Blood's Round Trip

Trace one continuous path through the lungs and body.

HAP.10.2 "Describe the flow of blood through the pulmonary system and systemic circulation."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Number the first mention of each heart chamber in the order blood reaches it after leaving a finger. Circle the capillaries where blood gains or loses oxygen.

From Fingertip to Lungs and Back

1. Imagine gripping a bicycle handle as you ride uphill. Cells in your fingers use oxygen to release energy from fuel, and blood flowing through tiny systemic capillaries delivers more. At these capillaries, oxygen moves from blood into tissues, while carbon dioxide moves from tissues into blood. The returning blood enters small veins that join larger veins. Veins from the upper body drain into the superior vena cava, and veins from the lower body drain into the inferior vena cava. Both venae cavae carry blood into the right atrium. Blood then passes through a valve into the right ventricle.

2. When the right ventricle contracts, it sends blood through a valve into the pulmonary trunk, which divides into the left and right pulmonary arteries. These arteries carry blood to the lungs, even though that blood is low in oxygen. In capillaries around the air sacs, carbon dioxide leaves the blood and enters the air to be exhaled. Oxygen from inhaled air enters the blood there. The blood, now higher in oxygen, returns to the heart in pulmonary veins. Those veins empty into the left atrium, and blood passes through a valve into the left ventricle.

3. The left ventricle pumps blood through a valve into the aorta. From the aorta, systemic arteries branch toward organs, including the muscles gripping the handle. Smaller arteries lead to systemic capillaries, where blood gives up oxygen and picks up carbon dioxide before entering veins again. Pulmonary circulation runs from the right ventricle through the lungs to the left atrium. Systemic circulation runs from the left ventricle through body tissues to the right atrium. These circuits connect in series, so the same blood moves through both on each complete trip. Arteries carry blood away from the heart, and veins carry it back, regardless of oxygen level.

2 ANSWER WITH EVIDENCE

Use the passage

1. Trace blood from a finger capillary to the right ventricle. Name the vessels and heart chamber it passes through.

2. Trace blood from the right ventricle to the left atrium. Where does its oxygen level rise?

3. Trace blood from the left ventricle to a finger capillary. Where does oxygen leave the blood?

4. Why do pulmonary arteries carry blood low in oxygen, while pulmonary veins carry blood higher in oxygen? Explain using the order of flow.

3 YOUR TURN

Your own words

Write a six-sentence travel log for one red blood cell, starting and ending at a calf muscle capillary. Name all four heart chambers, the inferior vena cava, pulmonary arteries, pulmonary veins, and the aorta, and state where oxygen enters and leaves the blood.

ANSWER KEY

Blood's Round Trip

PART 1 · READ AND MARK

Number the first mention of each heart chamber in the order blood reaches it after leaving a finger. Circle the capillaries where blood gains or loses oxygen. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Trace blood from a finger capillary to the right ventricle. Name the vessels and heart chamber it passes through.	**Finger capillary → veins → superior vena cava → right atrium → right ventricle.**
2	Trace blood from the right ventricle to the left atrium. Where does its oxygen level rise?	**Right ventricle → pulmonary trunk → pulmonary arteries → lung capillaries → pulmonary veins → left atrium. Oxygen enters the blood in the lung capillaries.**
3	Trace blood from the left ventricle to a finger capillary. Where does oxygen leave the blood?	**Left ventricle → aorta → systemic arteries → smaller arteries → finger capillary. Oxygen leaves the blood at the finger capillary and enters the tissues.**
4	Why do pulmonary arteries carry blood low in oxygen, while pulmonary veins carry blood higher in oxygen? Explain using the order of flow.	**Pulmonary arteries carry blood from the right ventricle to the lung capillaries. After oxygen enters the blood there, pulmonary veins carry it to the left atrium.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

At a calf muscle capillary, oxygen leaves my blood for the muscle, and I pick up carbon dioxide. I travel through veins and the inferior vena cava into the right atrium, then enter the right ventricle. The right ventricle pumps me through the pulmonary trunk and pulmonary arteries to lung capillaries. There I release carbon dioxide and take in oxygen. Pulmonary veins bring me to the left atrium, and I pass into the left ventricle. The left ventricle pumps me into the aorta and through systemic arteries back to a calf muscle capillary, where oxygen leaves my blood again.

Accept paths that omit smaller branching vessels if the direction and major structures are correct. In the travel log, check that the six sentences follow both circuits in order and place oxygen gain in the lungs and oxygen loss at the calf muscle.