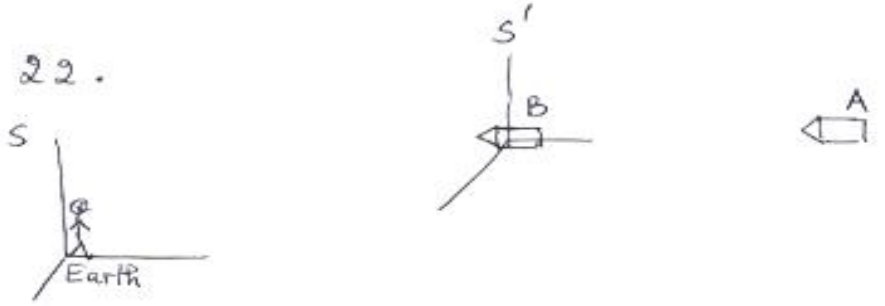
Pb # 22.

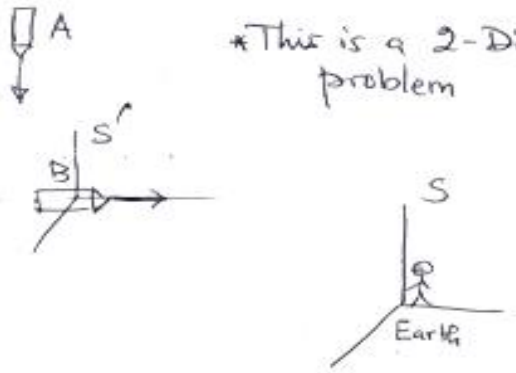


Suppose B is fixed to S' $\Rightarrow$ $V = 0.8C$, $u_x = 0.5C$

$$u'_x = \frac{u_x - V}{1 - \frac{u_x V}{C^2}} = \frac{0.5C - 0.8C}{1 - \left(\frac{0.8 \times 0.5C^2}{C^2}\right)} = \frac{-0.3C}{0.6}$$

$$\boxed{u'_x = -0.5C}$$

Pb # 25.



*This is a 2-Dim. problem

Space ship A
$u_x = 0$ $u_y = -0.9C$

Space ship B
$u_x = 0.9C$ $u_y = 0$

Suppose B is fixed to S' $\Rightarrow$ $V = 0.9C$

We will calculate u'_x and u'_y for A.

$$u'_x = \frac{u_x - V}{1 - \frac{u_x V}{C^2}} = \frac{0 - 0.9C}{1 - \frac{(0.9C)(0)}{C^2}} = -0.9C$$

$$u'_y = \frac{u_y}{\gamma\left(1 - \frac{u_x V}{C^2}\right)} = \frac{-0.9}{2.3\left(1 - \frac{(0)(0.9C)}{C^2}\right)} = -0.39C$$

$$\gamma = \frac{1}{\sqrt{1 - V^2/C^2}} = \frac{1}{\sqrt{1 - (0.9)^2}} = 2.3$$

$$u' = \sqrt{u_x^2 + u_y^2} = \boxed{0.98C}$$