

PLTW Principles of Biomedical Science

Lesson 5: April 10th

Learning Targets / Daily Objectives:

Students will be able to draw, label and identify the major heart valves, tendons, & muscles inside the heart. (*Reference: PLTW[®] 4.1.2 Anatomy of the Heart*)

Let's Get Started (Bell Ringer):

Watch Videos: [Anatomy of the Heart Valves](#)

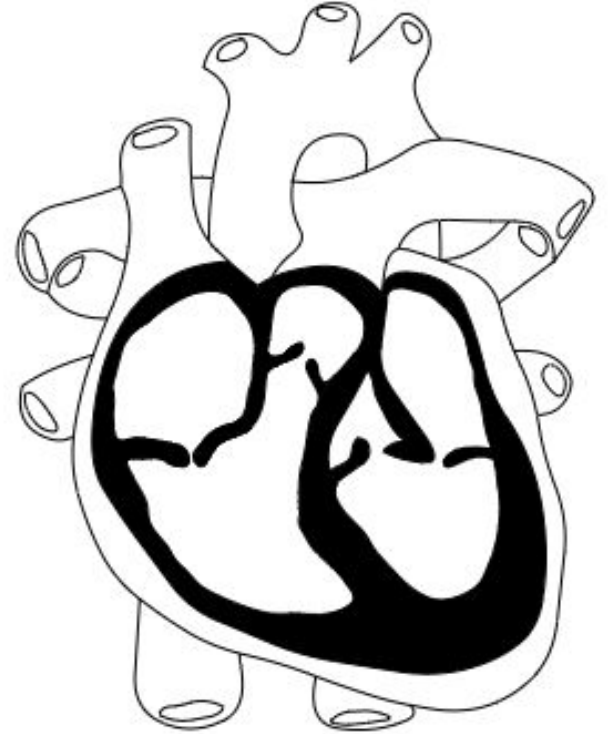
[Layers of the Heart / Valves & Tendons Movie time Start - 3:30](#)

Lesson/Activity:

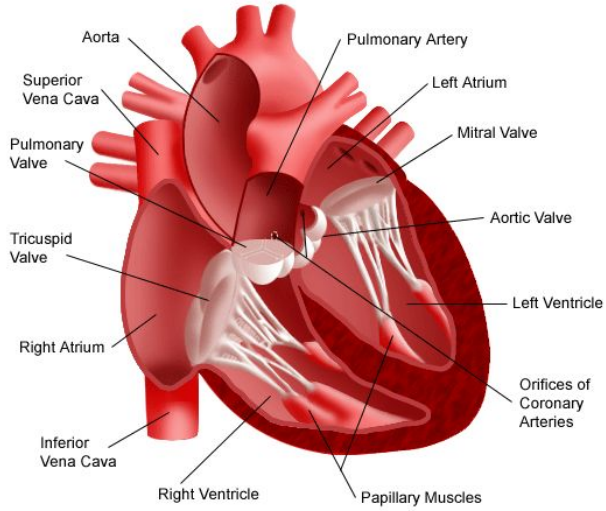
1. Draw a heart diagram in your notebook or on a piece of paper. Use the example on the right to help you come up with the structure.
2. Use the get started videos and your own resources to help you locate, draw and label the following parts into your heart diagram.

Tricuspid valve, pulmonary semilunar valve, aortic semilunar valve, and bicuspid (mitral) valve.

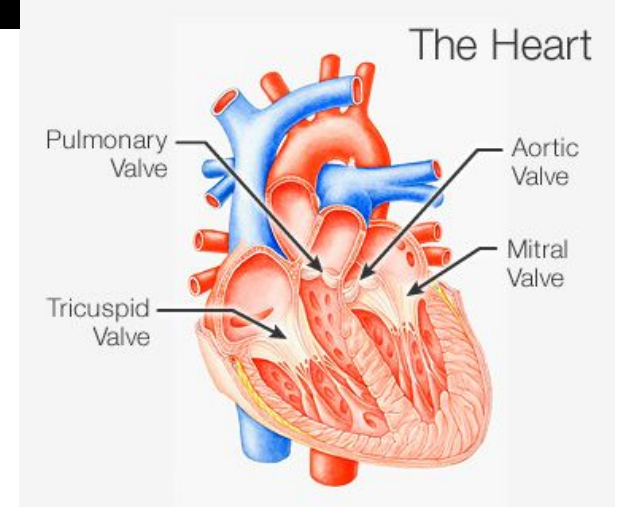
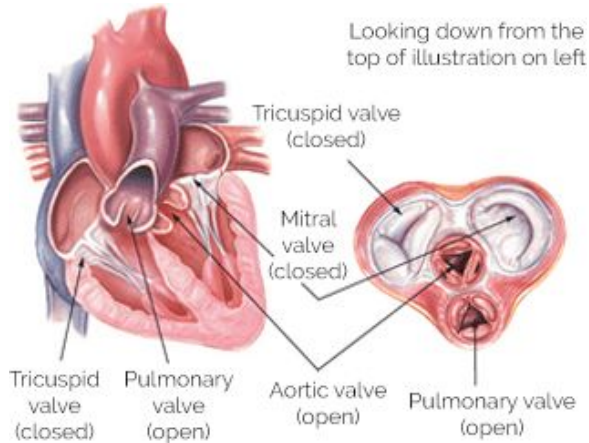
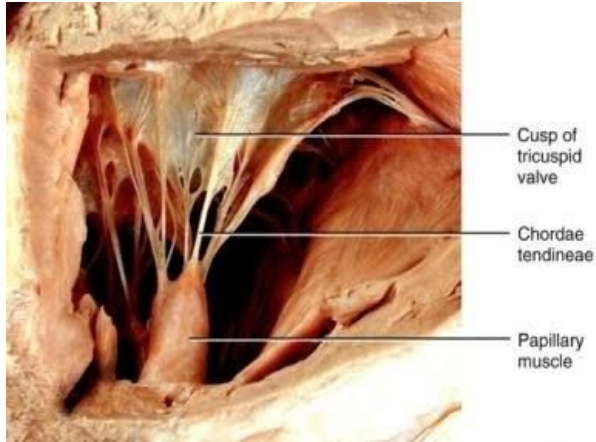
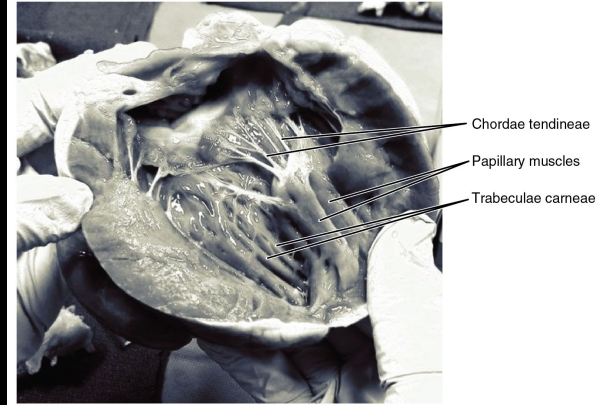
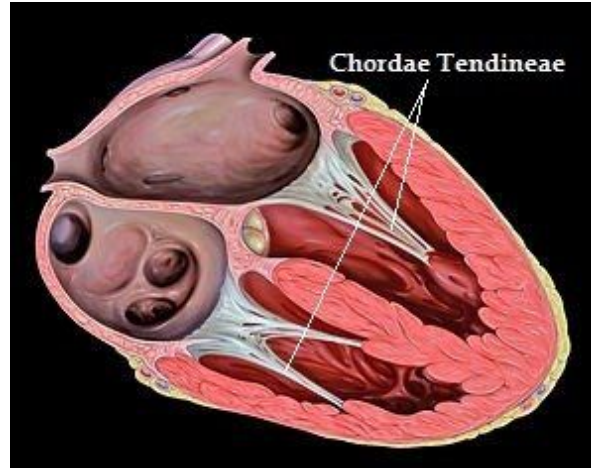
Show where the chordae tendinae would connect to the valves and back to the heart muscle.



Interior View of the Heart



Answers:



Lesson/Activity continued:

Find your own resources to answer the following questions:

- a. How many cusps (flaps) does a tricuspid valve have? Bicuspid?
- b. What are the two things that chordae tendineae attach to?
- c. Where do you find papillary muscles?
- d. Describe how the valves keep the blood moving in one direction?

Answers:

a. How many cusps (flaps) does a tricuspid valve have? Bicuspid?

Tricuspid (3) Bicuspid (2)

b. What are the two things that chordae tendineae attach to?

Valves & Papillary Muscle

c. Where do you find papillary muscles?

Ventricles

d. Describe how the valves keep the blood moving in one direction.

When the ventricles contract and pressure begins to rise in the ventricles, the papillary muscles also contract, placing tension on the chordae tendineae and holding all the valves in place. The semilunar valves (pulmonary and aortic) lack chordae tendineae and papillary muscles, as the ventricles relax and pressure drops within the ventricles. The valves, consisting of reinforced endothelium and connective tissue, fill with blood and seal off the opening preventing the return of blood.

Practice:

Create your own set of vocabulary flashcards and practice your vocabulary.

Glossary:

atrioventricular valves: one-way valves located between the atria and ventricles; the valve on the right is called the tricuspid valve, and the one on the left is the mitral or bicuspid valve

bicuspid valve: (also, mitral valve or left atrioventricular valve) valve located between the left atrium and ventricle; consists of two flaps of tissue

chordae tendineae: string-like extensions of tough connective tissue that extend from the flaps of the atrioventricular valves to the papillary muscles

mitral valve: (also, left atrioventricular valve or bicuspid valve) valve located between the left atrium and ventricle; consists of two flaps of tissue

papillary muscle: extension of the myocardium in the ventricles to which the chordae tendineae attach

right atrioventricular valve: (also, tricuspid valve) valve located between the right atrium and ventricle; consists of three flaps of tissue

semilunar valves: valves located at the base of the pulmonary trunk and at the base of the aorta

tricuspid valve: term used most often in clinical settings for the right atrioventricular valve

Additional Practice:

Click on the links below to get additional practice and to check your understanding!

[Quizizz](#) yourself, take a 10 questions quiz about heart valves.

[Quizz.biz](#) challenge yourself to a 19 questions quiz on heart valves.

Unit Wrap Up Review Practice

Get out your notebook, or blank page of paper, and make a list of all the structures, parts, pieces, and movements that you can remember about the human heart. Space these words out all over your paper, it does not matter what they look like or where you put them. (you do have to be able to read them) Once you have your final scattered list, start connecting your structures, parts, pieces, and movements together with lines. On your lines write out how the structures relate to one another, small example on next slide.

Unit Wrap Up Example

There are many more terms,
don't just copy this.

