

Answer on Question 37637, Physics, Electric Circuits Here we must use the Ohm law twice, corresponding to two situations (10 Ω and 3 Ω resistor):

$$E = (r + R)I$$

$$E = (r + R_1)I_1, \quad E = (r + R_2)I_2$$

where R_1 and R_2 3 and 10 Ohm and I_1 and I_2 are correspondent currents. From this we can find

$$(r + R_1)I_1 = (r + R_2)I_2$$

$$r = \frac{I_2 R_2 - I_1 R_1}{I_2 - I_1} = \frac{0.24 \cdot 0.3 - 1 \cdot 0.1}{0.3 - 0.1} = 2\Omega$$

$$E = (r + R_1)I_1 = (2 + 10)0.1 = 1.2V$$