Ch. 9.1 Q-1,3,19 P- 1,3

Q #1 $p = m(v)$

$p_1 = (20g)(1\,m/s) = 20\ g \cdot m/s$

$p_2 = (20g)(2\,m/s) = 40\ g \cdot m/s$

$p_3 = (10g)(2\,m/s) = 20g \cdot m/s$

$p_4 = (10g)(1\,m/s) = 10\ g \cdot m/s$

$p_5 = (200g)(0.1\,m/s) = 20\ g \cdot m/s$

$$p_2 > p_1 = p_3 = p_5 > p_4$$

Q #3

m_1 - 0.2 kg ~~plastic~~ extra info not needed

m_2 - 20 kg lead

F - (equal)

t - 1s

p - ?

= impulse-momentum theorem

$F_{avg}(t) = p$

if equal, then momentum will also be the same

(force & time)

Q#19

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

$m_1 - 20\,kg$

$v_i - 0\,m/s$

$v_f - 1\,m/s$

$t - \cancel{2ms}$ $0.002\,s$

$$\frac{20kg(1m/s - 0m/s)}{0.002s}$$

$$\frac{20(1)}{0.002}$$

$$\frac{20}{0.002}$$

$= 10{,}000$ "D"

P#1

$$P_{b+r} = P_c$$

$$(m_{b+r} v_{b+r}) = (m_c v_c)$$

$m_{b+r} - 100\,kg$

$v_{b+r} - ?$

$m_c - 1500\,kg$

$v_c - 1.0\,m/s$

$$(100kg \cdot v_{b+r}) = (1500kg \cdot 1m/s)$$

$$\frac{100kg \cdot v_{b+r}}{100} = \frac{1500}{100}$$

$v_{b+r} = 15\,m/s$

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

P #3

m_s - 120g

v_f - 7.5m/s

F - ?

t - 0.15s

v_i - 0m/s

$$\frac{0.12\text{kg}\,(7.5\text{m/s} - 0\text{m/s})}{0.15\text{s}}$$

$$\frac{0.12\text{kg}\,(7.5)}{0.15\text{s}}$$

$$\frac{0.9}{0.15}$$

$$= 6.0\text{ N}$$