

**CHAPTER 8**  
**ANSWER KEY**

# How Much Blood Does Your Heart Pump? Answer Key

**BLM 8.1.10A**

Typical values are shown.

Type of Activity	Pulse rate per minute	Stroke volume (mL)	Cardiac Output (L)
Sitting, at rest	72	75	5.4
Lying on the floor	68	75	5.1
After 2 minutes of running on the spot	134	75	10.1

- Cardiac output is the volume of blood pumped by each ventricle per minute. Stroke volume is the volume of blood ejected by each ventricle per beat.
- Cardiac output increases during exercise because of an increase in heart rate and stroke volume. When exercise begins, the heart rate increases up to about 100 beats per minute. As exercise becomes more intense, skeletal muscles squeeze on veins more vigorously, returning blood to the heart more rapidly. In addition, the ventricles contract more strongly, so they empty more completely with each beat.
- During exercise, muscles require more blood. The increased blood flow delivers more oxygen to the muscle cells and removes the waste products released by these cells. The dilation of the arterioles (vasodilation) allows for this increased flow of blood to the muscle cells.

On the other hand, the cells of your digestive system do not require as much blood when you are exercising. The constriction of arterioles (vasoconstriction) supplying blood to organs of the digestive system reduces the blood flow to these organs, making more blood available to the skeletal muscles.

- It takes approximately 1 minute for the body's entire volume of blood to pump through your heart when you are sitting.