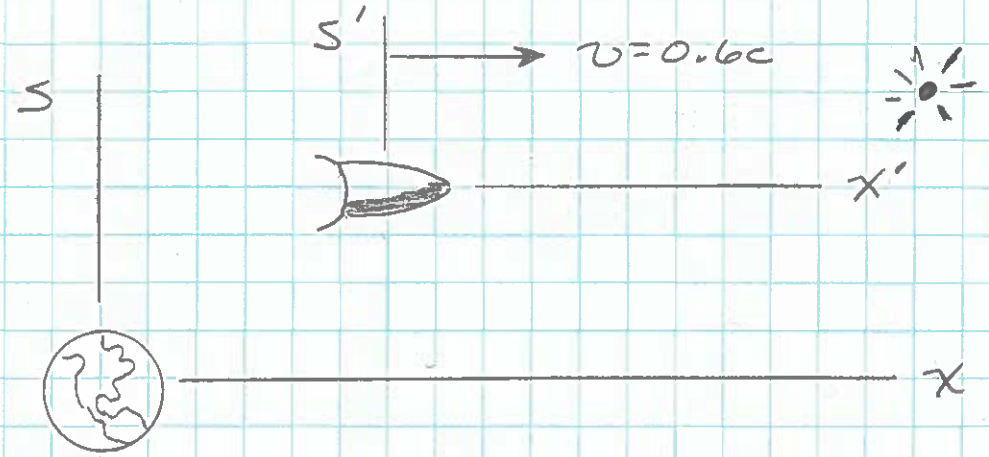

On frame s', event is at

$$(x', t') = (3\times10^{10}\,m,\ 200s)$$

Find (x, t) in frame S:

a.) GCT:

$$x = x' + vt' = x' + .6ct'$$

$$x = \underline{6.6\times10^{10}\,m}$$

$$\underline{t = t' = 200s}$$

b.) LCT:

$$x = \gamma(x' + vt')$$

$$\gamma = \frac{1}{\sqrt{1 - v^2/c^2}} = \frac{1}{\sqrt{1 - .6^2}} = 1.25$$

$$x = \gamma(x' + .6ct') = \underline{8.25\times10^{10}\,m}$$

$$t = \gamma\left(t' + \frac{vx'}{c^2}\right)$$

$$= \gamma\left(t' + \frac{.6cx'}{c^2}\right)$$

$$= \underline{325\,s}$$

So, in frame S: event is at

$$\underline{(x, t) = (8.25\times10^{10}\,m,\ 325s)}$$