

Pathway of Blood

Starting at the heart blood flows:

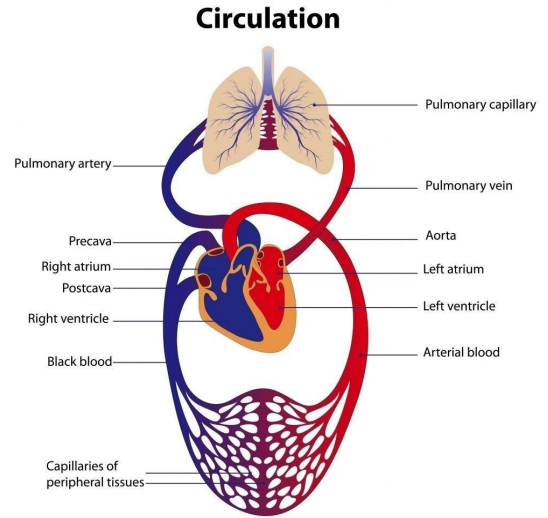
- 1) Heart
- 2) Arteries
- 3) Capillaries
- 4) Veins
- 5) Heart

This is completed in 2 closed loops

- Pulmonary Route (to the lungs)
- Aorta Route (to the body)

Draw Figure 8

Drawing



Science 30 - Lesson 2 - Pathway for Blood

Name: _____

1) Complete the following table to compare arteries, veins, and capillaries.

Characteristic	Arteries	Veins	Capillaries
description of vessel walls			
direction of vessel blood flow in relation to heart			
blood oxygen level in vessel			
colour in a circulatory system diagram			
blood pressure in vessel			
valves present			
pulse present			

2) Sketch a capillary bed. Include the artery, the arteriole, the vein, the venule, and the proper placement of valves. Include a few tissue cells being fed by the capillaries. Add arrows to your sketch that indicate the direction of blood flow, and add arrows that show what materials are being exchanged and the exchange direction.

3) A blood cell travels through different blood vessels as it passes through the circulatory system after leaving the heart. The blood vessels involved include the following terms: **capillary, vein, venule, artery, and arteriole**. Read each of the following descriptions and match each blood vessel term with a description.

- a) Large one-way valves in this vessel help direct blood back to the heart. _____
- b) These vessels are so small that blood cells must pass in single file. _____
- c) Capillaries converge into this vessel before entering a vein. _____
- d) This vessel is the pathway for oxygen-rich blood to enter capillaries. _____
- e) This vessel has thick walls with elastic fibres. _____

4) Explain why circulatory problems often occur with people who are bedridden or with inactive people who seldom use their muscles.

5) People who have type 1 diabetes do not produce insulin—the sugar-regulating hormone—and they must have regular hypodermic insulin injections to regulate their blood sugar. Researchers have developed a dry powdered form of insulin that can be delivered by the same kind of inhaler used by people with asthma.

a) Describe some possible benefits of the inhaler delivery system. Is there any drawbacks?

b) Insulin is usually injected into fat underneath the skin. List the pathway that injected insulin takes from a capillary bed under the skin to a target cell in the liver.

c) List the pathway that inhaled insulin would take from the lungs to a target cell in the liver.

d) Which of the two delivery methods—injected or inhaled—could be faster at getting to target cells?

6) Explain why it is more dangerous if an artery—rather than a vein—is cut in an accident.

7) Soldiers on guard are often required to stand in one place for long periods of time. While standing at attention some of the soldiers sway back and forth, slightly contracting and relaxing their calf muscles. Other soldiers exercise the muscles in their lower legs by slightly wiggling their toes in oversized boots. Soldiers who do not use strategies like these often faint after standing for a long time. Explain why contracting and relaxing the muscles in their lower legs helps prevent soldiers from fainting.
