TEACHER GUIDE

7th–9th Grade

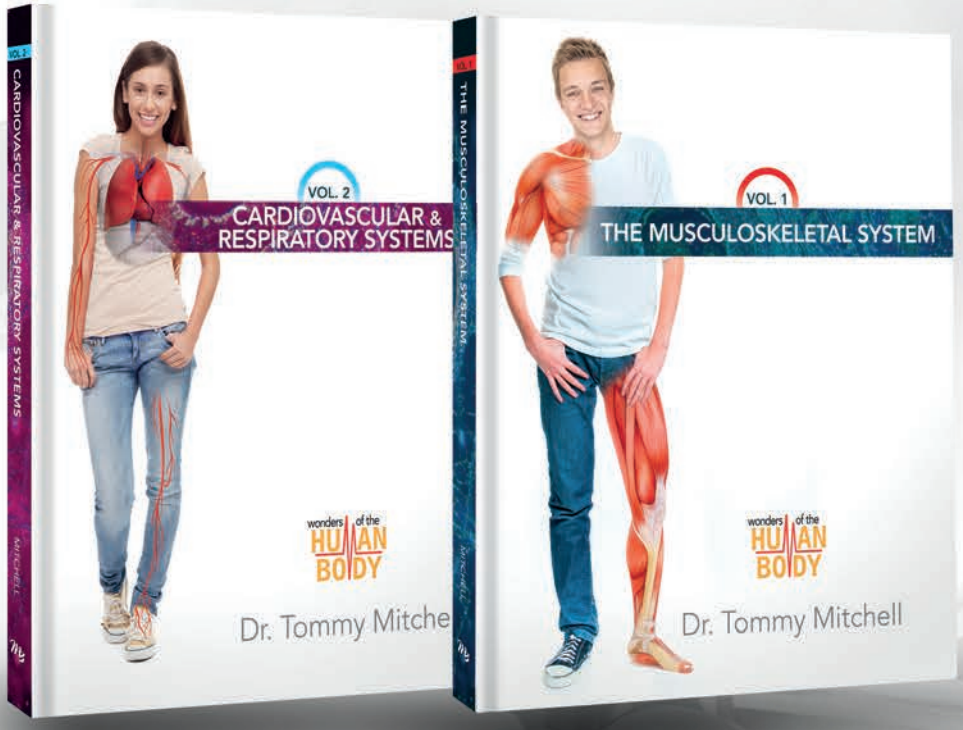
Includes Student Worksheets

Science

- Weekly Lesson Schedule
- Worksheets
- Quizzes & Tests
- Answer Keys

INTRODUCTION TO ANATOMY & PHYSIOLOGY 1

The Musculoskeletal, Cardiovascular, & Respiratory Systems



wonders of the HUMAN BODY

MASTERBOOKS® CURRICULUM

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7th–9th Grade | Science

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Introduction to Anatomy & Physiology 1

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Dr. Tommy Mitchell held an MD from Vanderbilt University School of Medicine and had a thriving medical practice for 20 years before pursuing creation ministry full time. Since 2005, Dr. Mitchell served as a popular speaker and author for Answers in Genesis. He passed into the presence of the Lord on September 17, 2019.

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Table of Contents

Using This Teacher Guide

Features: The suggested weekly schedule enclosed has easy-to-manage lessons that guide the reading, worksheets, and all assessments. The pages of this guide are perforated and three-hole punched so materials are easy to tear out, hand out, grade, and store. Teachers are encouraged to adjust the schedule and materials needed in order to best work within their unique educational program.

Fearfully and Wonderfully Made!

Explore the human body from a creation perspective in this dynamic Anatomy & Physiology course. Students will learn how amazing their bodies are — from the simplest parts to some of its most complex functions. Covering muscles and bones, along with the cardiovascular and respiratory systems, this course takes an in-depth look at how these systems work and how our bodies cannot possibly be an accident! Through worksheets, quizzes, and tests, students will solidify their knowledge of the human body, created by the one and only Master Designer.

	**Approximately 30 to 45 minutes per lesson, five days a week**
	**Includes answer keys for worksheets, quizzes, and tests**
	**Worksheets for each section**
	**Quizzes and tests are included to help reinforce learning and provide assessment opportunities**
	**Designed for grades 7 to 9 in a one-year science course**

Course Objectives: Students completing this course will

- Learn the incredible design of the human heart and how it is really two pumps in one
- Identify how blood moves through an incredible network of arteries and veins
- Investigate what "blood pressure" is and the marvelous systems that help regulate it
- Explore how the respiratory system allows us to get the "bad air out " and the "good air in"
- Review the ins and outs of the bones in your skeleton and how they function
- Discover detail as to how your marvelous muscles move you

Course Description

In this dynamic *Introduction to Anatomy & Physiology* course, students will not only begin to grasp the intricate workings of their bodies, but also learn of the wonders of the human body, designed by our Creator and loving Father. Nothing else in the universe is quite like it. The body is delicate yet powerful — incredibly complex but at times amazingly simple. Students will explore the structure, function, and regulation of the body in detail.

Throughout the two volumes studied over the course of the year, students will learn things to do to keep the body healthy, though in a fallen, cursed world, things are bound to go wrong. The human body is built from many kinds of cells and tissues, and students will learn how they work. We will look at what happens when disease or injury affects bones and muscles. The course also covers both the cardiovascular and respiratory systems, from the level of the cell to the organs themselves, examining these systems in depth.

Although the world insists that our bodies are merely the result of time and chance, as students examine the human body closely, they will see that it cannot be an accident. It can only be the product of a Master Designer.

Date	Day	Assignment	Due Date	✓	Grade
First Semester-First Quarter — ***The Musculoskeletal System***					
Week 1	Day 1	Read Foundations • Pages 4–5 • *The Musculoskeletal System* (MS) Read Introduction with focus on course objectives • Pages 4–5 • Teacher Guide (TG)			
	Day 2	Read Introduction • Pages 6–9 • (MS)			
	Day 3	Read Pages 10–12 • (MS)			
	Day 4	Worksheet 1 • Pages 17–18 • (TG)			
	Day 5	Worksheet 1 • Pages 17–18 • (TG)			
Week 2	Day 6	Read Pages 13–14 • (MS)			
	Day 7	Read Pages 15–16 (to Ribosomes) • (MS)			
	Day 8	Worksheet 2 • Pages 19–20 • (TG)			
	Day 9	Worksheet 2 • Pages 19–20 • (TG)			
	Day 10	Read pages 16 (from Ribosomes)–19 (to Nucleus) • (MS)			
Week 3	Day 11	Read pages 19 (from Nucleus)–22 • (MS)			
	Day 12	Worksheet 3 • Pages 21–22 • (TG)			
	Day 13	Worksheet 3 • Pages 21–22 • (TG)			
	Day 14	Read Pages 23–27 (to Moving On) • (MS)			
	Day 15	Read Pages 27 (from Moving On)–28 • (MS)			
Week 4	Day 16	Read Pages 29–top paragraph of 30 • (MS)			
	Day 17	Read Pages 30 (second paragraph on)–31 • (MS)			
	Day 18	Read pages 32–33 • (MS)			
	Day 19	Worksheet 4 • Pages 23–24 • (TG)			
	Day 20	Worksheet 4 • Pages 23–24 • (TG)			
Week 5	Day 21	Worksheet 4 • Pages 23–24 • (TG)			
	Day 22	Read Pages 34–36 (to But They Are) • (MS)			
	Day 23	Read Pages 36 (from But They Are)–37 • (MS)			
	Day 24	Read Pages 38–39 • (MS)			
	Day 25	Worksheet 5 • Pages 25–26 • (TG)			
Week 6	Day 26	Worksheet 5 • Pages 25–26 • (TG)			
	Day 27	Study Day			
	Day 28	**Quiz Section One** • Pages 97–98 • (TG)			
	Day 29	Read Pages 40–42 • (MS)			
	Day 30	Read Page 43 • (MS)			
Week 7	Day 31	Worksheet 6 • Pages 27–28 • (TG)			
	Day 32	Worksheet 6 • Pages 27–28 • (TG)			
	Day 33	Read Pages 44–45 • (MS)			
	Day 34	Read Pages 46–47 (to Bone Cells) • (MS)			
	Day 35	Worksheet 7 • Pages 29–30 • (TG)			

Date	Day	Assignment	Due Date	✓	Grade
	Day 36	Worksheet 7 • Pages 29–30 • (TG)			
	Day 37	Read Pages 47 (from Bone Cells)–49 (to Mature Bone) • (MS)			
Week 8	Day 38	Read 49 (from Mature Bone)–51 • (MS)			
	Day 39	Worksheet 8 • Pages 31–32 • (TG)			
	Day 40	Worksheet 8 • Pages 31–32 • (TG)			
	Day 41	Read Pages 52–53 (to Bone and the Body) • (MS)			
	Day 42	Read Pages 53 (from Bone and the Body)–55 • (MS)			
Week 9	Day 43	Worksheet 9 • Page 33 • (TG)			
	Day 44	Worksheet 9 • Page 33 • (TG)			
	Day 45	Read Pages 56–57 • (MS)			
First Semester-Second Quarter — ***The Musculoskeletal System***					
	Day 46	Read Pages 58–59 • (MS)			
	Day 47	Worksheet 10 • Pages 35–36 • (TG)			
Week 1	Day 48	Worksheet 10 • Pages 35–36 • (TG)			
	Day 49	Read Pages 60–61 • (MS)			
	Day 50	Read Pages 62–63 • (MS)			
	Day 51	Worksheet 11 • Pages 37–38 • (TG)			
	Day 52	Worksheet 11 • Pages 37–38 • (TG)			
Week 2	Day 53	Read Pages 64–65 • (MS)			
	Day 54	Read Pages 66–68 • (MS)			
	Day 55	Worksheet 12 • Pages 39–40 • (TG)			
	Day 56	Worksheet 12 • Pages 39–40 • (TG)			
	Day 57	Read Pages 69–70 • (MS)			
Week 3	Day 58	Read Pages 71–72 • (MS)			
	Day 59	Worksheet 13 • Pages 41–42 • (TG)			
	Day 60	Worksheet 13 • Pages 41–42 • (TG)			
	Day 61	Read Pages 73–74 (to The Leg) • (MS)			
	Day 62	Read Pages 74 (from The Leg)–75 • (MS)			
Week 4	Day 63	Read Pages 76–77 • (MS)			
	Day 64	Worksheet 14 • Pages 43–44 • (TG)			
	Day 65	Worksheet 14 • Pages 43–44 • (TG)			
	Day 66	Study Day			
	Day 67	**Quiz Section Two** • Pages 99–100 • (TG)			
Week 5	Day 68	Read Pages 78–80 • (MS)			
	Day 69	Read Pages 81–82 • (MS)			
	Day 70	Worksheet 15 • Page 45 • (TG)			
	Day 71	Worksheet 15 • Page 45 • (TG)			
	Day 72	Read Pages 83–85 (to Stimulated to Move) • (MS)			
Week 6	Day 73	Read Pages 85 (from Stimulated to Move)–86 • (MS)			
	Day 74	Worksheet 16 • Pages 47–48 • (TG)			
	Day 75	Worksheet 16 • Pages 47–48 • (TG)			

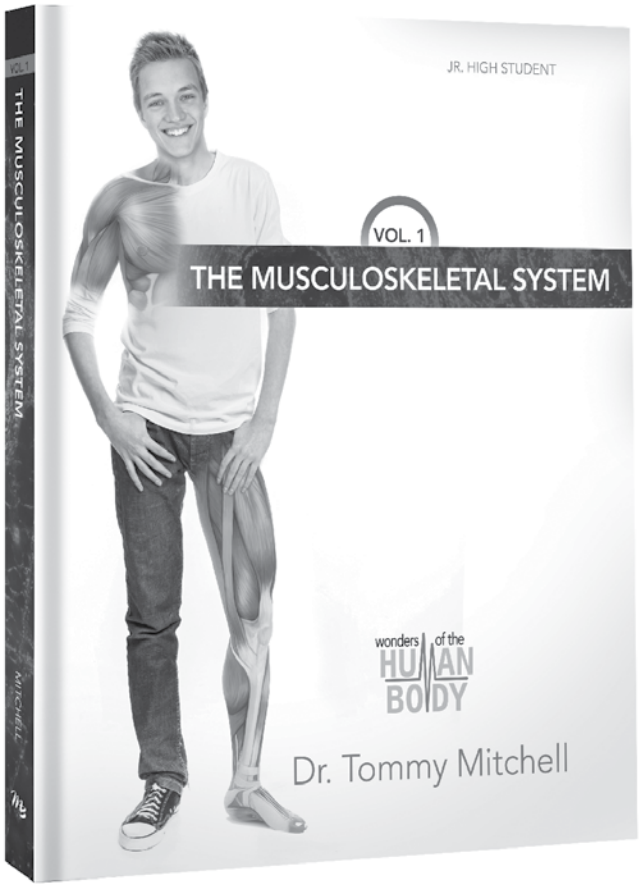
Date	Day	Assignment	Due Date	✓	Grade
Week 7	Day 76	Read Pages 87–88 • (MS)			
	Day 77	Read Pages 89–91 • (MS)			
	Day 78	Worksheet 17 • Page 49 • (TG)			
	Day 79	Worksheet 17 • Page 49 • (TG)			
	Day 80	Read Pages 92–93 • (MS)			
Week 8	Day 81	Read Pages 94–96 • (MS)			
	Day 82	Worksheet 18 • Pages 51–52 • (TG)			
	Day 83	Worksheet 18 • Pages 51–52 • (TG)			
	Day 84	Read Pages 97–99 (to The Head and Face) • (MS)			
	Day 85	Read Pages 99 (from The Head and Face)–101 • (MS)			
Week 9	Day 86	Worksheet 19 • Pages 53–54 • (TG)			
	Day 87	Study Day			
	Day 88	**Quiz Section Three** • Pages 101–102 • (TG)			
	Day 89	Study Day			
	Day 90	**Semester Test** • Pages 107–108 • (TG)			
		Mid-Term Grade			

Second Semester Suggested Daily Schedule

Date	Day	Assignment	Due Date	✓	Grade
Second Semester-Third Quarter — ***Cardiovascular & Respiratory Systems***					
Week 1	Day 91	Read The Cardiovascular System and Introduction • Pages 4–7 • *Cardiovascular & Respriatory Systems* (CRS)			
	Day 92	Read Pages 8–10 • (CRS)			
	Day 93	Read Pages 11–13 (to Cardiac Muscle) • (CRS)			
	Day 94	Worksheet 20 • Pages 57–58 • (TG)			
	Day 95	Worksheet 20 • Pages 57–58 • (TG)			
Week 2	Day 96	Read Pages 13 (from Cardiac Muscle)–16 (to Chambers of the Heart) • (CRS)			
	Day 97	Read Pages 16 (from Chambers of the Heart)–18 (to Heart Valves) • (CRS)			
	Day 98	Worksheet 21 • Pages 59–60 • (TG)			
	Day 99	Worksheet 21 • Pages 59–60 • (TG)			
	Day 100	Read Pages 18 (from Heart Valves)–20 • (CRS)			
Week 3	Day 101	Read Pages 21–22 • (CRS)			
	Day 102	Worksheet 22 • Pages 61–62 • (TG)			
	Day 103	Worksheet 22 • Pages 61–62 • (TG)			
	Day 104	Read Pages 23–24 • (CRS)			
	Day 105	Read Pages 25–27 • (CRS)			
Week 4	Day 106	Worksheet 23 • Page 63 • (TG)			
	Day 107	Worksheet 23 • Page 63 • (TG)			
	Day 108	Read Pages 28–31 (to The Electrocardiogram) • (CRS)			
	Day 109	Read Pages 31 (from The Electrocardiogram)–34 • (CRS)			
	Day 110	Worksheet 24 • Pages 65–66 • (TG)			
Week 5	Day 111	Worksheet 24 • Pages 65–66 • (TG)			
	Day 112	Read Pages 35–37 • (CRS)			
	Day 113	Read Pages 38–39 • (CRS)			
	Day 114	Worksheet 25 • Page 67 • (TG)			
	Day 115	Worksheet 25 • Page 67 • (TG)			
Week 6	Day 116	Read Pages 40–42 (to Blood Vessel Structure) • (CRS)			
	Day 117	Read Pages 42 (from Blood Vessel Structure)–44 (to Capillaries) • (CRS)			
	Day 118	Worksheet 26 • Pages 69–70 • (TG)			
	Day 119	Worksheet 26 • Pages 69–70 • (TG)			
	Day 120	Read Pages 44 (from Capillaries)–45 • (CRS)			
Week 7	Day 121	Read Pages 46–48 (to Blood Pressure) • (CRS)			
	Day 122	Worksheet 27 • Pages 71–72 • (TG)			
	Day 123	Worksheet 27 • Pages 71–72 • (TG)			
	Day 124	Read Pages 48 (from Blood Pressure)–50 (to Cardiovascular Center) • (CRS)			
	Day 125	Read Pages 50 (from Cardiovascular Center)–52 (to Hypertension) • (CRS)			

Date	Day	Assignment	Due Date	✓	Grade
Week 8	Day 126	Worksheet 28 • Page 73 • (TG)			
	Day 127	Worksheet 28 • Page 73 • (TG)			
	Day 128	Read Pages 52 (from Hyptertension)–53 • (CRS)			
	Day 129	Read Pages 54–55 • (CRS)			
	Day 130	Worksheet 29 • Pages 75–76 • (TG)			
Week 9	Day 131	Worksheet 29 • Pages 75–76 • (TG)			
	Day 132	Read Pages 56–57 • (CRS)			
	Day 133	Read Pages 58–59 • (CRS)			
	Day 134	Study Day			
	Day 135	**Quiz Section One** • Pages 103–104 • (TG)			
Second Semester-Fourth Quarter — ***Cardiovascular & Respiratory Systems***					
Week 1	Day 136	Read Pages 60–63 (to Anatomy of the Respiratory System) • (CRS)			
	Day 137	Read Pages 63 (from Anatomy of the Respiratory System)–66 (to Sinuses) • (CRS)			
	Day 138	Worksheet 30 • Pages 77–78 • (TG)			
	Day 139	Worksheet 30 • Pages 77–78 • (TG)			
	Day 140	Read Pages 66 (from Sinuses)–69 • (CRS)			
Week 2	Day 141	Read Pages 70–71 • (CRS)			
	Day 142	Worksheet 31 • Pages 79–80 • (TG)			
	Day 143	Worksheet 31 • Pages 79–80 • (TG)			
	Day 144	Read Pages 72–73 • (CRS)			
	Day 145	Read Pages 74–75 • (CRS)			
Week 3	Day 146	Worksheet 32 • Pages 81–82 • (TG)			
	Day 147	Worksheet 32 • Pages 81–82 • (TG)			
	Day 148	Read Pages 76–78 (to Blood Vessels) • (CRS)			
	Day 149	Read Pages 78 (from Blood Vessels)–79 • (CRS)			
	Day 150	Worksheet 33 • Pages 83–84 • (TG)			
Week 4	Day 151	Worksheet 33 • Pages 83–84 • (TG)			
	Day 152	Read Pages 80–81 • (CRS)			
	Day 153	Read Pages 82–84 (to Expiration) • (CRS)			
	Day 154	Worksheet 34 • Pages 85–86 • (TG)			
	Day 155	Worksheet 34 • Pages 85–86 • (TG)			
Week 5	Day 156	Read Pages 84 (from Expiration)–86 (to Gas Exchange) • (CRS)			
	Day 157	Read Pages 86 (from Gas Exchange)–88 (top paragraph) • (CRS)			
	Day 158	Worksheet 35 • Pages 87–88 • (TG)			
	Day 159	Worksheet 35 • Pages 87–88 • (TG)			
	Day 160	Read Pages 88 (from second paragraph)–89 • (CRS)			

Date	Day	Assignment	Due Date	✓	Grade
	Day 161	Read Pages 90–91 (to Control of Respiration)			
	Day 162	Worksheet 36 • Pages 89–90 • (TG)			
Week 6	Day 163	Worksheet 36 • Pages 89–90 • (TG)			
	Day 164	Worksheet 36 • Pages 89–90 • (TG)			
	Day 165	Read Pages 91 (from Control of Respiration)–93			
	Day 166	Read Pages 94–95 • (CRS)			
	Day 167	Read Pages 96–97 • (CRS)			
Week 7	Day 168	Worksheet 37 • Pages 91–92 • (TG)			
	Day 169	Worksheet 37 • Pages 91–92 • (TG)			
	Day 170	Worksheet 37 • Pages 91–92 • (TG)			
	Day 171	Read Pages 98–99 • (CRS)			
	Day 172	Read Pages 100–101 • (CRS)			
Week 8	Day 173	Worksheet 38 • Page 93 • (TG)			
	Day 174	Worksheet 38 • Page 93 • (TG)			
	Day 175	Worksheet 38 • Page 93 • (TG)			
	Day 176	Study Day			
	Day 177	**Quiz Section Two** • Pages 105–106 • (TG)			
Week 9	Day 178	Study Day Volume One			
	Day 179	Study Day Volume Two			
	Day 180	**Semester Test** • Pages 109–110 • (TG)			
		Final Grade			



Musculoskeletal System Worksheets

for Use with

The Musculoskeletal System

Words to Know: Define the Following:

1. Cells: _____
2. Anatomy: _____
3. Physiology: _____
4. Organs: _____
5. Digestive system: _____
6. Nucleus: _____
7. Cell membrane: _____
8. Cytoplasm: _____
9. Erythrocytes: _____
10. Nucleus: _____

Fill in the Blank

1. The bones in the skeleton cannot remain strong without _____, which is manufactured by the skin.

2. There are over _____ different kinds of cells in the human body.

3. Psalm _____, says, "I will praise You, for I am fearfully and wonderfully made; marvelous are Your works."

4. Just as words are built of letters and books are built from words, so your body is built of organs and tissues, and all the organs and tissues are made of _____.

5. The study of microscopic anatomy is called _____.

6. Physiology of the circulatory system focuses on how the _____ works.

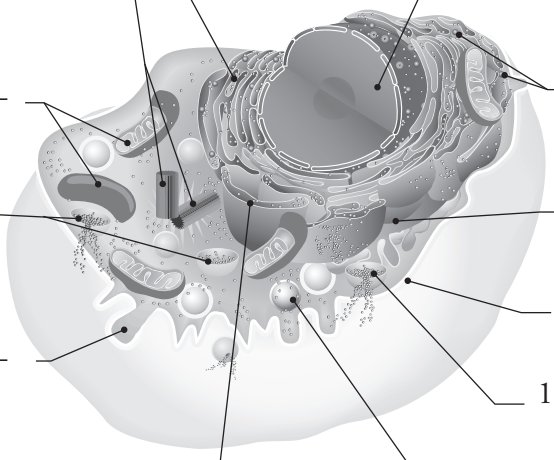
7. Cells are small but not _____ .

8. Groups of cells form tissues, which can be thought of as one of four basic tissue types — epithelial, connective, muscle, and _____.

9. The cell is the smallest "_____ unit" of the body.

10. Most cells have three basic parts — a nucleus, a cell membrane, and _____.

Complete the Chart — Human Cell Structure



1. _____
2. _____
3. _____
4. _____
5. _____
_____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

Words to Know: Define the Following:

1. The plasma membrane: _____
2. Intracellular fluid: _____
3. Extracellular fluid: _____
4. Water soluble: _____
5. Lipid: _____
6. Hydrophilic: _____
7. Hydrophobic: _____
8. Exocytosis: _____
9. Cytosol: _____
10. Lysosomes: _____

Fill in the Blank

1. The plasma _____ is far more than just a container, for it helps separate the two major fluid compartments of the body, the intracellular fluid and the extracellular fluid.

2. The plasma membrane is actually made up of two layers of molecules called _____ .

3. The plasma membrane is composed of two layers of phospholipids, creatively called a phospholipid _____ , which means "two layers of phospholipids."

4. The cytosol plus the organelles make up the _____.

5. _____ acids are the building blocks of proteins.

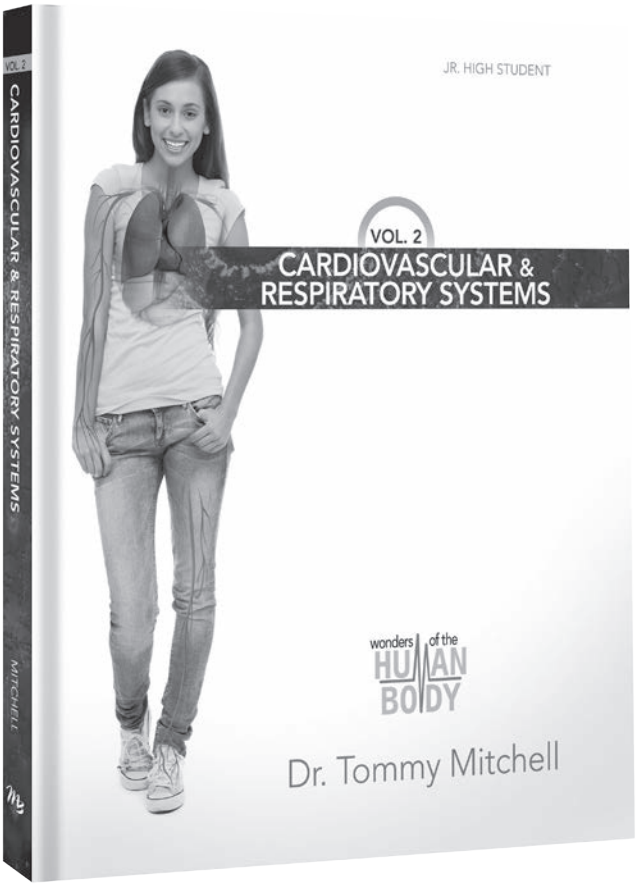
6. The _____ reticulum is a network of tubes and membranes that is connected to the nuclear membrane.

7. The _____ apparatus is a collection of small flattened sacs that stack on one another.

8. _____ break down worn-out organelles, bacteria, and toxic substances.

9. Lysosomes also aid the cell by breaking down substances the cell needs for _____.

10. By breaking down organelles that are worn out or no longer needed, the lysosomes _____ valuable materials.



Cardiovascular & Respiratory Systems Worksheets

for Use with

The Cardiovascular & Respiratory Systems

Words to Know: Define the Following:

1. Cardiovascular system: _____
2. Respiratory system: _____
3. Physiology: _____
4. Skeletal muscles: _____
5. Mitochondria: _____
6. Esophagus: _____
7. Trachea: _____
8. Diaphragm: _____
9. Pericardium: _____
10. Epicardium: _____

Fill in the Blank

1. In one _____ your heart pumps enough blood to fill an Olympic-sized swimming pool.

2. The heart generates its own _____ signals.

3. Your heart began beating _____ days after you were conceived.

4. You have around _____ miles of blood vessels in your body.

5. Organs are made of tissues, and tissues are made of _____.

6. God created the first man and woman perfect and complete, Adam and Eve, about _____ years ago.

7. A normal _____ is about the size of a person's fist.

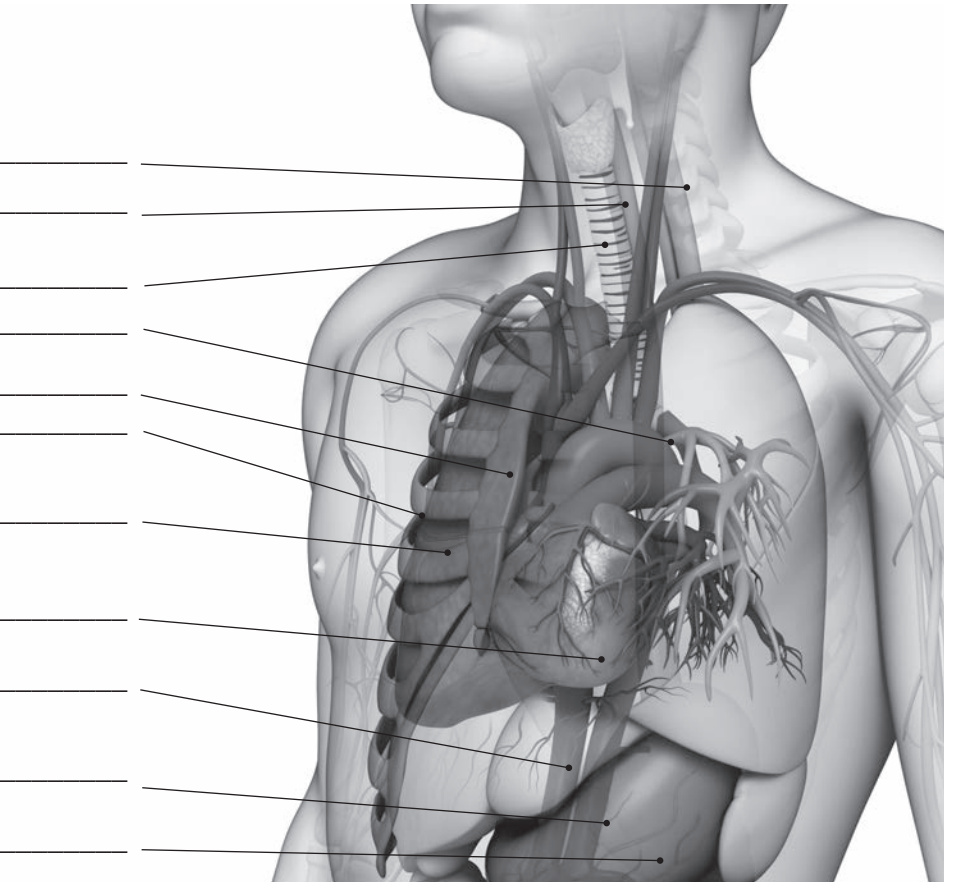
8. On average, the heart moves _____ liters of blood per day.

9. God designed the heart with its own _____ system.

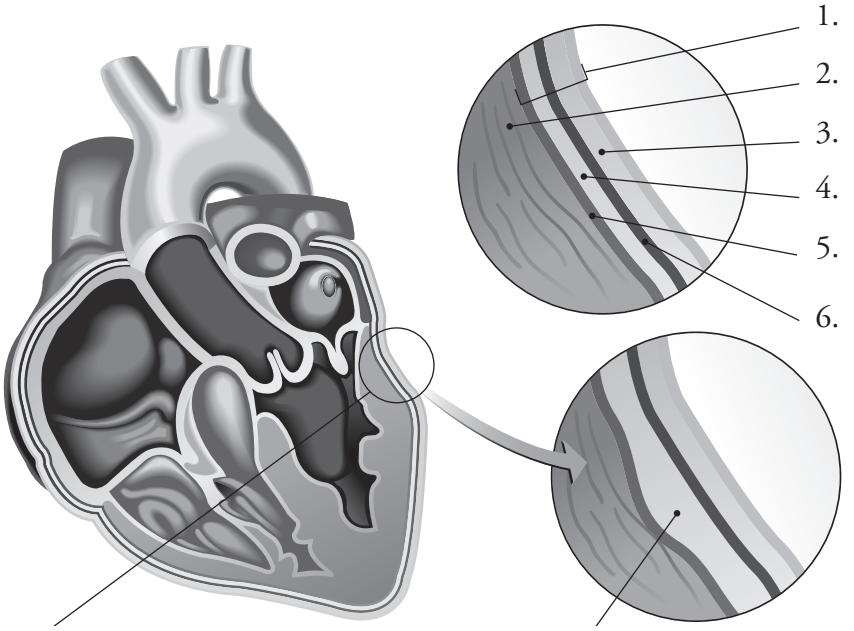
10. The wall of the heart consists of three layers: the epicardium, the myocardium, and the _____.

Complete the Chart — Thoracic Cavity

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____



Complete the Chart — Pericardium and Layers of the Heart



1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Words to Know: Define the Following:

1. Intercalated discs: _____
2. Desmosome: _____
3. Gap junctions: _____
4. Pulmonary circulation: _____
5. Systemic circulation: _____
6. Artery: _____
7. Veins: _____
8. Atria: _____
9. Pulmonary veins: _____
10. Vena cavae: _____

Fill in the Blank

1. Skeletal _____ is attached to the bones of the skeleton.

2. Smooth muscle is found in the walls of most of the hollow _____ of the body.

3. Cardiac muscle is found only in the walls of the _____.

4. Mitochondria generate energy for the _____.

5. _____ blood returns to the right side of the heart and gets pumped out to the lungs.

6. _____ blood returns to the left side of the heart from the lungs and gets pumped out to the brain and body.

7. Oxygenated blood is a _____ red and deoxygenated blood is a more purplish-red color.

8. The human heart has _____ chambers.

9. The words _____ and inferior when speaking of the body mean "upper" and "lower," respectively.

10. The walls of the ventricles are made of _____ muscle than the atrial walls.

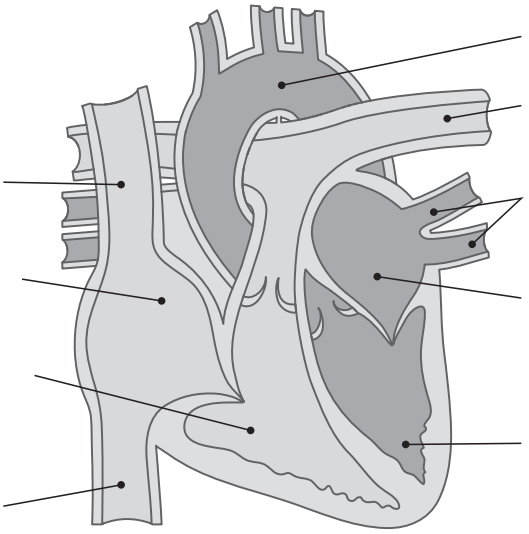
Complete the Chart — Chambers of the Heart

1. _____

2. _____

3. _____

4. _____



5. _____

6. _____

7. _____

8. _____

9. _____

Quizzes and Tests Section

Match the words/phrases and their definitions.

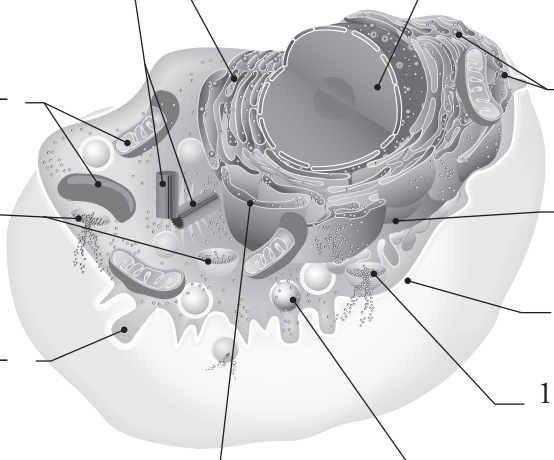
Organs	Exocytosis	Homeostasis	Metabolize	Programmed cell death
Antibodies	Lysosomes	Organ	Anatomy	DNA (deoxyribonucleic acid)

1. _____ groups of tissues that have a particular function
2. _____ the study of the body's parts and how they are put together
3. _____ the process of releasing material from inside the cell
4. _____ small vesicles containing enzymes that can digest many kinds of molecules and debris
5. _____ a controlled way of "burning" the fuel of the body
6. _____ stores the genetic instructions needed to make all the proteins in the body
7. _____ fight infectious invaders in your body
8. _____ a collection of various types of tissues that work together to perform a function
9. _____ the body has many mechanisms to help maintain a balance or "equilibrium" among its many systems
10. _____ the process by which some cells are designed to self-destruct.

Fill in the blank with the correct answer.

1. Psalm _____, says, "I will praise You, for I am fearfully and wonderfully made; marvelous are Your works."
2. Most cells have three basic parts — a nucleus, a cell membrane, and _____.
3. _____ acids are the building blocks of proteins.
4. The cytosol plus the organelles make up the _____.
5. The instructions for what the cell is supposed to do are stored in the _____.
6. The cell's favorite fuel is not wood or gasoline but the sugar _____.
7. DNA is a complex system of information that is used primarily to make the _____ in our body.
8. Collections of organs and structures are called organ _____.
9. Proximal and distal:_____
10. Superior and inferior:_____

Complete the Chart — Human Cell Structure



1. _____
2. _____
3. _____
4. _____
5. _____
_____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

Match the words/phrases and their definitions.

Shock Myocardial ischemia Cardiac output Veins End systolic volume

Capillaries The cardiac cycle Gap junctions Mitochondria The cardiovascular center

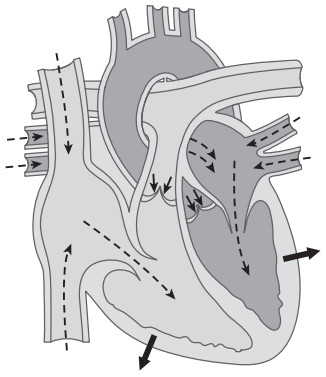
1. _____ tiny power generators that keep the heart muscle continually supplied with energy
2. _____ provide a route for electrical signals to be transmitted from muscle cell to muscle cell.
3. _____ the name given to the five steps involved in filling the heart's chambers and pumping the blood
4. _____ the situation where adequate oxygen is not delivered to the heart muscle
5. _____ the amount of blood pumped by the heart in one minute
6. _____ the amount of blood left in the ventricle after it contracts
7. _____ connect the arteries and veins; get the blood from the arterial system back into the vessels of the venous system
8. _____ their primary function is to return blood to the heart
9. _____ the part of the nervous system that oversees regulation of the heart and blood vessels
10. _____ situations in which the cardiovascular system cannot deliver adequate blood flow to meet the body's needs

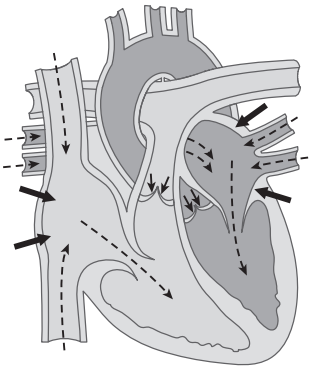
Fill in the blank with the correct answer.

1. A normal _____ is about the size of a person's fist.
2. The walls of the ventricles are made of _____ muscle than the atrial walls.
3. The pressure of the _____ inside the ventricles pushes them shut.
4. God designed the _____ circulation — a way for the heart to pump blood to itself.
5. Cardiac output is the product of two things: the heart rate (HR) and the _____ volume (SV).
6. One of the most common tests performed to detect coronary artery disease is called an exercise test, or a "_____" test.
7. There are five primary types of blood vessels: _____, arterioles, veins, venules, and capillaries.
8. Pulse rate is recorded in _____ per minute.
9. When a person has a blood pressure that is chronically over 140/90 it is known as _____, commonly called "high blood pressure."
10. By some estimates, _____ percent of the world's population has hypertension.

Complete the Chart — The Cardiac Cycle

1. _____
_____
_____
_____
_____





2. _____
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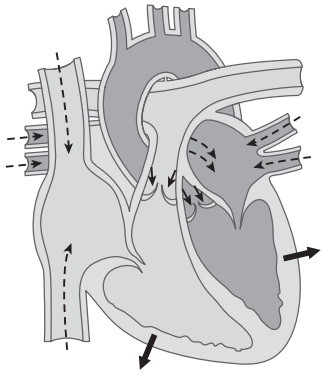

5. _____
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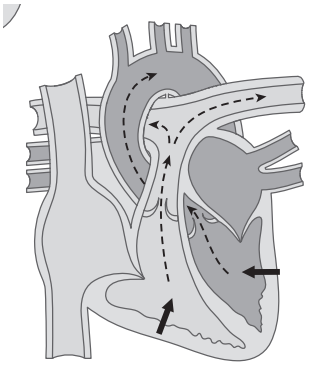

4. _____
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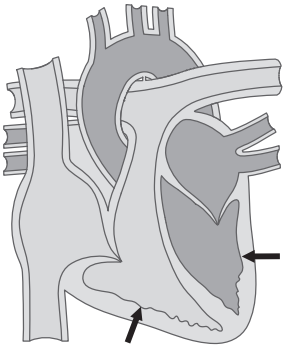
_____
_____



3. _____
_____
_____

Answers

Worksheet 1

Words to Know: Define the Following:

1. **Cells:** the building blocks of life
2. **Anatomy:** the study of the body's parts and how they are put together
3. **Physiology:** the study of how the parts of the body function . . . the study of how everything in the body works
4. **Organs:** groups of tissues that have a particular function
5. **Digestive system:** all the parts that process your food — from your mouth and stomach to your liver and intestines
6. **Nucleus:** directs most of the action in the cell
7. **Cell membrane:** forms the cell's outer border
8. **Cytoplasm:** most of the cell's work gets done here
9. **Erythrocytes:** red blood cells; their main job is to carry oxygen
10. **Nucleus:** the control center of the cell

Fill in the Blank

1. vitamin D
2. 200
3. 139:14
4. cells
5. histology
6. heart
7. simple
8. nervous
9. functional
10. cytoplasm

Complete the Chart — Human Cell Structure

1. Centrioles
2. Mitochondria
3. Peroxisome
4. Secretory vesicle
5. Smooth endoplasmic reticulum
6. Rough endoplasmic reticulum
7. Nucleus
8. Ribosomes
9. Golgi complex
10. Plasma membrane
11. Lysosome
12. Vesicle

Worksheet 2

Words to Know: Define the Following:

1. **The plasma membrane:** the envelope that contains the other components of the cell
2. **Intracellular fluid:** fluid inside the cells
3. **Extracellular fluid:** fluid that is outside the cells
4. **Water soluble:** something that can dissolve in water
5. **Lipid:** another name for a fat
6. **Hydrophilic:** a word that literally means "water-loving"
7. **Hydrophobic:** a word that literally means "water-fearing"
8. **Exocytosis:** the process of releasing material from inside the cell
9. **Cytosol:** the liquid found inside the cell
10. **Lysosomes:** small vesicles containing enzymes that can digest many kinds of molecules and debris

Fill in the Blank

1. membrane
2. phospholipids
3. bilayer
4. cytoplasm
5. Amino
6. endoplasmic
7. Golgi
8. Lysosomes
9. nutrition

Worksheet 20

Words to Know: Define the Following:

1. **Cardiovascular system:** the heart, with all its associated vessels
2. **Respiratory system:** gets oxygen from the air; you need oxygen to live; also gets rid of the carbon dioxide your body makes, and consists of the lungs and all the tubes
3. **Physiology:** how the systems of the body work
4. **Skeletal muscles:** muscles that enable you to walk or use your hands
5. **Mitochondria:** tiny power-generators that keep the heart muscle continually supplied with energy
6. **Esophagus:** carries the food you swallow to your stomach
7. **Trachea:** carries the air you breathe to your lungs
8. **Diaphragm:** a large sheet of skeletal muscle that separates the chest cavity from the abdominal cavity
9. **Pericardium:** this sac goes around the heart
10. **Epicardium:** made mostly of connective tissue and provides a protective covering for the surface of the heart

Fill in the Blank

1. year
2. electrical
3. 22
4. 60,000
5. cells
6. 6,000
7. heart
8. 7,200
9. lubrication
10. endocardium

Complete the Chart — Thoracic Cavity

1. Spine
2. Esophagus
3. Trachea
4. Bronchus
5. Sternum
6. Rib
7. Lung
8. Heart
9. Inferior vena cava
10. Descending aorta
11. Stomach

Complete the Chart — Pericardium and Layers of the Heart

1. Normal pericardium
2. Cardiac muscle
3. Fibrous pericardial
4. Pericardial cavity
5. Visceral pericardial
6. Parietal pericardial
7. Pericardium
8. Pericardial effusion

Worksheet 21

Words to Know: Define the Following:

1. **Intercalated discs:** at the end of cardiac muscle cells are thick areas of the surrounding plasma membrane
2. **Desmosome:** helps hold the muscle fibers together as they contract
3. **Gap junctions:** provide a route for electrical signals to be transmitted from muscle cell to muscle cell
4. **Pulmonary circulation:** the right-sided circulation
5. **Systemic circulation:** the left-sided circulation
6. **Artery:** the name given to a blood vessel in which blood moves away from the heart
7. **Veins:** vessels carrying blood toward the heart

8. **Atria:** plural of atrium; collect blood as it returns to the heart
9. **Pulmonary veins:** the veins that bring blood from the lungs to the left atrium
10. **Vena cavae:** the veins that bring blood back from the brain and the body

Fill in the Blank

1. muscle
2. organs
3. heart
4. cell
5. Deoxygenated
6. Oxygenated
7. brighter
8. four
9. superior
10. thicker

Complete the Chart — Chambers of the Heart

1. Superior vena cavae
2. Right atrium
3. Right ventricle
4. Inferior vena cavae
5. Aorta
6. Pulmonary artery
7. Pulmonary vein
8. Left atrium
9. Left ventricle

Worksheet 22

Words to Know: Define the Following:

1. **Tricuspid valve:** blood passes from the right atrium into the right ventricle through this
2. **Bicuspid valve:** blood passes from the left atrium into the left ventricle though this
3. **Mitral:** used for the bicuspid valve because the two cusps look a little like a bishop's headdress, called a miter
4. **Chordae tendineae:** the ties that bind the cusps to the ventricular wall; this Latin name means "heart strings"
5. **Semilunar valves:** the valves guarding the exit from the ventricles
6. **Pulmonary valve:** the semilunar valve between the right ventricle and the pulmonary artery
7. **Incompetent:** a valve that is damaged and allows blood under high pressure to leak backward, where a whooshing murmur may be heard
8. **Stenosis:** if a damaged valve is stiff and does not open normally, the outflow of blood is impeded
9. **The cardiac cycle:** the name given to the five steps involved in filling the heart's chambers and pumping the blood
10. **Atrial systole:** after the passive filling of the ventricles, when the atria simultaneously contract

Fill in the Blank

1. valve
2. cusp
3. blood
4. half
5. murmurs
6. filling
7. 1816
8. systole
9. relax
10. backward

Complete the Chart — The Cardiac Cycle

1. The "filling phase" when the whole heart is relaxed (atrial and ventricular diastole)
2. The atria contract — atrial systole
3. The beginning of ventricular systole, enough to close the tricuspid and mitral valves
4. Ejection of blood from the heart as ventricular systole (contraction) continues, forcing their exit valves (the semilunar valves) open
5. Ventricular diastole — ventricles relax enough to allow their exit valves (the semilunar valves) to close

Quiz: Section One

Match the words/phrases and their definitions.

1. **Organs:** groups of tissues that have a particular function
2. **Anatomy:** the study of the body's parts and how they are put together
3. **Exocytosis:** the process of releasing material from inside the cell
4. **Lysosomes:** small vesicles containing enzymes that can digest many kinds of molecules and debris
5. **Metabolize:** a controlled way of "burning" the fuel of the body
6. **DNA (deoxyribonucleic acid):** stores the genetic instructions needed to make all the proteins in the body
7. **Antibodies:** fight infectious invaders in your body
8. **Organ:** a collection of various types of tissues that work together to perform a function
9. **Homeostasis:** the body has many mechanisms to help maintain a balance or "equilibrium" among its many systems
10. **Programmed cell death:** the process by which some cells are designed to self-destruct.

Fill in the blank with the correct answer.

1. 139:14
2. cytoplasm
3. Amino
4. cytoplasm
5. nucleus
6. glucose
7. proteins
8. systems
9. Proximal and distal: describe whether something is closer or farther away from the middle of the body
10. Superior and inferior: describe whether something is above or below something else.

Complete the Chart — Human Cell Structure

1. Centrioles
2. Mitochondria
3. Peroxisome
4. Secretory vesicle
5. Smooth endoplasmic reticulum
6. Rough endoplasmic reticulum
7. Nucleus
8. Ribosomes
9. Golgi complex
10. Plasma membrane
11. Lysosome
12. Vesicle

Quiz: Section Two

Match the words/phrases and their definitions.

1. **Bone marrow:** helps to create red and white blood cells
2. **Periosteum:** the outermost layer of bone, which is a thin, fibrous membrane
3. **Osteo:** the Greek word for "bone"
4. **Chondrocytes:** these cells are what make cartilage
5. **Enzymes:** special proteins that speed up and control chemical reactions in the body
6. **Arthritis:** inflammation of one or more joints
7. **Callus:** a cartilage-like layer of tissue that forms inside a fracture
8. **Articulate:** connected by a joint
9. **Axial skeleton:** made up of the skull, the vertebral column, and the ribs
10. **Upper limb:** consists of the pectoral (or shoulder) girdle, arm, forearm, wrist, and hand

Fill in the blank with the correct answer.

1. support
2. compact
3. blood

9. **Excitability:** means that muscle can respond to a stimulus or a trigger
10. **Muscle tone:** refers to the fact that there is some tension in a muscle even when it is not being actively contracted

Fill in the blank with the correct answer.

1. cytosol
2. collagen
3. bones
4. cartilage
5. knees
6. 26
7. support
8. contracts
9. contract
10. breathe

Complete the Chart — Skeletal Muscle Fiber

1. Sarcolemma
2. Mitochondria
3. Myofibrils
4. Sarcoplasmic reticulum
5. Nucleus

The Cardiovascular & Respiratory System Quizzes and Tests Answer Keys

Quiz: Section One

Match the words/phrases and their definitions.

1. **Mitochondria:** tiny power generators that keep the heart muscle continually supplied with energy
2. **Gap junctions:** provide a route for electrical signals to be transmitted from muscle cell to muscle cell.
3. **The cardiac cycle:** the name given to the five steps involved in filling the heart's chambers and pumping the blood
4. **Myocardial ischemia:** the situation where adequate oxygen is not delivered to the heart muscle
5. **Cardiac output:** the amount of blood pumped by the heart in one minute
6. **End systolic volume:** the amount of blood left in the ventricle after it contracts
7. **Capillaries:** connect the arteries and veins; get the blood from the arterial system back into the vessels of the venous system
8. **Veins:** their primary function is to return blood to the heart
9. **The cardiovascular center:** the part of the nervous system that oversees regulation of the heart and blood vessels
10. **Shock:** situations in which the cardiovascular system cannot deliver adequate blood flow to meet the body's needs

Fill in the blank with the correct answer.

1. heart
2. thicker
3. blood
4. coronary
5. stroke
6. stress
7. arteries
8. beats
9. hypertension
10. 25

Complete the Chart — The Cardiac Cycle

1. The "filling phase" when the whole heart is relaxed (atrial and ventricular diastole)
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