

Physics 12 Solving Practice

Name: Key

1. Solve for v:

$$E_k = \frac{1}{2}mv^2 \rightarrow \frac{2E_k}{m} = \frac{m}{m}v^2$$

$$v = \sqrt{\frac{2E_k}{m}}$$

2. Solve for $\Delta\Phi$:

$$\mathcal{E} = -N \frac{\Delta\Phi}{\Delta t} \rightarrow -\frac{\mathcal{E}\Delta t}{N} = \Delta\Phi$$

3. Solve for v_f :

$$d = \left(\frac{v_f + v_i}{2}\right)t \rightarrow \frac{d}{t} = \frac{v_f + v_i}{2}$$

$$\frac{2d}{t} = v_f + v_i$$

$$v_f = \frac{2d}{t} - v_i$$

4. Solve for v:

$$L = L_0 \sqrt{1 - \frac{v^2}{c^2}}$$

$$\left(\frac{L}{L_0}\right)^2 = \left(\sqrt{1 - \frac{v^2}{c^2}}\right)^2$$

$$\frac{L^2}{L_0^2} = 1 - \frac{v^2}{c^2}$$

$$\left(\frac{L^2}{L_0^2} - 1 = -\frac{v^2}{c^2}\right)(-1)$$

$$\left(-\frac{L^2}{L_0^2} + 1 = \frac{v^2}{c^2}\right)(c^2)$$

$$\sqrt{c^2\left(-\frac{L^2}{L_0^2} + 1\right)} = \sqrt{v^2}$$

$$c\sqrt{1 - \frac{L^2}{L_0^2}} = v$$

5. Solve for T:

$$\frac{Gm_1m_2}{r^2} = \frac{m_2 4\pi^2 r}{T^2}$$

$$T^2 = \frac{4\pi^2 r^3}{Gm_1}$$

$$T = \sqrt{\frac{4\pi^2 r^3}{Gm_1}}$$