Pb # 6.

Time dialation $\Rightarrow \quad \Delta T = \gamma \Delta T' \quad -- (1)$

In this problem $\Delta T' = \frac{\Delta T}{2} \quad -- (2)$

Compare (1) & (2) $\Rightarrow \quad \gamma = 2 = \frac{1}{\sqrt{1 - v^2/c^2}}$

$$4 = \frac{1}{1 - v^2/c^2} \Rightarrow 1 = 4 - 4\frac{v^2}{c^2}$$

$$\Rightarrow 4\frac{v^2}{c^2} = 3 \Rightarrow \frac{v^2}{c^2} = \frac{3}{4} \Rightarrow v = c\sqrt{\frac{3}{4}} = \underline{\underline{0.866c}}$$

The Clock is moving at a speed of $0.866c = 2.598 \times 10^8$ m/s.

Pb # 9.

Length contraction $\Rightarrow \Delta L = \frac{\Delta L'}{\gamma} \quad -- (1)$

In this problem $\Delta L = 75$ cm $\qquad \Delta L' = 100$ cm

$$75 = 100\sqrt{1 - \frac{v^2}{c^2}} \Rightarrow 1 - \frac{v^2}{c^2} = (0.75)^2 = 0.563$$

$$\frac{v^2}{c^2} = 0.438 \Rightarrow v = \underline{\underline{0.66c}}$$

The meter stick is moving at a speed of $0.66c = 1.98 \times 10^8$ m/s