BLOOD

(a) $v^2 = v_0^2 + 2ax$ $\quad w/ v_0 = 0$

$a = v^2/2x$

$= (26\ cm/sec)^2 / 2 * 2.0\ cm$

$\boxed{a = 169\ cm/s^2}$

NOTE $g = 980\ cm/s^2$

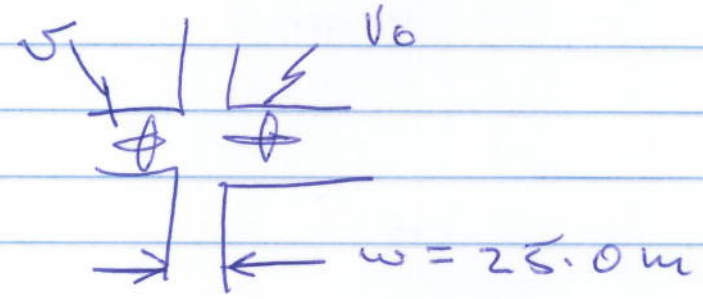
(b) $v = v_0 + at$

$t = (v - v_0)/a$

$t = 26\ cm/s \,/\, 169\ cm/s^2$

$\boxed{t = 0.15\ sec}$

PLANE



$$v^2 = V_0^2 + 2ax \qquad (1)$$

$$v = V_0 + at \qquad (2)$$

FIND V_0 & THEN t

$$V_0^2 = v^2 - 2ax$$

$$t = (v - V_0)/a$$

$$t = (v - \sqrt{V_0^2 - 2ax})/a$$

$a = -5.7\ m/s^2$

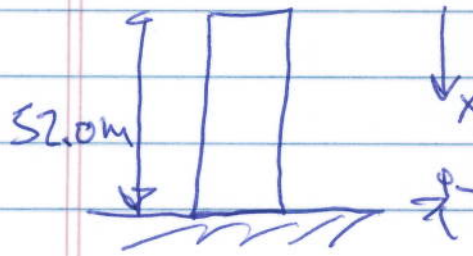
$x = 59.7\ m + 25.0\ m = 84.7\ m$

$v = 45.0\ m/s$

$$t = \frac{(45.0 - [45^2 + 2(5.7)84.7]^{1/2})}{-5.7} \text{ sec}$$

$t = 1.7$ sec

Block



$v^2 = v_0^2 + 2ax$

$v = v_0 + at$

v (14m ABOVE GND)

$v(14m) = \sqrt{2gx}$ $\quad x = 52m - 14m = 38m$

$v_{14} = 27.3 m/s$

$v(T's\ HEAD) = \sqrt{2gx}$ $\quad x = 52m - 8m = 50m$

$= 31.3 m/s.$

THE TIME TO INCREASE SPEED FROM 27.3m/s TO 31.3 m/s IS TIME FOR TURNER TO MOVE

$v = v_0 + at$

$= v_0 + gt$

$t = (v - v_0)/g$ $\quad v_0 = 27.3 m/s$, $v = 31.3 m/s$, $g = 9.8 m/s^2$

$t = (4.0/9.8)\ sec$

$t = 0.4\ sec$

SKIDDING CAR

COMPARE DISTANCES TO STOP, THEN FIND DIFFERENCE

DRY ROAD

$$v^2 = v_0^2 + 2ax$$

$$x = -v_0^2 / 2a \qquad v = 0 \text{ m/s}$$

$$x_{DRY} = -\frac{(32.0)^2}{-2 * 8.00} \text{ m}$$

$$\boxed{x_{DRY} = 64.0 \text{ m}}$$

$$x_{ICE} = -\frac{(32.0)^2}{-2 * 3.00}$$

$$\boxed{x_{ICE} = 170.7 \text{ m}}$$

$$\Delta s = x_{ICE} - x_{DRY}$$

$$\boxed{\Delta s = 106.7 \text{ m}}$$