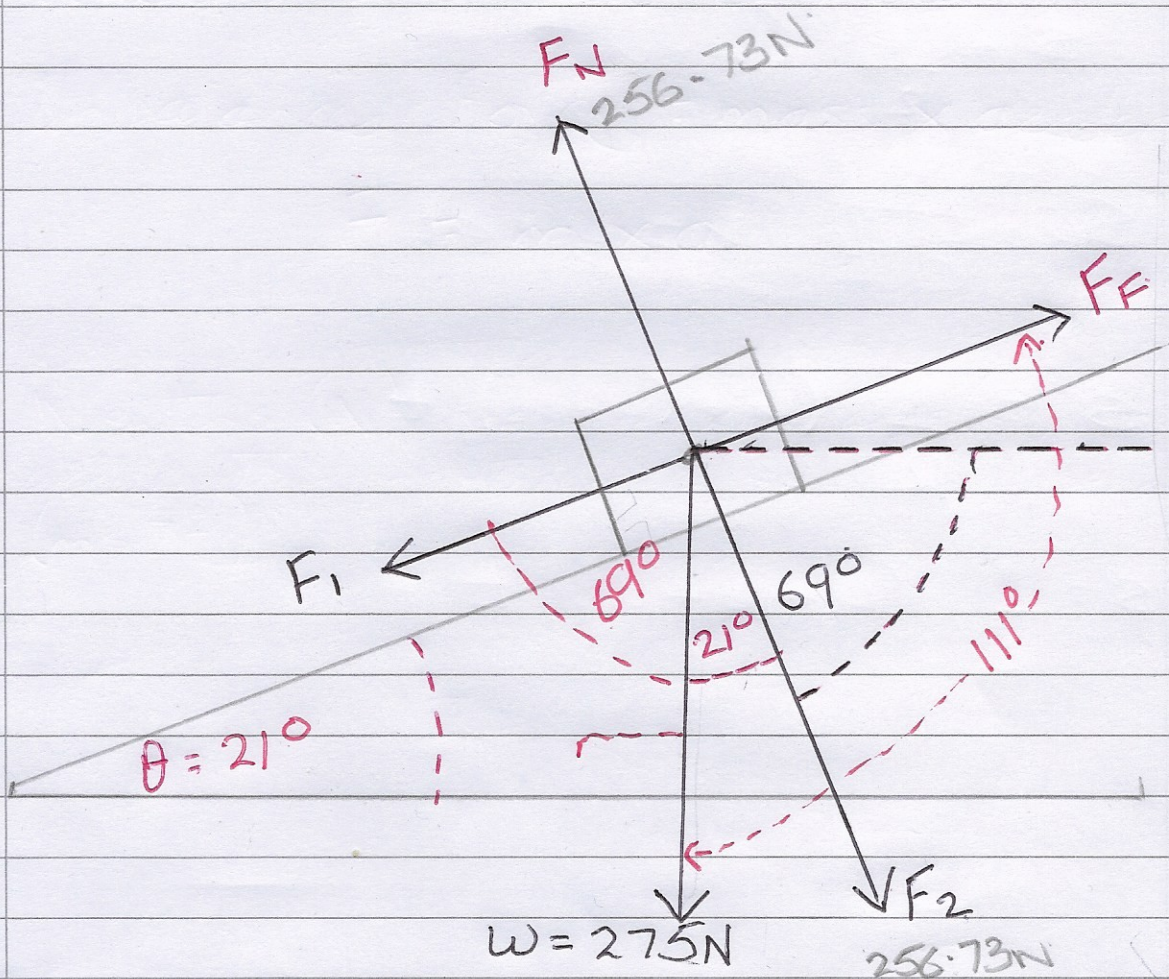


SCIENCE M3X01513

GRIFFITH CARL BIRD - 1907974.



Weight = mass $\times$ gravity

$$275 = \text{mass} \times 9.81\text{ms}^{-2}$$

$$F_2 = W \cos 21^\circ$$

$$F_2 = 275 (\cos 21^\circ) = 256.73\text{N}$$

$$F_1 = 275 (\cos$$

$$\textcircled{A} \textcircled{i} \textcircled{1} \quad 275 (\sin 21^\circ) = 98.55 \text{ N}$$

$$\textcircled{2} \quad 111^\circ$$

$$\textcircled{iii} \quad 275 (\cos 21^\circ) = 256.73 \text{ N}$$

$\textcircled{B}$

$\textcircled{i}$

$$\textcircled{ii} \quad \text{kg} \cdot \text{m/s}$$

$\textcircled{C}$

$$\textcircled{1} \quad F_R = 275 \div 9.81 = 28.03 \text{ kg}$$

$$\textcircled{a} \quad \text{Resultant force} = \text{mass} \times \text{acceleration}$$

$$\text{Resultant force} = 70.075$$

$$70.075 \text{ N}$$

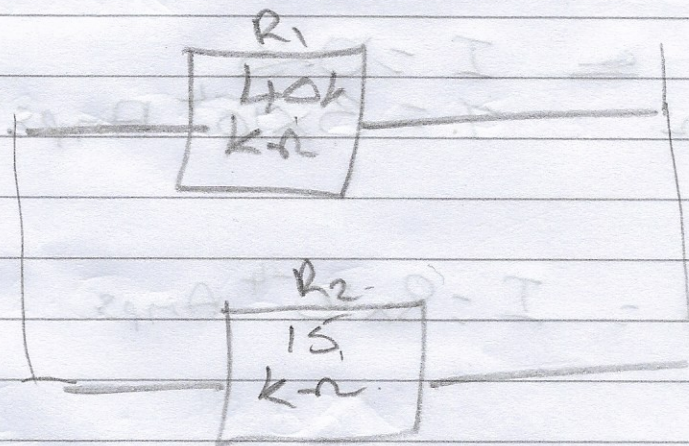
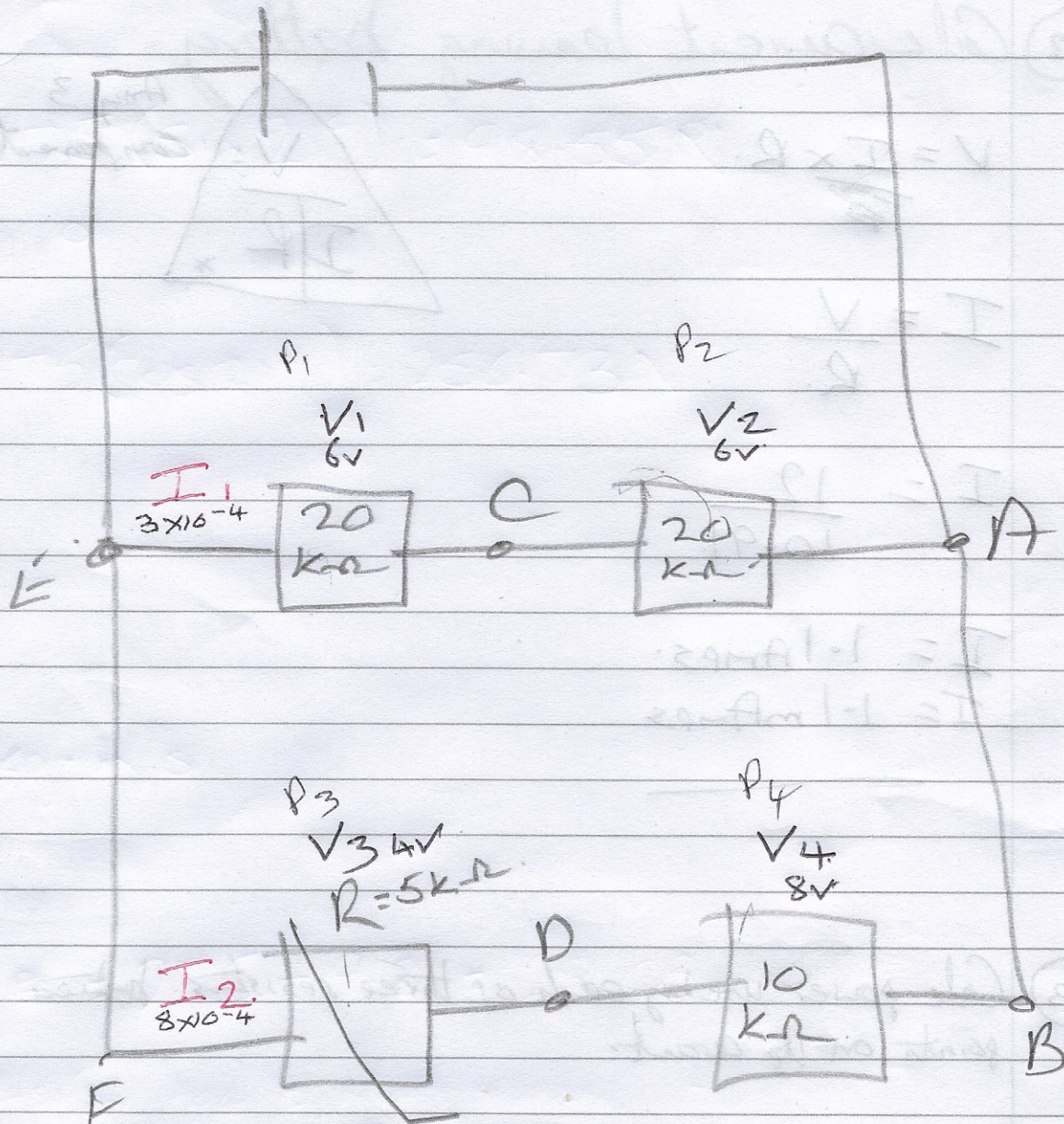
$$\textcircled{ii} \quad 28.03 \times 7.5 = 210.25 \text{ ms}^{-1}$$

$$\textcircled{iii} \quad 5 \times 12.5 = 62.5$$

$$\frac{62.5}{3.2} = 19.53 \text{ N}$$

$\textcircled{2}$

12V.



a) $\frac{1}{R_1} + \frac{1}{R_2} = \frac{1}{0.0916} = 10.91k\Omega$

3

Q2) Calc current leaving battery.

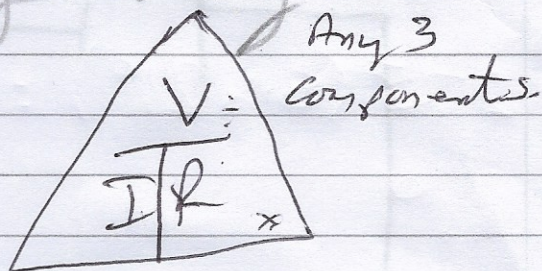
$$V = I \times R.$$

$$I = \frac{V}{R}.$$

$$I = \frac{12}{10.91}.$$

$$I = 1.1 \text{ Amps.}$$

$$I = 1.1 \text{ mAmps}$$



Q3) Calc power use by each of three resistors between points on the circuit.

$$I = \frac{V}{R}$$

$$I_1 = \frac{12}{40 \text{ k}\Omega} \quad I = 0.3 \quad I = 3 \times 10^{-4} \text{ Amps}$$

$$I_2 = \frac{12}{15 \text{ k}\Omega} \quad I = 8 \times 10^{-4} \text{ Amps}$$

4

$$V = IR$$

$$V_1 = 3 \times 10^{-4} \times 20 \text{ k}\Omega$$

$$V_1 = 6 \text{ V}$$

$$V_2 = 6 \text{ V}$$

$$V_3 = I \times R$$

$$V_3 = 8 \times 10^{-4} \times 5 \text{ k}\Omega$$

$$V_3 = 0.04 \text{ V}$$

$$V_3 = 4 \text{ mV}$$

$$V_4 = I \times R$$

$$V_4 = 8 \times 10^{-4} \times 10 \text{ k}\Omega$$

$$V_4 = 8 \text{ V}$$

$$P = IV$$

$$P = 3 \times 10^{-4} \times 6$$

$$P = 1.8 \times 10^{-3} \text{ W}$$

$$V_1 = 1.8 \times 10^{-3} \text{ W}$$

$$V_2 = 1.8 \times 10^{-3} \text{ W}$$

$$P_3 = IV$$

$$P_3 = 8 \times 10^{-4} \times 4$$

$$P_3 = 3.2 \times 10^{-3} \text{ W}$$

$$P_4 = 8 \times 10^{-4} \times 8 \text{ W}$$

$$= 6.4 \times 10^{-3} \text{ W}$$

$$P_1 = 1.8 \times 10^{-3} \text{ W}$$

$$P_2 = 1.8 \times 10^{-3} \text{ W}$$

$$P_3 = 3.2 \times 10^{-3} \text{ W}$$

$$P_4 = 6.4 \times 10^{-3} \text{ W}$$

5

2b

$$A - C = 6V$$

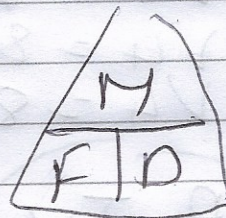
$$D - F = 4V$$

C - D = 0V current in parallel

3a

Look up: the product of the distance from the point to the point of application of the force and the component of the force perpendicular to the line of distance

b) $M = F \cdot D$



$$M = 250 \times 0.048 \text{ m}$$

$$M = 12 \text{ Nm}$$

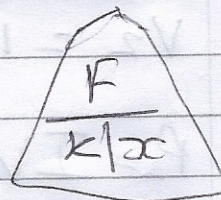
② $4 = 12 \times 27$

$$12 = 0.027$$

$$4 = 444.4 \text{ N}$$

Hooke's Law

③ $F_s = kx$



$$\frac{444.4}{0.015} =$$

④ $\frac{444.4}{0.015} = 29626.6 \text{ N/m}$
Spring constant

6

⑤ Work done = Force $\times$ Distance ?
;

③

①

⑦