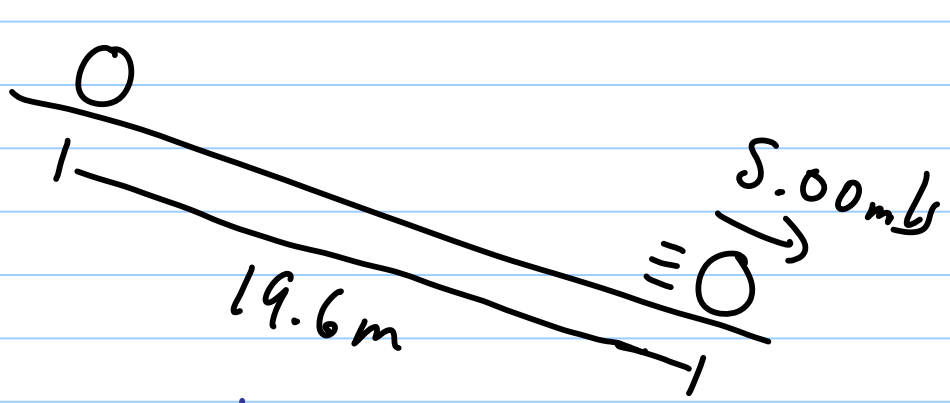
Note Title 15/10/2009

1)



$V = 5.00\,m/s$

$V_0 = 0$

$a = ?$

$d = 19.6\,m$

$t =$

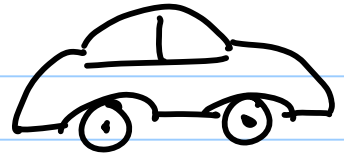
$$V^2 = V_0^2 + 2ad$$

$$V^2 - V_0^2 = 2ad$$

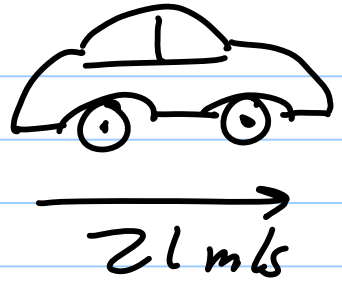
$$a = \frac{V^2 - V_0^2}{2d} = \frac{(5.00)^2}{2(19.6)}$$

$$= \boxed{0.638\ m/s^2}$$

2)



$t = 7.0\,s$



$V = 21\ m/s$

$V_0 = 0\ m/s$

$a = ?$

$d =$

$t = 7.0\,s$

$V = \cancel{V_0}^{0} + at$

$V = at$

$a = \frac{V}{t} = \frac{21\ m/s}{7.0\,s}$

$= 3.0\ m/s^2$

$V = ?$

$V_0 = 0$

$a = 3.0\ m/s$

$d =$

$t = 2.0\,s$

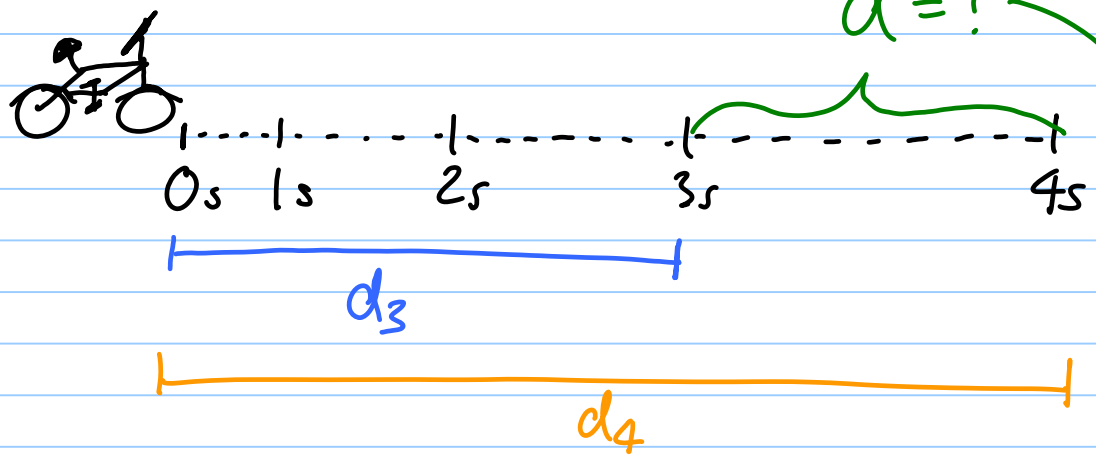
$V = \cancel{V_0}^{0} + at$

$V = at$

$= (3.0)(2.0)$

$= 6.0\ m/s$

3)



$d = d_3 - d_4$

at $t = 3.0s$

$v =$
$v_0 = 0$
$a = 2.0 m/s^2$
$d =$
$t = 3.0s$

$d_3 = \cancel{v_0 t}^{0} + \frac{1}{2}at^2$

$d_3 = \frac{1}{2}at^2$

$= \frac{1}{2}(2.0)(3.0)^2$

$= 9.0m$

at $t = 4.0s$

$v =$
$v_0 = 0$
$a = 2.0 m/s^2$
$d =$
$t = 4.0s$

$d_4 = \cancel{v_0 t}^{0} + \frac{1}{2}at^2$

$d_4 = \frac{1}{2}at^2$

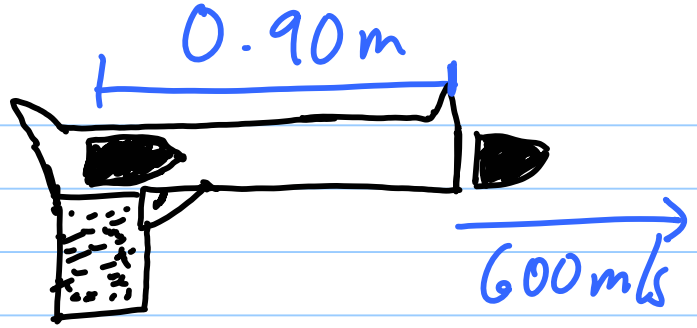
$= \frac{1}{2}(2.0)(4.0)^2$

$= 16 m$

$d = d_4 - d_3 = 16 - 9.0$

$= \boxed{7 m}$

4)



$V = 600\ m/s$

$V_0 = 0\ m/s$

$a =$

$d = 0.90\ m$

$t =$

$v^2 = v_0^2 + 2ad$ ($v_0 = 0$)

$v^2 = 2ad$

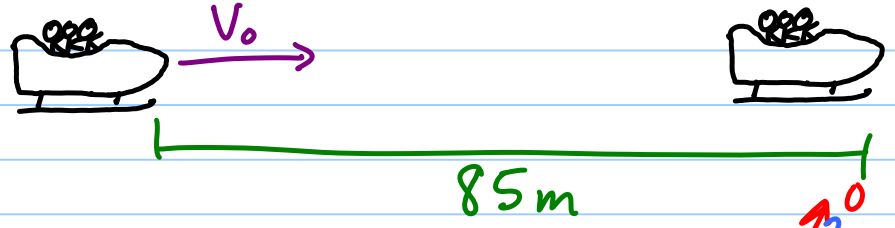
$a = \frac{v^2}{2d} = \frac{(600\ m/s)^2}{2(0.90\ m)}$

$= \boxed{2.0 \times 10^5\ m/s^2}$

has to be negative!

$a = -0.43\ m/s^2$

5]



$V = 0$

$V_o = ?$

$a = -0.43\ m/s^2$

$d = 85\ m$

$t = ?$ ← can't find this right away so... look for V_o first

$V^2 = V_o^2 + 2ad$ (V = 0)

$-V_o^2 = 2ad$

$V_o^2 = -2ad$

$V_o = \sqrt{-2ad}$

$= \sqrt{-2(-0.43\ m/s^2)(85)}$

$= 8.550\ m/s$

$V = V_o + at$ (a = 0)

$t = \frac{V - V_o}{a} = \frac{-(8.550\ m/s)}{(-0.43\ m/s^2)} = 20.\ s$

$= \boxed{2.0 \times 10^1\ s}$

Bonus