## Instructions

i.   Separate into groups of no more than three persons. Make sure the group members are not exactly the same as any of your earlier groups.

ii. Only one submission is needed for each group. Late submission will not be accepted.

iii. **Write down all the steps** that you have done to obtain your answers. You may not get full credit even when your answer is correct without showing how you get your answer.

Name	ID
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For the circuit below, suppose i_s = 15A.

    a.   Find all mesh currents.

    b.   Find v_0
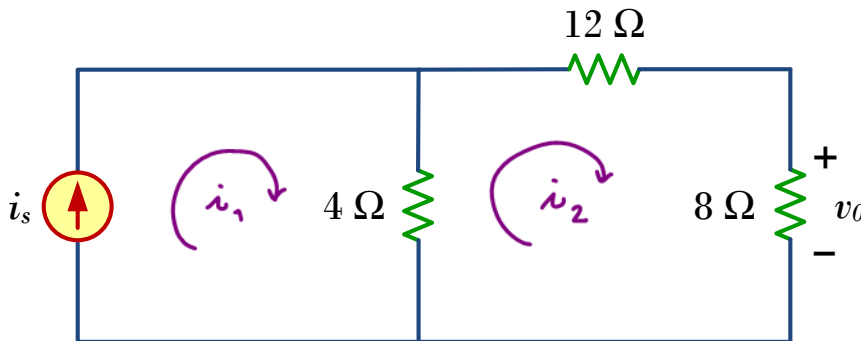
From mesh ①,

$$i_1 = i_s = 15\ A$$

From mesh ②,

$$-(i_2 - i_1) \times 4 - i_2 \times 12 - i_2 \times 8 = 0$$

$$4\,i_1 = i_2 \underbrace{(4 + 12 + 8)}_{24}$$

$$i_2 = \frac{\overset{1}{4}}{\underset{6}{24}}\,i_1 = \frac{\overset{5}{15}}{\underset{2}{6}} = 2.5\ A$$

(a) $i_1 = 15\ A$

    $i_2 = 2.5\ A$

(b) From Ohm's law, $V_0 = +i_2 \times 8 = \frac{5}{2} \times 8 = 5 \times 4 = 20\ V$

direction of i_2 conforms with the passive sign convention when considered with the polarity of v_0.