Exercise 1A

1) $I = 15\ Ns$

$I = mv - mu$

$15 = 0.5v - 0.5 \times 0$

$v = 30\ ms^{-1}$

3) $I = Ft = 0.4 \times 1.5 = 0.6\ Ns$

$I = mv - mu$

$0.6 = 0.2v - 0.2 \times 0$

$v = 3\ ms^{-1}$

5) SUVAT

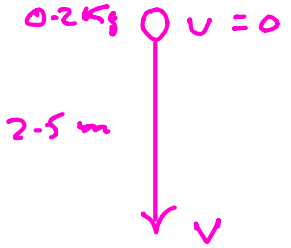
$v = u + at$

$s = ut + \frac{1}{2}at^2$

$s = vt - \frac{1}{2}at^2$

$v^2 = u^2 + 2as$

$s = \frac{(u+v)}{2}t$



$v^2 = u^2 + 2as$

$v^2 = 0 + 2g \times 2.5$

$v^2 = 49$

$v = 7\ ms^{-1}$

momentum $= -0.2 \times 7 = -1.4\ kg\ ms^{-1}$

Rises to 1.8 m then stops

$$v^2 = u^2 + 2as$$

$$0 = u^2 - 2g \times 1.8$$

$$2 \times 9.8 \times 1.8 = u^2$$

$$\frac{882}{25} = u^2$$

$$u = 5.94 \text{ ms}^{-1}$$

momentum $= 0.2 \times 5.94 = 1.19 \text{ kg ms}^{-1}$

I = Change in mom

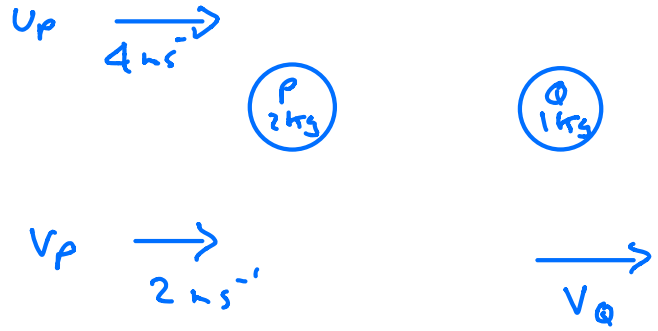
$= mv - mu$

$= 1.19 - -1.4$

$= 2.59 \text{ Ns}$

Exercise 1B

1)

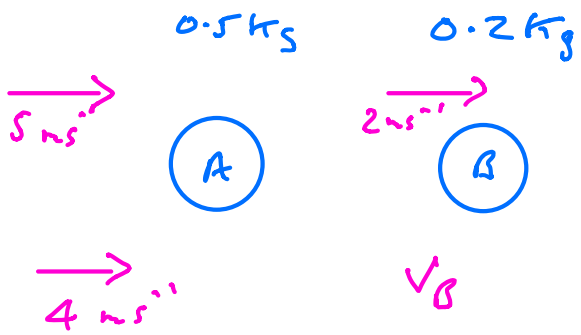


PCLM $\quad 2 \times 4 = 2V_P + 1V_Q$

$$8 = 2 \times 2 + V_Q$$

$$V_Q = 4 \text{ ms}^{-1}$$

3)



PCLM $\quad 0.5 \times 5 + 0.2 \times 2 = 0.5 \times 4 + 0.2 V_B$

$$2.9 = 2 + 0.2 V_B$$

$$\frac{0.9}{0.2} = V_B$$

$$V_B = 4.5 \text{ ms}^{-1}$$

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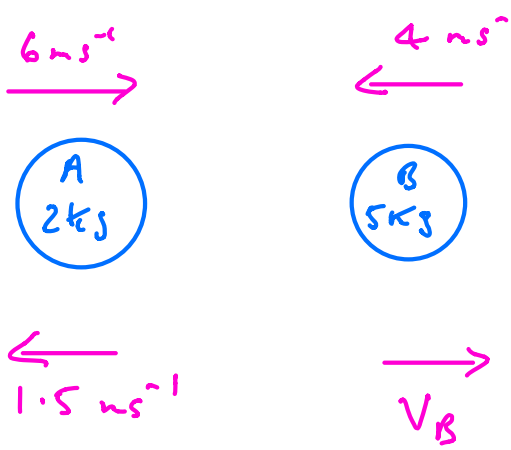
5)



PCLM $\quad 2 \times 6 - 5 \times 4 = -2 \times 1.5 + 5 V_B$

$$-8 = -3 + 5 V_B$$

$$-5 = 5 V_B$$

$$V_B = -1 \text{ ms}^{-1}$$

B travels at 1 ms^{-1} in its original direction of travel

b) Impulse = Change in momentum of B

$5(4-1) = 15$ Ns

Classwork and Hwk

Even numbers Exercises 1A and 1B