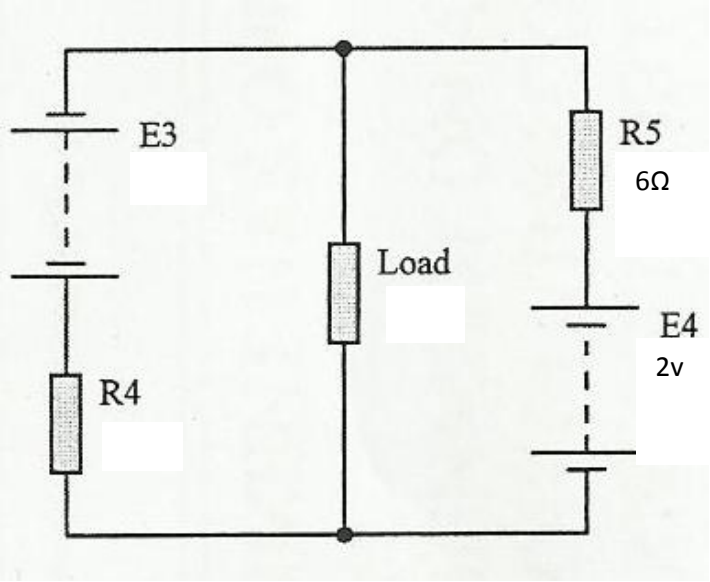
Circuit Two Kirchoffs Law



Loop A B C D

$3v = 3\Omega I_1 + 1\Omega (I_1 - I_2)$

$3v = 3\Omega I_1 + 1I_1 - I_2$

$3v = 4\Omega I_1 - 1I_2$ --------- ①

Loop B E F C

$2v = 6\Omega I_2 + 1\Omega I_1 (I_2 - I_1)$

$2v = 1\Omega I_1 + 7\Omega I_2$ ---------- ②

$3v = 4\Omega I_1 - 1\Omega I_2$ ---------- ① x1

$2v = -4\Omega I_1 + 7\Omega I_2$ ---------- ② x4

$3v = 4\Omega I_1 - 1\Omega I_2$

$8v = -16\Omega I_1 + 28\Omega I_2$

$11v = 27\Omega I_2$

$I_2 = \frac{11v}{27\Omega} = 0.407a$

Sub I_2 into equation ①

$3v = 4\Omega I_1 - 1\Omega I_2 (0.407a)$

$3v = 4\Omega I_1 + 0.407a$

$3v + 0.407a = 4\Omega I_1$

$I_1 = 3v + (\frac{0.407a}{4\Omega}) = 0.851a$

$I_1 - I_2 = 0.851a - 0.407a = 0.444a$