

Name: _____

Vocabulary Chapter 4

Prokaryotic- p. 219

Eukaryotic- p. 219

DNA- p. 219

Organelles- (glossary)

Selectively permeable- p. 220

Lipid- p. 220

Proteins- p. 221

Amino Acids- p. 221

Hormones (glossary)

Ions- p. 221

Diffusion- p. 222

Osmosis- p. 223

Vacuole- p. 223

Passive Transport- p. 224

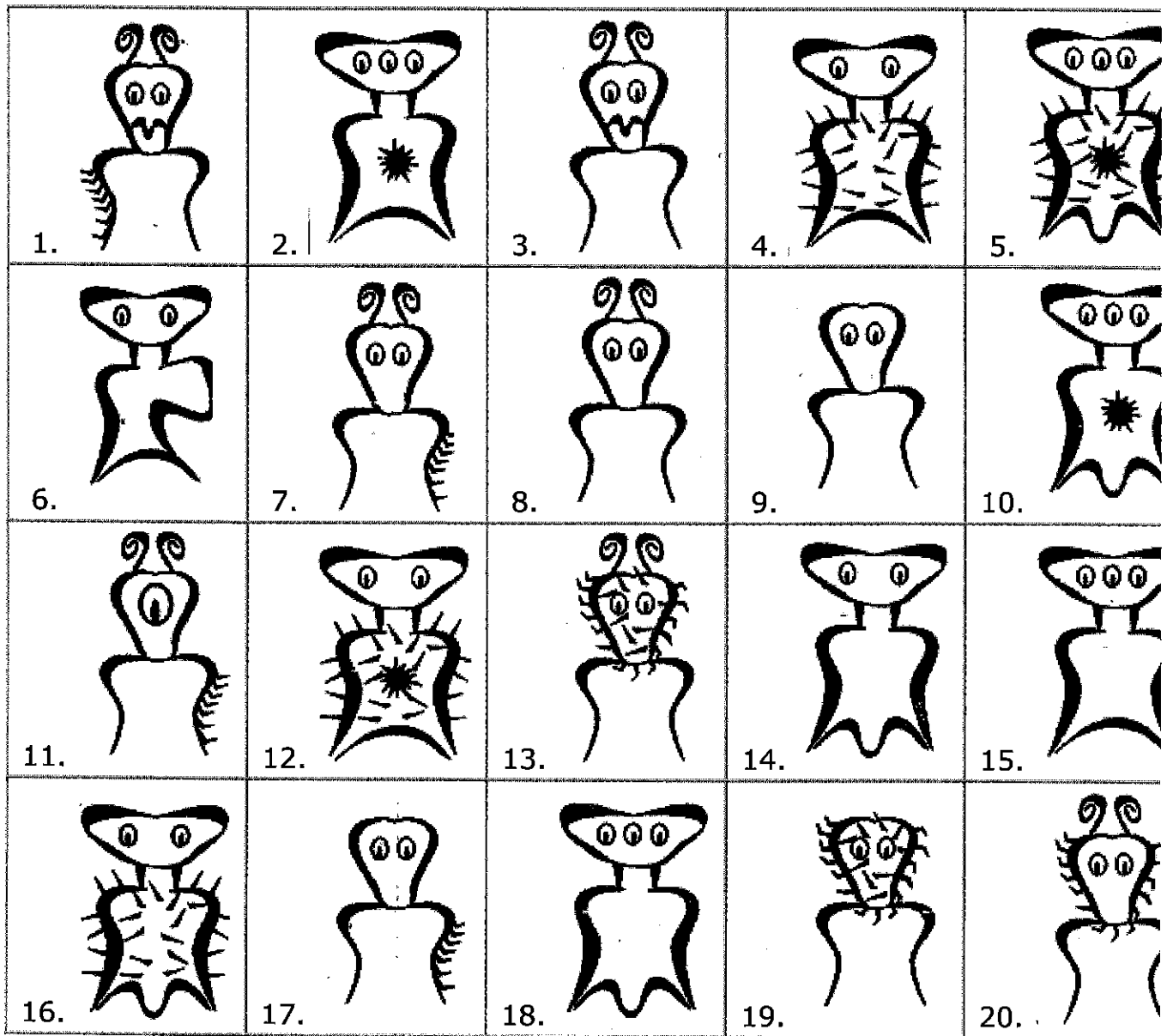
Active Transport- p. 224

A Key to New Pamishan Creatures

1. a. The creature has a large wide head.....go to 2
b. The creature has a small narrow head.....go to 11
2. a. It has 3 eyesgo to 3
b. It has 2 eyesgo to 7
3. a. There is a star in the middle of its chest.....go to 4
b. There is no star in the middle of its chestgo to 6
4. a. The creature has hair spikes*Broadus hairus*
b. The creature has no hair spikes.....go to 5
5. a. The bottom of the creature is arch-shaped*Broadus archus*
b. The bottom of the creature is M-shaped*Broadus emmus*
6. a. The creature has an arch-shaped bottom*Broadus plainus*
b. The creature has an M-shaped bottom.....*Broadus tritops*
7. a. The creature has hairy spikesgo to 8
b. The creature has no spikes.....go to 10
8. a. There is a star in the middle of its body*Broadus hairystr*
b. There is no star in the middle of its bodygo to 9
9. a. The creature has an arch shaped bottom*Broadus hairyem*
b. The creature has an M shaped bottum*Broadus kiferus*
10. a. The body is symmetrical*Broadus walter*
b. The body is not symmetrical.....*Broadus anderson*
11. a. The creatrue has no antennaego to 12
b. The creature has antennaego to 14
12. a. There are spikes on the face*Narrowus wolfus*
b. There are no spikes on the facego to 13
13. a. The creature has no spike anywhere*Narrowus blankus*
b. There are spikes on the right leg*Narrowus starbo*
14. a. The creature has 2 eyes.....go to 15
b. The creature has 1 eye.....*Narrowus cyclop*
15. a. The creature has a mouth.....go to 16
b. The creature has no mouth.....go to 17
16. a. There are spikes on the left leg*Narrowus portus*
b. There are no spikes at all*Narrowus plainus*
17. a. The creature has spikesgo to 18
b. The creature has no spikes*Narrowus georgi*
18. a. There are spikes on the headgo to 19
b. There are spikes on the right leg.....*Narrowus montan*
19. a. There are spikes covering the face*Narrowus beardu*
b. There are spikes only on the outside edge of head*Narrowus fuzzus*

Taxonomy, Classification, and Dichotomous Keys

Help! Scientists have discovered quite a few new creatures on planet Pamishan. They need your help to identify and classify them. Use the dichotomous key on the next page to identify these creatures.



FINGERPRINTS, A CLASSIFICATION SYSTEM

(loops, arches, whorls) (L.M.)

OBJECTIVE: Students will observe the differences and similarities in fingerprints and develop a system to classify prints into similar groups.

Supplies: pencils, sharpener, scotch tape, index cards, white paper, magnifiers

Procedure:

1. Trace an outline of your hand onto the white paper.
2. Rub pencil onto the index card, to make a graphite pad for taking prints.
3. Press/roll a finger "pad" (from your dominant hand!) firmly onto the penciled area.
4. Stick a short piece of tape to the finger pad and press it into place. Carefully remove the tape and press it onto the hand outline in the proper location.
5. Continue with each finger until each student has a complete record of one hand.
6. Wash hands.
7. Teams compare prints for similarities and differences and "classify" the prints.
8. *Observe hand out of fingerprint patterns and note the fingerprint type of each student. Classify each student's prints.
9. Collect the data from each team. Each student will make a bar graph, showing the distribution of fingerprint patterns in the class.

Questions:

1. Why is classification important?
2. List 3 things that are 'classified' at home and the traits used to classify them.
3. Carolus Linnaeus (1707-1778) developed the classification system that we use today. He separated animals and plants according to certain physical similarities. List the 7 levels of the classification system for organisms used today. (Hint: Keep Pond Clean Or Froggy Gets Sick!)
4. What are some examples of words to classify things at North?
5. List examples of ways that we classify people.

6. Work in pairs to create a new animal species that has never been seen before. Below, draw a picture of your animal, describe the physical and behavioral traits, describe its habitat and make up a genus/species name for it that would fit into the system of binomial nomenclature.

FINGERPRINT PATTERNS AND CLASSIFICATIONS



Plain Arch

In plain arches the ridges enter on one side of the impression and flow or tend to flow out the other side with a rise or wave in the center.



Tented Arch

Tented arches are similar to plain arches with the exception that the ridges in the center form a definite angle, or one or more ridges at the center form an upthrust; or they approach the loop type of pattern, possessing two of the basic characteristics of the loop, but lacking the third.



Ulnar Loop

Ulnar loops are those types of pattern in which the loops flow in the direction of the little fingers.

The above pattern would be an ulnar pattern if on the right hand, and a radial pattern if on the left hand. The above pattern is also sometimes called a right slant loop, regardless of which hand it appears on.



Radial Loop

Radial loops are those types of pattern in which the loops flow in the direction of the thumbs.

The above pattern would be a radial pattern if on the right hand, and an ulnar pattern if on the left hand.

The above pattern is also sometimes called a left slant loop, regardless of which hand it appears on.



Double Loop Whorl

The double loop whorl consists of two separate loop formations, with two separate and distinct sets of shoulders and two deltas.



Plain Whorl

A plain whorl has two deltas and at least one ridge making a complete circuit, which may be spiral, oval, or any variant of the circle. An imaginary line drawn between the two deltas must touch or cross at least one of the recurving ridges within the pattern area.



Central Pocket Loop Whorl

The central pocket loop whorl consists of one or more recurving ridges, or an obstruction at a right angle to the inner line of flow, with two deltas between which an imaginary line would cut or touch no recurving ridge within the pattern area. The inner line of flow of a central pocket loop whorl is determined by drawing an imaginary line between the inner delta and the center of the innermost recurve or looping ridge.



Accidental Whorl

The accidental whorl is a pattern with two or more deltas, and a combination of two or more different types of patterns exclusive of the plain arch. This classification also includes those exceedingly unusual patterns which may not be placed by definition into any other classes.

Above fingerprint images from *The Science of Fingerprints - Classification and Uses*, by the FBI Identification Division, 1957.

Essay p. 218: COMPARTMENTS

The human body maintains a constant internal temperature (“warm-blooded”) partly because the body is kept _____ from the external environment by the _____. In single-celled organisms, the _____ (or the _____, if it is a plant cell) keeps the ‘environments’ separated. The basic unit of life is the _____.

Prokaryotic organisms have only 1 cell and ____ compartment.

Eukaryotic organisms, even if they only have 1 cell, have many _____.

Having many ‘compartments’ allows the cell, or organism, to keep different internal environments at the same time. If the conditions of any of these compartments have a significant change, it means the organism is _____ or _____.

Essay p. 220: MEMBRANES

The Cell Membrane is present in both _____ and animal cells. Because the cell membrane is a *boundary* that separates the inside and outside environments, the cell membrane only lets _____ things pass through it. It is _____ to most substances. (This means it won’t let things pass through!) But the cell membrane is _____, and, therefore, allows the molecules the cell needs to enter through this membrane.

The permeability of a cell membrane depends on its structure. A typical cell membrane is made up mostly of _____ (or lipids) and form a _____, because the molecules are arranged into 2 layers.

_____ do not usually mix with water, so these fat molecules have their part of the molecule that has the greatest ability to interact with water (H₂O) facing the inside and outside of the cell. The center of this lipid bilayer allows fat-soluble molecules to pass through.

Although H₂O molecules are not fat-soluble, they CAN pass through the center of the membrane because they are very small molecules.

The cell membrane also has _____ molecules among the fat molecules. Proteins are _____ molecules made up of smaller molecules called _____.

There are protein molecules on the outside of the cell membrane that act as *receptors*. _____ bind to _____, which are chemical messengers, that tell the cells to respond to some body condition. (Ex: adrenaline is released when scared!)

Other types of proteins are also on the cell membrane. These proteins allow *some* molecules to _____ of the cell, like sugar molecules and _____, molecules with an electrical charge like sodium (Na⁺) and chlorine (Cl⁻). Therefore, these proteins are selectively _____.

ESSAY P. 222: MOLECULAR MOVEMENT

Molecules in the air disperse (spread out) in _____ directions. (Ex: perfume bottle opened.) But overall they move from an area of _____ concentration to an area of _____ concentration, and will continue until the concentration is the _____ everywhere. This type of molecular movement is called _____.

Because molecules move from an area of _____ concentration to an area of _____ concentration, they are said to move *down* a _____ (like a staircase...going from hi to low!) This happens in liquids and gases. (Ex: food color in water; cooking in air!)

The movement of substances, for example salt, across a cell membrane depends on the concentrations, also, but also depends on special _____ that are on the cell membrane and act as "_____."

A specific type of diffusion is called _____. This is the movement of _____ (H₂O) from an area of _____ concentration to an area of _____ concentration. If

there is a greater concentration of water outside a cell versus inside the cell, the water will move _____ the cell. If too much water enters a cell, causing the pressure in the cell to build up, the cell can _____.

Plant cells have a special structure, filled with water, called a _____. The vacuole gives plants their _____. If a plant leaf does not have enough water, the leaf will _____.

In _____, proteins will move molecules _____ a concentration gradient. This does NOT require _____. (Ex: riding bike down hill!)

However, in _____, proteins move molecules _____ a concentration gradient. This, of course, requires _____. (Ex: riding bike up hill!)

Essay P.224: MAKING EXCHANGES THROUGHOUT THE BODY

Single-celled organisms have their 'compartments' (internal environment) in direct contact with the external environment. For multi-cellular organisms, it is much more complicated. (Ex: studio apt. vs. large bldg.)

Cells need contact with the external environment to get _____, _____ and to release _____. *For cells to survive, they must maintain their _____ environment when the external environment is changing.*

An _____ is necessary to maintain the internal environment. A "_____" is a group of organs working together to do a specific job. Types of organ systems include: gas exchange, circulatory system and urinary system.

The _____ system provides air to the _____. _____ is exchanged for _____ (CO₂) in the lungs.

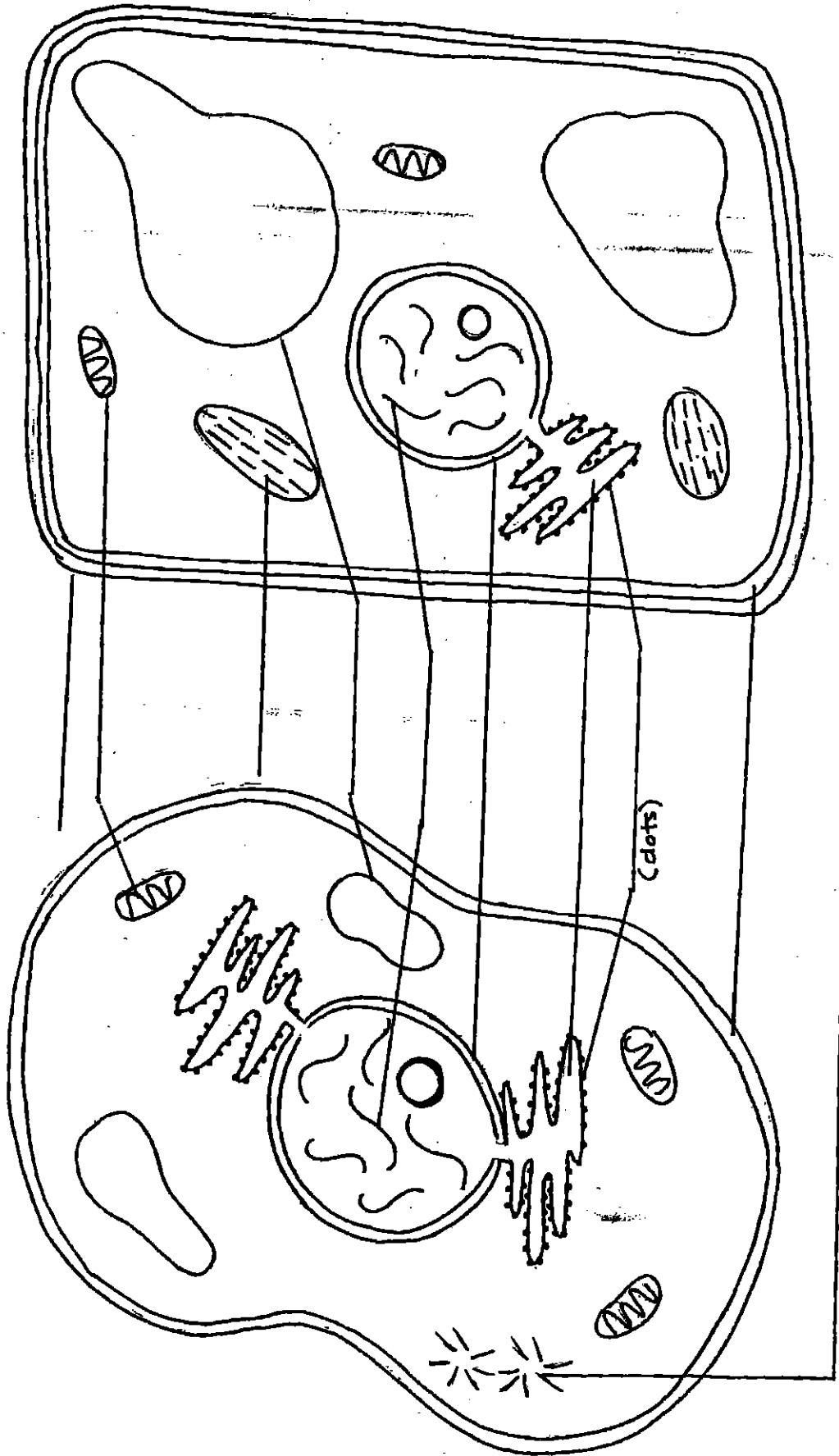
The oxygen goes into the blood vessels and is carried to every cell of the body. The blood then carries the _____ back to the lungs. This is called the _____ system.

Name _____

Period _____

ANIMAL CELL

PLANT CELL



Name _____ Period _____

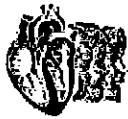
The Cell

Below are the parts of a cell. Use them to label the diagrams on the next page. Then color the cell parts using the colors listed. Finally fill in the blanks on this page.

<u>CELL PART</u>	<u>COLOR</u>	<u>PLANT/ANIMAL/BOTH</u>
1. ribosome	purple	_____
2. nucleus	gray	_____
3. mitochondria	orange	_____
4. canal network	yellow	_____
5. vacuole	blue	_____
6. cell membrane	blue	_____
7. centrioles	red	_____
8. chromosomes	blue and pink	_____
9. chloroplasts	green	_____
10. cell wall	green	_____
11. nucleolus	purple	_____
12. packaging structure	brown	_____
13. cytoplasm	no color	_____
14. digestive sacs	yellow	_____

Use the cell parts above to fill in the blanks below.

1. aids in reproduction _____
2. used to move substances _____
3. produces energy, "mighty" _____
4. stores food and water _____
5. proteins are made here _____
6. determines traits _____
7. control center _____
8. made of cellulose _____
9. contains chlorophyll _____
10. controls what goes in/out of cell _____
11. breaks down food _____
12. jelly-like material, fills cell _____
13. bundles material _____
14. makes ribosomes _____



The Children's Heart Institute
HASAN ABDALLAH, M.D., FAAP, FAAC

www.childrenheartinstitute.org

The Heart

This drawing shows how blood flows through the heart.

Color Me:

The areas of the heart with more oxygen are labeled with an 'R'.
Color these areas RED.

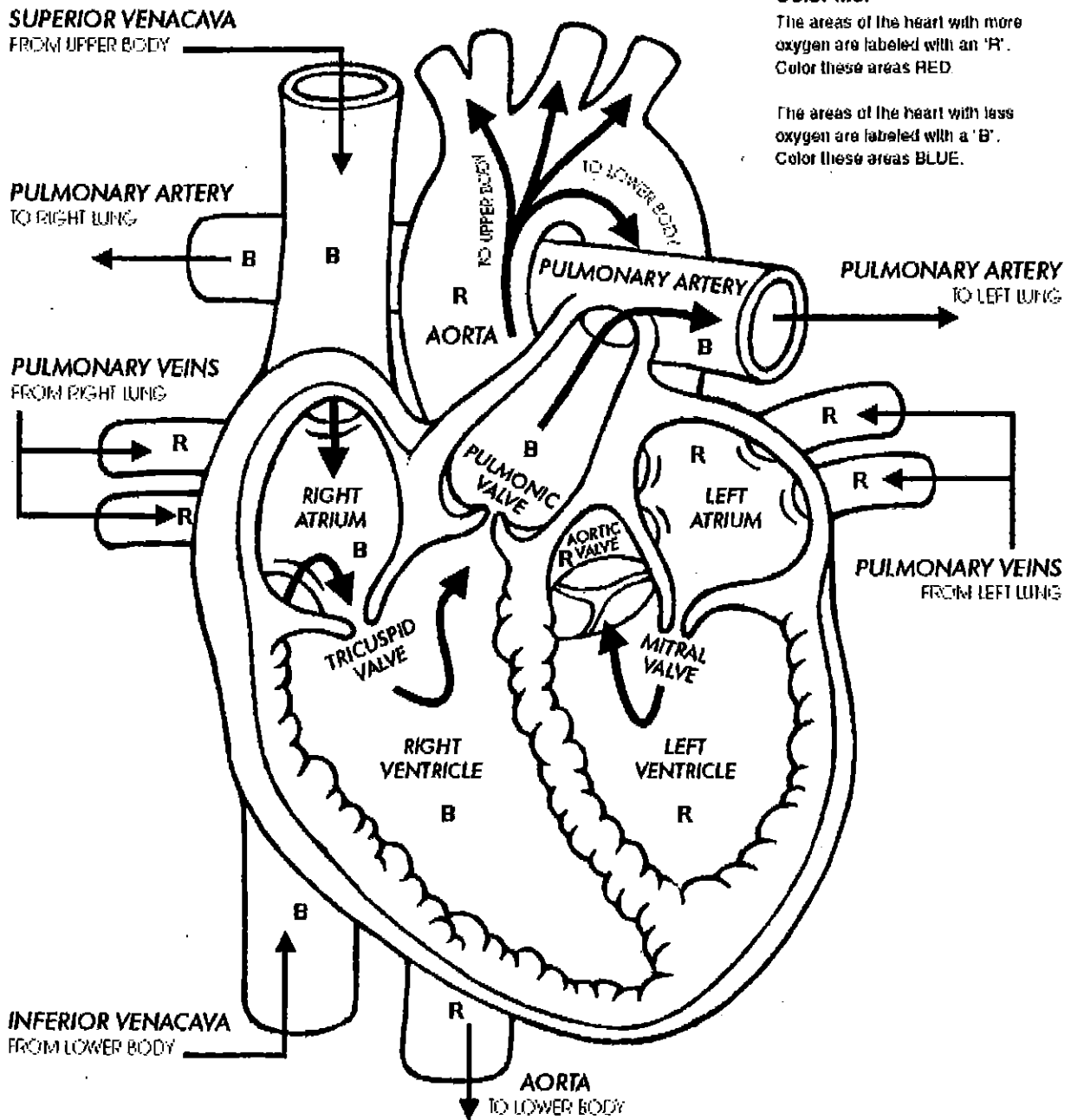
The areas of the heart with less oxygen are labeled with a 'B'.
Color these areas BLUE.

SUPERIOR VENACAVA
FROM UPPER BODY

PULMONARY ARTERY
TO RIGHT LUNG

PULMONARY VEINS
FROM RIGHT LUNG

INFERIOR VENACAVA
FROM LOWER BODY



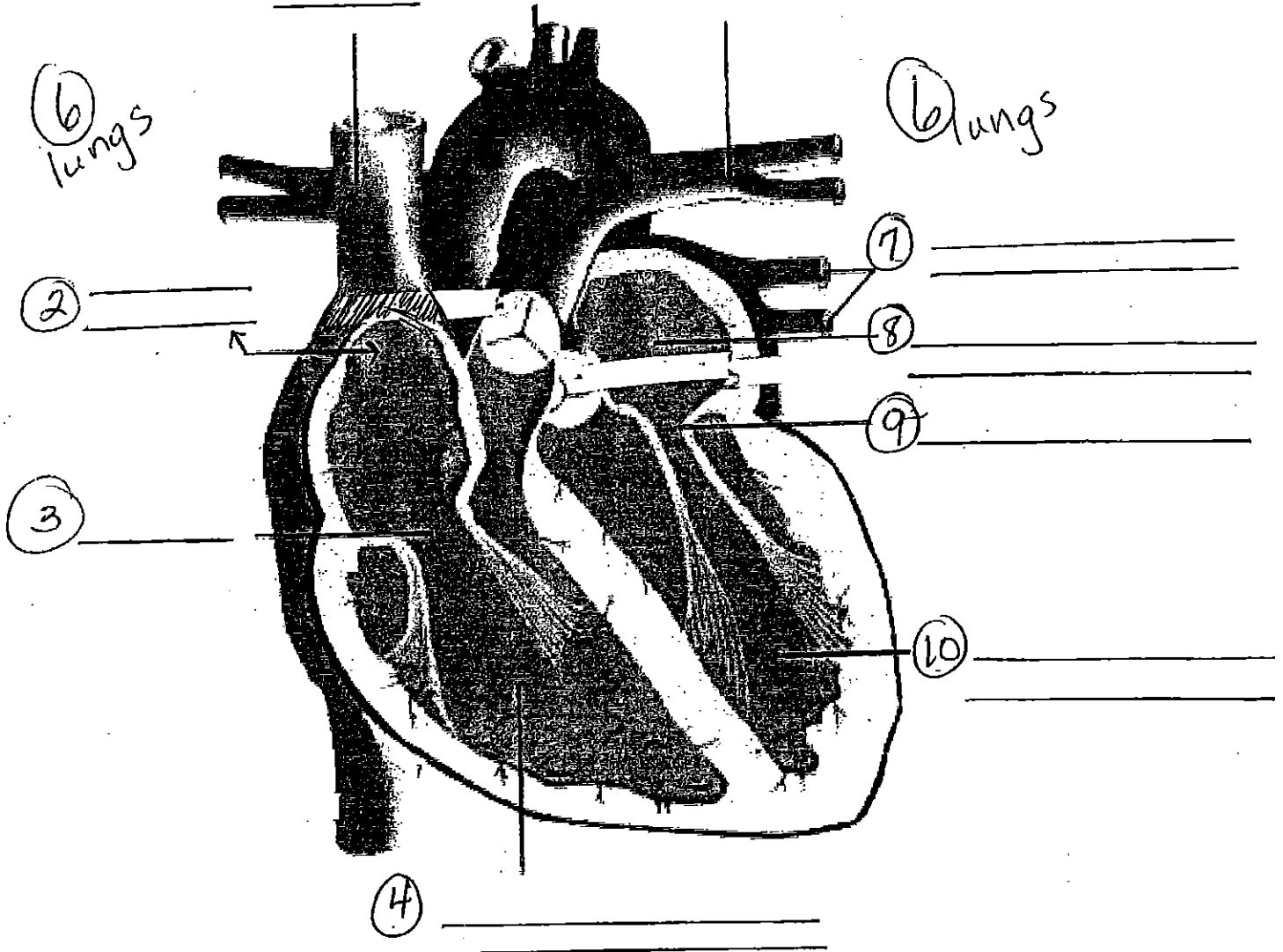
PULMONARY ARTERY
TO LEFT LUNG

PULMONARY VEINS
FROM LEFT LUNG

AORTA
TO LOWER BODY

Name: _____ Period _____

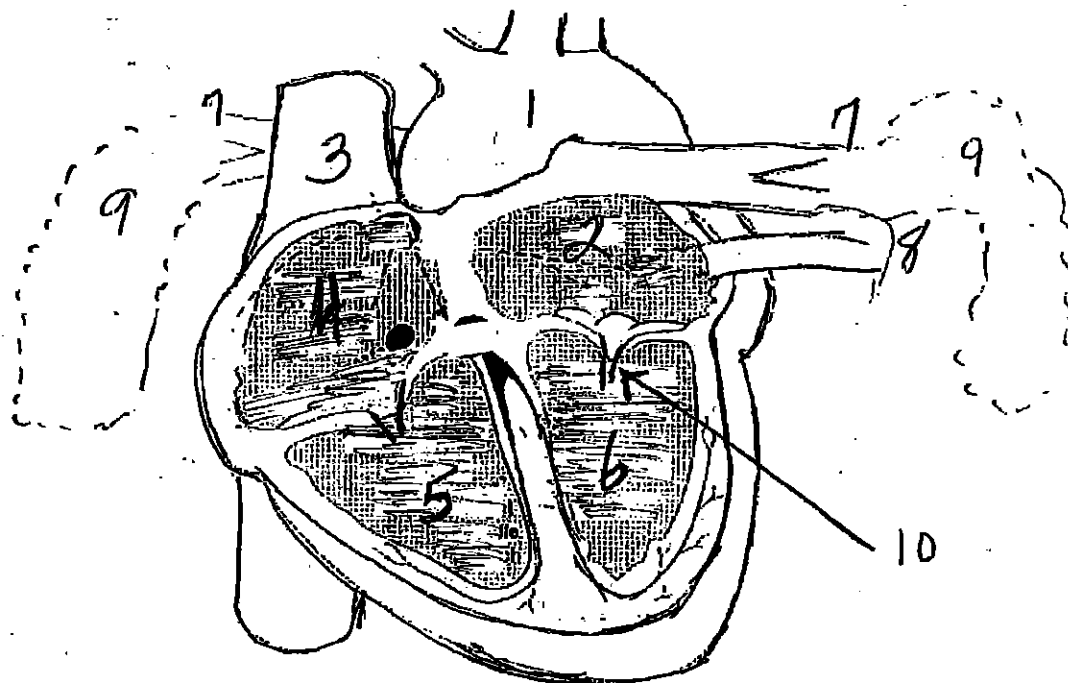
① _____ ② _____ ③ _____



Identify: (The path of blood follows the numbers.)

right ventricle aorta pulmonary veins valves (2x) pulmonary artery left ventricle
right atrium vena cava left atrium

The lungs are identified as #6.



Identify the following:

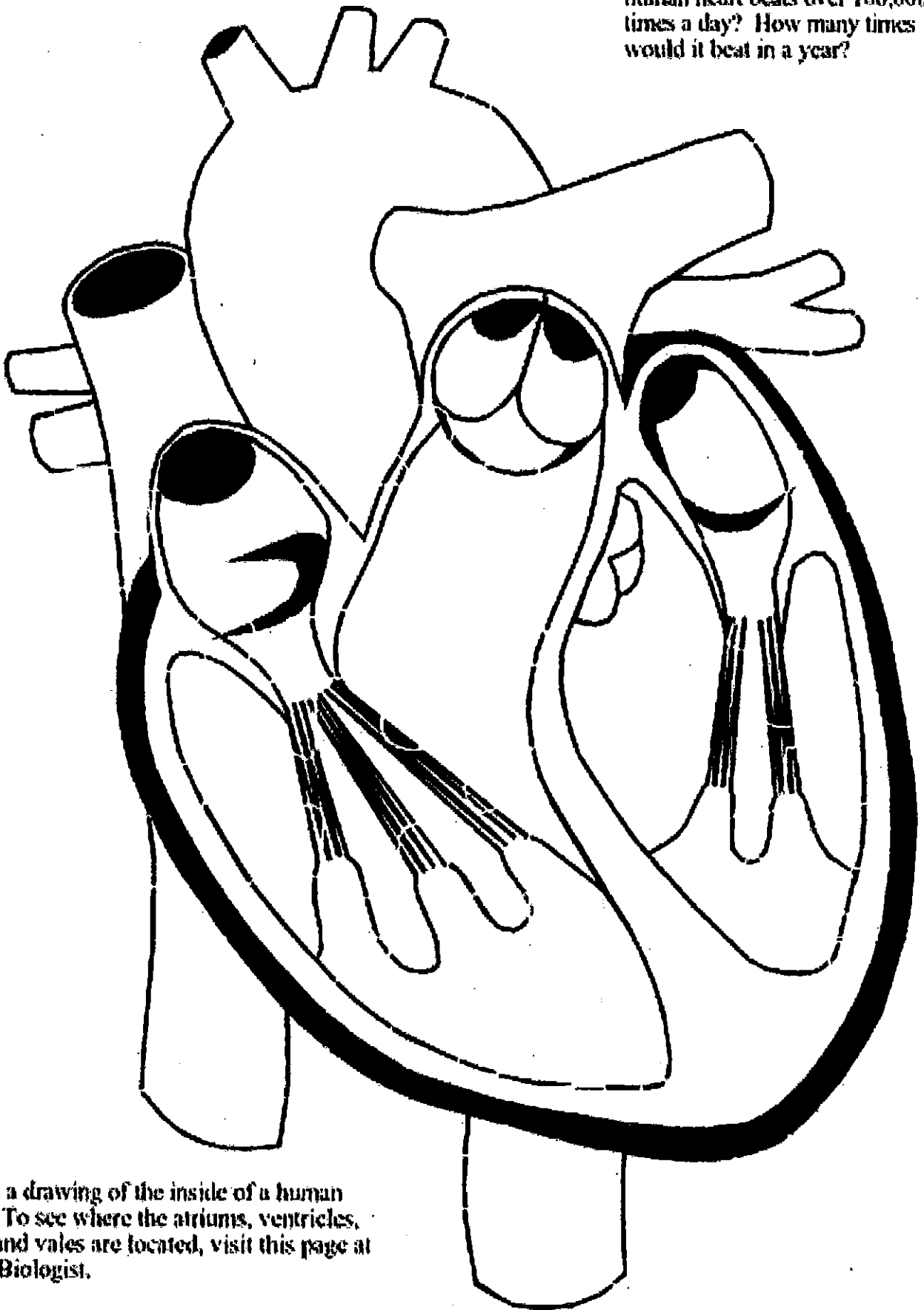
Aorta _____ Vena Cava _____ Left atrium _____
 Right ventricle _____ Pulmonary artery _____ Right atrium _____
 Left ventricle _____ Valves _____ Pulmonary vein _____ Lungs 9

Blood passes from the vena cava into the _____, through _____ and into the _____; through valves again and into the _____ which brings blood to the _____. Here, the blood drops off _____ and picks up _____.

Blood leaves the lungs and returns to the heart through the _____

From here, it passes into the _____, through valves into the _____ and once more through valves where it enters the largest artery, the _____. The _____ pumps blood to _____.

Did you know that an adult human heart beats over 100,000 times a day? How many times would it beat in a year?



This is a drawing of the inside of a human heart. To see where the atriums, ventricles, veins and vales are located, visit this page at Ask a Biologist.

<http://askbiologist.asu.edu/expstuff/images/heart.gif>

