Students are given the Heart Hunt location clues.

Clues lead students to places in the school where they can find “Heart Hunt” Facts. They should fill in heart hunt facts at each location in their packet.

They will also pick up a slip from an envelope at each location that gives them hints on labeling a human heart.

As many of my students are seniors, I add bonus points for getting college advice from faculty they come in contact with while they are completing the scavenger hunt.

Points are awarded according to the following:

Points:

Order or return (most points awarded to first team back, and decreases thereafter) \_\_\_\_\_\_

Accuracy of identifying heart parts on diagram (1 point each) \_\_\_\_\_\_

Accurate completion of clue location (1 point each) \_\_\_\_\_\_

Accurate completion of heart facts (1 point each) \_\_\_\_\_\_

Staff facts (.5 points each) \_\_\_\_\_\_

**HEART HUNT**

|  |  |  |
| --- | --- | --- |
|  | **Clue** | **Location** |
| 1 | A fine place to get your heart and the “iron pumping” |  |
| 2 | A likely place to hear “Total Eclipse of the Heart” |  |
| 3 | folge deinem Herzen |  |
| 4 | Helium, Argon and T…He Ar T  |  |
| 5 | Keeping the body hydrated helps the heart pump blood more easily- go to this location for free refills! |  |
| 6 | sigue a tu corazón |  |
| 7 | Stress isn’t good for your heart…feel free to share what’s on your mind with individuals here. |  |
| 8 | suis ton cœur |  |
| 9 | The location of this clue will SHOCK your heart |  |
| 10 | Whole grain, fruits and vegetables…they are good for the heart |  |
| 11 | Wishing guys here would have a heart…not assign a Saturday detention |  |
| 12 | With runs every day, you’ll likely find the fittest heart in the school, and one of the most loved people, in this classroom |  |
| 13 | You may be able to “check out” *Where the Heart Is*, by Ethel Dell here |  |
| 14 | You might find a prize for simply playing with heart…like when you were a kid |  |
| 15 | You’ll find someone trained to manage any heart emergencies every day after school |  |
| 16 | Those with a heart for adoption likely would go to this place to get a furry friend |  |
| 17 | T = 60vr…find someone who could coach you through solving this! |  |
| 18 | Members of Team 3655 have a head start on designing and building the newest generation of heart surgeons. |  |
| 19 | A full muscular sac elevates blood pressure and heart rate- go here to relieve yourself and ease your heart. All genders welcome. |  |
| 20 | “Memory, The Heart” was another masterpiece by Frida. Go to her to find one titled “Self-Portrait with Thorn Necklace and Hummingbird” |  |

Team Members: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Heart Facts**

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* Cardiovascular disease, listed as the underlying cause of death, accounts for nearly 801,000 deaths in the US. That’s about 1 of every\_\_\_\_ deaths in the US. It is the leading global cause of death, accounting for more than 17.3 million deaths per year in 2013, a number that is expected to grow to more than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ million by 2030. About \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Americans die of cardiovascular disease each day, an average of 1 death every \_\_\_\_\_\_\_ seconds. Cardiovascular diseases claim more lives each year than all forms of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and Chronic Lower Respiratory Disease combined.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the leading cause (45.1 percent) of deaths attributable to cardiovascular disease in the US, followed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (16.5 percent), \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (8.5 percent), \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (9.1 percent), diseases of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (3.2 percent). Coronary heart disease accounts for 1 in \_\_\_\_\_\_ deaths in the US, killing over 360,000 people a year.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* About \_\_\_\_\_\_\_,000 people in the US have heart attacks each year. Of those, about \_\_\_\_\_,000 will die. The estimated annual incidence of heart attack in the US is \_\_\_\_\_\_,000 new attacks and \_\_\_\_\_\_,000 recurrent attacks. Average age at the first heart attack is \_\_\_\_\_\_\_\_\_ years for males and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ years for females. Approximately every \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ seconds, an American will have a heart attack.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* Someone in the US has a stroke about once every \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and kills someone in the US about every \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Stroke accounts for 1 of every \_\_\_\_\_\_ deaths in the US. When considered separately from other cardiovascular diseases, stroke ranks No. \_\_\_\_ among all cause of death in the US, killing nearly \_\_\_\_\_\_\_,000 people a year. Stroke is a leading cause of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the US.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* In 2014, any-mention sudden cardiac arrest mortality in the US was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The majority of Out of Hospital Cardiac Arrests (OHCA) occur at a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (70 percent). In 2015, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (19.8 percent) and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (10.6 percent) were the second and third most common locations of OHCA.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* Heart Disease, Stroke and Cardiovascular Disease Risk Factors The American Heart Association gauges the cardiovascular health of the nation by tracking seven key health factors and behaviors that increase risks for heart disease and stroke. We call these “Life’s Simple 7” and we measure them to track progress toward our 2020 Impact Goal: to improve the cardiovascular health of all Americans by \_\_\_\_\_ percent and reduce deaths from cardiovascular diseases and stroke by \_\_\_\_\_\_\_ percent, by the year 2020. Life’s Simple 7 are: not-\_\_\_\_\_\_\_\_\_\_\_\_\_\_, physical activity, healthy \_\_\_\_\_\_\_\_\_\_\_\_, body \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and control of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, blood \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and blood \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* About one in every three U.S. adults or 30.4 percent, do not engage in leisure time \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Among students in grades 9-12, only about \_\_\_\_\_\_\_ percent meet the American Heart Association recommendation of \_\_\_\_\_\_\_ minutes of exercise every day. More high school boys (\_\_\_\_\_ percent) than girls (\_\_\_\_\_\_ percent) reported having been physically active at least 60 minutes per day on all 7 days.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* Between 2003 to 2004 and 2011 to 2012 in the United States, the mean AHA healthy diet score improved in both children and adults. These improvements were largely attributable to increased \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ consumption and decreased sugar-sweetened \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ consumption in both children and adults, as well as a small, non-significant trend in increased \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ consumption. No major trends were evident in children or adults in progress toward the targets for consumption of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* About 94.6 million, or 39.7 percent, of American adults have total cholesterol of \_\_\_\_\_\_\_\_ mg/dL or higher. About 28.5 million, or 11.9 percent, of American adults have total cholesterol of \_\_\_\_\_\_\_ mg/dL or higher. Nearly 1 of every \_\_\_\_ American adults have high levels of LDL cholesterol (the “\_\_\_\_\_\_\_\_” kind). About 18.7 percent of American adults have low levels of HDL cholesterol (the “\_\_\_\_\_\_\_\_\_\_” kind).

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* About 85.7 million, or \_\_\_\_\_\_ percent, of American adults have high blood pressure. Of the hypertensive, about 76 percent of those are using antihypertensive medication, but only 54.4 percent of those have their condition controlled. About 77 percent of people who have a first \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ have blood pressure higher than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mm Hg. Nearly half of people with high blood pressure (45.6 percent) do not have it under control. Projections show that by 2030, about \_\_\_\_\_\_\_\_\_\_\_\_\_ percent of US adults will have hypertension, an increase of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ percent from 2012 estimates.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* In the US, the prevalence of obesity among adults, estimated using NHANES data, increased from 1999 to 2000 through 2013 to 2014 from 30.5 percent to 37.7 percent. In the US, the prevalence of overweight and obesity among children and adolescents age 2-19 years, estimated using NHANES data, is 33.4 percent (\_\_\_\_\_\_\_\_\_ percent were overweight and \_\_\_\_\_\_\_\_ percent were obese).

• By age group, the prevalence of obesity for children aged 2 to 5 years was \_\_\_\_\_\_\_\_\_\_\_\_ percent; for children aged 6 to 11 years, prevalence was \_\_\_\_\_\_\_\_\_\_\_\_ percent; and for adolescents aged 12 to 19 years, prevalence was \_\_\_\_\_\_\_\_\_\_\_ percent.

• Worldwide, between 1980 and 2013, the proportion of overweight or obese adults increased from 28.8 percent to \_\_\_\_\_\_\_\_\_\_\_\_\_ percent among males and from 29.8 percent to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ percent among females.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* Although tobacco use in the United States has been \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, tobacco use worldwide has climbed steeply and is currently responsible for \_\_\_ million deaths annually. Worldwide, tobacco smoking (including second-hand smoke) was 1 of the top \_\_\_ leading risk factors for disease and contributed to an estimated \_\_\_\_\_\_\_\_ million deaths in 2010.
* \_\_\_\_\_\_\_\_\_percent of adolescents aged 12 to 17 report being current smokers.
* Among adults, \_\_\_\_\_\_\_ percent of males and \_\_\_\_\_\_\_\_ percent of females are smokers.
* In 2014 there were approximately \_\_\_\_\_\_\_\_\_\_\_\_\_\_ new cigarette smokers every \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Blood pressure, which is created by the pumping action of the heart, is the force that blood exerts against the walls of the circulatory system. Blood pressure is usually measured in \_\_\_\_\_\_\_\_\_\_\_\_\_. Blood pressure measurement typically consists of two readings. One is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pressure, which reflects the pressure of the heart during systole. The other reading is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pressure and occurs when the heart is at rest between beats.

A normal systolic blood pressure is considered to be no more than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mmHg.

normal diastolic pressure is considered to be no more than \_\_\_\_\_\_\_\_\_\_\_\_\_\_ mmHg.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Your adult heart beats about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ times each day. Do the math, and that’s at least one beat every second, or \_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ times a minute, according to the [American Heart Association](https://www.heart.org/HEARTORG/Conditions/More/MyHeartandStrokeNews/All-About-Heart-Rate-Pulse_UCM_438850_Article.jsp). For people whose heart rate is closer to 60 beats per minute (bpm), that’s about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ times a day. And it’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ times a day if your heart rate is closer to 100 bpm.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Age and fitness level affect your heart rate.  Generally, as children grow or adults get fitter, the heart rate gets slower. See how it changes throughout the decades with this chart from the [National Institutes of Health](https://medlineplus.gov/ency/article/003399.htm):

* Newborn (0 to 11 months):  \_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_ bpm
* One to four years:  80 to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bpm
* Five to nine years:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to 110 bpm
* Children 10 years and up and adults (non-athletes):  \_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_ bpm
* Adults (athletes):  \_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_ bpm

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

It is estimated that in a person at rest, the volume of blood ejected in each systole is around \_\_\_\_\_\_ to \_\_\_\_\_\_ ml. This amount of blood moves from the left ventricle to the aorta. It is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Similarly, the same amount is forced from the right ventricle to the pulmonary artery. Therefore, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is around 140 to 160 ml. Given a pulse rate of 70 and a stroke volume of 80 ml, the amount of blood that leaves the left ventricle is 70 x 80 ml = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ liters per minute. This is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Arteries receive blood from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and carry it to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; the veins return that blood back to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Arteries divide into branches through the body, becoming smaller at each division. Arteries are characterized by their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The aorta—the major vessel that is connected to the left ventricle—has a diameter of approximately \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is equal to 2.54 cm or 0.0254m.

Capillaries are tiny vessels about \_\_\_\_\_\_\_\_\_\_\_\_ in diameter that connect arterioles with venules.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

There are two phases in a cardiac cycle; a contraction period called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and a relaxation period called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The contraction and relaxation of the heart represents one heartbeat. One heart beat is one cardiac cycle.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are relaxed during diastole. This is the moment when ventricular filling happens.

Ventricles \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ during systole, propelling blood into the pulmonary and systemic circuits. An average normal cardiac cycle occurs around \_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_ times per minute. This number represents the heart rate.

The cardiac cycle varies in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ proportion to the size of a person. This statement is extended as well to all warm-blooded animals. It makes sense that the circulation on a small body will be completed in a small period of time and, therefore, determining more "mini-cycles" per a given period of time than a larger body. The heart of an elephant for example, beats around \_\_\_\_\_\_\_\_\_ times per minute. The heart of a mouse beats around \_\_\_\_\_\_\_\_\_\_ times per minute. In general, if the body is small, the consumption of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by the tissues of the animal will be faster in comparison to a larger animal.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

It is said that the heart is similar in size to a fist; in other words, a closed hand, making a fist, represents the size of our heart. It weighs a bit less than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

During its contraction, the impact is felt on the wall of the chest, between ribs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_. To be more precise, this impact is felt most strongly below the left nipple and approximately \_\_\_\_\_\_\_ cm (about 3 inches) to the left of the symmetric axis.

**LOCATION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Heartbeat is a bit faster in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Comparing fetuses, the heart rate of a female fetus is approximately \_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_, while for a male fetus is \_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_. Heart rate is also influenced by age. At birth the rate is approximately \_\_\_\_\_\_ beats per minute. When the individual is three years old, the rate is \_\_\_\_\_\_ beats per minute. Youngsters have a rate of \_\_\_\_\_\_ beats per minute; adults have it at about \_\_\_\_\_\_\_ beats per minute, while elderly people have it at \_\_\_\_\_\_\_ to \_\_\_\_\_\_\_ beats per minute.

The heartbeat rate is influenced by the posture of our body. Standing up the heartbeat rate is \_\_\_\_\_\_\_; sitting is \_\_\_\_\_\_ and when lying down the heartbeat rate is \_\_\_\_\_\_\_\_\_\_. Therefore, some patients are told to lie down when physicians want to slow down the heartbeat rate.

**Words to the Wise**

Interact with staff members as you look for heart parts, descriptions and facts. If you find a teacher WITHOUT a class or another staff member, ask them for “their best advice they can give you about being successful in your first year of college”. Complete the chart as you talk with them.

|  |  |
| --- | --- |
| **Name** | **Advice** |
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**Have an envelope or a stack of these near the signs at each location. They will collect and use these for the final task of labeling a diagram of a heart.**

The left atrium is one of the four hollow chambers of the heart. It plays the vital role of receiving blood from the lungs via the pulmonary veins and pumping it to the left ventricle.

The right atrium is one of the four hollow chambers of the interior of the heart. It is located in the upper right corner of the heart superior to the right ventricle. Deoxygenated blood entering the heart through veins from the tissues of the body first enters the heart through the right atrium before being pumped into the right ventricle.

The right ventricle is second largest chamber of the heart, smaller than only the left ventricle. Like the left ventricle, it is a hollow, muscular chamber on the inferior end of the heart. The right ventricle performs the vital role in pulmonary circulation of pumping deoxygenated blood to the lungs where gas exchange occurs.

The left ventricle is the lower left-hand chamber of the heart. Together with the right ventricle, it forces blood out of the heart into the arteries to be carried back to the various sites throughout the body. The left ventricle has a much thicker wall than the right ventricle. It must force blood to all other parts of the body against a great flow of resistance, so the walls are stronger than that of the right ventricle.

The inferior vena cava is the largest vein in the human body. It collects blood from veins serving the tissues inferior to the heart and returns this blood to the right atrium of the heart. Although the vena cava is very large in diameter, its walls are incredibly thin due to the low pressure exerted by venous blood.

The superior vena cava is one of the two major paths into which the veins from all parts of the body (except from the lungs back to the heart) converge to lead to the right atrium of the heart.

The arch of the aorta is the second major anatomical region of the aorta; it curves above the heart between the ascending and descending aorta. All of the blood delivered from the heart to the systemic tissues of the body passes through the aorta, making it the largest artery in the human body.

The mitral valve, also known as the bicuspid valve, is found between the left atrium and left ventricle. Two cusps form this valve. Its cusps are attached to papillary muscles by way of the chordae tendinae and it allows blood to enter the left ventricle from the left atrium

The tricuspid valve guards the atrioventricular opening between the right atrium and the right ventricle of the heart. This valve is composed of three leaflets, or cusps. This valve permits blood to move from the right atrium into the right ventricle and prevents it from moving back the other way.

The interventricular septum separates the left ventricle from the right ventricle. The interventricular septum is slanted backwards and to the right, and it also curves to the right, which completes the oval of the thick ventricle and encroaches upon the chamber of the right ventricle.

The left pulmonary vein carries blood away from the lower lobe of the left lung back toward the heart. It can be found at the lowest section of the small depression known as the hilum of the lung, and often feeds directly into the left atrium of the heart.

The left pulmonary artery is also known as the left branch of the pulmonary artery. It supplies blood to the left lung; it runs down to the root of that lung and from there it branches out into two separate arteries. These smaller arteries each transport blood to one of the lung's left lobes.

The right pulmonary artery is also known as the right branch of the pulmonary artery. It is a thicker artery, and a longer one, compared to the left pulmonary artery. The right pulmonary artery provides the right lung's blood supply; it runs down to the root of the right lung and from there it branches out into two separate arteries. These smaller arteries each transport blood to one of the lung's right lobes.

The right pulmonary vein is a large blood vessel which takes blood from the lower lobe of the right lung back to the heart. It runs behind the superior vena cava and the right atrium and deposits the blood directly into the left atrium.

**HEART HUNT**

**Cardiovascular disease, listed as the underlying cause of death, accounts for nearly 801,000 deaths in the US. That’s about 1 of every 3 deaths in the US. It is the leading global cause of death, accounting for more than 17.3 million deaths per year in 2013, a number that is expected to grow to more than 23.6 million by 2030. About 2,200 Americans die of cardiovascular disease each day, an average of 1 death every 40 seconds. Cardiovascular diseases claim more lives each year than all forms of cancer and Chronic Lower Respiratory Disease combined.**

**HEART HUNT**

**Coronary Heart Disease is the leading cause (45.1 percent) of deaths attributable to cardiovascular disease in the US, followed by stroke (16.5 percent), Heart Failure (8.5 percent), High Blood Pressure (9.1 percent), diseases of the arteries (3.2 percent). Coronary heart disease accounts for 1 in 7 deaths in the US, killing over 360,000 people a year.**

**HEART HUNT**

**About 790,000 people in the US have heart attacks each year. Of those, about 114,000 will die. The estimated annual incidence of heart attack in the US is 580,000 new attacks and 210,000 recurrent attacks. Average age at the first heart attack is 65.3 years for males and 71.8 years for females. Approximately every 40 seconds, an American will have a heart attack.**

**HEART HUNT**

**Someone in the US has a stroke about once every 40 seconds and kills someone in the US about every 4 minutes. Stroke accounts for 1 of every 20 deaths in the US. When considered separately from other cardiovascular diseases, stroke ranks No. 5 among all cause of death in the US, killing nearly 133,000 people a year. Stroke is a leading cause of serious long-term disability in the US.**

**HEART HUNT**

**In 2014, any-mention sudden cardiac arrest mortality in the US was 353,427. The majority of Out of Hospital Cardiac Arrests (OHCA) occur at a home or residence (70 percent). In 2015, public settings (19.8 percent) and nursing homes (10.6 percent) were the second and third most common locations of OHCA.**

**HEART HUNT**

**Heart Disease, Stroke and Cardiovascular Disease Risk Factors The American Heart Association gauges the cardiovascular health of the nation by tracking seven key health factors and behaviors that increase risks for heart disease and stroke. We call these “Life’s Simple 7” and we measure them to track progress toward our 2020 Impact Goal: to improve the cardiovascular health of all Americans by 20 percent and reduce deaths from cardiovascular diseases and stroke by 20 percent, by the year 2020. Life’s Simple 7 are: not-smoking, physical activity, healthy diet, body weight, and control of cholesterol, blood pressure, and blood sugar.**

**HEART HUNT**

**Although tobacco use in the United States has been declining, tobacco use worldwide has climbed steeply and is currently responsible for 5 million deaths annually. Worldwide, tobacco smoking (including second-hand smoke) was 1 of the top 3 leading risk factors for disease and contributed to an estimated 6.2 million deaths in 2010.**

* **4.9 percent of adolescents aged 12 to 17 report being current smokers.**
* **Among adults, 16.7 percent of males and 13.7 percent of females are smokers.**
* **In 2014 there were approximately 5,700 new cigarette smokers every day.**

**HEART HUNT**

**About one in every three U.S. adults or 30.4 percent, do not engage in leisure time physical activity. Among students in grades 9-12, only about 27.1 percent meet the American Heart Association recommendation of 60 minutes of exercise every day. More high school boys (36 percent) than girls (17.7 percent) reported having been physically active at least 60 minutes per day on all 7 days.**

**HEART HUNT**

**Between 2003 to 2004 and 2011 to 2012 in the United States, the mean AHA healthy diet score improved in both children and adults. These improvements were largely attributable to increased whole grain consumption and decreased sugar-sweetened beverage consumption in both children and adults, as well as a small, nonsignificant trend in increased fruit and vegetable consumption. No major trends were evident in children or adults in progress toward the targets for consumption of fish or sodium.**

**HEART HUNT**

**About 94.6 million, or 39.7 percent, of American adults have total cholesterol of 200 mg/dL or higher. About 28.5 million, or 11.9 percent, of American adults have total cholesterol of 240 mg/dL or higher. Nearly 1 of every 3 American adults have high levels of LDL cholesterol (the “bad” kind). About 18.7 percent of American adults have low levels of HDL cholesterol (the “good” kind).**

**HEART HUNT**

**In the US, the prevalence of obesity among adults, estimated using NHANES data, increased from 1999 to 2000 through 2013 to 2014 from 30.5 percent to 37.7 percent. In the US, the prevalence of overweight and obesity among children and adolescents age 2-19 years, estimated using NHANES data, is 33.4 percent (16.2 percent were overweight and 17.2 percent were obese).**

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**HEART HUNT**

Blood pressure, which is created by the pumping action of the heart, is the force that blood exerts against the walls of the circulatory system. Blood pressure is usually measured in mmHg. Blood pressure measurement typically consists of two readings. One is called the systolic pressure, which reflects the pressure of the heart during systole. The other reading is called diastolic pressure and occurs when the heart is at rest between beats.

*Inequalities and Blood Pressure*

A normal systolic blood pressure is considered to be no more than 120 mmHg, which it can be written as the inequality: Normal SBP ≤ 120 mmHg

A normal diastolic pressure is considered to be no more than 80 mmHg, or written as an inequality: Normal DBP ≤ 80

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* Newborn (0 to 11 months):  70 to 160 bpm
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**HEART HUNT**

It is estimated that in a person at rest, the volume of blood ejected in each systole is around 70 to 80 ml. This amount of blood moves from the left ventricle to the aorta. It is called the stroke volume. Similarly, the same amount is forced from the right ventricle to the pulmonary artery. Therefore, the total cardiac output is around 140 to 160 ml. Given a pulse rate of 70 and a stroke volume of 80 ml, the amount of blood that leaves the left ventricle is 70 x 80 ml = 5.6 liters per minute. This is called the cardiac output.

**HEART HUNT**

The perfect arrangement of arteries, veins and capillaries along the entire body ensures the proper distribution of the blood.

Arteries receive blood from the heart and carry it to the capillaries; the veins return that blood back to the heart. Arteries divide into branches through the body, becoming smaller at each division. Arteries are characterized by their elasticity.

The aorta—the major vessel that is connected to the left ventricle—has a diameter of approximately 1 inch, which is equal to 2.54 cm or 0.0254m.

Capillaries are tiny vessels about 8Μ in diameter that connect arterioles with venules. Venules are small veins.

**HEART HUNT**

There are two phases in a cardiac cycle; a contraction period called systole, and a relaxation period called diastole.

The contraction and relaxation of the heart represents one heartbeat. One heart beat is one cardiac cycle.

Ventricles are relaxed during diastole. This is the moment when ventricular filling happens.

Ventricles contract during systole, propelling blood into the pulmonary and systemic circuits. An average normal cardiac cycle occurs around 70 to 72 times per minute. This number represents the heart rate. Given a pulse rate of 70 to 72, the time for a cardiac cycle is 0.8 second.

The cardiac cycle varies in inverse proportion to the size of a person. This statement is extended as well to all warm-blooded animals. It makes sense that the circulation on a small body will be completed in a small period of time and, therefore, determining more "mini-cycles" per a given period of time than a larger body. The heart of an elephant for example, beats around 25 times per minute. The heart of a mouse beats around 700 times per minute. In general, if the body is small, the consumption of oxygen by the tissues of the animal will be faster in comparison to a larger animal.

**HEART HUNT**

It is said that the heart is similar in size to a fist; in other words, a closed hand, making a fist, represents the size of our heart. It weighs a bit less than one pound.

During its contraction, the impact is felt on the wall of the chest, between ribs five and six. To be more precise, this impact is felt most strongly below the left nipple and approximately 8 cm (about 3 inches) to the left of the symmetric axis.

**HEART HUNT**

Heartbeat is a bit faster in women than in men. Comparing fetuses, the heart rate of a female fetus is approximately 140 to 145, while for a male fetus is 130 to 135. Heart rate is also influenced by age. At birth the rate is approximately 140 beats per minute. When the individual is three years old, the rate is 100 beats per minute. Youngsters have a rate of 90 beats per minute; adults have it at about 75 beats per minute, while elderly people have it at 70 to 80 beats per minute.

The heartbeat rate is influenced by the posture of our body. Standing up the heartbeat rate is 80; sitting is 70 and when lying down the heartbeat rate is 66. Therefore, some patients are told to lie down when physicians want to slow down the heartbeat rate.

**HEART HUNT (ANSWERS)**

|  |  |  |
| --- | --- | --- |
|  | **Clue** | **Location** |
| 1 | A fine place to get your heart and the “iron pumping” | Weight room |
| 2 | A likely place to hear “Total Eclipse of the Heart” | Choir room |
| 3 | folge deinem Herzen | German |
| 4 | Helium, Argon and T…He Ar T  | Periodic table on wall/chemistry room |
| 5 | Keeping the body hydrated helps the heart pump blood more easily- go to this location for free refills! | Water fountain |
| 6 | sigue a tu corazón | Spanish  |
| 7 | Stress isn’t good for your heart…feel free to share what’s on your mind with individuals here. | Counseling office |
| 8 | suis ton cœur | French |
| 9 | The location of this clue will SHOCK your heart | AED |
| 10 | Whole grain, fruits and vegetables…they are good for the heart | Cafeteria |
| 11 | Wishing guys here would have a heart…not assign a Saturday detention | Discipline office/administrator |
| 12 | With runs every day, you’ll likely find the fittest heart in the school, and one of the most loved people, in this classroom | Health teacher |
| 13 | You may be able to “check out” *Where the Heart Is*, by Ethel Dell here | Library |
| 14 | You might find a prize for simply playing with heart…like when you were a kid | Trophy case |
| 15 | You’ll find someone trained to manage any heart emergencies every day after school | Athletic training room |
| 16 | Those with a heart for adoption likely would go to this place to get a furry friend | Kennel (our school store) |
| 17 | T = 60vr…find someone who could coach you through solving this! | Math teacher  |
| 18 | Members of Team 3655 have a head start on designing and building the newest generation of heart surgeons. | Robotics room |
| 19 | A full muscular sac elevates blood pressure and heart rate- go here to relieve yourself and ease your heart. All genders welcome. | Restroom |
| 20 | “Memory, The Heart” was another masterpiece by Frida. Go to her to find one titled “Self-Portrait with Thorn Necklace and Hummingbird” | Mural of Frida Kahlo on the wall in hallway |

Team Members: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cardiovascular disease, listed as the underlying cause of death, accounts for nearly 801,000 deaths in the US. That’s about 1 of every 3 deaths in the US. It is the leading global cause of death, accounting for more than 17.3 million deaths per year in 2013, a number that is expected to grow to more than 23.6 million by 2030. About 2,200 Americans die of cardiovascular disease each day, an average of 1 death every 40 seconds. Cardiovascular diseases claim more lives each year than all forms of cancer and Chronic Lower Respiratory Disease combined.

Coronary Heart Disease is the leading cause (45.1 percent) of deaths attributable to cardiovascular disease in the US, followed by stroke (16.5 percent), Heart Failure (8.5 percent), High Blood Pressure (9.1 percent), diseases of the arteries (3.2 percent). Coronary heart disease accounts for 1 in 7 deaths in the US, killing over 360,000 people a year.

About 790,000 people in the US have heart attacks each year. Of those, about 114,000 will die. The estimated annual incidence of heart attack in the US is 580,000 new attacks and 210,000 recurrent attacks. Average age at the first heart attack is 65.3 years for males and 71.8 years for females. Approximately every 40 seconds, an American will have a heart attack.

Someone in the US has a stroke about once every 40 seconds and kills someone in the US about every 4 minutes. Stroke accounts for 1 of every 20 deaths in the US. When considered separately from other cardiovascular diseases, stroke ranks No. 5 among all cause of death in the US, killing nearly 133,000 people a year. Stroke is a leading cause of serious long-term disability in the US.

In 2014, any-mention sudden cardiac arrest mortality in the US was 353,427. The majority of Out of Hospital Cardiac Arrests (OHCA) occur at a home or residence (70 percent). In 2015, public settings (19.8 percent) and nursing homes (10.6 percent) were the second and third most common locations of OHCA.

Heart Disease, Stroke and Cardiovascular Disease Risk Factors The American Heart Association gauges the cardiovascular health of the nation by tracking seven key health factors and behaviors that increase risks for heart disease and stroke. We call these “Life’s Simple 7” and we measure them to track progress toward our 2020 Impact Goal: to improve the cardiovascular health of all Americans by 20 percent and reduce deaths from cardiovascular diseases and stroke by 20 percent, by the year 2020. Life’s Simple 7 are: not-smoking, physical activity, healthy diet, body weight, and control of cholesterol, blood pressure, and blood sugar.

Although tobacco use in the United States has been declining, tobacco use worldwide has climbed steeply and is currently responsible for 5 million deaths annually. Worldwide, tobacco smoking (including second-hand smoke) was 1 of the top 3 leading risk factors for disease and contributed to an estimated 6.2 million deaths in 2010.

* 4.9 percent of adolescents aged 12 to 17 report being current smokers.
* Among adults, 16.7 percent of males and 13.7 percent of females are smokers.
* In 2014 there were approximately 5,700 new cigarette smokers every day.

About one in every three U.S. adults or 30.4 percent, do not engage in leisure time physical activity. Among students in grades 9-12, only about 27.1 percent meet the American Heart Association recommendation of 60 minutes of exercise every day. More high school boys (36 percent) than girls (17.7 percent) reported having been physically active at least 60 minutes per day on all 7 days.

Between 2003 to 2004 and 2011 to 2012 in the United States, the mean AHA healthy diet score improved in both children and adults. These improvements were largely attributable to increased whole grain consumption and decreased sugar-sweetened beverage consumption in both children and adults, as well as a small, nonsignificant trend in increased fruit and vegetable consumption. No major trends were evident in children or adults in progress toward the targets for consumption of fish or sodium.

Between 1999 and 2012, although AHA healthy diet scores tended to improve in all race/ethnicity, income, and education levels, many disparities present in earlier years widened over time, with generally smaller improvements seen in minority groups and those with lower income or education.

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**3. Heart disease isn’t only the number one killer of men, it’s also the top killer for women.**Your heart doesn’t care if you’re from Mars or Venus. “Heart disease is an equal opportunity buzz kill,” says [James Beckerman, MD](https://oregon.providence.org/physician-directory/b/beckerman-james-g/), director of the Center for Prevention and Wellness at the Providence Heart and Vascular Institute in Portland, Oregon, and author of [Heart to Start](https://www.oregonlive.com/health/index.ssf/2015/02/heart_to_start_fitness_book_by.html) (2015). More women die of heart disease than from most cancers combined, notes Dr. Beckerman.

According to the [American Heart Association (AHA)](http://www.heart.org/HEARTORG/Advocate/IssuesandCampaigns/QualityCare/Women-and-Heart-Disease_UCM_430484_Article.jsp), more than one in three women is living with heart disease. Every minute in this country, one woman dies from heart disease, stroke, or another form of cardiovascular disease.

**4. Want to know how big your heart is? Make a fist.**Heart size depends on the size of the person as well as the condition of their heart. Generally speaking, a healthy heart is about the size of the person's fist.

That’s only a healthy heart, though. “Hearts can enlarge in response to certain conditions,” says [Kathryn Boling, MD](https://mdmercy.com/centers-of-excellence/additional-centers/primary-care-physicians/find-a-primary-care-doctor/primary-care-doctors/kathryn-boling-md?sc_lang=en), a family medicine physician with Lutherville Personal Physicians in Lutherville, Maryland. For instance, [congestive heart failure](https://www.everydayhealth.com/congestive-heart-failure/guide/) can cause the heart to enlarge, explains the [American College of Cardiology](https://www.cardiosmart.org/Healthwise/hw44/415/hw44415).

**5. Your heart rate drops while you sleep.** At night, it’s common for heart rates to drop below 60 bpm. Some people even have rates in the 40s while sleeping. Why? “It’s because your metabolism slows and the parasympathetic nervous system, which slows your heart and relaxes you, is more active,” Boling says.

**6. Heart attack symptoms are different in men and women.** Although heart disease is an equal opportunity killer, [symptoms of heart attack](https://www.everydayhealth.com/news/barbra-streisand-heart-health-fight-ladykiller/) show up differently in me versus women. Whereas men often report crushing chest pain, sweating and nausea, women might instead experience shortness of breath, dizziness, lightheadedness or fainting, pain in the lower chest or upper abdomen, and upper back pressure, notes the AHA.

**7. Your activity level is the greatest potential risk factor for heart disease.** People with low fitness levels have double the risk of heart disease as their more active counterparts, Beckerman says. The [AHA recommends](https://www.heart.org/HEARTORG/HealthyLiving/PhysicalActivity/FitnessBasics/American-Heart-Association-Recommendations-for-Physical-Activity-in-Adults_UCM_307976_Article.jsp#.WHcq7rmHjh8) logging at least 150 minutes of moderate-intensity exercise, or 75 minutes of vigorous activity, or a combination of the two, every week.

The good news is, “whether you’re on the treadmill, in the weight room, or in a yoga studio, your heart benefits from every type of activity,” he says. And 80 percent of heart disease is preventable with healthy lifestyle choices and management of risk factors, he adds. Other ways to [lower heart disease risk](https://www.heart.org/HEARTORG/Conditions/My-Life-Check---Lifes-Simple-7_UCM_471453_Article.jsp) include quitting smoking, controlling cholesterol, eating better, managing blood pressure, losing weight, and reducing blood sugar, according to the AHA.

**8. Depression increases your risk for a heart attack, especially if you’re a woman.** If you’re a woman under 55 with [moderate or severe depression](https://www.everydayhealth.com/columns/health-answers/heart-attack-depression-link/), listen up. This group of women are more than twice as likely to [suffer a heart attack](https://www.everydayhealth.com/news/depression-doubles-odds-heart-attack-younger-women/), die of heart disease, or require an artery-opening procedure, Boling says.

**9. Excessive amounts of sitting have been linked to an increased risk of heart disease.**  You may have heard that sitting is the new smoking. Numerous studies show that spending most of the day on your duff has been linked to chronic health conditions, [including heart disease](https://www.everydayhealth.com/columns/daily-checkup/even-you-exercise-too-much-sitting-can-make-you-sick/).

“When we’re more active, even with smaller movements like when we stand or shift from side to side, our muscles turn on genes that create chemicals and proteins that not only help us process blood sugar and cholesterol more efficiently but also create a

healthier atmosphere in the walls of our blood vessels,” Beckerman says. That then leads to a lower heart disease risk, which is why you should stand up and move around at least every hour for a few minutes.

**10. Your heart is one giant pump.** Every minute, your heart pumps about five quarts of blood through a system of blood vessels that's over 60,000 miles long, [according to the Cleveland Clinic](https://my.clevelandclinic.org/services/heart/heart-blood-vessels/heart-facts). That translates to about 2,000 gallons of blood every day.

* Heart disease is the No. 1 killer of women and is more deadly than all forms of cancer combined.
* Approximately 1 in 31 deaths of women is attributable to breast cancer, whereas 1 in 7.5 female deaths is attributable to coronary heart disease.
* Every minute, approximately one woman dies from heart disease.
* Only 1 in 5 American women believe that heart disease is her greatest health threat.
* An estimated 6.6 million women alive today in the U.S. have coronary heart disease.
* 90% of women have one or more risk factors for developing heart disease or stroke.
* Since 1984, more women than men have died each year from heart disease.
* Heart disease (which includes Heart Disease, Stroke and other Cardiovascular Diseases) is the No. 1 cause of death in the United States, killing nearly 787,000 people alone in 2011.
* Heart disease is the leading cause of death for people of most racial/ethnic groups in the United States, including African Americans, Hispanics and Whites. For Asian Americans or Pacific Islanders and American Indians or Alaska Natives, heart disease is second only to cancer.
* Cardiovascular diseases claim more lives than all forms of cancer combined.
* Coronary heart disease is the most common type of heart disease, killing nearly 380,000 people annually.
* In the United States, someone has a heart attack every 34 seconds. Every 60 seconds, someone in the United States dies from a heart disease-related event.
* About 720,000 people in the U.S. suffer heart attacks each year. Of these, 515,000 are a first heart attack and 205,000 happen in people who have already had a heart attack.
* In 2011, about 326,200 people experienced out-of-hospital cardiac arrests in the United States. Of those treated by emergency medical services, 10.6 percent survived. Of the 19,300 bystander-witnessed out-of-hospital cardiac arrests in the same year, 31.4 percent survived.
* Direct and indirect costs of heart disease total more than $320.1 billion. That includes health expenditures and lost productivity.