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(1.) $m = 725\ kg$

$V = 115\ km/h = 31.9\ m/s$ East

a) $p = mv$

$= (725)(31.9)$

$= 2.30 \times 10^4\ kg \cdot m/s$ East

b) $p = 2.30 \times 10^4\ kg \cdot m/s$

$m = 2175\ kg$

$V = \frac{p}{m} = \frac{2.30 \times 10^4}{2175}$

$= 9.33\ m/s$

(2.) $F = 5.0 \times 10^3\ N$ West

$\Delta t = 2.0\ s$

a) $F\Delta t = (5.0 \times 10^3)(2.0)$

$= 1.0 \times 10^4\ N \cdot s$ West

b) $V_i = 31.9\ m/s$

$m = 725\ kg$

$F\Delta t = -1.0 \times 10^4\ N \cdot s$

$F\Delta t = mv_f - mv_i$

$= m(v_f - v_i)$

$V_f = \frac{F\Delta t}{m} + V_i$

$= \frac{-1.0 \times 10^4}{725} + 31.9$

$= -14\ m/s + 31.9$

$= 18\ m/s$

(3) $m = 7.0\ kg$

$V_i = 2.0\ m/s$

a) $F\Delta t = 5\ N \cdot s$

$F\Delta t = m(v_f - v_i)$

$V_f = \frac{F\Delta t}{m} + V_i$

$= \frac{5}{7.0} + 2.0$

$= .7 + 2.0$

$= +2.7\ m/s$

b) $F\Delta t = -5\ N \cdot s$

$F\Delta t$

$V_f = \frac{}{m} + V_i$

$= \frac{-5}{7.0} + 2.0$

$= -.7 + 2.0$

$= +1.3\ m/s$

(4.) $m = 240.0\ kg$

$V_i = 6.00\ m/s$

$V_f = 28.0\ m/s$

$\Delta t = 60.0\ s$

b) $F\Delta t = mv_f - mv_i$

$= (240.0)(28.0 - 6.0)$

$= 528\ kg \cdot m/s$

$F\Delta t = 528\ N \cdot s$

c) $F = \frac{528}{60.0}$

$= 88.0\ N$

(5.) $m = 60.0\ kg$

$\Delta t = .20\ s$

a) $F\Delta t = mv_f - mv_i$

$F = \frac{m(v_f - v_i)}{\Delta t}$

$= \frac{(60.0)(0 - 26\ m/s)}{.20}$

$= 7.80 \times 10^3\ N$ in opposite direction

b) $F_g = mg$

$m = \frac{F_g}{g}$

$= \frac{7.80 \times 10^3\ N}{9.80}$

$= 796\ kg$ $= 1750\ lbs!!$

(56.) $m = .058\ kg$

$F = 272\ N$

$V_f = 62.0\ m/s$

$F\Delta t = mV_f - mV_i$

$\Delta t = \dfrac{m(V_f - V_i)}{F}$

$= \dfrac{(.058)(62.0 - 0)}{272}$

$= \dfrac{3.6}{272}$

$= .013\ s$

(57.) $m = .145\ kg$

$V_i = 42\ m/s$

$V_f = -58\ m/s$

a) $= mV_f - mV_i$

$= (.145)(-58 - 42)$

$= -15\ kg \cdot m/s$

$\Delta t = 4.6 \times 10^{-4}\ s$

b) $F = \dfrac{-15}{4.6 \times 10^{-4}}$

$= -3.3 \times 10^4\ N$

(64) $m = .115\ kg$

$F = 30.0\ N$

$\Delta t = .16\ s$

$V_i = 0\ m/s$

$F\Delta t = m(V_f - V_i)$

$V_f = \dfrac{F\Delta t}{m} + V_i$

$= \dfrac{(30.0)(.16)}{.115} + 0$

$= 42\ m/s$

(66) $m = .150\ kg$

$V_i = 12\ m/s$

$F\Delta t = (.5)(2)(2) = 2\ N \cdot s$ → area under curve

$F\Delta t = m(V_f - V_i)$

$V_f = \dfrac{F\Delta t}{m} + V_i$

$= \dfrac{2}{.150} + 12$

$= 13 + 12$

$= 25\ m/s$

(69.) $m = 4.7 \times 10^{-26}\ kg$

$V_i = 550\ m/s$

$V_f = -550\ m/s$

$F\Delta t = mV_f - mV_i$

$= m(V_f - V_i)$

a) $= (4.7 \times 10^{-26})(-550 - 550)$

$= -5.2 \times 10^{-23}\ N \cdot s$

b) $-5.2 \times 10^{-23}\ N \cdot s \times \dfrac{1.5 \times 10^{23}\ collisions}{s} = 7.8\ N$

(70.) $F = 35\ N$

$m = 72\,000\ kg$

$\Delta V = 63\ cm/s = .63\ m/s$

$F\Delta t = mV_f - V_i$

$= m\Delta V$

$\Delta t = \dfrac{m\Delta V}{F}$

$= \dfrac{(72\,000)(.63)}{35}$

$= 1.3 \times 10^3\ s$

$= 22\ min.$

(71.) $\Delta d = -60.0\ m$ $V_{iy} = 0\ m/s$

$F_g = 175\ N$ $g = -9.80\ m/s^2$

$V_x = 36.0\ m/s$ $V_{fy} = ?$

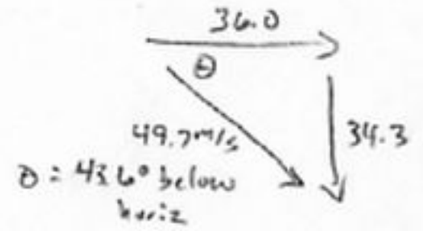
$m = \dfrac{F_g}{g} = \dfrac{175}{9.80}$

$= 17.9\ kg$

$V_{fy}^2 = V_{iy}^2 + 2g\Delta d$

$V_{fy} = \sqrt{2(-9.80)(-60.0)}$

$= -34.3\ m/s$



$p = mv$

$= (17.9)(49.7)$

$= 890\ kg \cdot m/s$ @ $43.6°$ below horiz.