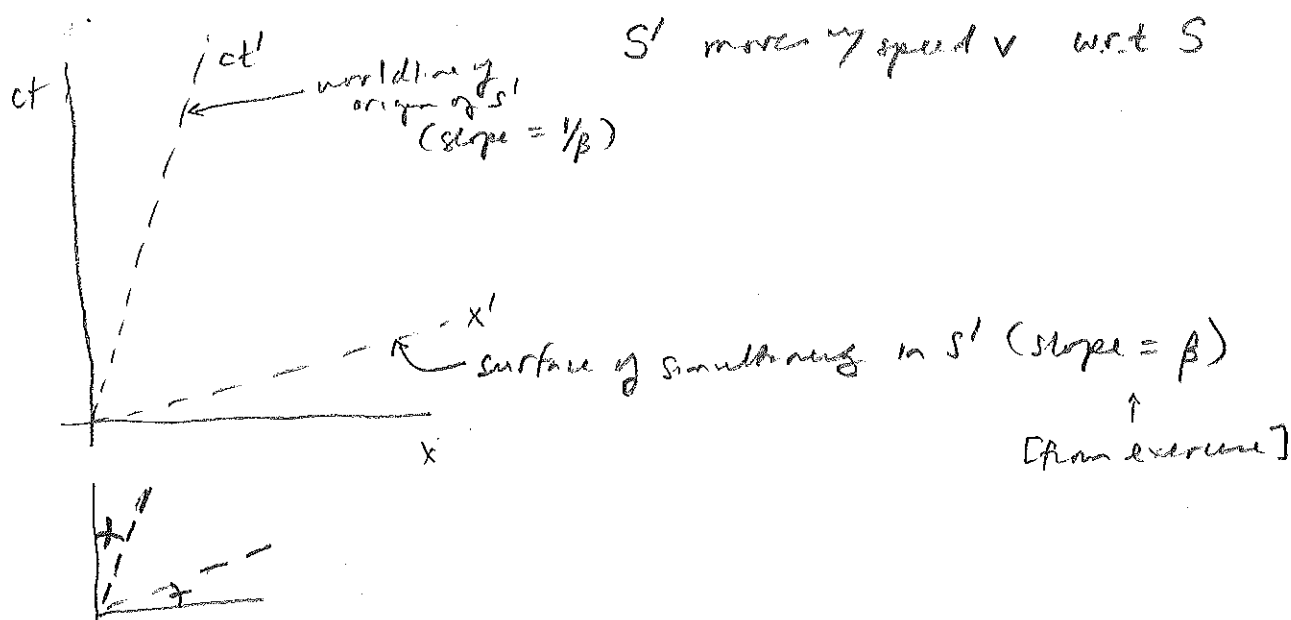
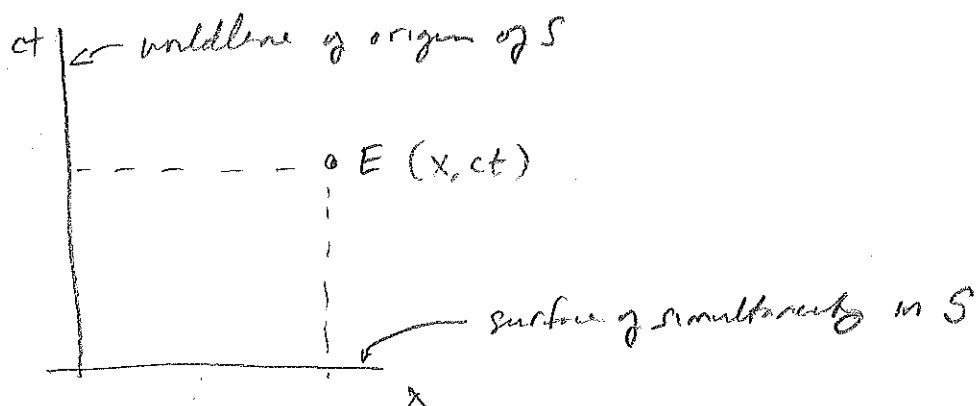
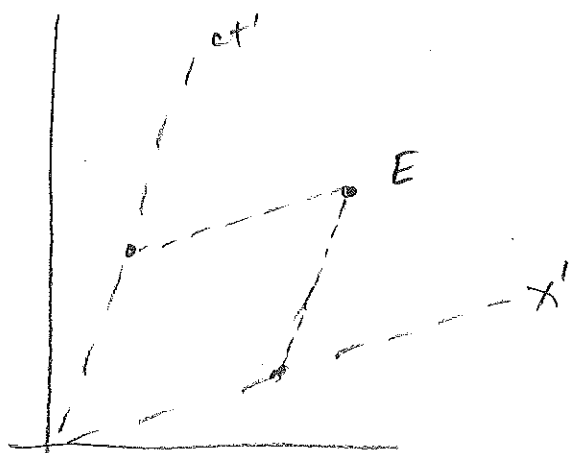


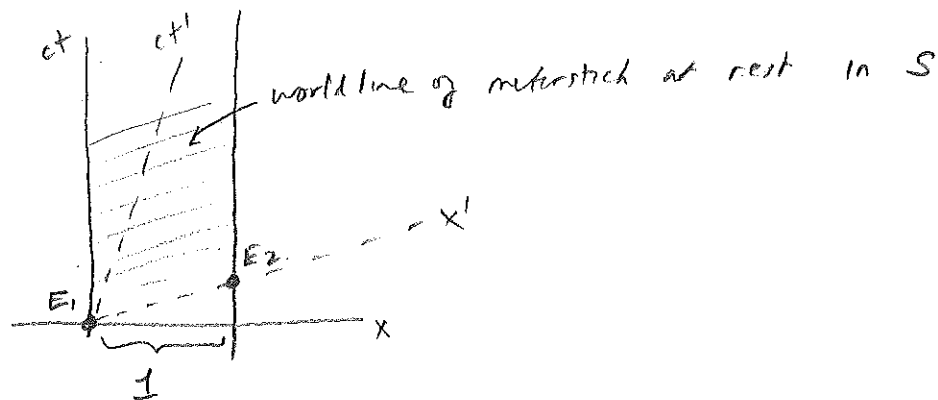
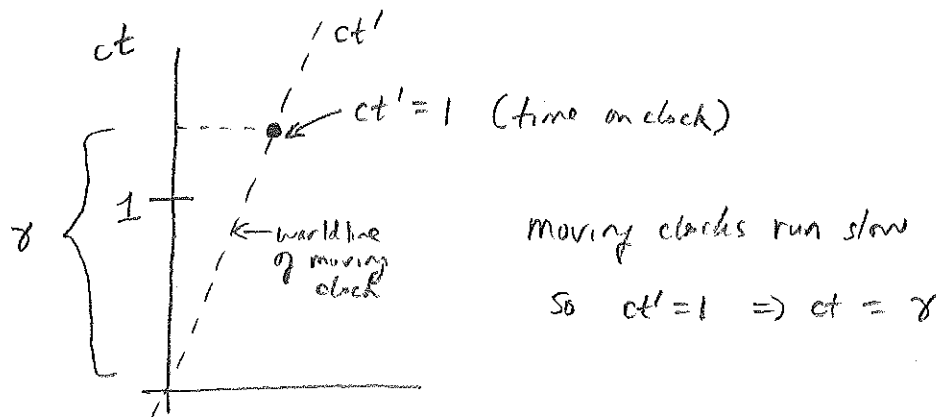
Events are real, coordinates are frame dependent



How does one determine coordinates in S' frame? Drop parallels



Caution: Scales on x' , ct' axes are different than x , ct

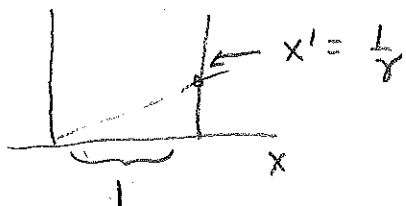


Meterstick is moving w.r.t. S' & is therefore contracted to $\frac{1}{\gamma}$

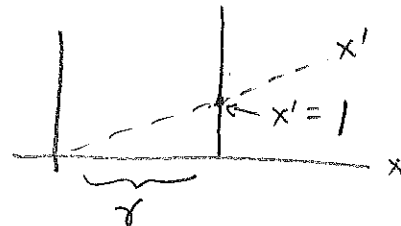
To measure the length of a moving object, measure the positions of both ends at the same time (in your frame)

E_1 & E_2 are the two ends of the meterstick at same time $t' = 0$ in S'

$\therefore x'$ -coordinate of E_2 is $\frac{1}{\gamma}$

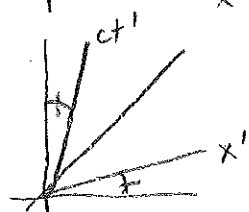
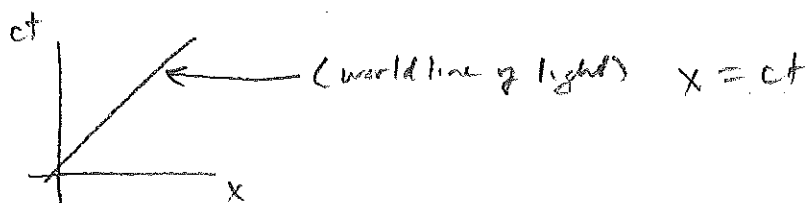


$\Rightarrow$



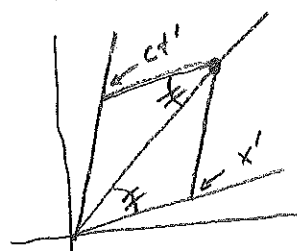
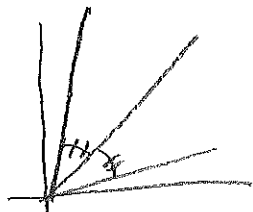
[optional] To show: $x = ct \Rightarrow x' = ct'$

ie Light travels at c in $S \Rightarrow$ light travel at c in S'

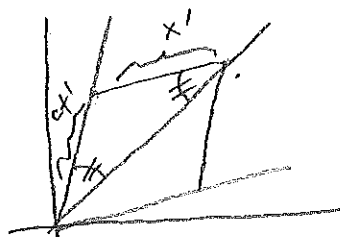


[reciprocal slopes $\Rightarrow$ equal angles]

[45-0]



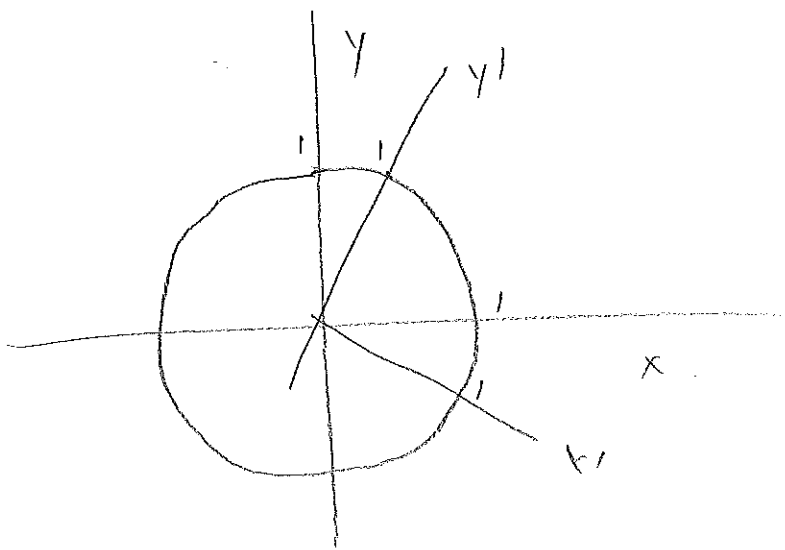
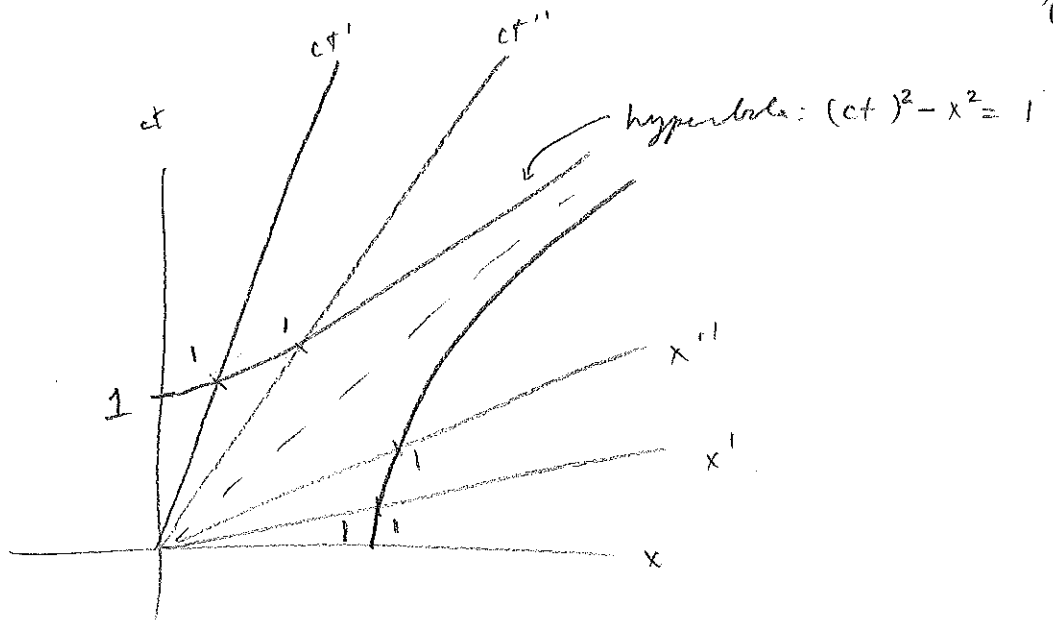
[alternate interior]



[isosceles $\Rightarrow$ equal sides]

$$x' = ct'$$

optimal



$$x^2 + y^2 = 1$$