

## Heat Transfer Questions

### Venturi

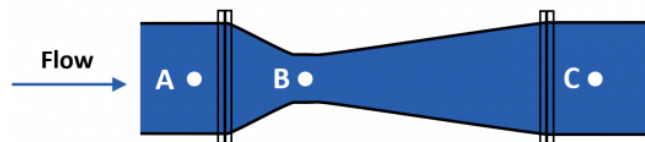
Q1:

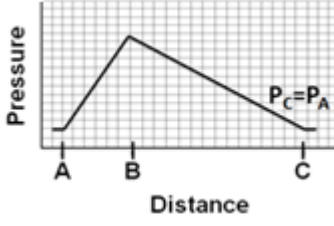
To describe the concept of continuity at steady state for an incompressible fluid, classify the following statements as true or false:


	True	False
Mass flow rate in equals mass flow rate out		
Volumetric flow rate in equals volumetric flow rate out		
As diameter increases, velocity increases		

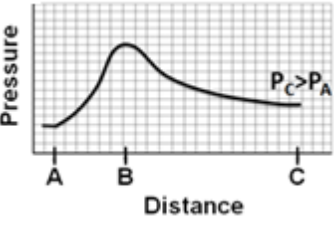
Q2:

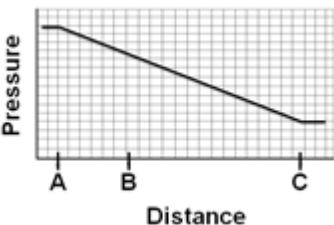
Consider the venturi meter below. Select the most realistic graph for pressure versus distance in the venturi:

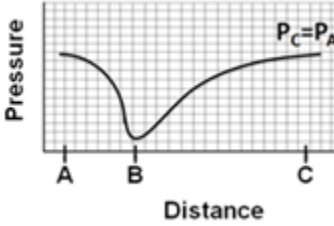


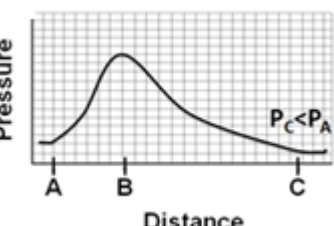
- a. 

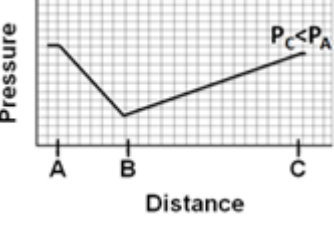
e. 

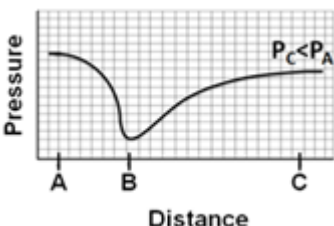
b. 

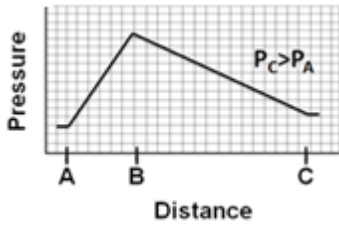
f. 

c. 

g. 

d. 

h. 



i.

Q3:

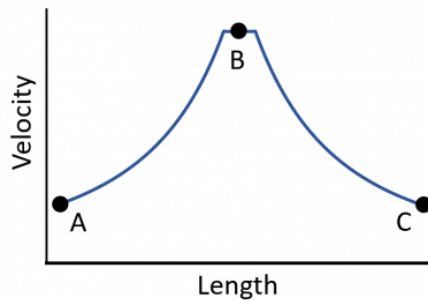
Describe the energy transformation in the fluid between points A and B.



- Kinetic energy is being converted to flow work.
- Flow work is being converted to kinetic energy.
- Kinetic energy is being converted to potential energy.
- Potential energy is being converted to kinetic energy.
- Not enough information.

Q4:

In a horizontal pipe of changing diameter, the following velocity profile was measured at points A, B, and C. Choose the best description for the pressure profile, assuming  $v_A = v_C$ .

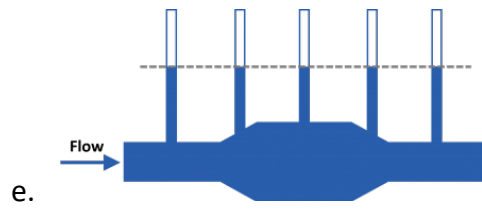
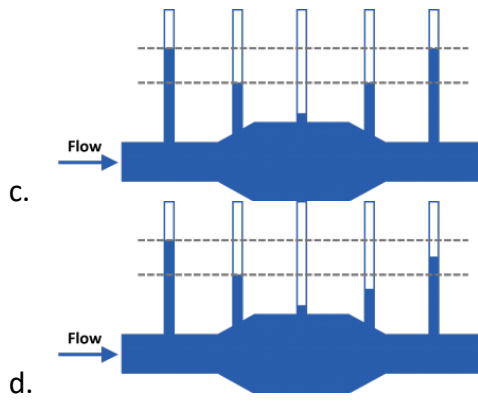


- $P_A > P_B > P_C$  because friction causes the pressure to decrease along the entire length of the pipe.
- $P_A > P_C > P_B$  because the velocity increases at Point B, leading to a decrease in pressure, and  $P_C < P_A$  because of frictional losses, though the velocity is the same.
- $P_B > P_A > P_C$  because the velocity increases at Point B, leading to an increase in pressure, and  $P_C < P_A$  because of frictional losses, though the velocity is the same.
- $P_A = P_C > P_B$  because the velocity increases at Point B, leading to a decrease in pressure, and the pressures at  $P_A = P_C$  because the velocities are the same.

Q5:

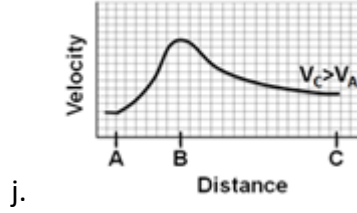
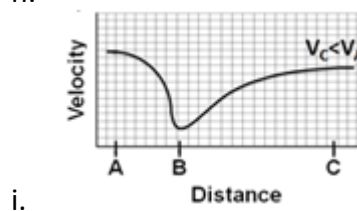
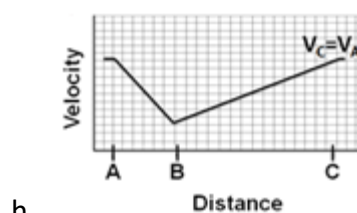
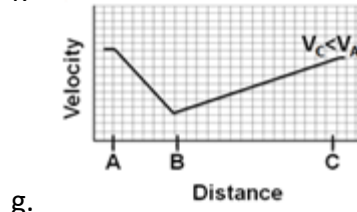
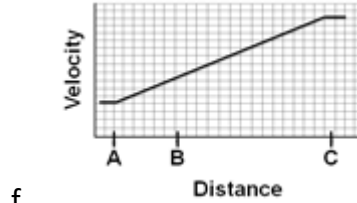
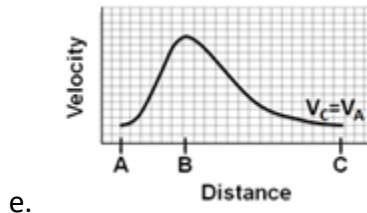
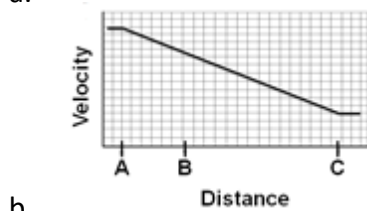
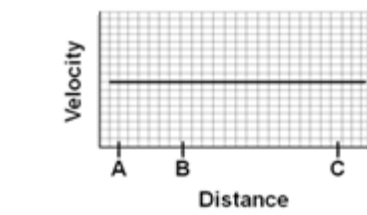
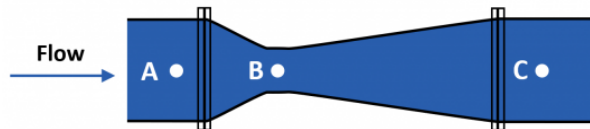
Select the figure that most closely represents reality, assuming incompressible flow and that the diameters at points A and C are equal.





Q6:

Consider the venturi meter below. Select the most realistic graph for velocity versus distance in the venturi:



e.

j.

