Bio390 **PERIPHERAL CIRCULATION and RESISTANCE**

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1. In mammalian circulatory physiology, resistance to flow is measured in **peripheral resistance units**, PRU. What are the dimensions of PRU's if blood flow is measured in $\frac{ml}{\min}$ and pressures are measured in mm Hg?

ANS:_____

2. Estimate the total resistance (in PRU's) for the **systemic circulation** given the following information:

cardiac output: $\frac{5000\ \text{ml}}{\min}$
mean aortic pressure: 95 mm Hg
mean right atrial pressure: 4 mm Hg

ANS:_____

3. Assume that mean pressures in the left atrium and pulmonary arteries are 2 and 13 mm Hg, respectively. Which circuit, systemic or pulmonary, has the greater resistance to flow? How many times greater?

ANS:_____

4. Consider a hypothetical circulatory system composed of 5 circuits arranged in parallel. Each component circuit has a resistance of 3 PRU's. The total pressure gradient in this system is 100 mm Hg.

a. Estimate the total resistance for this circulatory system.

ANS:_____

b. Estimate flow rate (in $\frac{\text{ml}}{\min}$) through one of the circuits.

ANS:_____

c. Estimate total resistance in this circulatory system **IF** the five component circuits (each having an individual resistance as given above) were arranged "in series".

ANS:_____