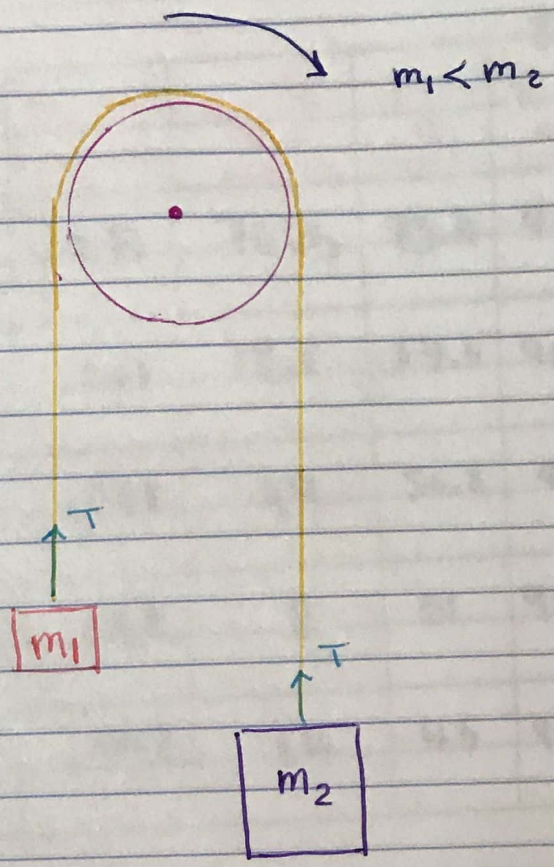
بسم الله الرحمن الرحيم



$\Rightarrow$ For m_1 :-

$$T - m_1 g = m_1 a \quad \rightarrow ①$$

$\Rightarrow$ For m_2

$$m_2 g - T = m_2 a \quad \rightarrow ②$$

$1 + 2 =$

$$m_2 g - m_1 g = m_1 a + m_2 a$$

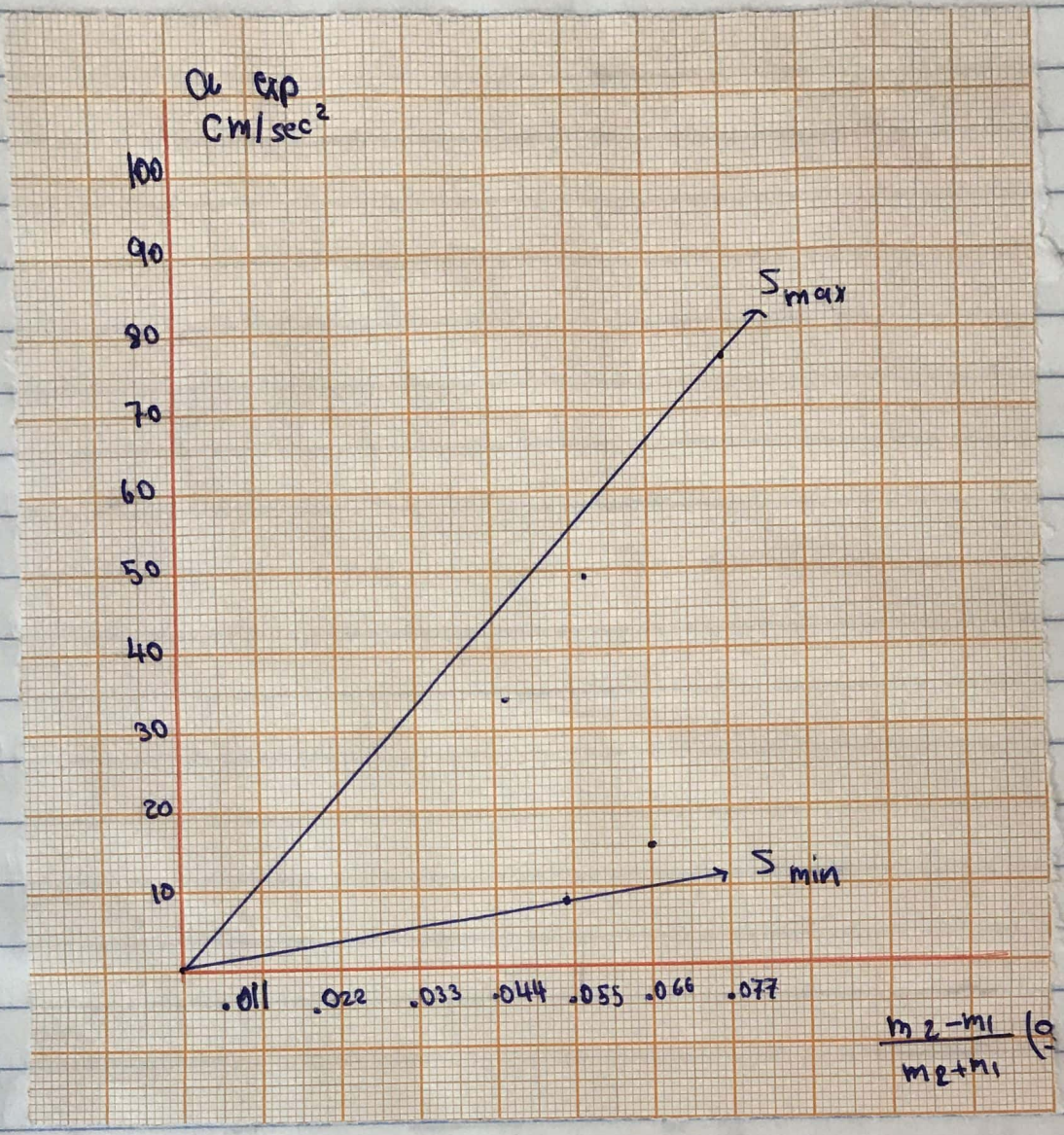
$$g(m_2 - m_1) = a(m_2 + m_1)$$

$$a = \frac{(m_2 - m_1)\, g}{m_2 + m_1}$$

$Y = 153$ cm

$(m_2 - m_1)g$ ↑

trial number	M_1 (g)	M_2 (g)	t_1 (s)	t_2 (s)	$\bar{t}$ s	$\bar{t}^2$ (s)	$\frac{m_2 - m_1}{m_2 + m_1}$	$a_{exp} = \frac{2Y}{t^2}$ cm/s^2	a_{th} cm/s^2	F_{net} (N)
1	60	70	2.18	1.93	2.	4	.077	76.5	75.4	9800
2	70	80	4.08	4.95	4.5	20.2	.066	15.1	64.6	9800
3	80	90	2.52	2.49	2.5	6.25	.058	49	56.8	9800
4	90	100	5.84	6.6	6.22	38.6	.052	8	51	9800
5	100	110	2.92	3.35	3	9	.047	34	46	9800



$$\text{Slope}_{max} = \frac{76.5 - 0}{.077 - 0} = 993.5$$

$$\text{slope}_{min} = \frac{8 - 0}{.052 - 0} = 153.8$$

$$\text{Slope}_{Average} = \frac{S_{max} + S_{min}}{2} = 573.65$$

$$\Rightarrow g_{exp} = 573.65 \ \ Cm/s^2$$

- Error $= \frac{g_{exp} - g_{the}}{g_{the}} * \%100$

$= \frac{573.65 - 980}{980} * \%100$

$= \%41.46$

⇒ Question 8 -

1 - $a = \frac{m_2 - m_1}{m_2 + m_1} * g = \frac{.5}{1.5} * 10$

$= 3.3 \quad m/s^2$

2. $F_{net} = (m_2 - m_1)\, g$

$= (2-1)10 = 10\ N$