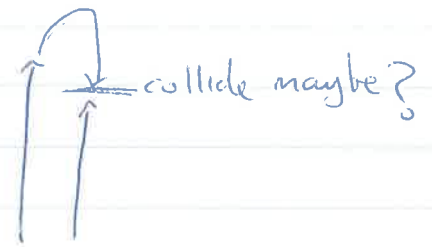


LCH 04 1.a

$$u = 20 \\ a = -g$$

1 sec later
 $u = u$
 $a = -g$



in 2 sec they collide so ie $S_A = S_B$

$$S_A \text{ in 3 sec } \circ 20(3) + \frac{1}{2}(-9.8)(3^2)$$

$$60 - 44.1 \\ 15.9$$

$$S_B \text{ in 2 sec } \circ u(2) + \frac{1}{2}(-9.8)(2^2)$$

$$2u - 19.6$$

$$S_A = S_B \Rightarrow 15.9 = 2u - 19.6 \\ 35.5 = 2u \\ u = 17.75$$

ii) ^{dist and B} \wedge A \wedge before collision = ?

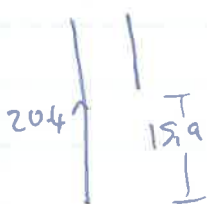
Tricky

~~need time of collision~~

Collide at 15.9 above ground, but what distance travelled?

$$\text{1st ball: } v^2 = u^2 + 2as \\ \uparrow 0 = 20^2 + 2(-g)(s) \\ s = 20.4$$

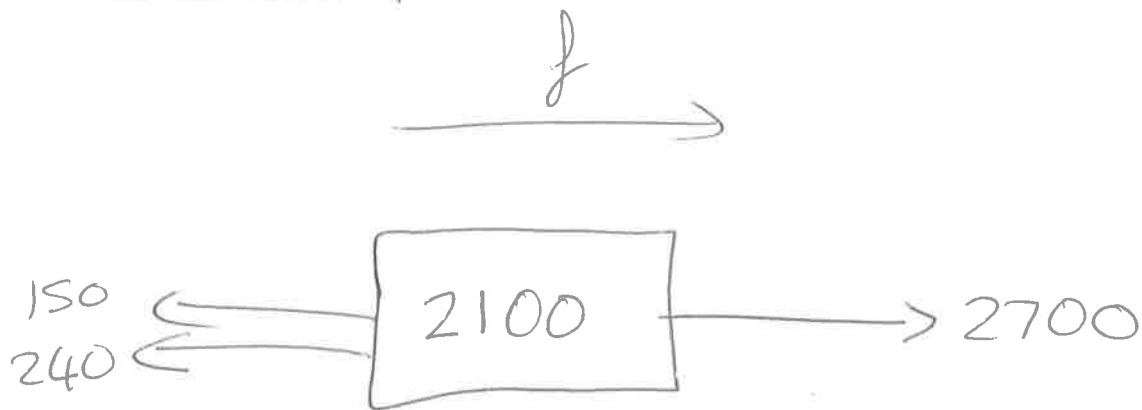
$$\text{distance} = 20.4 + (20.4 - 15.9) \\ \uparrow \downarrow = 24.9 \\ = 25$$



$$\text{2nd ball: } v^2 = u^2 + 2as \\ 0 = 17.75^2 + 2(-g)(s) \\ s = 16.07$$

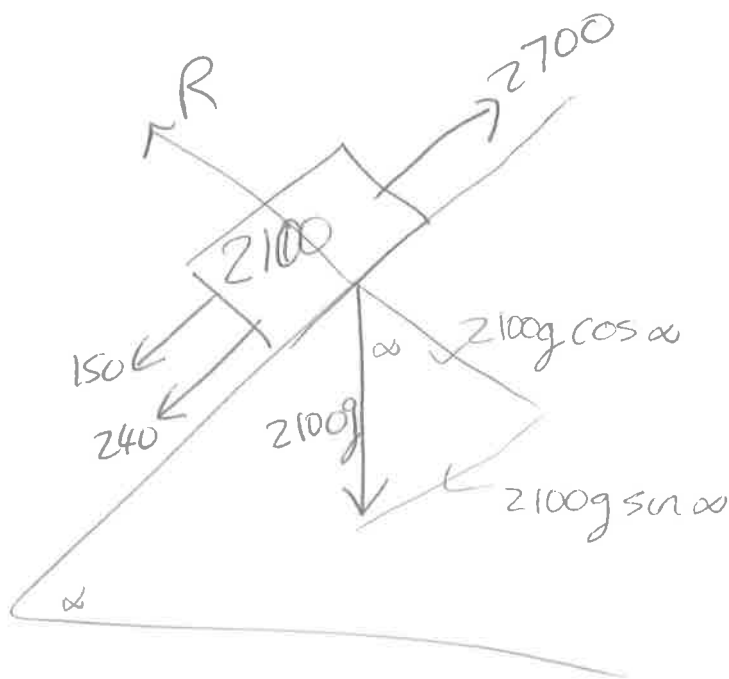
$$\text{distance} = 16.07 + (16.07 - 15.9) \\ = 16.24 \\ = 16$$

b/ or Together



$$2700 - 150 - 240 = 2100 f$$

$f = 1.1$



\perp : $R = 2100g \cos \alpha$

\parallel : $2700 = 2100g \sin \alpha + 150 + 240$

$$2310 = 2100g \sin \alpha$$

$$\frac{11}{98} = \sin \alpha$$

$$\alpha = 6.44^\circ$$