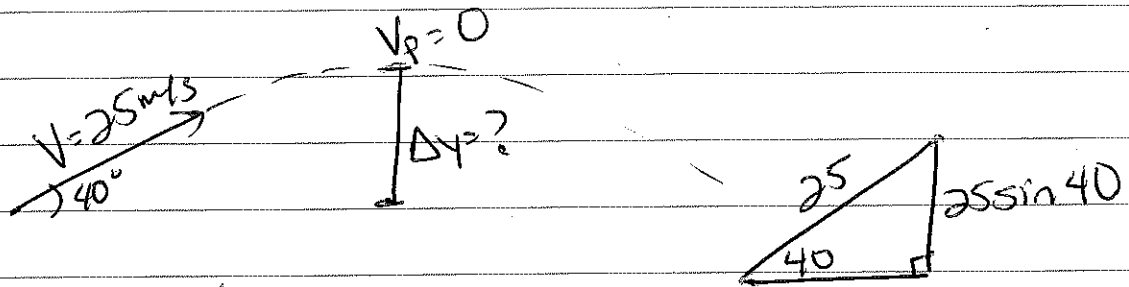


1)



~~$V_f = 0$~~

$$a = -9.8 \text{ m/s}^2$$

$$V_i = 16 \text{ m/s}$$

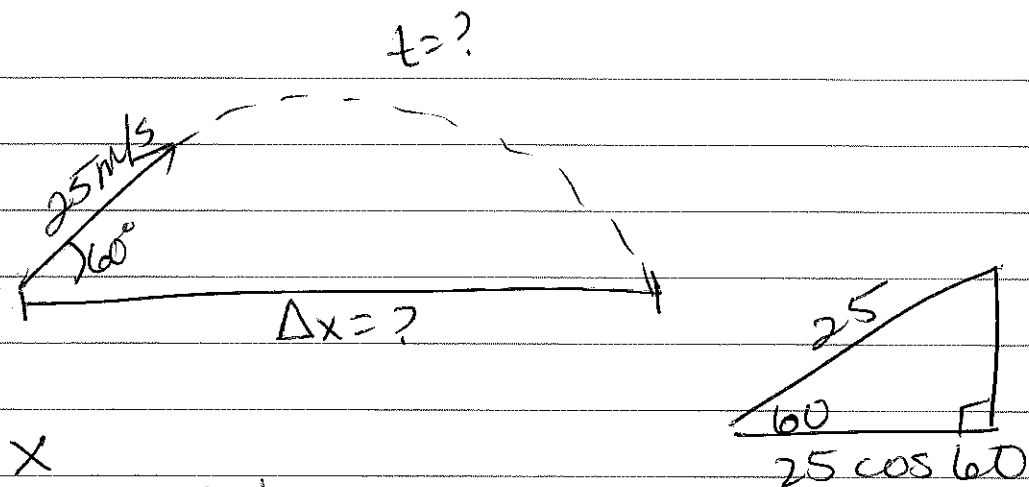
$$V_f^2 = V_i^2 + 2a\Delta x$$

$$0 = (16)^2 + 2(-9.8)\Delta x$$

$$\frac{\Delta x \cdot 19.6}{19.6} = \frac{256}{19.6}$$

$$\boxed{\text{height} = 13 \text{ meters}}$$

2)



x

$$v = 12.5 \text{ m/s}$$

no acceleration

$$\Delta x = 55.2 \text{ m}$$

$$\text{Range} = \frac{v^2 \sin 2\theta}{g}$$

$$\text{Range} = \frac{(25)^2 \sin(2 \cdot 60)}{9.8}$$

$$= \frac{625 \sin 120}{9.8}$$

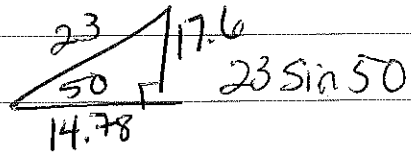
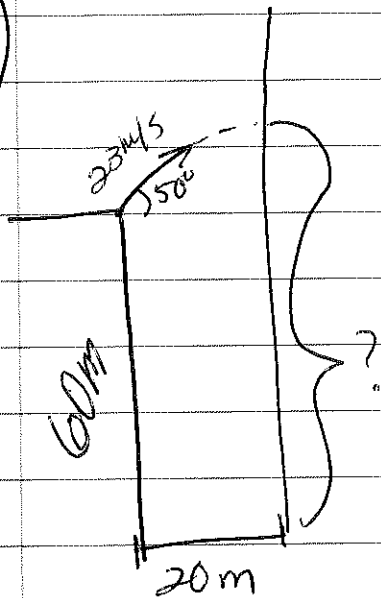
$$\boxed{\text{Range} = 55.2 \text{ meters}}$$

$$\frac{\Delta x}{v} = \frac{v \cdot t}{v}$$

$$t = \frac{\Delta x}{v} = \frac{55.2}{12.5} = \boxed{4.4 \text{ seconds}}$$

# SICATOA

3)



$$t \cdot v = \frac{\Delta x}{v_x}$$

$$t \cdot v = \frac{\Delta x}{v \cos \theta}$$

$$t = \frac{\Delta x}{v \cos \theta} = \frac{20}{14.78}$$

X  
 $\Delta x = 20\text{m}$   
 $v_i = 14.78 \frac{\text{m}}{\text{s}}$   
 $t = 1.35\text{s}$   
 no acceleration

Y  
 $v_i = 17.6 \text{ m/s}$   
 $g = -9.8 \text{ m/s}^2$       no  $v_f$   
 $t = 1.35\text{s}$   
 $\Delta x_y = ?$

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

$$\Delta x = 17.6(1.35) + 4.9(1.35)^2$$

$$23.76 - 8.93$$

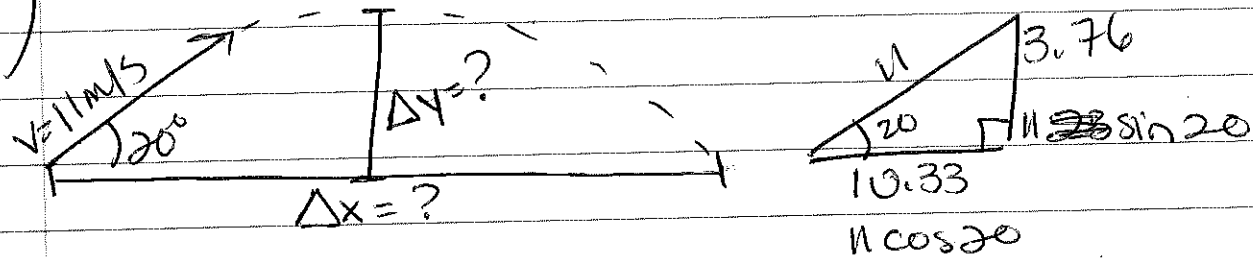
$$14.83\text{m}$$

Total height =  $14.83 + 60\text{m}$

=  $74.83\text{ meters}$

S<sup>o</sup> C<sup>o</sup> A<sup>o</sup> T<sup>o</sup> A

4)



X	Y	Range = $\frac{V^2 \sin 2\theta}{g}$
$V = 10.33 \text{ m/s}$	$g = -9.8 \text{ m/s}^2$	$= \frac{(11)^2 \sin [2(20)]}{9.8}$
NO acceleration	$V_f(\text{top}) = 0$	$= \frac{121 (\sin 40)}{9.8}$
$\Delta x = ?$	$V_i = 3.76 \text{ m/s}$	
	$\Delta y = ?$	
		$\Delta x = 7.9 \text{ m}$

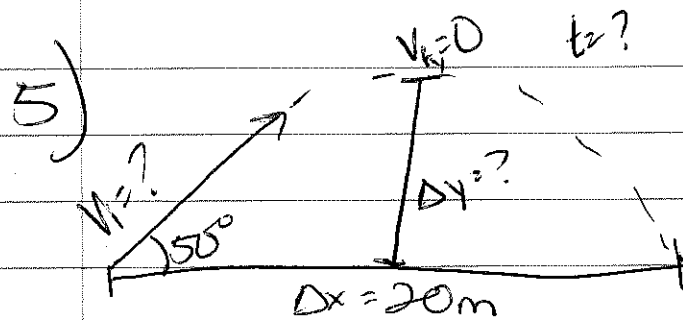
$$V_f^2 = V_i^2 + 2a\Delta x$$

$$0 = (3.76)^2 + 2(-9.8)\Delta x$$

$$\frac{19.6\Delta x = 14.1376}{19.6 \quad 19.6}$$

$$\Delta x = .721$$

$\Delta y = .721 \text{ meters}$



$$\text{Range} = \frac{V^2 \sin 2\theta}{g}$$

X	Y
$\Delta x = 20\text{m}$	$g = -9.8\text{m/s}^2$
$V = 9.1\text{m/s}$	$9.8 \cdot 20 = \frac{V^2 \sin 100}{9.8}$
	$V_i = 10.8\text{m/s}$
	$t = 2.19\text{s}$
	$V_f = 0$

$$\frac{196}{\sin 100} = \frac{V^2 \sin 100}{\sin 100}$$

$$\sqrt{\frac{196}{\sin 100}} = \sqrt{V^2}$$

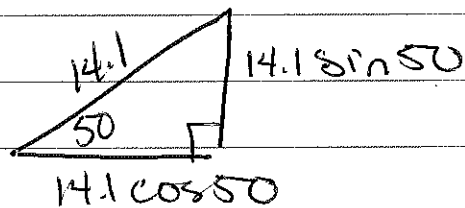
$$14.1\text{m/s} = V$$

$$\frac{\Delta x}{V} = \frac{V \cdot t}{V}$$

Initial  $V = 14.1\text{m/s}$

$$t = \frac{\Delta x}{V} = \frac{20}{9.1} = 2.19$$

time = 2.19 seconds

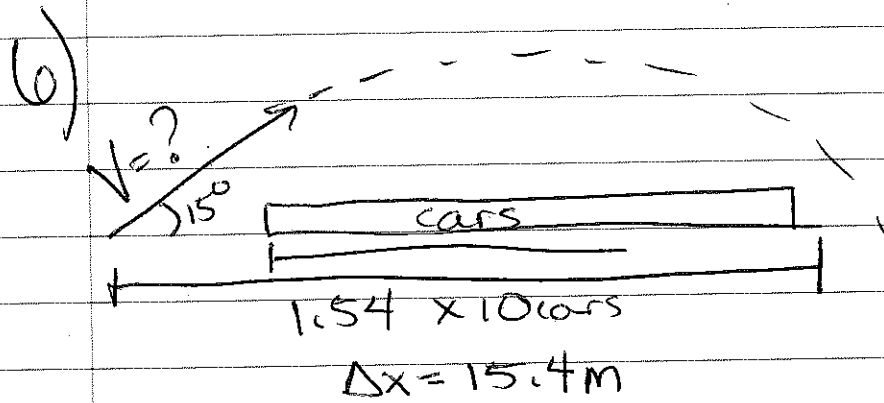


$$V_f^2 = V_i^2 + 2a\Delta x$$

$$0 = (10.8)^2 + 2(-9.8)\Delta x$$

$$\frac{19.6\Delta x}{19.6} = \frac{116.64}{19.6}$$

height = 5.95 meters



x	y
$\Delta x = 15.4 \text{ m}$	$g = -9.8 \text{ m/s}^2$

$$\text{Range} = \frac{v^2 \sin 2\theta}{g}$$

$$9.8 \cdot 15.4 = \frac{v^2 \sin 30 \cdot 9.8}{9.8}$$

$$\frac{150.92}{\sin 30} = \frac{v^2 \sin 30}{\sin 30}$$

$$\sqrt{\frac{150.92}{\sin 30}} = \sqrt{v^2}$$

$\text{Velocity} = 17.3 \text{ m/s}$