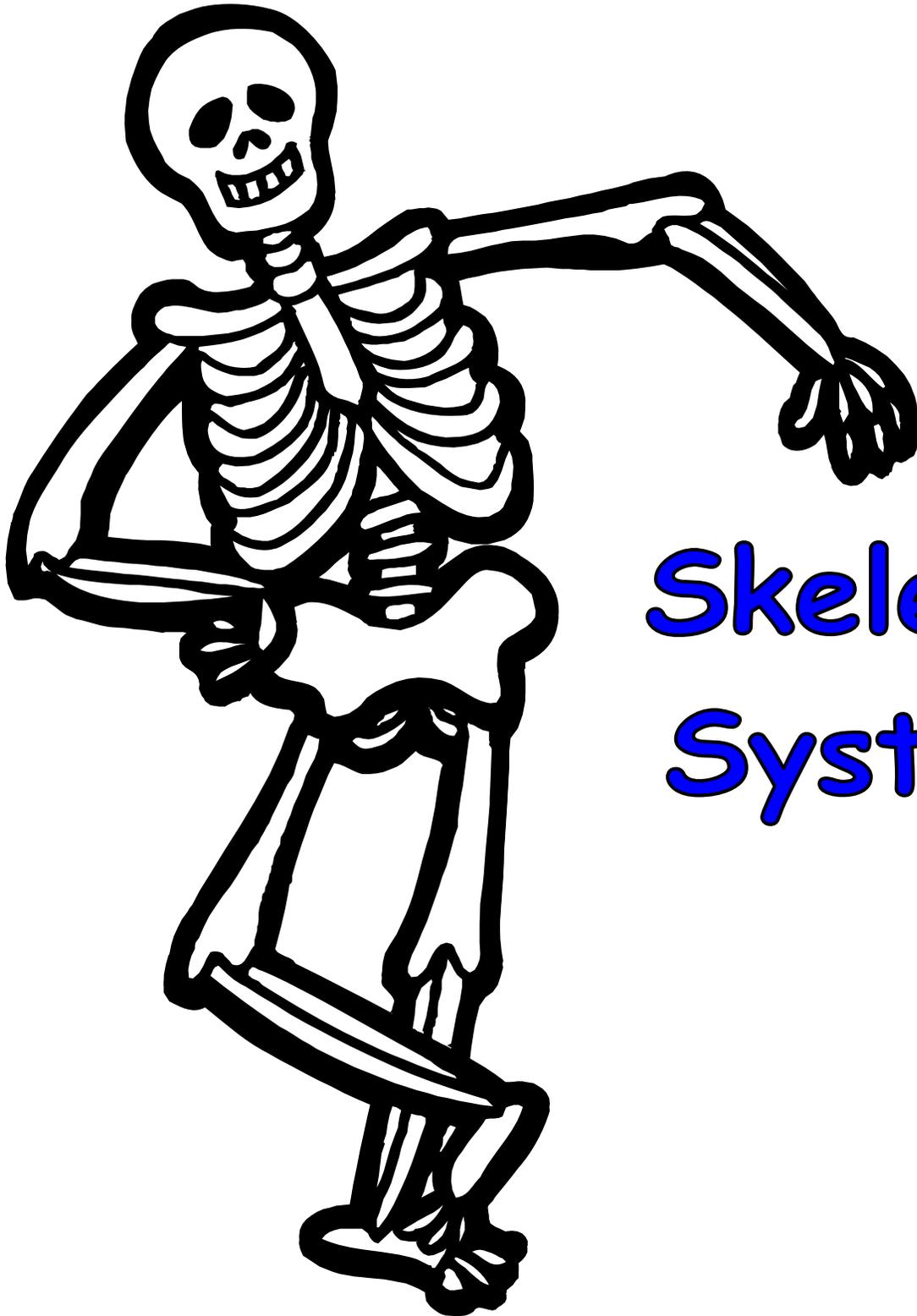
1. Muscular
2. pull
3. skeletal
4. nervous
5. circulatory
6. digestive
7. b. around and around
8. b. in the mouth
9. b. brain

10. a. nervous system
11. **Circle** - wash your hands/ exercise/ get lots of sleep/ take baths/ eat healthy foods
X out - stay up late/ eat lots of sugar/ skip breakfast/ share a toothbrush
12. b. Edward Jenner
13. c. tiny living things
14. c. microscope
15. b. heat a liquid to kill bad germs
16. c. Louis Pasteur

Appendix P

Samples of Posters to give visual aid to visual learners!





Skeletal System



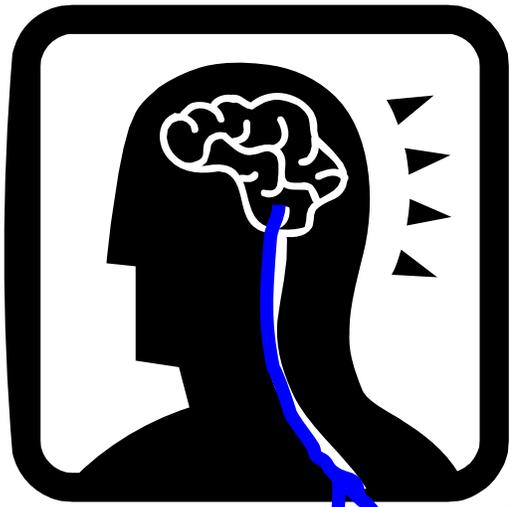
Digestive System



Musculatory System



Muscles move me!



Nervous System



Sends
and
Receives
Messages