2. –/1 points Notes Question: HoltPhys06 2.P.016.

A car traveling in a straight line has a velocity of +3.3 m/s. After an acceleration of 0.64 m/s^2, the car's velocity is +6.2 m/s. In what time interval did the acceleration occur?

v_i a v_f

_____ s

$$\vec{v}_f = \vec{v}_i + \vec{a}\Delta t$$

$$(+6.2\,m/s) = (+3.3\,m/s) + (0.64\,m/s^2)\,\Delta t$$

$\frac{m}{s}$ / $\frac{m}{s^2}$

$$6.2\,m/s - 3.3\,m/s = (0.64\,m/s^2)\,\Delta t$$

$$\frac{6.2\,m/s - 3.3\,m/s}{0.64\,m/s^2} = \Delta t = 4.53\,s$$

4. –/1 points Notes Question: HoltPhys06 2.P.018.

A bus slows down uniformly from 54.8 km/h (15.2 m/s) to 0 km/h in 26 s. How far does it travel before stopping?

[ ] m

V_i V_f Δt d

$$\vec{v}_f = \vec{v}_i + \vec{a}\Delta t$$

$$0\,m/s = (15.2\,m/s) + \vec{a}(26\,s)$$

$$-15.2\,m/s = a(26\,s)$$

$$\frac{-15.2\,m/s}{26\,s} = a = -0.584615\,m/s^2$$

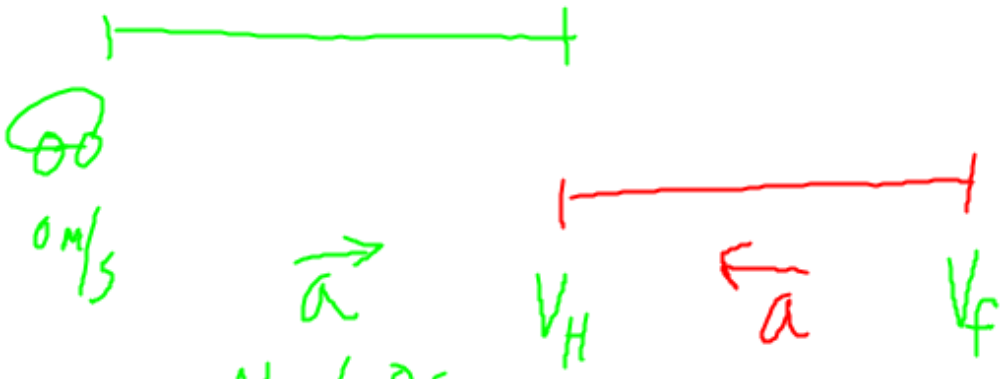
$$\vec{v}_f^2 = \vec{v}_i^2 + 2\vec{a}\Delta\vec{d}$$

$$(0\ m/s)^2 = (15.2\ m/s)^2 + 2(-0.584615\ m/s^2)\Delta d$$

$$2(0.584615\ m/s^2)\Delta d = (15.2\ m/s)^2$$

$$\Delta d = \frac{(15.2\ m/s)^2}{2(0.584615\ m/s^2)}$$

$$\boxed{\Delta d = 198\ m}$$



$\Delta t = 6.0\,s$

$a = 1.3\,m/s^2$

$\Delta t = 1.8\,s$

$a = -1.8\,m/s^2$

$$\vec{v}_f = \vec{v}_i + \vec{a}\Delta t$$

$$V_H = (0\,m/s) + (1.3\,m/s^2)(6.0\,s)$$

$$V_H = 7.8\,m/s$$

$$\vec{v}_f = \vec{v}_i + \vec{a}\Delta t$$

$$V_f = V_H + (-1.8\,m/s^2)(1.8\,s)$$

$$(7.8\,m/s)$$

$$V_f = 4.56\,m/s$$

$$\vec{v}_f^{\,2} = \vec{v}_i^{\,2} + 2\vec{a}\Delta\vec{d}$$

$$(7.8\,m/s)^2 = (0\,m/s)^2 + 2(1.3\,m/s^2)\Delta d$$

$$(4.56\,m/s)^2 = (7.8\,m/s)^2 + 2(-1.8\,m/s^2)\Delta d$$

$$\vec{v}_f^2 = \vec{v}_i^2 + 2\vec{a}\Delta\vec{d}$$

$(7.8\,m/s)^2 = (0\,m/s)^2 + 2(1.3\,m/s^2)\Delta d$

$\frac{(7.8\,m/s)^2}{2(1.3\,m/s^2)} = \Delta d$

$\Delta d = 23.4\,m$

$(4.56\,m/s)^2 = (7.8\,m/s)^2 + 2(-1.8\,m/s^2)\Delta d$

$(4.56\,m/s)^2 - (7.8\,m/s)^2 = 2(-1.8\,m/s^2)\Delta d$

$\frac{(4.56\,m/s)^2 - (7.8\,m/s)^2}{2(-1.8\,m/s^2)} = \Delta d$

$\Delta d = 11.1\,m$