

H.W

90
18
4

1)

$$u = 90 \text{ km/hr}$$

$$v = 18 \text{ km/hr}$$

$$t = 4 \text{ s}$$

$$\text{acceleration} = \frac{v-u}{t}$$

$$= \frac{18-90}{4}$$

$$= \frac{-72}{4}$$

$$\therefore a = \frac{-72}{4} = -18 \text{ km/hr}^2 = -5 \text{ m/s}^2$$

$$\begin{aligned} \text{Initial momentum} &= 1200 \times 90 \text{ km/hr} \\ &= 1200 \times 25 \text{ m/s} \\ &= 30,000 \text{ kg m/s} \end{aligned}$$

$$\begin{aligned} \text{Final momentum} &= 1200 \times 18 \text{ km/hr} \\ &= 1200 \times 5 \text{ m/s} \\ &= 6000 \text{ kg m/s} \end{aligned}$$

$$\begin{aligned} \therefore \text{Change in momentum} &= 6000 - 30,000 \\ &= -24,000 \text{ kg m/s} \end{aligned}$$

$$\begin{aligned} F &= ma \\ &= 1200 \times -5 \\ &= -6000\text{N} \end{aligned}$$

2)
(i)

Distance travelled in next 5s = 100m

$$\therefore \text{velocity} = \frac{100}{5}$$

$$= 20\text{m/s}$$

(ii)

$$\text{acceleration} = \frac{20}{10} = 2\text{m/s}^2$$

(iii)

$$\begin{aligned} \text{Force} &= ma \\ &= 100 \times 2 \\ &= 200\text{N} \end{aligned}$$

3)

4)

$$F = ma$$

(d) yes, it is a action reaction pair

(e)

(f)

Home assignment

(a) Action -

Reaction

(b) Action - hammer

Reaction - nail

(c) Action - book

Reaction - table

(d) Action - rocket

Reaction - ground

(e) Action - person

Reaction - floor

(1) Action - moving train Reaction - stationary train.

2) (b) Because every action reaction pair has equal and opposite reaction.