

**Saladin 7E**  
**Answer Key**  
**Chapter 19, The Circulatory System: The Heart**

**Testing Your Comprehension**

1. Verapamil has a negative inotropic effect because it reduces calcium inflow into the cardiac muscle cells, and with less calcium, there is less myosin–actin cross-bridging and a weaker contraction of the myocardium.
2. Massaging the carotid artery at this point compresses the baroreceptors located here and results in inhibitory (vagal) signals to the heart that reduce the heart rate.
3. Some blood from the left ventricle flows through the septal defect into the right ventricle, thus adding to the amount of blood that the right ventricle pumps to the lungs. This raises the pulmonary blood pressure, while the systemic blood pressure is reduced because of left ventricular blood that is not being ejected into the aorta. The added strain on the right ventricle causes right-sided ventricular hypertrophy while the left ventricle, now with less workload, may exhibit atrophy.
4. The afterload in the pulmonary trunk is much lower than the afterload in the aorta, so the pulmonary valve does not have to overcome as much resistance as the aortic valve. This is why the pulmonary valve opens first and blood is expelled from the right ventricle a little earlier than from the left ventricle.
5. If the left ventricle is enormously enlarged, the mitral valve orifice is proportionately dilated and the valve cusps may be unable to span that distance. This leaves a gap that allows some regurgitation of blood back into the atrium.