



Voltage source = short

$$\frac{V_1}{5} + \frac{V_2}{8} + \frac{V_2}{5} = 5$$

$$\frac{V_1}{5} + \frac{-2V_1}{8} + \frac{-2V_1}{5} = 5$$

$$\frac{V_1}{5} - \frac{V_1}{4} = \frac{2V_1}{5}$$

$$\frac{-2V_1}{5} = 5$$

$$V_1 = -10$$

$$V_2 = 20 \quad i_x = \frac{V_2}{5} = \frac{20}{5} = 5$$

$$V_2 - V_1 = 6i_x$$

$$V_2 - V_1 = 6 \cdot \frac{V_2}{5}$$

$$V_2 - V_1 = \frac{3V_2}{2}$$

$$\frac{V_2}{2} = -V_1$$

$$V_2 = -2V_1$$

Mesh analysis for voltage

$$4i_1 + 4(i_1 - i_2) + 6(i_2 - i_1) = 0$$

-6i₁

$$8i_2 + 4(i_2 - i_1) + 6 = 0$$

$$8i_1 + 2i_2 = 0$$

$$-4i_1 + 12i_2 = -6$$

$$i_1 = \frac{+3}{8}$$

$$i_2 = -\frac{3}{8}$$

$$\frac{-3}{8} - \frac{3}{8}$$

$$\frac{-3}{8} - 4(-3)$$

$$i_x = -3$$

from current source $i_x = 5$

from voltage source $i_x = -3$

$$5 + (-3) = \underline{\underline{2A}} = i_x$$

