Third Grade “The Human Body” Assessment

1a. The _______________ system is the system in the body that includes muscle cells and tissues that cause organs or body parts to move.
   a. nervous
   b. muscular

1b. The _______________ system is the system in the body that includes muscle cells and tissues that cause organs or body parts to move.
   a. skeletal
   b. nervous
   c. muscular
   d. digestive

1c. Explain what the muscular system is and what it does in the human body.

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2a. What are muscles, and what do they do in our bodies?
   a. they are the tissues that join bones together
   b. they are the tissues that make the body parts move

2b. What are muscles, and what do they do in our bodies?
   a. they are the tissues that join bones together
   b. they are the soft tissues inside the bones
   c. they are the tissues that make the body parts move
   d. they are tissues that connect the body to the brain

2c. Define muscles. What are they, and what function do they have in the body?

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3a. There are three kinds of muscles. Match each of the three kinds with the correct definition:
   skeletal a. the muscle forming the strong walls of the heart
   cardiac b. muscles attached to bones, allowing movement of limbs
   smooth c. muscles found in internal organs, helping with movement in the various body systems

3b. The _______________ muscles are those attached to our bones and make our limbs move, such as our arms and legs. The _______________ muscle is our heart muscle. The _______________ muscles are found in our internal organs and move on their own, such as in our circulatory or digestive systems.
3c. Name and describe each of the three kinds of muscle found in our bodies.
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________________________________________________________________________
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4a. _______________ muscles are muscles that you control, like the ones in your arms and legs. _______________ muscles work automatically on their own even if you are unaware of them, like the heart or the muscle that makes your eye blink.
   a. Voluntary; Involuntary
   b. Involuntary; Voluntary

4b. _______________ muscles are muscles that you control, like the ones in your arms and legs. _______________ muscles work automatically on their own even if you are unaware of them, like the heart or the muscle that makes your eye blink.
   a. Cardiac; Skeletal
   b. Voluntary; Involuntary
   c. Involuntary; Voluntary
   d. Smooth; Skeletal

4c. Explain the difference between voluntary and involuntary muscles. Give an example of each type.
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5a. The _______________ system, or ____________, is the framework of the body, or the system of bones that protects and supports the body and its internal organs and holds it together.
   a. skeletal; skeleton
   b. muscular; muscle

5b. The _______________ system, or ____________, is the framework of the body, or the system of bones that protects and supports the body and its internal organs and holds it together.
   a. muscular; muscle
   b. skeletal; skeleton
   c. nervous; nerve
   d. digestive; intestine

5c. Explain, in your own words, what the skeletal system, or skeleton, is and what it does in the human body.
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________________________________________________________________________
________________________________________________________________________
6a. One of the pieces of hard and dense material that supports the rest of the body is called _________________. A soft, flexible tissue found in the joints is called _________________.
   a. bone; cartilage
   b. cartilage; bone

6b. One of the pieces of hard and dense material that supports the rest of the body is called _________________. A soft, flexible tissue found in the joints, where it cushions against shock, is called _________________.
   a. cartilage; a bone
   b. tissue; a bone
   c. tissue; cartilage
   d. a bone; cartilage

6c. Explain the difference between bone and cartilage.
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

7a. ________________ is the soft tissue inside bones where red blood cells are made.
   a. cartilage
   b. marrow

7b. ________________ is the soft tissue inside bones where red blood cells are made.

7c. List two facts you know about bone marrow.
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

8a. Bones are fastened together at the joints by bands of tissue called _________________.
   Muscles are connected to the bones by strong pieces of tissue known as _________________.
   a. tendons; ligaments
   b. ligaments; tendons

8b. Bones are fastened together at the joints by bands of tissue called _________________.
   Muscles are connected to the bones by strong pieces of tissue known as _________________.
   a. tendons; ligaments
   b. cartilage; ligaments
   c. tendons; cartilage
   d. ligaments; tendons
8c. Label this diagram of the arm with the following parts: ligament, tendon, bone. Spell them correctly.

9a. The _______________ ________________ is named after a legendary Greek hero who could only be wounded in his heel.
   a. Zeus tendon
   b. Achilles tendon

9b. The _______________ ________________ is named after a legendary Greek hero who could only be wounded in his heel.

9c. Explain how the Achilles tendon received its name.

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________________________________________________________________________
10a. Label the following bones on the picture of the skeleton: cranium (skull), spinal column, vertebrae, ribs, rib cage, sternum, scapula (shoulder blades), pelvis, tibia, fibula.

_________________________
_________________________
_________________________
_________________________
_________________________
_________________________
_________________________
_________________________
_________________________
_________________________
10b. Label the following bones on the picture of the skeleton: cranium (skull), spinal column, vertebrae, ribs, rib cage, sternum, scapula (shoulder blades), pelvis, tibia, fibula.

Use skeleton from 10a.

10c. Draw (stick-figure drawings are fine) and label the following bones: cranium (skull), spinal column, vertebrae, ribs, rib cage, sternum, scapula (shoulder blades), pelvis, tibia, fibula. Then choose three of the bones and write one fact about each of them.

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11a. One of the functions of bones is protection of internal organs. Match each bone to the body part it protects.

   _____ cranium                          a. spinal cord
   _____ spinal column                    b. lungs and heart
   _____ rib cage                          c. brain

11b. The ______________ offers protection to the brain, the spinal column gives protection to the ______________, and the rib cage protects the ______________.
11c. What common functions do the cranium, the spinal column, and the rib cage all share? Explain in your own words.
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________________________________________________________________________

12a. Which of the following is true (circle the true answer)?
   a. Ribs are bone or cartilage segments forming the spinal column.
   b. Vertebrae are bone or cartilage segments forming the spinal column.

12b. The bone or cartilage segments forming the spinal column are called_______________.
   a. ribs
   b. muscle
   c. nerves
   d. vertebrae

12c. Explain the difference between ribs and vertebrae.
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________________________________________________________________________
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13a. A place in the body where two bones meet is called a _________________.
   a. ligament
   b. joint

13b. A place in the body where two bones meet is called a _________________.

13c. Define a joint and name two kinds of joints.
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________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

14a. There are several kinds of movable joints that allow body parts to move. ________________ joints give movement to elbows and knees. ________________ joints help our shoulders and hips to move.
   a. Hinge; Ball and socket
   b. Ball and socket; Hinge

14b. There are several kinds of movable joints that allow body parts to move. Match each body part with the corresponding joint:
   _______elbow
   _______shoulder          a. hinge
   _______knee              b. ball and socket
   _______hip
14c. Name two kinds of joints and the body parts they move:

<table>
<thead>
<tr>
<th>Kind of Joint</th>
<th>Body Part They Move</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
</tbody>
</table>

15a. The form of energy used by doctors to take pictures of the inside of the body (so they can see things that might be wrong) is called _________________________.
   a. light
   b. an x-ray

15b. Which of the following facts about x-rays is NOT true?
   a. an x-ray is a form of energy like light, but it can go through many surfaces that would stop light
   b. doctors use x-rays to take pictures of the inside of the body so they can see things that might be wrong
   c. an x-ray is the same as an ultra-violet ray
   d. a photograph taken with an x-ray is called an x-ray

15c. Describe the connection between broken bones and x-rays.
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16a. Helmets, knee pads, safety belts, and good nutrition are all ways to help prevent _________________________.
   a. broken bones
   b. sleepless nights

16b. Helmets, knee pads, safety belts, and good nutrition are all ways to help prevent _________________________.

16c. List three ways to help prevent broken bones:
   1. __________________________________________________________________
   2. __________________________________________________________________
   3. __________________________________________________________________

17a. There are three parts that make up the nervous system. They are the brain, the spinal cord, and _________________________.
   a. muscles
   b. nerves
17b. There are three parts that make up the nervous system. Check the three parts from the following choices:
   a. _____muscles
   b. _____bones
   c. _____brain
   d. _____spinal cord
   e. _____nerves
   f. _____intestines

17c. List the three parts of the nervous system:
   1. __________________________________________________________________
   2. __________________________________________________________________
   3. __________________________________________________________________

18a. The nervous system
    a. takes in all the information coming from the senses, and arranges it for us
    b. supports the body, and is the glue that holds it all together

18b. The nervous system
    a. takes in all the information coming from the senses, and arranges it for us
    b. supports the body, and is the glue that holds it all together
    c. allows us to breathe
    d. takes in food and breaks it down so it can be used by the body

18c. Describe how the nervous system can be compared to a busy airport.
    __________________________________________________________________
    __________________________________________________________________
    __________________________________________________________________

19a. Label this diagram of the brain with its three parts: medulla (brain stem), cerebellum, cerebrum (cerebral cortex). Spell them correctly.
19b. Identify and label the three parts of the brain.

1. __________________________________________________________________
2. __________________________________________________________________
3. __________________________________________________________________

20a. There are two parts of the brain working all the time, even when we don’t know it. The______________ keeps your heartbeat and your breathing regular. The _______________ coordinates your muscles and gives you balance.

a. medulla; cerebellum
b. cerebellum; medulla
20b. There are two parts of the brain working all the time, even when we don’t know it. The_______________ keeps your heartbeat and your breathing regular. The _______________ coordinates your muscles and gives you balance.

a. medulla; cerebrum  
b. cerebellum; medulla  
c. medulla; cerebellum  
d. cerebrum; medulla

20c. Explain how the medulla (brain stem) and the cerebellum are similar and how they are different.

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________________________________________________________________________
________________________________________________________________________

21a. The part of the brain that controls thinking, sensing, and moving is known as the _________________. It is in control when we are aware of our world. The outer coiled gray matter making up most of this part of the brain is called the _________________.

a. cerebrum; cerebral cortex  
b. medulla; brain stem

21b. The part of the brain that controls thinking, sensing, and moving is known as the _________________. It is in control when we are aware of our world. The outer coiled gray matter making up most of this part of the brain is called the _________________.

a. cerebrum; cerebral cortex  
b. medulla; brain stem  
c. medulla; cerebral cortex  
d. cerebrum; brain stem

21c. The part of the brain that controls thinking, sensing, and moving is known as the _________________. It is in control when we are aware of our world. The outer coiled gray matter making up most of this part of the brain is called the _________________.

22a. Match the items in the first column with the corresponding part of the brain from the second column:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Part of the Brain</th>
</tr>
</thead>
<tbody>
<tr>
<td>play a game</td>
<td>a. cerebrum</td>
</tr>
<tr>
<td>balance on a bicycle</td>
<td>b. medulla</td>
</tr>
<tr>
<td>breathe</td>
<td>c. cerebellum</td>
</tr>
<tr>
<td>read a book</td>
<td></td>
</tr>
<tr>
<td>balance on skates</td>
<td></td>
</tr>
</tbody>
</table>
22b. List a job for each of the three main parts of the brain:
   cerebrum _______________________________________________________________
   medulla _________________________________________________________________
   cerebellum _______________________________________________________________

22c. List the three main parts of the brain, and describe the job each one does.
   _______________________________________________________________________
   _______________________________________________________________________
   _______________________________________________________________________

23a. What is the spinal cord?
   a. a long piece of muscle that connects the head to the rest of the body
   b. a long piece of nerve tissue that runs from the brain down through the backbone

23b. A long piece of nerve tissue that runs from the brain down through the backbone is called the ___________ ____________.

23c. Describe the spinal cord.
   _______________________________________________________________________
   _______________________________________________________________________
   _______________________________________________________________________

24a. What are nerves, and what do they do in the body?
   a. tiny fibers found in the spinal cord and all over the body that send messages to the brain
   b. tiny fibers found in the spinal cord and all over the body that hold the bones in place

24b. Which of the following is NOT true?
   a. Nerves pick up information and send it up the spinal cord to the brain.
   b. Nerves tell us when we are seeing, feeling, hearing, smelling, or touching something.
   c. Nerves are tiny fibers found in the spinal cord and all over the body that hold the bones in place.
   d. Nerves are tiny fibers found in the spinal cord and all over the body that send messages to the brain.

24c. Define nerves and tell what they do in the body.
   _______________________________________________________________________
   _______________________________________________________________________
   _______________________________________________________________________

25a. A ________________ is a quick action that happens so fast we cannot even think about it, such as moving our finger after touching a hot stove.
   a. repeat
   b. reflex
25b. Mark the following items if they are REFLEX actions, or ones happening so fast that a person cannot think about them.
   _____ dodge a ball
   _____ cross a street
   _____ pull your arm away from a hot iron
   _____ go shopping
   _____ jump at the sound of thunder

25c. Explain what happens when you dodge a ball. Give the name for this action and why it happens.
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________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

26a. Label the following parts of the eye: cornea, iris, pupil, lens, retina. Spell these correctly.

26b. Match each of the parts of the eye from the first column with the definitions in the second column:
   _____ cornea    a. dark opening in the eye through which light enters
   _____ iris      b. transparent, see-through covering on outside of eye
   _____ pupil     c. part of the eye that focuses light rays onto the retina
   _____ lens      d. a layer of tissue at the back of the eye
   _____ retina    e. colored part of the eye
26c. Label the eye and choose three parts to define in your own words.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

27a. Number the following steps IN ORDER to describe how the eye works.

_____ The retina sends the upside-down picture to the optic nerve.
_____ Light passes through the cornea, and then through the pupil, and finally through the lens.
_____ The optic nerve sends the upside-down picture to the brain where the picture is flipped right-side up and we see.
_____ The light is focused on the retina, at the back of the eye, where it forms an upside-down picture.

27b. In the following explanation of how the eye works, fill in the missing steps (in your own words).

a. Light passes through the cornea, and then through the pupil, and finally through the lens.

b. 

c. The retina sends the upside-down picture to the optic nerve.

d. 

e. We see.

27c. Explain the steps for how the eye works.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
28a. The _______________ ____________ connects the eye to the brain and carries messages there which the brain interprets so we can see.
   a. spinal cord
   b. optic nerve

28b. Which of the following is NOT true?
   a. The optic nerve connects the eye to the brain.
   b. The optic nerve carries messages from the eye to the brain.
   c. The brain interprets the messages from the eye so we can see.
   d. The optic nerve carries messages all over the body.

28c. List at least two facts about the optic nerve.
   1. ___________________________________________________________________
   2. ___________________________________________________________________

29a. The iris makes the pupil ________________ when light is dim so we can see better in the dark. The iris makes the pupil ________________ in bright light to protect our eye from too much light.
   a. bigger; smaller
   b. smaller; bigger

29b. The iris makes the pupil bigger when light is ________________ so we can see better in the dark. The iris makes the pupil smaller when light is ___________ to protect our eye from too much light.
   a. dim; bright
   b. bright; dim

29c. Explain why your pupil gets bigger when light is dim, and smaller when the light is bright.
   ___________________________________________________________________
   ___________________________________________________________________

30a. __________________ is an eye problem that causes distant objects to appear distinct while nearby objects look fuzzy. __________________ is an eye problem that causes nearby objects to be clear but distant objects appear fuzzy.
   a. farsightedness; nearsightedness
   b. nearsightedness; farsightedness

30b. __________________ is an eye problem that causes distant objects to appear distinct while nearby objects look fuzzy. __________________ is an eye problem that causes nearby objects to be clear but distant objects appear fuzzy.

30c. Explain the difference between nearsightedness and farsightedness.
   ___________________________________________________________________
   ___________________________________________________________________
   ___________________________________________________________________
31a. Sound is caused by __________________, which is movement back and forth very fast.
   a. locomotion
   b. vibration

31b. Sound is caused by __________________, which is movement back and forth very fast.
   a. locomotion
   b. nodding
   c. waving
   d. vibration

31c. Describe what causes sound.
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________________________________________________________________________
________________________________________________________________________

32a. Label the following parts of the ear: outer ear, eardrum, cochlea, auditory nerve, hammer, ear canal, stirrup, anvil.

32b. Match each of the parts of the ear in the first column with the correct definition in the second column.

   ____ outer ear  a. ear bones inside the ear
   ____ ear canal b. passage that leads from the opening of
   ____ eardrum the ear to the inner part of the ear
   ____ hammer, anvil, stirrup c. nerve that connects inner ear to the brain
   ____ cochlea and carries messages to the brain
   ____ auditory nerve d. opening of the ear through which sound
                     waves enter the ear
   ____ thin skin that stretches across inner end e. eardrum
   ____ spiral-shaped organ filled with liquid f. small hairs which are sensitive to
        and small hairs which are sensitive to vibrations
32c. Label the following parts of the ear: outer ear, eardrum, cochlea, auditory nerve, hammer, ear canal, stirrup, anvil. Then choose three parts (the three bones only count as one part) to describe in your own words.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

33a. Number the following steps IN ORDER to describe how we hear:

_____ Sound waves enter our ear through the outer ear and travel down the ear canal to the eardrum.
_____ The vibrations in the little bones inside the ear vibrate the liquid and the little hairs found in the cochlea.
_____ The auditory nerve sends a signal to the brain and we hear.
_____ The sound waves make the eardrum vibrate.
_____ Through the vibrations in the hairs in the cochlea connections are made with the auditory nerve.
_____ The vibrations of the eardrum cause vibrations in the hammer, anvil, and stirrup (the little bones in the ear).

33b. In the following explanation of how we hear, fill in the missing steps (in your own words).
a. Sound waves enter our ear through the outer ear and travel down the ear canal to the eardrum.
b. 
c. Vibrations begin in the hammer, anvil, and stirrup, the little bones of the ear.
d. 
e. Vibrations in the hairs of the cochlea make connections with the auditory nerve.
f. 
g. We hear.
33c. Explain the steps for how we hear:

________________________________________________________________________
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________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

The following Colorado Model Content Standards are covered in this assessment by the questions indicated:

Questions 1a, 1b, 1c, 2a, 2b, 2c, 3a, 3b, 3c, 4a, 4b, 4c, 5a, 5b, 5c, 6a, 6b, 6c, 7a, 7b, 7c, 8a, 8b, 8c, 9a, 9b, 9c, 10a, 10b, 10c, 11a, 11b, 11c, 12a, 12b, 12c, 13a, 13b, 13c, 14a, 14b, 14c, 15a, 15b, 15c, 16a, 16b, 16c, 17a, 17b, 17c, 18a, 18b, 18c, 19a, 19b, 19c, 20a, 20b, 20c, 21a, 21b, 21c, 22a, 22b, 22c, 23a, 23b, 23c, 24a, 24b, 24c, 25a, 25b, 25c, 26a, 26b, 26c, 27a, 27b, 27c, 28a, 28b, 28c, 29a, 29b, 29c, 30a, 30b, 30c, 31a, 31b, 31c, 32a, 32b, 32c, 33a, 33b, 33c: Standard K-4.3.3.a describing human body systems *(for example, digestive, respiratory, circulatory, skeletal, muscular)*
Answer Key

1a. b. muscular  
1b. c. muscular  
1c. Acceptable answers could include:  
-the system in the body that includes muscle cells and tissues that cause organs or body parts to move

2a. b. they are the tissues that make the body parts move  
2b. c. they are the tissues that make the body parts move  
2c. Acceptable answers could include:  
-tissues that make the body parts move

3a. b, a, c  
3b. skeletal, cardiac, smooth  
3c. Acceptable answers could include (in any order):  
-skeletal-muscles attached to our bones which make our limbs move, such as arms and legs  
-cardiac-muscle forming strong walls of the heart, or simply heart muscle  
-smooth-muscles found in internal organs which move on their own, such as moving the blood in the circulatory system or food in the digestive system

4a. a. Voluntary; Involuntary  
4b. b. Voluntary; Involuntary  
4c. Acceptable answers could include (in any order):  
-voluntary-muscles that you control like in your arms or leg  
-involuntary-muscles that work automatically on their own like your heart beating or breathing or blinking an eye

5a. a. skeletal; skeleton  
5b. b. skeletal; skeleton  
5c. Acceptable answers could include:  
-the framework of the body  
-system of bones that protects and supports the body and its internal organs  
-system of bones that holds the body together

6a. a. bone; cartilage  
6b. d. a bone; cartilage  
6c. Acceptable answers could include:  
-bone-one of the pieces of hard, dense material that supports the rest of the body  
-cartilage-soft, flexible tissue found in the joints where it cushions against shock

7a. b. marrow  
7b. Marrow
7c. Acceptable answers could include:
- soft tissue inside the bones
- where red blood cells are made

8a. b. ligaments; tendons
8b. d. ligaments; tendons
8c.

9a. b. Achilles tendon
9b. Achilles tendon
9c. Acceptable answers could include:
- named after the legendary Greek hero who could be wounded only in the heel
- a tendon connecting the heel bone with the calf muscle of the leg
10a.

- cranium
- spinal column
- vertebrae
- rib cage
- sternum
- scapula
- ribs
- pelvis
- fibula
- tibia
10b. See 10a.

10c. See 10a.
Acceptable answers could include (but must include at least three of these):
- cranium-skull; protects the brain
- spinal column-spine; backbone; protects the spinal cord
- vertebrae-bone or cartilage segments forming the spinal column
- ribs-series of curved bones in the chest attached to the spinal column
- rib cage-bone structure formed by the ribs protecting the lungs and heart
- sternum-breastbone
- scapula-shoulder blade
- pelvis-bowl-shaped group of bones connecting the trunk of the body to the legs and supporting the spine
- tibia-inner, larger of the two bones in lower part of human leg, from the knee to the ankle
- fibula-outer, smaller of the two bones in lower part of human leg, between the knee and ankle

11a. c, a, b
11b. cranium, spinal cord, lungs and heart
11c. Acceptable answers could include:
- protection-each one protects certain organs in the body

12a. b. Vertebrae are bone or cartilage segments forming the spinal column.
12b. d. vertebrae
12c. Acceptable answers could include:
- vertebrae are the bone or cartilage segments making up the spinal column
- vertebrae help make up the spinal column
- ribs are the curved bones in the chest
- ribs are attached to the spinal column

13a. b. joint
13b. joint
13c. Acceptable answers could include:
- joint-a place in the body where two bones meet
- ball-and-socket
- hinge

14a. a. Hinge; Ball and socket
14b. a, b, a, b
14c. Acceptable answers could include:
- hinge; knees, elbows
- ball-and-socket; shoulder, hip

15a. b. an x-ray
15b. c. an x-ray is the same as an ultra-violet ray
15c. Acceptable answers could include:
-doctors use x-rays to take pictures (also called x-rays) of the inside of the body so they can see things like broken bones

16a. a. broken bones
16b. broken bone
16c. Acceptable answers could include:
-wear a helmet
-wear knee and elbow pads
-buckle you safety belt
-eat healthy nutritious foods that contain calcium

17a. b. nerves
17b. c, d, e
17c. brain, spinal cord, nerve

18a. a. takes in all the information coming from the senses, and arranges it for us
18b. a. takes in all the information coming from the senses, and arranges it for us
18c. Acceptable answers could include:
-information is constantly coming into and out of the control tower, or the brain
-the information goes down the main runway, or the spinal cord
-it goes down many other runways, or the nerves

19a.

19b. See 19a.
19c. See 19a.
Acceptable answers could include:
-medulla-brain stem (connects cerebrum with the spinal cord); works all the time; controls digestion, heartbeat, breathing, body temperature, and other body functions
-cerebellum-works all the time; controls balance, posture, and coordination
-cerebrum-largest part of the brain; controls thinking, sensing, and moving

20a. a. medulla; cerebellum
20b. c. medulla; cerebellum
20c. Acceptable answers could include:
   - similar-they work even when we don’t know it
   - different-control different parts of the body; medulla controls various body functions, while the cerebellum controls balance and coordination

21a. a. cerebrum; cerebral cortex
21b. a. cerebrum; cerebral cortex
21c. cerebrum; cerebral cortex

22a. a, c, b, a, c
22b. Acceptable answers could include:
   - cerebrum-smell a flower, do an addition problem, tell Mom that Grandma called, taste and orange, etc.
   - medulla-cause the heart to pump, breathe faster when jogging, make the stomach muscles work, etc.
   - cerebellum-balance on a bicycle, walk on a tightrope, etc.

22c. Acceptable answers could include:
   - medulla- controls digestion, heartbeat, breathing, body temperature, and other body functions
   - cerebellum- controls balance, posture, and coordination
   - cerebrum- controls thinking, sensing, and moving

23a. b. a long piece of nerve tissue that runs from the brain down through the backbone
23b. spinal cord
23c. Acceptable answers could include:
   - a long piece of nerve tissue that runs through the brain sown through the backbone
   - one of the three major parts of the nervous system
   - comparable to the main runway at an airport

24a. a. tiny fibers found in the spinal cord and all over the body that send messages to the brain
24b. c. Nerves are tiny fibers found in the spinal cord and all over the body that hold the bones in place.
24c. Acceptable answers could include:
   - tiny fibers found in the spinal cord and all over the body
   - they send messages to the brain

25a. b. reflex
25b. dodge a ball, pull your arm away from a hot iron, jump at the sound of thunder
25c. Acceptable answers could include:
   - nerves in your spine and brain act really fast to protect yourself
   - you react before you have time to think
   - this is a reflex action
26a. lens

26b. b, e, a, c, d
26c. See 26a for correct labels.
Acceptable answers could include any three of the following:
- cornea-transparent, see-through covering on outside of eye
- iris-colored part of the eye
- pupil-dark opening in the eye through which light enters
- lens-part of the eye that focuses light rays onto the retina
- retina-a layer of tissue at the back of the eye

27a. 3, 1, 4, 2
27b. Acceptable answers could include:
  b. the light is focused on the retina, at the back of the eye, where it forms an upside-down picture
  d. the optic nerve sends the upside-down picture to the brain where it is turned right-side-up
27c. Acceptable answers could include:
  - Light passes through the cornea, the pupil, and the lens.
  - The light is focused on the retina where it forms an upside-down picture.
  - The retina sends this picture to the optic nerve.
  - The optic nerve sends the picture to the brain where it is turned right-side-up.
  - We see.

28a. b. optic nerve
28b. d. The optic nerve carries messages all over the body.
28c. Acceptable answers could include:
  - the optic nerve connects the eye to the brain
  - the optic nerve carries messages from the eye to the brain
  - the optic nerve receives messages from the retina

29a. a. bigger; smaller
29b. a. dim; bright
29c. Acceptable answers could include:
-the iris makes the pupil bigger when light is dim so we can see better in the dark
-the iris makes the pupil smaller when light is bright to protect our eye from too much light

30a. a. farsightedness; nearsightedness
30b. Farsightedness; nearsightedness
30c. Acceptable answers could include:
-nearsightedness-far objects are fuzzy while nearby objects are clear
-farsightedness-near objects are fuzzy while distant ones are clear

31a. b. vibration
31b. d. vibration
31c. Acceptable answers could include:
-sound is caused by vibration, which is fast movement back and forth

32a.

32b. d, b, e, a, f, c
32c. See 32a for correct labels.
Acceptable answers could include any of the three following:
-outer ear-opening of the ear through which sound waves enter the ear
-ear canal-passage that leads from the opening of the ear to the inner part of the ear
-eardrum-thin skin that stretches across inner end of the ear canal
-hammer, anvil, stirrup-ear bones inside the ear
-cochlea-spiral-shaped organ filled with liquid and small hairs which are sensitive to vibrations
-auditory nerve-nerve that connects inner ear to the brain and carries messages to the brain

33a. 1, 4, 6, 2, 5, 3
33b. Acceptable answers could include:
   b. The sound waves make the eardrum vibrate.
   d. The vibrations in the little bones inside the ear vibrate the liquid and the little hairs found in the cochlea.
   e. The auditory nerve sends a signal to the brain.

33c. Acceptable answers could include:
   - Sound waves enter our ear through the outer ear and travel down the ear canal to the eardrum.
   - This starts the eardrum vibrating.
   - The vibrations of the eardrum cause vibrations in the hammer, anvil, and stirrup (the little bones in the ear).
   - These vibrations vibrate the cochlea and the liquid and hairs found inside there.
   - The vibrations in the hairs cause connections to be made with the auditory nerve.
   - The auditory nerve sends a signal to the brain.
   - We hear.