NAME _____ DATE _____ CLASS _____

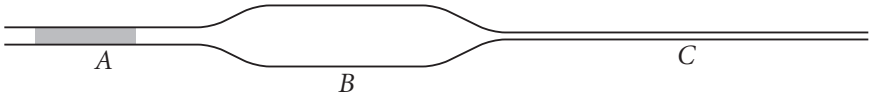
Fluid Mechanics

HOLT PHYSICS

Math Skills

Fluids in Motion

Every second, 1.20 m^3 of water enters a heating system through a pipe of medium width, *A*, with a cross-sectional area of 0.200 m^2. The water then flows into a wide pipe, *B*, with an area of 0.600 m^2, and flows out through a narrow pipe, *C*, with an area of 0.100 m^2.



1. What is the flow rate in each pipe?

2. What is the length of the segment of pipe *A* that contains 1.20 m^3 of water? Sketch the marks on the diagram above showing the segments of pipes *B* and *C* that would contain the same amount of water. What is the length of each segment?

3. How much time is required for water to travel the lengths you found in pipe *A*? in pipe *B*? in pipe *C*?

4. What is the flow speed of water in each pipe?

5. Does the speed of water increase when it enters a narrow pipe? Does the flow rate increase? Explain.