

Mesh set

Student Group

First Name	Surname	Matrikel Nr.

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In every closed circuit and every mesh of the network, the sum of all voltages is zero!

Set the voltage on the power supply to 12 V and measure this voltage precisely using a



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multimeter. Set up the measuring circuit shown in [figure 1](#).

Fig. 1: Mesh-set Add the voltage arrows and measure U , U_{1} und U_{2} :



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Tab. 1: Mesh set voltage measurement

What is the mesh set here?

Check the formula with the measured values:

The resistors R_{1} and R_{2} connected in series form a voltage divider. What is the ratio between the voltages U_{1} and R_{2} ? $\frac{U_{\text{1}}}{U_{\text{2}}} =$

Set of nodes

At each junction point, the sum of all incoming and outgoing currents is equal to zero!

Set the voltage on the power supply to 12 V and measure the voltage accurately with a multimeter. In the first step, set up the measuring circuit shown in [figure 2](#):



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Fig. 2: Node-set circuit 1 Draw the arrows for the directions of currents I_{1} and I_{2} in [figure 3](#). The DC current measurement range must be set on both multimeter using the rotary switch. Then measure currents I_{1} and I_{2} and



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enter the measured values in [table 2](#).

Fig. 3: Node-set circuit

2 What is the relationship between currents I_1 and I_2 ? $\frac{I_1}{I_2} =$

Switch the power supply back on and measure the current I . Enter its value in [table 2](#).



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Tab. 2: Node set current measurement

Determine the node set for node K and check its validity.

Using the measured values for resistors R_1 , R_2 , and R_3 , calculate the total resistance R_{KP} :

Using the calculated value R_{KP} , check the measured value of the total current:

$I = \frac{U}{R_{KP}} =$

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