

Find the volt meter reading X.

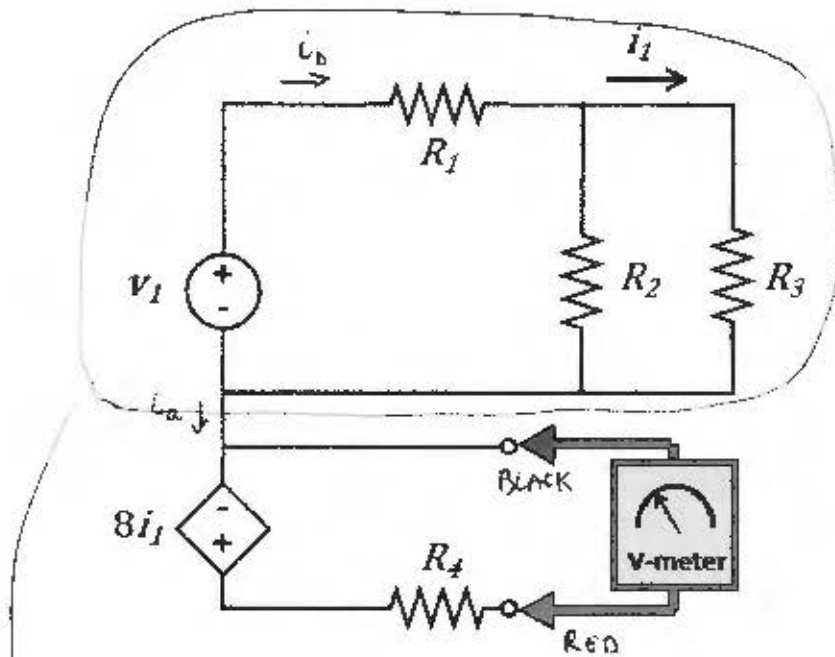
$$v_1 = 10 \text{ V}$$

$$R_1 = 10 \Omega$$

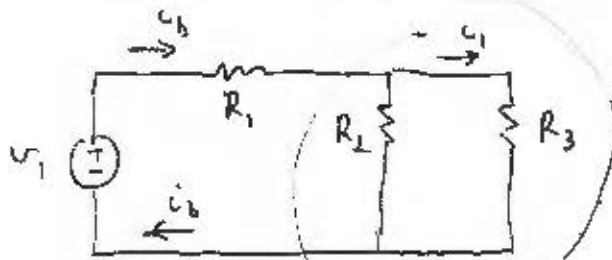
$$R_2 = 15 \Omega$$

$$R_3 = 10 \Omega$$

$$R_4 = 10 \Omega$$



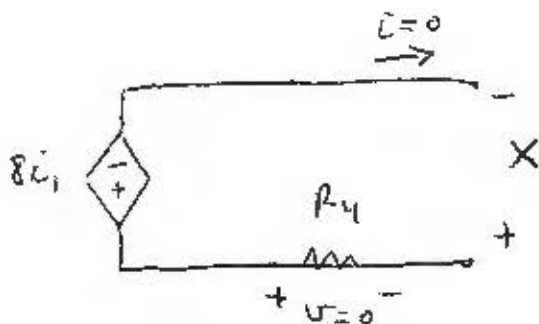
GENERALIZED KCL: $i_a = 0$



$$R_2 \parallel R_3 = \left(\frac{1}{15} + \frac{1}{10} \right)^{-1} \\ = \left(\frac{1}{5} \cdot \left(\frac{1}{3} + \frac{1}{2} \right) \right)^{-1} \\ = \left(\frac{1}{5} \cdot \frac{5}{6} \right)^{-1} = 6 \Omega$$

$$i_b = \frac{v_1}{R_1 + R_2 \parallel R_3} = \frac{10}{10 + 6} = \frac{10}{16}$$

CURRENT DIVIDER. $i_1 = i_b \frac{R_2}{R_2 + R_3} = \frac{10}{16} \cdot \frac{15}{25} = \frac{3}{8}$



$$\Rightarrow X = 8i_1 = 8 \cdot \frac{3}{8}$$

$$X = 3 \text{ V}$$