DEVIL PHYSICS

BADDEST CLASS ON CAMPUS

GIANCOLI READING ACTIVITY
Sections 10-8 to 10-10

1. Read sections 10-8 to 10-10 in your textbook.

2. Write a definition for each of the terms listed below:

   a. fluid dynamics _____

   b. hydrodynamics _____

   c. streamline or laminar flow _____

   _____

   _____

   d. turbulent flow _____

   _____

   e. viscosity _____

   f. mass flow rate _____

   _____

   g. equation of continuity _____

   h. Bernoulli's principle _____

   _____

   _____

   i. Bernoulli's equation _____

   j. Torricelli's theorem _____

   _____

   _____

   k. dynamic lift _____

   _____

   _____

   _____

   l. venturi tube _____

   _____

   _____

3. Answer the following questions:

   a. What does the word "laminar" mean? _____

   b. What is one factor that will cause streamline or laminar flow to become turbulent flow? _____

   _____

   c. What do eddies do to the energy of a fluid flow? _____

   d. Bonus: Name the TV shows in which these eddies were characters; Eddie Haskell, Eddie Munster, Eddie Winslow? _____

   e. Assuming that a fluid is incompressible (i.e. density remains the same), what will happen if a fluid flows from a pipe with larger diameter to one with a smaller one and vice versa? _____

   _____

   f. The aorta is a large artery that comes directly from the heart and capillaries are tiny vessels that bring blood to tissues in the extremeties. Blood flow in the capillaries is much slower than that in the aorta which is the exact opposite of the equation of continuity. How can you explain this? _____

   _____

   _____

   _____

   _____

   g. Referring to figure 10-19, why wouldn't there be higher pressure in Area 2 where the velocity is greater? _____

   _____

   _____

   h. In Bernoulli's equation [$P_1 + {}^1/_2\,\rho v_1{}^2 + \rho g y_1 = P_2 + {}^1/_2\,\rho v_2{}^2 + \rho g y_2$], points 1 and 2 can be any two points in the fluid flow which means $P + {}^1/_2\,\rho v^2 + \rho g y = constant$. What law does this fact illustrate? _____

   i. Why does smoke flow up a chimney? _____

   _____

   _____

   j. Why does fresh air blow through a prairie dog's tunnel? _____

   _____

   _____

   _____

l. Use Bernoulli's principle to explain why transient ischemic attacks occur. _____

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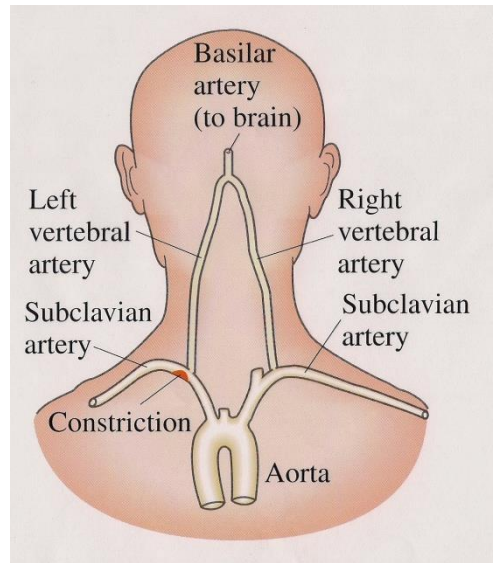
m. What two things does Bernoulli's equation ignore? _____

_____

4. This assignment may be typed or neatly printed. Drawings may be freehand, but try to make use of the 'Shapes' or 'Insert Clipart" functions of MS Word. If you submit this assignment electronically, the filename must be in the following format, "LastnameFirstinitialPerXReadActX-X". You *do not* need include a copy of these instructions with the assignment you hand in.