Name _____ Class _____ Date _____

Fluid Mechanics

Section Quiz: Fluids in Motion
Write the letter of the correct answer in the space provided.

_____ 1. Which of the following statements does *not* describe an ideal fluid?
   a. An ideal fluid is incompressible.
   b. An ideal fluid has internal friction (viscosity).
   c. The flow of an ideal fluid is always steady.
   d. The flow of an ideal fluid is always laminar.

_____ 2. Which type of flow best describes a river moving through rocky rapids?
   a. steady flow
   b. laminar flow
   c. turbulent flow
   d. viscous flow

_____ 3. What are the irregular motions in a flowing fluid called?
   a. eddy currents
   b. turbulent currents
   c. laminar flows
   d. nonlinear flows

_____ 4. Which of the following statements about an ideal fluid moving through a pipe with changing diameter provides the basis for the continuity equation?
   a. The density of the fluid remains constant throughout the pipe.
   b. The mass of the fluid remains constant throughout the pipe.
   c. The volume of the fluid remains constant throughout the pipe.
   d. The speed of the fluid remains constant throughout the pipe.

_____ 5. A fluid has a flow rate of 5.0 m^3/s as it travels at a speed of 7.5 m/s through a pipe. What is the cross-sectional area of the pipe?
   a. 3.8 m^2
   b. 1.5 m^2
   c. 0.67 m^2
   d. 0.27 m^2

Fluid Mechanics *continued*

_____ **6.** A fluid flows through a pipe whose cross-sectional area changes from 2.00 m² to 0.50 m². If the fluid's speed in the wide part of the pipe is 3.5 m/s, what is its speed when it moves through the narrow part of the pipe?
   a. 0.071 m/s
   b. 0.88 m/s
   c. 1.1 m/s
   d. 14 m/s

_____ **7.** Which of the following is a correct statement of Bernoulli's principle?
   a. The density of a fluid increases as the fluid's velocity increases.
   b. The density of a fluid decreases as the fluid's velocity increases.
   c. The pressure in a fluid increases as the fluid's velocity increases.
   d. The pressure in a fluid decreases as the fluid's velocity increases.

_____ **8.** What happens when a breeze blows between two foam plastic balls that are hung by strings 5 cm apart?
   a. The balls move toward each other.
   b. The balls move away from each other.
   c. The balls do not move.
   d. The balls move upward.

9. Use Bernoulli's principle to explain why pressure in a fluid decreases within a pipe as its radius decreases.

_____

_____

_____

_____

10. Use Bernoulli's principle to explain how an airplane achieves lift by moving forward at high speed.

_____

_____

_____

_____

_____