

8. The skydiver has reached terminal velocity. This means she is falling at constant velocity. From Newton's First Law, if the velocity is constant the net force is zero. This means the force due to air resistance must be equal to the weight of the skydiver. The weight of the skydiver is

$$W = m g$$

$$W = (50 \text{ kg}) (9.8 \text{ m/s}^2) = 490 \text{ N (directed downward)}$$

The force due to air resistance is therefore

$$F_R = 490 \text{ N (directed upward)}$$