

What mass would a sled on ice have if it requires a horizontal force of 100.0 N to change its velocity from 30.0 to 120.0 km/h in 5.0 s? ($u = 0$)

$F_n = F = 100\text{ N}$
 $F_n = ma$
 $m = \frac{F_n}{a} = \frac{100\text{ N}}{5.0\text{ m/s}^2} = 20.0\text{ kg}$

$t = 5.0\text{ s}$ Kinematics
 $a = \frac{v_f - v_i}{t} = \frac{(+33.3\text{ m/s}) - (+8.33\text{ m/s})}{5.0\text{ s}} = 5.0\text{ m/s}^2$

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