# Activity – Texting While Driving

2) if $t = 3\,s$

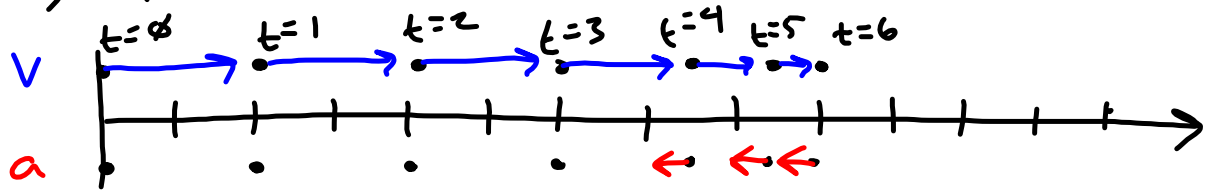
$$\Delta x = v_i t + \frac{1}{2} a t^2$$

↳ $a = 0\ m/s^2$

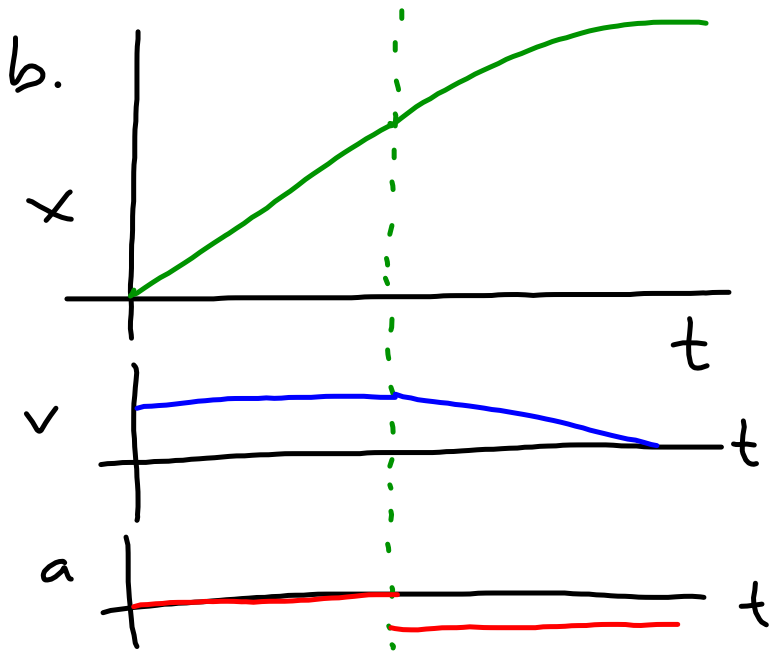
$$= (20\ m/s)(3\,s)$$

$$= 60\ m$$

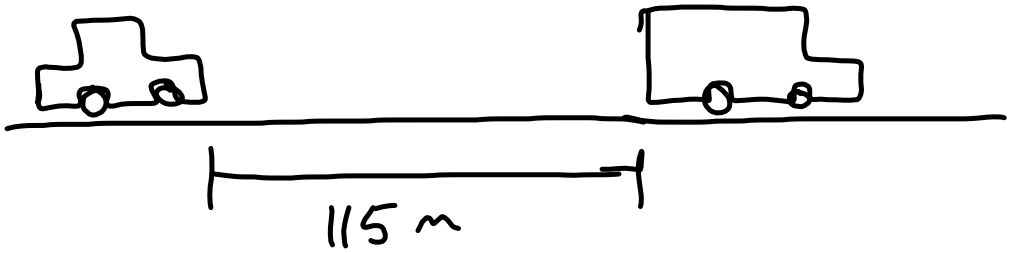
3) a.




b.



c.




$v_i = 20\ m/s \qquad a = -5\ m/s^2$

$v_f = 0\ m/s \qquad \Delta x = ?$

$$v_f^2 = v_i^2 + 2a\Delta x$$

$$-v_i^2 \qquad -v_i^2$$

$$\frac{v_f^2 - v_i^2}{2a} = \frac{2a\Delta x}{2a}$$

$$\Delta x = \frac{v_f^2 - v_i^2}{2a}$$

$$= \frac{(0\ m/s)^2 - (20\ m/s)^2}{2(-5\ m/s^2)}$$

$$= 40\ m$$

Did NOT hit the truck!

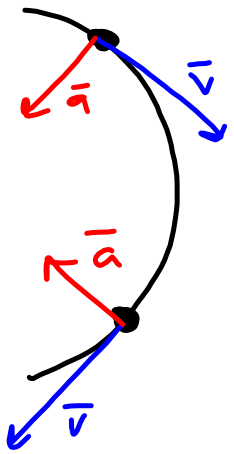
# Review - Kinematics

Traffic Circle at 18 km/h

Constant speed? YES

constant velocity? NO

uniform acceleration? YES




Top of trajectory

$\bar{v} = 0$ m/s

$a = 9.8$ m/s$^2$ down

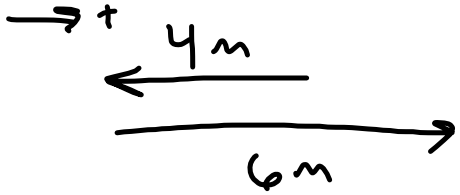
Units:

$x \rightarrow$ m

$v \rightarrow$ m/s

$a \rightarrow$ m/s$^2$

$-\bar{v}$ and $+\bar{a} \rightarrow$ slowing down

1) 


$d = 4m + 6m = 10m$

$\Delta x = -4m + 6m = 2m$

2) $v_f = 0\ m/s$

$v_i = 9\ m/s$

$a = -4.1\ m/s^2$

$t = ?$

$v_f = v_i + at$

$t = \frac{v_f - v_i}{a}$

$= \frac{0\ m/s - 9\ m/s}{-4.1\ m/s^2}$

$= 2.2s$

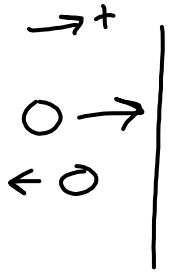
3) $v_f = 28.8\ m/s$
$v_i = ?$
$a = -5.92\ m/s^2$
$t = 4\ s$

$v_f = v_i + at$

$v_i = v_f - at$

$= 28.8\ m/s - (-5.92\ m/s^2)(4\ s)$

$= 52.48\ m/s$

4) 


$v_i = 12\ m/s$
$v_f = -10\ m/s$
$t = 0.2\ s$
$a = ?$

$v_f = v_i + at$

$a = \frac{v_f - v_i}{t}$

$= \frac{-10\ m/s - 12\ m/s}{0.2\ s}$

$= -110\ m/s^2$

5) a. $v_{top} = 0\ m/s$


b. $v_f = 0\ m/s$
$v_i = 24\ m/s$
$a = -9.8\ m/s^2$
$\Delta x = ?$

$v_f^2 = v_i^2 + 2a\Delta x$

$\Delta x = \frac{v_f^2 - v_i^2}{2a}$

$= \frac{(0\ m/s)^2 - (24\ m/s)^2}{2(-9.8\ m/s^2)}$

$= 323.5\ m$

c. $v_i = 24\ m/s$
$v_f = 0\ m/s$
$a = -9.8\ m/s^2$
$t = ?$

$v_f = v_i + at$

$t = \frac{v_f - v_i}{a}$

$= \frac{0\ m/s - 24\ m/s}{-9.8\ m/s^2}$

$= 2.45\ s$

d. total time = time up + time down

$= 2.45\ s + 2.45\ s$

$= 4.9\ s$